FIFTY-THIRD ANNUAL

COLORADO BUSINESS ECONOMIC OUTLOOK

2018

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Table of Contents

Leeds School of Business 2
Introduction 3
Colorado Then and Now 4
U.S. Economic Outlook 6
Colorado Economic, Employment, and Population Outlook 9
- Agriculture 17
- Natural Resources and Mining 23
- Construction 33
- Manufacturing 38
- Trade, Transportation, and Utilities 45
- Information 54
- Financial Activities 61
- Professional and Business Services 75
- Education and Health Services 85
- Leisure and Hospitality 96
- Other Services 107
- Government 108
- International Trade 115
- Summary 120
- Around the Region 122
- Around the State
  - Boulder County 124
  - Kit Carson County 126
  - La Plata County 127
  - Mesa County 128
  - Northern Colorado 131
  - Pueblo 131
  - Southern Colorado 132

Steering Committee Members 136
Estimating Groups 137

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Introduction

The Business Research Division (BRD) in the Leeds School of Business is proud to present our 53rd annual Colorado Business Economic Outlook. This 2018 consensus forecast is a product of partnerships that rely on research conducted by our students and staff, and members of the public and private sectors in service and outreach to the state of Colorado.

This forecast analyzes changes that have occurred in all economic sectors during the past year, and looks at the opportunities and challenges that will shape population, employment, and the overall economy in the coming year. The information in this book is initially presented at the 53rd annual Colorado Business Economic Outlook Forum in Denver, followed by approximately 50 forecast speeches that are held throughout the state during the year, ranging from presentations to industry associations and nonprofit organizations to the Federal Reserve Bank of Kansas City.

Methodology

We are fortunate to have more than 100 individuals from the business, education, and government communities who serve on 13 sector estimating groups. These groups convene at a kickoff meeting in September where members discuss trends and issues that are likely to affect economic growth during the upcoming year. During the second half of September and into October, the committees apply this information to their industry. From this series of meetings, the sector write-ups and forecasts are prepared and submitted to the BRD in early November, when they are edited and published in this book. The following June, the Steering Committee, which is made up of the sector chairs, meets to review their forecasts and identify factors that will positively or negatively drive change in their industry's economic performance during the second half of the year. These updates are published in the summer issue of our quarterly newsletter, the *Colorado Business Review.*

Related Economic Research

The BRD conducts customized business and economic research that expands the knowledge base of decision makers throughout the state and region. The annual Colorado Business Economic Outlook provides the foundation for all research the BRD conducts within the state. Among the other BRD research tools available to businesses and organizations is the Leeds Business Confidence Index, a forward-looking index that gauges Colorado business leaders' opinions about national and state economic trends and how their industry will perform in the coming quarter, and the *Colorado Business Review,* which explores current topics of importance to the state's economy. Visit www.colorado.edu/business/brd for more information about BRD offerings.

Acknowledgments

We are humbled and thankful to have dedicated partners in producing this forecast. A complete list of committee members appears at the back of this book. Their efforts are very much appreciated. We also thank the staff of the State Demography Office of the Colorado Department of Local Affairs, and the Colorado Department of Labor and Employment who supply us with much of the population and employment data used in the forecast.

Finally, I would like to thank the many Leeds School of Business and CU Boulder personnel who worked hard at preparing, presenting, and promoting this project. My sincerest thanks go to Brian Lewandowski, Associate Director; Cindy DiPersio, Project Coordinator; Kristin Weber, Graphic Designer; Denise Munn, Senior Manager of Print Production Management; and John Griswold, Michael Hansen, Joseph Kaplan, William Maguire, and Jackson Rueter, Student Research Assistants, for their help in assembling and presenting the 2018 Colorado Business Economic Outlook Forum. The assistance provided by Leeds School staff, including Laurel Page, Events Coordinator; Erik Jeffries, Creative Assets and Marketing Technology Director; Nicole Waldrip, Graphic Designer; Erin Pfeifer, Content Strategy Consultant; Justin Forbis, Senior Internal Communications Coordinator; Trisha McKean, Assistant Dean for Advancement; Kathryn Marshall, Executive Director for Corporate and External Relations; and Anna Linn, Assistant Director of Corporate and External Relations, is greatly appreciated. I am also appreciative of the help provided by Trent Knoss, Dirk Martin, and Julie Poppen with CU Boulder Strategic Media Relations.

Colorado Economic Forecast for 2018

The sections that follow provide a summary of 2017, a forecast for 2018, and industry-specific data analysis and insight into the key factors influencing each sector. We believe this information will prove useful in your business and policy decision-making process.

Richard L. Wobbekind, PhD
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Executive Director, Business Research Division
Leeds School of Business
www.colorado.edu/business/brd

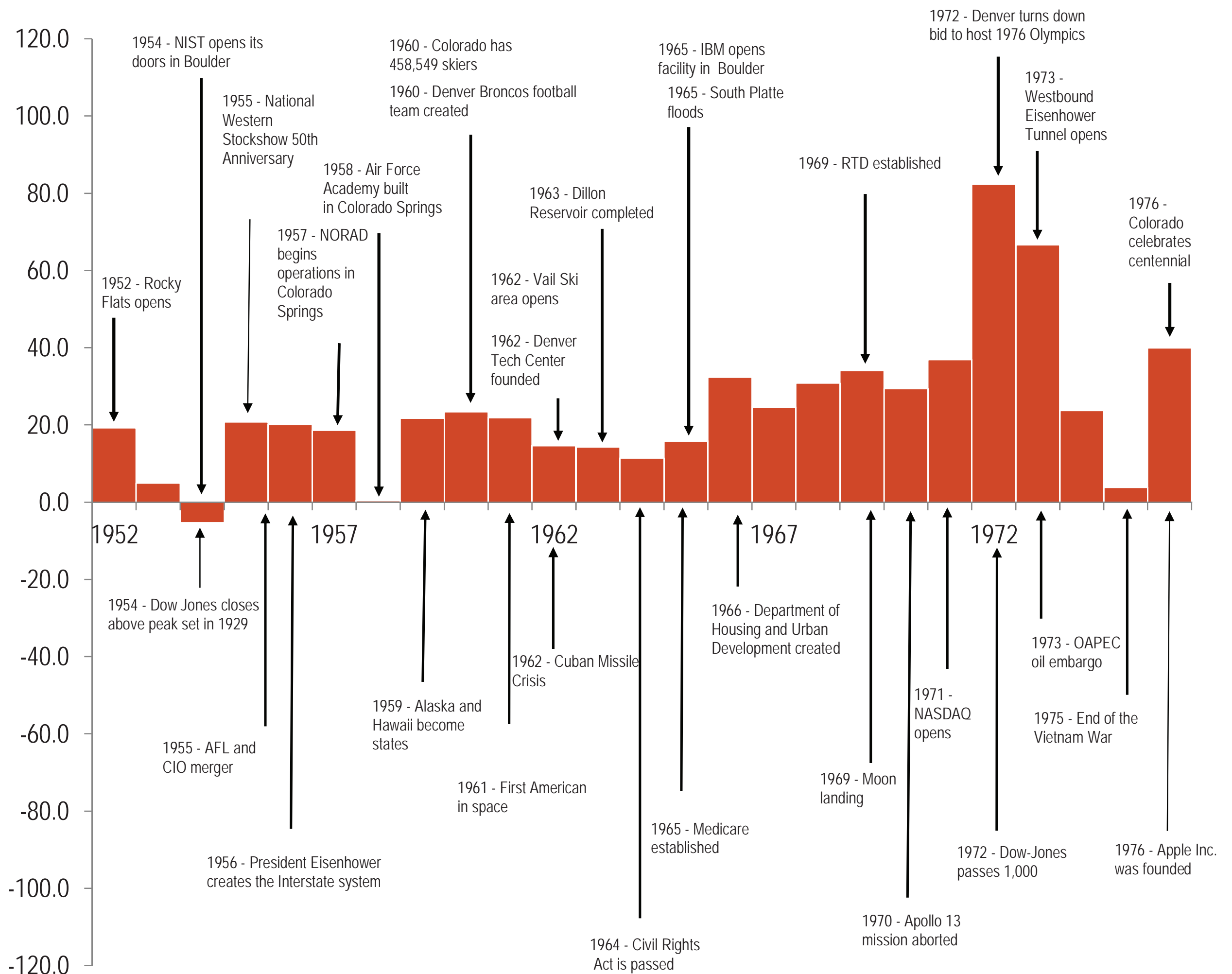
Colorado Then and Now

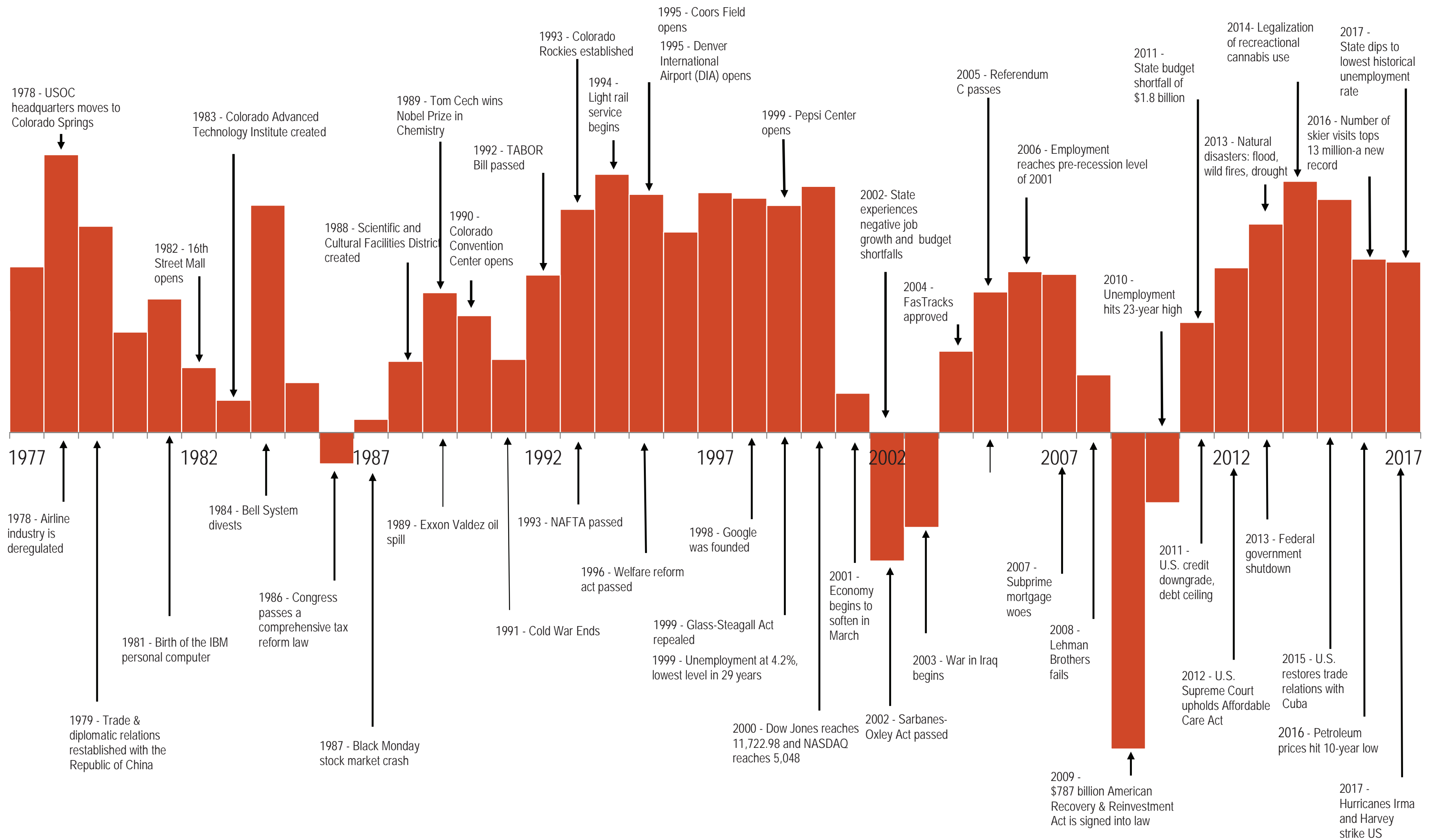
Over the past 47 years in Colorado, employment, labor force composition, and the economy have shifted dramatically.

In 1970, just over one million individuals were employed in Colorado and the average annual earnings were $6,538. Goods-producing industries accounted for 23.4% of jobs and made up 26.7% of the Colorado GDP. Proprietor employment represented less than 17% of total employment. Females made up 37% of Colorado's labor force, according to data from the Colorado Demography Office. Throughout the 1970s, the Colorado economy benefited profoundly from booms in petroleum and mining production as both industries experienced peak employment for the time.

Colorado wage and salary employment has grown to more than 2.6 million (not including proprietor employment in the state) and average annual pay for covered wage and salary earners topped $54,664. Goods-producing sectors now account for less than one-in-eight of total jobs and 16.6% of the Colorado GDP. Proprietor employment has increased to over 25% of total employment. The share of females in the state's labor force increased to nearly half (46%), a nine percentage point increase from 1970. In just over four decades, the state has undergone an enormous increase in college-educated population as the percent of Colorado residents 25 years or older with four or more years of college nearly tripled, from 14.9% in 1970 to 39.8% today. With a larger base of highly qualified employees, new high-tech industries have added significantly to Colorado's economy and key industry clusters, specifically aerospace, biosciences, IT-software, and telecommunications.

The timeline to the right provides a glimpse into the past, showing the annual change in state employment. Changes in employment have been accompanied by numerous social, economic, educational, and political changes. Colorado events are listed above the line; national events are noted below. ✤





1978 - USOC headquarters moves to Colorado Springs
1983 - Colorado Advanced Technology Institute created
1982 - 16th Street Mall opens
1988 - Scientific and Cultural Facilities District created
1989 - Tom Cech wins Nobel Prize in Chemistry
1990 - Colorado Convention Center opens
1992 - TABOR Bill passed
1993 - Colorado Rockies established
1994 - Light rail service begins
1995 - Coors Field opens
1995 - Denver International Airport (DIA) opens
1999 - Pepsi Center opens
2002- State experiences negative job growth and budget shortfalls
2004 - FasTracks approved
2005 - Referendum C passes
2006 - Employment reaches pre-recession level of 2001
2010 - Unemployment hits 23-year high
2011 - State budget shortfall of $1.8 billion
2013 - Natural disasters: flood, wild fires, drought
2014- Legalization of recreactional cannabis use
2016 - Number of skier visits tops 13 million-a new record
2017 - State dips to lowest historical unemployment rate
1977
1982
1987
1992
1997
2002
2007
2012
2017
1978 - Airline industry is deregulated
1979 - Trade & diplomatic relations restablished with the Republic of China
1981 - Birth of the IBM personal computer
1984 - Bell System divests
1986 - Congress passes a comprehensive tax reform law
1987 - Black Monday stock market crash
1989 - Exxon Valdez oil spill
1991 - Cold War Ends
1993 - NAFTA passed
1996 - Welfare reform act passed
1998 - Google was founded
1999 - Glass-Steagall Act repealed
1999 - Unemployment at 4.2%, lowest level in 29 years
2000 - Dow Jones reaches 11,722.98 and NASDAQ reaches 5,048
2001 - Economy begins to soften in March
2002 - Sarbanes-Oxley Act passed
2003 - War in Iraq begins
2007 - Subprime mortgage woes
2008 - Lehman Brothers fails
2009 - $787 billion American Recovery & Reinvestment Act is signed into law
2011 - U.S. credit downgrade, debt ceiling
2012 - U.S. Supreme Court upholds Affordable Care Act
2013 - Federal government shutdown
2015 - U.S. restores trade relations with Cuba
2016 - Petroleum prices hit 10-year low
2017 - Hurricanes Irma and Harvey strike US

U.S. Economic Outlook

The U.S. economy exhibited accelerating growth of 1.7% in 2013, 2.6% in 2014, and 2.9% in 2015. However, real gross domestic product (GDP) growth stalled in 2016, posting growth of 1.5%. Slow growth continued during first quarter 2017 (1.2%), but picked up in the latter part of the year—3.1% growth in Q2 2017 and 3% growth in Q3 2017 (advance estimate).

According to the National Bureau of Economic Research (NBER), the United States has experienced 11 business cycles post-World War II. The nation is nearly 8½ years into an expansion, making it currently the third-longest expansion over the past 70 years. The longest expansion during this period occurred in the 1990s, lasting 10 years. The shortest expansion occurred in the early 1980s, lasting 12 months. The average length of an expansion since 1945 (including the current expansion) has averaged just over 5 years.

The current long, sustained recovery persists with the backing of many positive underpinnings to the economy—notably, employment, income, and wealth. As of October, employment growth continued uninterrupted for 85 consecutive months. The October seasonally adjusted unemployment rate dipped to 4.1%—the lowest level since 2000 during the robust technology boom. Adding marginally attached workers and those employed part time for economic reasons, the U-6 rate dropped to 7.9% in October—also the lowest level in more than 16 years. Additionally, compared to the current environment, one must go back to 1973 to find lower initial and continued unemployment claims, a year when covered employment was 55% lower than in 2017.

Personal income rose 2.8% year-over-year in Q3 2017, reaching a seasonally adjusted annual rate of almost $16.5 billion. Per capita personal income, both real and nominal, also reached a new peak in Q3 2017. Employee wages, too, increased, up between 2% and 3% each month of 2017. Household wealth continues to reach new peaks. According to the Federal Reserve's Balance Sheet of Households and Nonprofit Organizations, total assets topped $111.5 trillion in Q2 2017. In November, the Dow Jones Industrial Average remained over 23,000, and home prices continued an upward climb in 2017.

Two components of the economy targeted by Fed policy are employment and inflation (the dual mandate). While the United States is effectively at full employment, inflation remained relatively subdued until 2017, when seasonally adjusted year-over-year price changes averaged 2.1% through October. This economy has signaled enough strength for the Federal Reserve to implement higher interest rates, with two rate increases so far in 2017. However, while the U.S. dollar remains strong relative to other currencies, it has been affected by political uncertainty and slowing economic growth worldwide. The eurozone and Asia Pacific regions are expected to register slightly slower growth in 2018 than in 2017.

With this backdrop, the following sections examine forecasts of output and the key components of GDP.

Total Output

The United States experienced attenuated growth for the seven years since the Great Recession, expanding between 1.5% and 2.9% per year. In 2017, growth in the consumer-led economy received help from fixed business

REAL GROSS DOMESTIC PRODUCT
2008-2018
(In Billions of Chained 2009 Dollars)

Economic Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017[a]	2018[b]
Real Gross Domestic Product	$14,830.4	$14,418.7	$14,783.8	$15,020.6	$15,354.6	$15,612.2	$16,013.3	$16,471.5	$16,716.2	$17,085.6	$17,495.7
Percentage Change	-0.3%	-2.8%	2.5%	1.6%	2.2%	1.7%	2.6%	2.9%	1.5%	2.2%	2.4%
Personal Consumption Expenditures	$10,007.2	$9,847.0	$10,036.3	$10,263.5	$10,413.2	$10,565.4	$10,868.4	$11,264.3	$11,572.1	$11,884.5	$12,187.6
Percentage Change	-0.3%	-1.6%	1.9%	2.3%	1.5%	1.5%	2.9%	3.6%	2.7%	2.7%	2.6%
Fixed Business Investment[c]	$1,934.4	$1,633.4	$1,673.8	$1,802.3	$1,964.1	$2,032.9	$2,172.7	$2,223.5	$2,210.4	$2,308.8	$2,408.0
Percentage Change	-0.7%	-15.6%	2.5%	7.7%	9.0%	3.5%	6.9%	2.3%	-0.6%	4.5%	4.3%
Government Expenditures	$2,994.8	$3,089.1	$3,091.4	$2,997.4	$2,941.6	$2,857.6	$2,839.1	$2,878.5	$2,900.2	$2,897.3	$2,917.6
Percentage Change	2.8%	3.1%	0.1%	-3.0%	-1.9%	-2.9%	-0.6%	1.4%	0.8%	-0.1%	0.7%
Net Exports	-$557.8	-$395.4	-$458.8	-$459.4	-$447.1	-$404.9	-$427.7	-$545.3	-$586.3	-$614.5	-$644.0

[a]Estimate. [b]Forecast. [c]Components do not sum to total since fixed business investment excludes residential investment and changes in inventories.

Sources: Bureau of Economic Analysis, Consensus Forecasts, National Association for Business Economics, and Colorado Business Economic Outlook Committee.

investment, while government spending remained a drag on economic growth. Expectations are for a modest acceleration in 2017 and 2018, with real GDP growth of 2.2% and 2.4%, respectively.

Consumer Spending

Personal consumption of goods outpaced growth in services in 2016, 3.7% to 2.3%, and this trend continued during the first three quarters of 2017. Durable goods saw the sharpest decline during the recession, but continue to show some of the strongest post-recession growth. While the growth rate in durables slowed slightly in 2016 from its robust levels from 2012–2015, it still posted a strong increase of 5.5%. On a quarterly basis, this trend continues to hold with strong gains in durable goods outpacing modest gains in services and nondurables. Personal consumption expenditures are expected to grow 2.7% in 2017 and 2.6% in 2018.

Photo: Nathan Pulley

Growth is being spurred by confidence on the part of consumers. National employment increased 1.4% year over-year in October 2017, and private-sector employment grew 1.6% year-over-year. Forty-eight states registered year-over-year job growth in October 2017. All but seven states now have unemployment rates below 5%, and nearly half of all states have rates under 4%. The labor force increased 0.5% in October compared to the same period in 2016; however, the labor force participation rate was 62.7% in October, 0.1 percentage-points lower than in October 2016. Initial unemployment claims averaged 231,250 for the four weeks ending November 4, 2017—down 9.7% compared to the same period the prior year. Changes to both the number of job seekers and the number of job leavers contribute to changes in the labor force participation rate. In terms of education and age cohort, the lowest unemployment rates in October were observed for individuals with a bachelor's degree and higher (2%) and those 45–54 years old (2.7%).

Personal income increased 2.8% year-over-year in Q3 2017. Personal income has grown each year since 2010, most recently by 1.1% in 2013, 5.3% in 2014, 5% in 2015, and 2.4% in 2016. Real disposable personal income has also grown annually for three straight years, increasing by 3.6% in 2014, 4.2% in 2015, and 1.4% in 2016. In Q3 2017, real disposable personal income grew by 1.2% year-over-year. Real per capita personal income has increased at a slightly slower rate—growing by 2.8% in 2014, 3.4% in 2015, 0.7% in 2016, and 0.5% year-to-date in Q3 2017.

Data from the Federal Housing Finance Authority show all but two states recording year-over-year gains in home prices according to the purchase only index. Home price appreciation helps with homeowner liquidity and labor mobility. The personal savings rate declined by 0.2 percentage points year-over-year in Q3 2017.

Household balance sheets remain healthy in 2017, with a financial obligation ratio (financial obligations as a percentage of disposable personal income) of 15.5% in Q2 2017. This ratio peaked at 18.1% in Q4 2007. Consumers have demonstrated a strong return to the market, with greater levels of consumption and a resumption of growth in revolving credit. Growth in retail and food services sales accelerated from 2.6% in 2015 to 3% in 2016, and sales were 4.6% higher in October 2017 compared to a year ago. With the consumer fundamentals in place, growth will continue through the end of 2017 and into 2018. Inflation has hovered around the target rate of 2% in 2017. The Consumer Price Index (all items) was up 2% year-over-year in October, while core inflation (all items less food and energy) increased 1.8%.

Investment

Housing starts will continue improving at a modest rate, surpassing 1.2 million in 2017 and 1.3 million in 2018, barring an unusually large reaction to rising mortgage rates. Regional demand and consumer preferences will continue to dictate the type of additions to the housing stock.

Fixed investment includes investment in residential structures, as well as nonresidential structures, equipment, software, and changes in inventory. Excluding changes in inventory, real business fixed investment fell in 2016 by 0.6%, but is expected to increase by 4.5% in 2017 and 4.3% in 2018. In 2016, nearly 79% of fixed investment (excluding inventory) was business related.

Government Expenditures

In 2016, government consumption expenditures and gross investment increased by 0.8%. The government consumption component of GDP is expected to decline 0.1% in 2017, but is forecasted to grow 0.7% in 2018.

continued on page 8

U.S Economic Outlook

continued from page 7

Nearly 61.5% of total government expenditures and investment are state and local, while approximately 23% are allocated to national defense and 15.4% to nondefense programs. According to the Congressional Budget Office, the federal budget deficit peaked at $1.4 trillion in FY2009. Since then, the annual deficit has decreased, but is expected to rise in the future. In FY2016, the federal deficit totaled to -$585 billion, but is projected at -$693 billion in 2017 and -$563 billion in 2018.

Net Exports

Global economic growth will continue to increase the U.S. trade deficit. Political dynamics may influence net exports as well, though it is difficult to anticipate in what way and the magnitude of the effect. Imports grew faster than exports for the first three quarters of 2017, contributing to a larger deficit. The trade imbalance is forecast to be -$614.5 billion in 2017 and -$644 billion in 2018, compared to -$586.3 billion in 2016.

STATE AND NATIONAL ECONOMIC COMPARISON, 2006-2016

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Colorado											
Real GDP ($ billions, chained 2009 dollars)	243.2	250.3	252.6	247.3	248.7	252.3	257.6	265.9	278.5	288.0	291.3
Nominal GDP ($ billions)	231.9	245.9	254.8	247.3	253.4	262.7	272.8	286.8	305.6	315.2	322.6
Total Personal Income ($ billions)	189.5	201.7	208.6	198.1	201.6	219.9	234.0	246.6	267.2	282.7	288.1
Per Capita Personal Income ($)	40,143	41,996	42,663	39,838	39,926	42,955	45,089	46,824	49,952	51,876	51,999
Employment (thousands)[a]	2,279.1	2,331.3	2,350.3	2,245.6	2,222.3	2,258.6	2,313.0	2,381.9	2,464.9	2,541.9	2,599.2
Unemployment Rate (percent)	4.3	3.7	4.8	7.3	8.7	8.4	7.9	6.8	5.0	3.9	3.3
Labor Force Participation Rate (percent)	72.4	72.2	72.1	70.9	70.4	69.7	69.0	68.3	67.8	66.9	66.9
CPI-All Items (percent change)	3.6	2.2	3.9	-0.6	1.9	3.7	1.9	2.8	2.8	1.2	2.8
All Items Less Food and Energy (percent change)	4.0	1.8	2.8	1.7	1.4	2.3	2.0	3.2	2.9	3.3	4.0
Shelter (percent change)	3.8	2.2	1.7	1.2	0.5	1.7	2.7	4.5	5.0	5.7	7.3
United States											
Real GDP ($ billions, chained 2009 dollars)	14,614	14,874	14,830	14,419	14,784	15,021	15,355	15,612	16,013	16,472	16,716
Nominal GDP ($ billions)	13,856	14,478	14,719	14,419	14,964	15,518	16,155	16,692	17,428	18,121	18,625
Total Personal Income ($ billions)	11,394	12,000	12,502	12,095	12,477	13,255	13,915	14,074	14,818	15,553	15,929
Per Capita Personal Income ($)	33,589	34,826	36,101	35,616	36,274	37,811	39,455	39,157	40,869	42,392	43,194
Employment (thousands)	136,453	137,999	137,242	131,313	130,361	131,932	134,175	136,381	138,958	141,843	144,306
Unemployment Rate (percent)	4.6	4.6	5.8	9.3	9.7	9.0	8.1	7.4	6.2	5.3	4.9
Labor Force Participation Rate (percent)	66.2	66	66	65.4	64.7	64.1	63.7	63.2	62.9	62.7	62.8
CPI-All Items (percent change)	3.2	2.8	3.8	-0.4	1.6	3.2	2.1	1.5	1.6	0.1	1.3
All Items Less Food and Energy (percent change)	2.5	2.3	2.3	1.7	1.0	1.7	2.1	1.8	1.7	1.8	2.2
Shelter (percent change)	3.4	3.7	2.5	1.1	-0.4	1.3	2.2	2.3	2.8	3.1	3.4

[a]Revised.
Note: Unless noted, figures are not inflation-adjusted.
Sources: Bureau of Labor Statistics and Bureau of Economic Analysis.

Colorado Economic, Employment, and Population Outlook

Economy

While Colorado continues to outperform most states economically, key economic metrics show that Colorado's pace of growth generally slowed in 2016 before reaccelerating in the first half of 2017. Colorado's real GDP grew 4.8% in 2014, 3.4% in 2015, and 1.1% in 2016; quarterly real GDP increased at a seasonally adjusted annual rate of 2.7% in Q1 and 3.8% in Q2 2017, ranking Colorado 3rd in the country for the pace of GDP growth. In terms of employment, Colorado grew jobs at a pace of 3% in 2013, 3.5% in 2014, and 3.1% in 2015 before slowing to a revised 2.3% in 2016—but the 2.3% wage growth still was the 13th fastest pace for the year. While Colorado's per capita personal income growth rate slowed from 6.7% in 2014 to 3.9% in 2015 and 0.2% in 2016, Colorado's per capita personal income still ranked 15th highest in the nation. Despite these slowing metrics, the state continues to outperform.

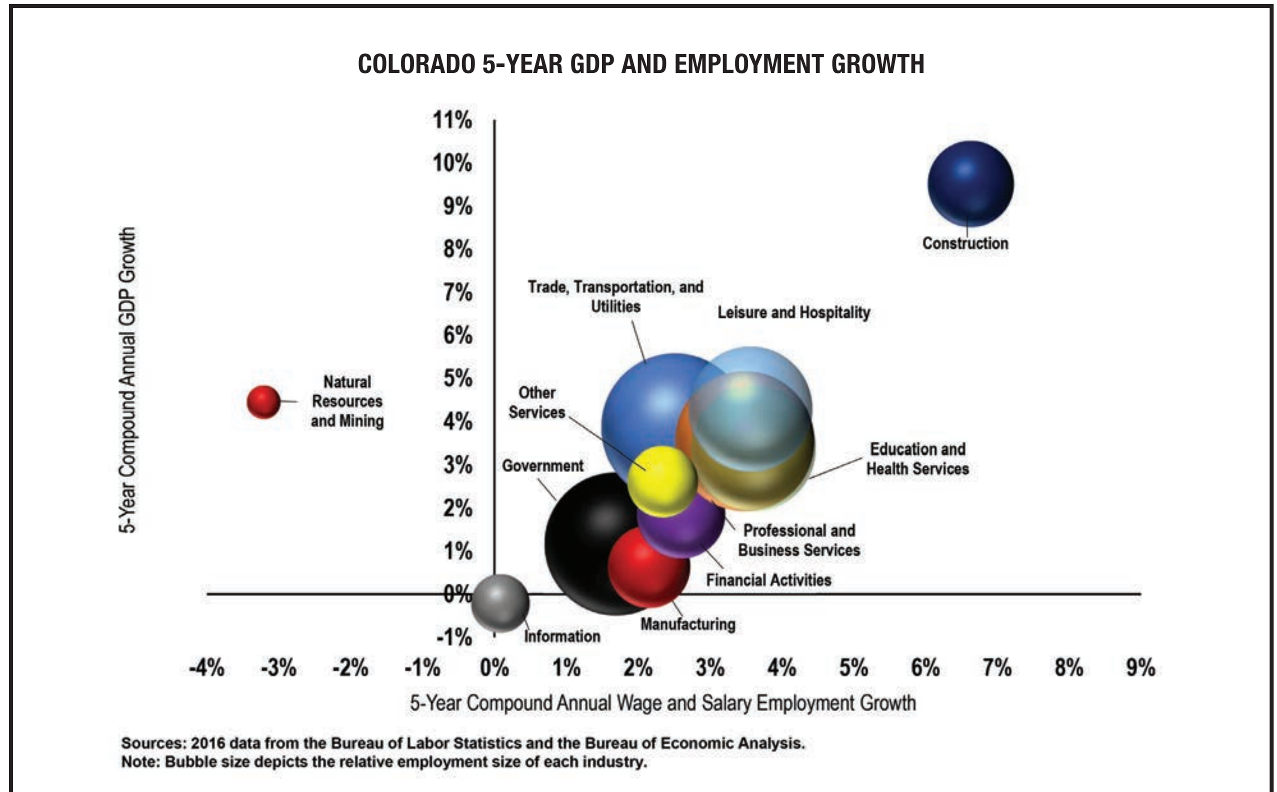
In addition to rebounding real GDP growth in the first half of 2017, total personal income rose 3.9% in Q2 2017 year-over-year, and per capita personal income increased 2.2%. The state's labor force increased 3.7% year-over-year in September—the fastest rate in the country—and the unemployment rate stood at 2.5%, the second-lowest rate nationally.

The U.S. city average all items Consumer Price Index for All Urban Consumers (CPI-U) increased by 1.6% in 2014, 0.1% in 2015, and 1.3% in 2016. Inflation increased to 2.2% during the first half of 2017, but the full-year average is expected to fall slightly to 2% and stay consistent through 2018. Core inflation—all items less food and energy—increased nationally 1.7% in 2014, 1.8% in 2015, and 2.2% in 2016.

Inflation is reported by the Bureau of Labor Statistics for the Denver-Boulder-Greeley combined metropolitan statistical areas, which is often used as a proxy for Colorado. A reflection of the hot local economy, prices increased faster than the rest of the nation, at 2.8% in 2014, 1.2% in 2015, and 2.8% in 2016. Core inflation in the Denver-Boulder-Greeley region increased 2.9% in 2014, 3.3% in 2015, and 4% in 2016. Shelter prices increased 5% in 2014, 5.7% in 2015, and 7.3% in 2016.

For more than half a century, the Colorado Business Economic Outlook has been compiled by industry leaders

continued on page 10



COLORADO RANK AMONG OTHER STATES

Metric	1-Year	3-Year	5-Year	10-Year
Real Gross Domestic Product Growth	3	9	5	7
Employment Growth	13	10	5	4
Labor Force Growth	1	4	4	4
Unemployment Rate	2	13	18	17
Population Growth	7	4	4	3
Personal Income Growth	7	16	2	5
Per Capita Personal Income	15	14	19	14
Per Capita Personal Income Growth	27	36	2	NA
Average Annual Pay	10	13	13	10
Average Annual Pay Growth	35	26	25	26
FHFA Home Price Index	2	1	3	1

Data Sources: Bureau of Economic Analysis (Q2 2017), Bureau of Labor Statistics (9/17), U.S. Census Bureau (2016), Colorado State Demography Office (8/17), Federal Housing Finance Agency Purchase Only Index (Q2 2017), BRD calculations. Notes: Most current data available; based on the compound annual growth rate.

Colorado Economic, Employment, and Population Outlook

continued from page 9

COLORADO RESIDENT LABOR FORCE
2008-2018
(Not seasonally adjusted) (in thousands)

Labor Force	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017[a]	2018[b]
Colorado Labor Force	2,716.6	2,723.0	2,724.4	2,736.1	2,757.2	2,775.7	2,810.4	2,833.5	2,891.0	2,970.82	3,030.2
Total Employment	2,585.2	2,524.4	2,486.4	2,507.3	2,539.9	2,586.0	2,670.0	2,723.0	2,795.2	2,896.54	2,951.4
Unemployed	131.4	198.5	238.0	228.8	217.3	189.7	140.5	110.5	95.8	74.3	78.8
Unemployment Rate	4.8%	7.3%	8.7%	8.4%	7.9%	6.8%	5.0%	3.9%	3.3%	2.5%	2.6%

[a]Estimated. [b]Forecast.

Note: There are slight differences between the LAUS data series and the CES employment data series that is used throughout the rest of this book.

Source: Colorado Department of Labor and Employment (LAUS data) and Colorado Business Economic Outlook Committee.

COLORADO NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT
2008-2018
(in thousands)

Sector	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017[b]	2018[c]
Natural Resources and Mining	28.5	24.2	24.4	27.9	30.3	30.6	34.1	30.7	23.7	25.0	26.1
Construction	161.8	131.3	115.1	112.5	115.8	127.5	142.2	148.8	155.1	162.0	164.5
Manufacturing	142.3	128.0	124.2	128.1	130.9	132.8	136.6	141.0	142.5	144.0	145.6
Trade, Transportation, and Utilities	429.3	403.8	397.6	401.7	409.7	420.2	432.9	446.2	454.8	461.7	470.4
Information	76.8	74.7	72.0	71.4	69.8	69.8	70.3	70.7	71.7	72.1	72.4
Financial Activities	155.6	148.0	144.3	143.9	146.7	151.0	153.9	159.0	163.6	167.6	169.6
Professional and Business Services	353.7	331.8	330.8	341.5	356.9	372.6	386.5	398.4	405.3	415.2	425.2
Education and Health Services	250.5	257.2	264.7	273.7	282.6	286.7	298.9	314.2	326.7	335.0	343.4
Leisure and Hospitality	272.9	262.4	263.0	271.4	279.7	289.4	300.4	312.8	323.3	330.8	337.0
Other Services	94.8	93.7	92.4	93.7	96.0	97.7	100.7	103.0	105.2	106.3	108.0
Government	384.1	390.5	393.8	392.9	394.8	403.7	408.5	417.1	427.3	435.8	440.4
Total[a]	2,350.3	2,245.6	2,222.3	2,258.6	2,313.0	2,381.9	2,464.9	2,541.9	2,599.2	2,655.5	2,702.7

[a]Revised. [b]Estimated. [c]Forecast.

[d]Due to rounding, the sum of the individual sectors may not equal the total.

Sources: Colorado Department of Labor and Employment (CES Data) and Colorado Business Economic Outlook Committees.

2016 AVERAGE ANNUAL PAY BY SECTOR
COLORADO AND THE UNITED STATES

Sector	Colorado	1-Year Growth	United States	1-Year Growth
Total, All Industries	$54,664	0.9%	$53,621	1.3%
Agriculture, Forestry, Fishing, Hunting	35,001	1.4	33,287	4.1
Mining	114,630	-0.1	102,988	0.5
Utilities	95,715	2.6	102,868	1.4
Construction	57,344	3.6	58,647	2.9
Manufacturing	66,329	-0.2	64,870	0.9
Wholesale Trade	79,510	0.5	73,710	0.5
Retail Trade	30,625	1.8	30,299	1.9
Transportation and Warehousing	53,090	2.4	50,459	1.1
Information	95,511	1.4	98,458	3.5
Finance and Insurance	90,007	2.3	101,210	0.9
Real Estate and Rental and Leasing	54,984	3.6	54,965	1.8
Professional and Technical Services	90,437	1.8	90,972	1.3
Mgmt of Companies and Enterprises	128,275	-9.9	115,325	-1.2
Administrative and Waste Services	38,771	2.9	37,989	1.9
Educational Services	39,361	1.2	48,757	1.6
Health Care and Social Assistance	48,801	1.3	47,956	1.4
Arts, Entertainment, and Recreation	36,072	2.0	36,806	1.9
Accommodation and Food Services	20,996	3.0	20,032	3.2
Other Services	38,204	1.9	35,921	2.3
Government	53,556	2.2	54,221	1.7

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

in the state, and presented by the Business Research Division (BRD) of the Leeds School of Business at the University of Colorado Boulder. The book archives serve as a chronicle of the changing issues and opportunities facing people and industry in Colorado for 53 years. This book presents historical data and forward-looking estimates on employment for each sector of the economy. It also offers discussion on other relevant economic metrics, ranging from sales and cash receipts to building permits and airport enplanements. This section lays the foundation for the each of the NAICS supersectors by providing an overview of labor force and wage and salary employment totals.

Employment

After growing by 57,300 jobs (2.3%) in 2016, the pace of employment growth decreased in Colorado in 2017, with the state adding 56,300 jobs, or 2.2% growth. This trend will continue in 2018, with the state adding 47,100 jobs, or 1.8% growth—a pace that will likely keep Colorado in the top 10 nationally. Three industries that will record the most jobs added in 2018 are Professional and Business Services (10,000 jobs); Trade, Transportation, and Utilities (8,700 jobs); and Education and Health Services (8,400 jobs). The slowest growing sectors are projected to be Information (300 jobs) and Natural Resources and Mining (1,100 jobs). Overall, growth is projected in every industry.

Wages

Wage growth overall stagnated in 2016, with the state recording just 0.9% growth in average annual pay. However, a deeper look at wages reveals that most industries—17 of the 20—did record wage growth in 2016. Three industries recorded growth of 3% or more, six industries were between 2% and 3%, and seven industries were between 1% and 2%. The overall average for the state was dampened by wage declines in industries that pay above average wages—Management of Companies and Enterprises (-9.9%), Mining (-0.1%), and Manufacturing (-0.2%)—and by relatively slower employment growth among many of the high wage industries. Nearly two-thirds of jobs and three-quarters of the job growth in 2016 were in industries that pay below the state average. That cohort grew employment by 2.8%, whereas the above-average paying industries grew by a more modest 1.6%.

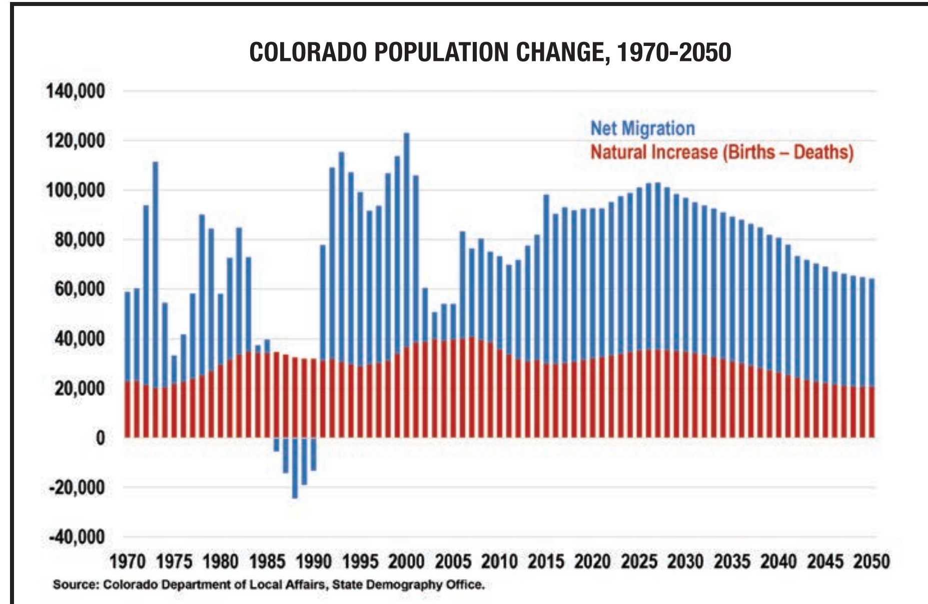
Labor Force and Unemployment

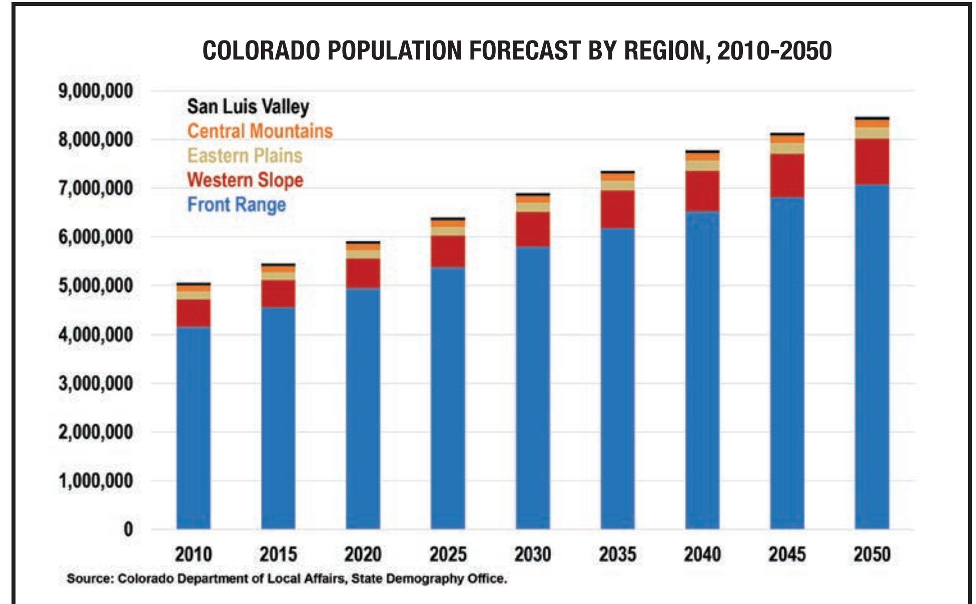
The unemployment rate in Colorado has declined steadily for the past five years coming out of the Great Recession. The unemployment rate averaged 8.7% in 2010, falling to 3.3% in 2016. Unemployment has continued to decline through 2016 and 2017, reaching a low of 2.3% in April 2017, before inching up to 2.5%

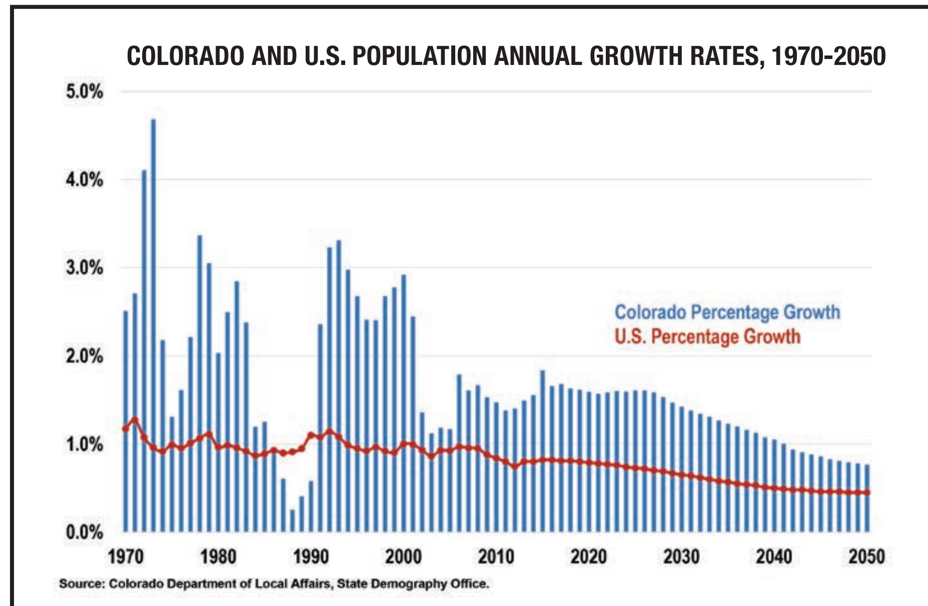
continued on page 12

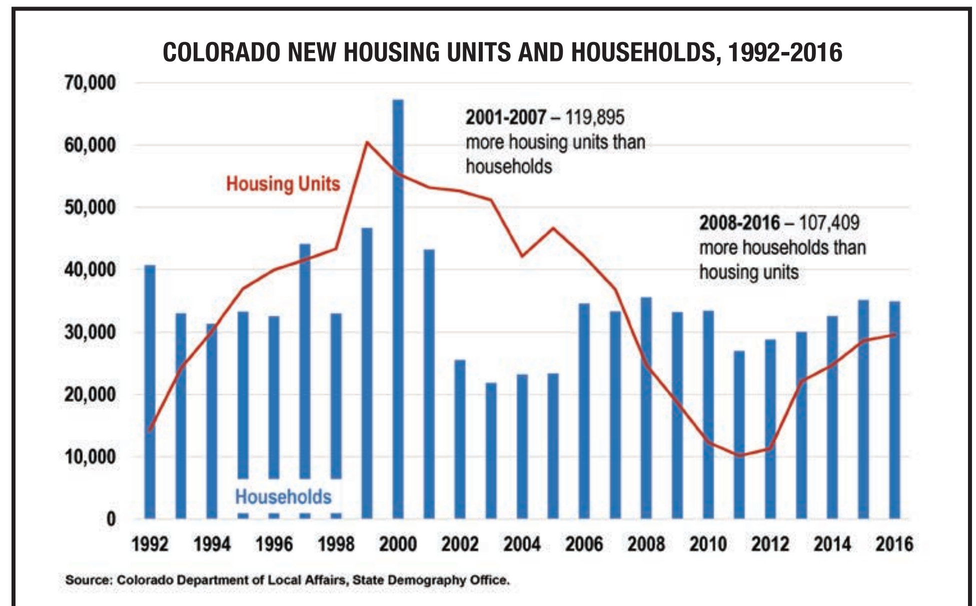
Colorado Economic, Employment, and Population Outlook

continued from page 11









Colorado Economic, Employment, and Population Outlook

POPULATION CHANGE BY COUNTY, 2016

	Rank	County	Population	County	Percent Change	County	Nominal Change
Largest	1	Denver	693,292	Ouray	4.2%	El Paso	14,029
	2	El Paso	690,207	Archuleta	3.9	Denver	12,634
	3	Arapahoe	637,254	Costilla	3.8	Weld	9,826
	4	Jefferson	571,711	Custer	3.6	Arapahoe	8,188
	5	Adams	497,673	Weld	3.5	Adams	7,750
Smallest	1	San Juan	698	Kit Carson	-7.1	Kit Carson	-580
	2	Mineral	737	Crowley	-6.4	Crowley	-355
	3	Hinsdale	775	Bent	-3.8	Bent	-221
	4	Kiowa	1,347	Kiowa	-3.5	Morgan	-82
	5	Jackson	1,351	Baca	-1.0	Logan	-75

Source: Colorado Department of Local Affairs, State Demography Office.

COMPONENTS OF COLORADO RESIDENT POPULATION, 2008-2018
(In Thousands)

Year	Births (Resident)	Deaths (Resident)	Natural Increase	Net Migration	Population Change	Total Population[a]
2008	70.7	31.0	39.7	40.5	80.2	4,901.9
2009	69.1	30.5	38.6	36.3	74.9	4,976.9
2010	67.3	31.4	35.9	37.6	73.5	5,050.3
2011	65.9	32.0	33.9	35.3	69.2	5,119.5
2012	64.7	32.8	32.0	39.6	71.5	5,191.1
2013	64.7	33.6	31.1	46.2	77.3	5,268.4
2014	65.7	34.0	31.7	50.0	81.7	5,350.1
2015	66.3	36.2	30.1	67.8	97.9	5,448.1
2016	66.6	36.5	30.1	60.1	90.1	5,538.2
2017[b]	67.0	37.0	30.0	61.5	91.5	5,629.7
2018[c]	67.5	37.9	29.6	61.0	90.6	5,720.3

[a]Due to rounding, the sum of the individual items may not equal the total.

[b]Estimated.

[c]Forecast.

Source: Colorado Department of Local Affairs, State Demography Office (July 1 estimates).

in September. Through September 2017, Colorado's labor force increased year-over-year uninterrupted for almost seven years while the number of unemployed has decreased for 80 consecutive months.

Labor Data Sets

The data for this forecast are derived from two U.S. Bureau of Labor Statistics (BLS) sources: Current Employment Statistics (CES) and Local Area Unemployment Statistics (LAUS).

The CES data set is the most frequently cited labor series and is typically used to evaluate sector trends. Compiled from a survey of companies, it includes full-time and part-time workers, temporary workers, employees on paid holiday or sick leave, and those who worked for only part of a pay period. It does not include sole proprietors. CES data for a particular year are revised twice—3 months and 15 months after the end of the year—based on the Quarterly Census of Employment and Wages (QCEW) that all firms are required to submit.

The LAUS labor series provides an estimate of the size of the total labor force and is used to calculate the unemployment rate. The LAUS data considers the labor force as everyone of working age who is actively employed or looking for a job. Students, retirees, stay-at-home parents, institutionalized individuals, and discouraged workers are not included in the workforce. This data series, which is more inclusive than the CES data set, is compiled from a survey of households. It includes farm workers, self-employed individuals, and full-time or part-time employees.

Population Overview

Total Population Change and Comparison to United States

Colorado's July 2016 population was estimated at 5,538,180, an increase of 90,125 from the previous year.

continued on page 14

Colorado Economic, Employment, and Population Outlook

continued from page 13

Natural increase (births minus deaths) accounted for 30,000 of the increase, with net migration contributing to the remaining 60,000. The increase of 1.7% ranked seventh in the United States for growth rate and eighth in total change. The 2016 estimate was slightly slower than the nearly 100,000 increase in 2015. Total births were estimated at 66,600, with deaths estimated at 36,500. The birth rate for Colorado fell during the recession and is still below pre-recession rates. Total births have picked back up in the last two years but are also still below 2007 levels. Deaths have been steadily increasing from 28,000 annually in 2000 to 36,500 annually in 2016 due to the aging of the population. Colorado's net migration of 60,000 ranked sixth among states in the United States. Florida ranked first, with over 325,000 net migrants. Colorado's net migration per 1,000 in population is 11.1, which ranks seventh in the nation. Although Colorado has been growing relatively fast compared to other states, its growth rate of 1.7% is significantly lower than its growth rate of 3% during the 1990s. In the 1990s, the total growth in the state surpassed 100,000 seven different years. Since 2001, Colorado has increased by 100,000 one time.

Change by County

Growth throughout the state has been disparate, with 96% of the population growth between 2010 and 2016 occurring in the Front Range and 65% of the total in the Denver Metro area. Twenty-one counties outside the Front Range recorded population loss between 2010 and 2016. Twenty-five counties experienced net out-migration and 15 counties natural decline. Many of the counties with natural decline have also been experiencing net out-migration, which will make their long-run population sustainability difficult.

El Paso County experienced the largest growth, increasing by 14,029, followed by Denver with an increase of 12,634. Denver still remains the largest populated county. The largest decline in population was in Kit Carson County, with a decline of 580 related to the closing of the Kit Carson Correctional Center. The fastest-growing counties were a mix of larger metro counties and smaller mountain counties. Most of the counties experiencing declines are those on the Eastern Plains.

Housing

Housing unit growth picked up to an estimated 29,600 in 2016 but it is still behind household formation, creating continued tightness in the housing market and price escalation. Household formation is forecast to continue to grow annually around 33,000–35,000, indicating that housing unit growth is still running behind. Demographically, it will be important to keep an eye on both the boomers currently age 52–72 and the millennials age 16–36. The boomers are quickly aging into the 70+ age group where downsizing often occurs or moving to homes with fewer stairs and smaller yards to maintain. The 70+ age group is increasing by approximately 6% per year. The leading edge of the millennials is also a group to watch as they start to enter the age group often associated with home ownership. The peak number of millennials were born in 1991—making them 25 years old in 2016. The majority of millennials are still in age groups where they would primarily live at home or be renters, but as a larger share of them enter their 30s there will be stronger growth in first-time home buyers.

Forecasts

Colorado's population is forecast to continue to grow but at a slowing rate. The population is forecast to increase by an estimated 91,500 between 2016 and 2017 and 90,600 between 2017 and 2018. Through 2019 natural increase is forecast to remain around 30,000, and net migration is forecast to remain around 60,000. The slowing growth is forecast due to a slowing economy, slowing birth rates, aging population, and slowing labor force growth. Although Colorado's growth is forecast to slow, it is forecast to continue to outpace the nation growing at roughly twice the rate. Colorado is forecast to increase from 1.7% of the U.S. population currently to 2.1% by 2050.

The largest population growth by county continues to be along the Front Range. Between 2015 and 2020 the state is forecast to increase by 460,000. Eighty-seven percent, or 400,000, is forecast for the Front Range and of that, 246,000 is forecast for the Denver Metro area. The fastest growth is forecast for the north Front Range at an annual average 2.5%, or 82,000. The 2050 forecast for the state is 8.461 million, with 7 million along the Front Range or 84% of the total population.

Age

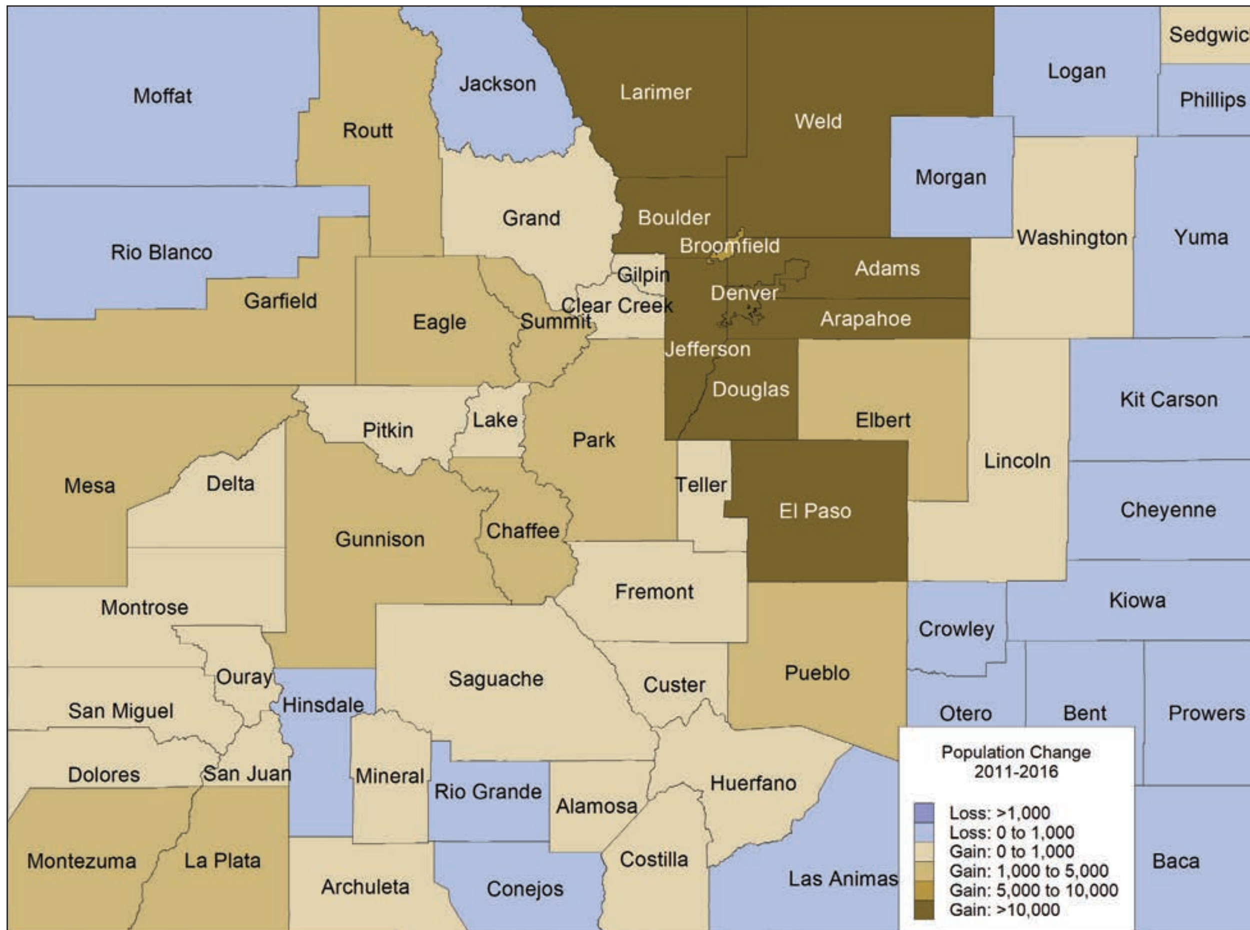
Between 2010 and 2016 the 65+ population increased by 189,000, or an annual average growth rate of 5%. Between 2010 and 2016 the total population increased by 488,000, or an annual average growth rate of 1.5%. The growth of the 65+ population was 38% of the total growth in the state, yet the age 65+ group represented only 13% of the population.

Age in Colorado remains a dominate force when understanding most trends in the state. The current and unique age distribution of the state (with relatively few people over 65) is the result of years of migration trends, where Colorado has historically attracted young adults age 22–37 in large numbers. Today, many of the migrants to Colorado in the 1970s are aging into the 65+ age group at a rate of approximately 5% per year. Most of the growth between 2015 and 2020 will be in the 65–74 year old age group. Due to the aging of the population, Colorado will experience faster growth in industries supporting the 65+ population, like health care. However, Colorado will also experience faster growth in leavers from the labor force as many retire and a slowing growth in the labor force, both due to aging.

New Businesses and Economic Growth in Colorado

Coming out of the recession, Colorado has seen strong growth in new business formation. It is one of the leaders nationwide in terms of business start-up rates, which has

COLORADO POPULATION CHANGE, 2011-2016



Source: Colorado State Demography Office.

also led to the state being a leader in terms of employment growth coming out of the recession. Colorado has seen economic development across a variety of industries, including technology and information, professional and business services, and leisure and hospitality. These industries have been important to moving Colorado forward, and will continue to expand with Colorado's well-educated populace and business-friendly environment.

Formation of new businesses is important to economic growth and gains in employment. Though large businesses employ more people, younger businesses typically add more jobs year-over-year compared with their older counterparts. Often times, newer companies innovate more and generate greater productivity gains as they continue to grow quickly, which leads to more economic development. Data collected by the U.S. Census Bureau demonstrates Colorado's strong national position in terms of both business growth and age, which will further strengthen 2018 employment gains.

Colorado's High Rate of New Business Formation

The U.S. Census Bureau's Business Dynamics Statistics (BDS) dataset shows Colorado's strong position as a business formation leader in the United States. Looking at new and young firms, businesses five years old and younger, Colorado ranked seventh nationally for the proportion of these firms relative to total businesses from 2010 to 2014, the most recent data available. Colorado recorded a five-year average of 36.2% for businesses in this age cohort, while Nevada led the nation at 42%.

The state's strong job growth rate over the last five years is bolstered by relatively high number of young firms compared to total businesses in Colorado. As mentioned previously, younger firms tend to have higher job creation rates, which leads to strong employment growth statewide. Nationally, Colorado ranked third in five-year employment growth averages, at 2.9% from 2012 to 2016. Only Utah (3.4%) and Florida (2.9%) had higher five-year averages of employment growth over this period. There is a strong correlation between the proportion of new businesses in a state and employment growth in that state in the long run. Five-year averages of annual job growth and the proportion of young firms in the state showed a relatively strong correlation coming out of the recession as illustrated by the scatterplot on page 16.

Colorado's entrepreneurial culture, risk-taking population, and business-friendly climate supports the state's robust rate of new business formation. The population is

continued on page 16

Colorado Economic, Employment, and Population Outlook

continued from page 15

also more educated than every other state in the union except Massachusetts in terms of people with a bachelor's degree or higher. Age in Colorado is also skewed toward younger cohorts, with 55.2% of the population between the age of 20 and 59, and 25.4% of the population age 19 years or younger. Colorado's population is primed to support a growing, diversified economy with its growing cohort of experienced entrepreneurs who can provide their knowledge to foster business growth in the future.

Entrepreneurial networks are a key ingredient for new business formation and its perpetuation. Colorado's entrepreneurial hubs include Boulder, Denver, and Fort Collins, and each one offers a unique, intimate network of current and past entrepreneurs. These networks encourage information sharing, collaboration, and the opportunity to learn from others. The constructive mindset of these communities is contrary to more adversarial climates in other entrepreneurial hubs, and is further supported by the closeness of the aforementioned networks. Connections like these are critical to continued innovation and sustained business growth over time.

Despite Colorado's high proportion of young businesses, the proportion has been declining since 1998. This trend is representative of a broader national trend. The proportion of young businesses in the nation has declined every year since 2006 and is below the proportion during the 1990s. Since 1990, Colorado's proportion has decreased from 47.9% to 34.4% in 2014. Nationally, this percentage was down from 44.7% to 31.4% over the same period. The significance of new business formation to job growth is apparent, so the decline in the proportion of young businesses has likely promoted more moderate economic growth in recent years at both the state and national level.

Consistent new business formation is critical to sustained job growth. Older firms have a lower job creation rate than younger ones, so employment growth is more muted without the formation of new businesses. From 2010 to 2014, the latest data available, all businesses in Colorado had an average job creation rate of 15.2%. For comparison, firms that were one or two years old had job creation rates of 24.3% and 19.6%, respectively. This above average job creation rate applies to young firms as a whole relative to the statewide average.

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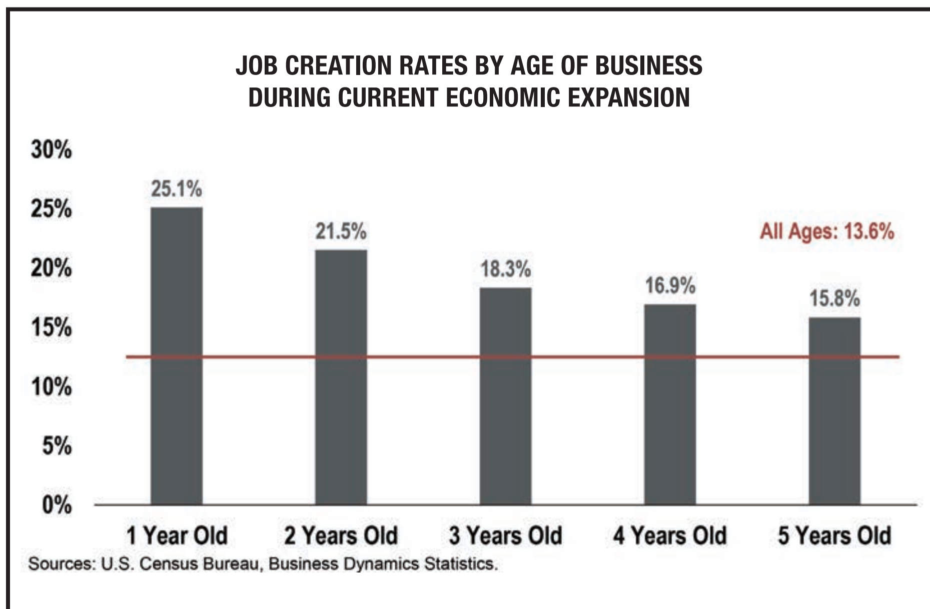
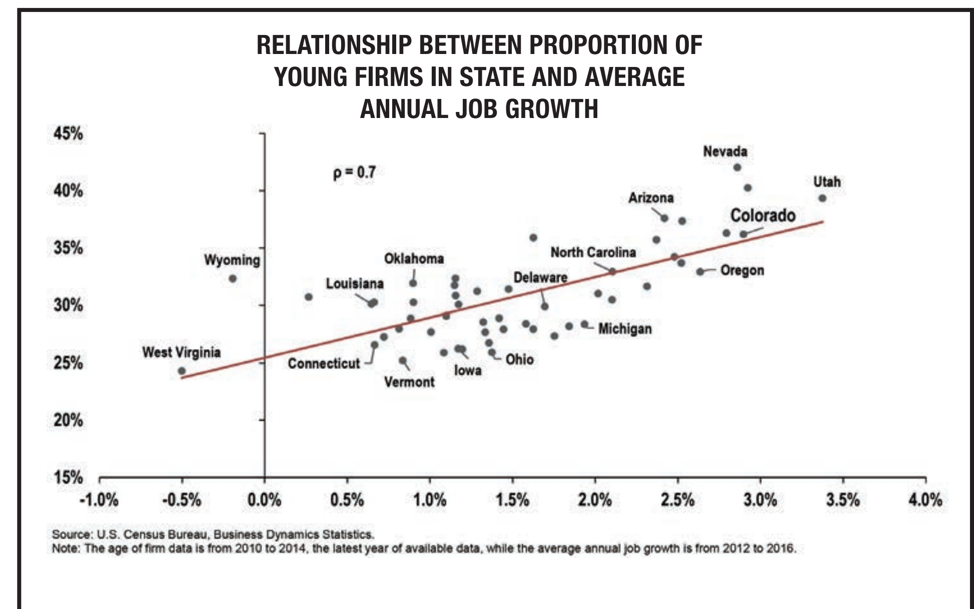


Sources: U.S. Census Bureau, Business Dynamics Statistics.



Source: U.S. Census Bureau, Business Dynamics Statistics.
Note: The age of firm data is from 2010 to 2014, the latest year of available data, while the average annual job growth is from 2012 to 2016.

Agriculture

Colorado Farmers Hang On, Waiting for Better Times

Change is likely, change is expected, and change is often driven by hard times. It is difficult to predict what changes will come about due to current economic challenges in agriculture, but there will certainly be adjustments in rural communities as farmers consider their options after multiple years of declining cash prices for wheat and corn. High crop yields are little consolation when the price farmers receive is less than the cost of growing them. There will likely be additional farm consolidation and loss of business in the rural communities that support the farm economy.

As projected, Colorado's 2017 total agricultural income will be lower than in 2016. The decline is not as steep as expected; however, profitability is highly concentrated among only a few sectors of Colorado's diverse food and agriculture value chain, most notably, cattle feeders. Net farm income for 2017 is expected to fall to $1.16 billion from $1.23 billion in 2016. An expected revision of 2017 farm production expenses by the USDA's Economic Research Service may drive this even lower.

Looking ahead to 2018, cattle, corn, and wheat producers can look forward to marginal increases in net income, mostly driven by small price increases or production gains. Projected net farm income is expected to climb slightly to $1.37 billion, a level still well off the record high of $1.84 billion recorded in 2011.

In 2017, some farmers made money, some hung on to pay their bills and survive another year, and some lost money. Wheat and corn, the major field crop commodities in Colorado, continue to compete in a world market overflowing with grain, but there was some reason for optimism on the livestock side.

Cattle feeders, who purchase young calves from ranchers and feed them to slaughter weight, had potentially their most profitable six months ever from January to July 2017. However, feeders that used the futures market as a risk management tool to lock in margins early likely missed out on capturing the full benefit of market conditions. Low calf prices, low corn (feed) prices, and high fed cattle (the end result) prices created this scenario, which is not likely to recur in 2018.

The cattle sector is so large in proportion to the rest of Colorado agriculture that it leads the way in economic impact. While beef has the largest impact to the farm income bottom line, dairy, egg, and pork producers also showed some gains.

Wheat prices are predicted to continue at levels less than half of the prices received in 2012–2014. The corn price for 2018 is forecast at less than half that of 2012. Corn farmers would have to look back to 2006 to see lower prices.

The agricultural economy is currently being driven by quantity rather than price. Grain is in abundant supply in the developed world, and it is nearly as cheap for flour millers in the United States to import wheat from the Black Sea area as it is for them to use U.S. wheat. In addition, China cut its price for its government wheat purchase program for the first time since its inception because of the size of their stockpiles, which account for about half of the world's inventory of wheat.

Trade is a major factor in the prices received by Colorado farmers and ranchers. The NAFTA agreement has a huge impact on Colorado cattle, wheat, milk, and potatoes. Much of Colorado's sorghum is exported to Mexico for cattle feeding. Additionally, Colorado's potato growers could experience substantial growth in exports if lawsuits brought by Mexico's potato growers to limit broader access to Mexico markets can be successfully resolved. However, the political uncertainty of trade agreements and their current status with the administration could prove to be a "black swan" lurking on the horizon.

The food and grocery worlds are also witnessing a retail paradigm shift. Coloradans in the most remote corners of the state can have dry and canned goods delivered to their doors by Amazon at a lower cost than they can buy them at the store. Traditional grocery stores' margins are being pinched by competition, and this change also affects agriculture profitability. There is a current trend

continued on page 18

COLORADO FARM INCOME AND PRODUCTION EXPENSES 2008–2018 (In Millions of Dollars)

Year	Gross Value of Farm Revenue	Total Farm Production Expenses	Net Farm Income
2008	$6,989.6	$5,882.4	$1,107.2
2009	6,910.1	6,044.2	865.9
2010	7,089.6	5,856.4	1,233.2
2011	8,487.3	6,650.0	1,837.3
2012	8,345.4	7,006.2	1,339.2
2013	8,550.2	7,210.6	1,339.6
2014	9,087.2	7,947.8	1,139.4
2015	8,804.3	7,312.9	1,491.4
2016[a]	7,613.7	6,383.8	1,229.9
2017[b]	7,913.0	6,750.0	1,163.0
2018[c]	7,974.0	6,600.0	1,374.0

[a]This number is expected to increase with updated data, lowering net income for 2016.

[b]Estimated.

[c]Forecast.

Source: Colorado Business Economic Outlook Agriculture Committee.

Agriculture

continued from page 17

of featuring beef in ads to draw consumers to the store in hopes that they will also purchase their other necessities.

The younger generation has its own style of cooking and eating, focusing on food experiences. They are more concerned about the healthfulness of their food, understanding where it comes from, and its effect on the environment. They are looking for a food experience rather than just fueling their bodies. They are also looking for more convenience, and purchasing food in smaller amounts, and in pre-portioned sizes rather than "family packs." Colorado ag producers are already selling products to meal kit services, such as Blue Apron, which are popular with consumers for providing convenience and built-in variety. The Amazon purchase of Whole Foods will certainly produce ripples through the whole food system.

Crop farmers in Colorado and the United States will be looking for strong support in the 2018 Farm Bill through the crop insurance program and increasing Conservation Reserve Program (CRP) acres. Other ag sectors, such as milk and cotton, will be campaigning strongly for support for their industries as well, while it is not likely that the current political climate favors adding spending to the Farm Bill.

Many Colorado farmers are limited in crop alternatives because of geographic and climatic conditions. Colorado does not get enough rain or have enough irrigation to grow much more corn, or the right climate to grow many soybeans. Planting crops such as wheat or corn year after year drains the soil, so crop rotation is important in Colorado. The crops farmers rotate are hay, sunflowers, sorghum, millet, and dry beans. Some areas in Colorado are more suited for each of these crops, and some require special equipment to harvest, creating additional cost challenges. Because of lack of profitability in wheat and corn the last several years, the area planted to alternate rotational crops each year is increasing. Some areas are only suited for grazing cattle, and not raising crops at all.

Water is what still keeps many Colorado agriculturalists awake at night. The San Luis Valley, where farmers grow 52,000 acres of potatoes, created a self-imposed groundwater subdistrict to buy acres out of production in an effort to resupply their aquifer. These farmers have cut back their pumping by an average of 30% since 2011, and have restored 350,000 acre feet to the aquifer since 2012. However, if aquifer restoration goals are not met by 2032, the state water engineer could request more water conservation within the subdistrict to fulfill their groundwater management plan. Such measures might include limiting irrigation and permanently fallowing fields.

VALUE ADDED BY COLORADO AGRICULTURAL SECTOR
2008–2018
(In Millions of Dollars)

Year	Livestock	Crops	Total Value of Production	Value of Services and Forestry[a]	Government Payments[b]	Gross Value of Farm Revenue
2008	$3,844.3	$2,166.4	$6,010.7	$717.9	$261.0	$6,989.6
2009	3,462.9	2,249.3	5,712.2	1,006.1	191.8	6,910.1
2010	3,831.1	2,249.3	6,080.4	737.6	271.6	7,089.6
2011	4,322.0	2,740.8	7,062.8	1,189.1	235.4	8,487.3
2012	4,487.2	2,577.2	7,064.4	1,065.3	215.7	8,345.4
2013	4,681.1	2,284.5	6,965.6	1,345.6	239.0	8,550.2
2014	5,322.5	2,425.8	7,748.3	1,053.0	285.9	9,087.2
2015	5,504.2	2,152.1	7,656.3	929.4	218.6	8,804.3
2016	4,367.1	2,105.5	6,472.6	907.2	233.9	7,613.7
2017[c]	4,644.0	2,079.0	6,723.0	950.0	240.0	7,913.0
2018[d]	4,659.0	2,110.0	6,769.0	965.0	240.0	7,974.0

[a]Includes sales of forest products, custom feeding fees, custom harvest fees, and other farm income. [b]Includes farm program payments directly to producers. [c]Estimated. [d]Forecast.

Source: Colorado Business Economic Outlook Committee.

Cattle Feeders Get a Win for 2017

Beef accounts for the largest share of Colorado's ag economy. The cattle industry leads the way for farm and ranch income in Colorado. Cattle feeders made a good profit in 2017 as herd rebuilding created the perfect situation of cheaper feeder calves and the corn market provided more inexpensive feed. There were three businesses involved in this supply chain: the rancher who sold the calves, who may have made a little money; the farmer who sold the corn, who probably did not profit or even lost money; and the feeder who fed and sold the animal to the processors, who did make a profit.

In 2017, Colorado saw the largest calf crop since 2008. As reported by USDA-NASS, the U.S. calf crop has increased each of the last three years. Supplies are still growing, but more heifers entering the feeder cattle market indicate that cattle producers are slowing the growth of their herds. Feeder cattle and calf prices remain strong this year compared to last. The forecast number of fed cattle

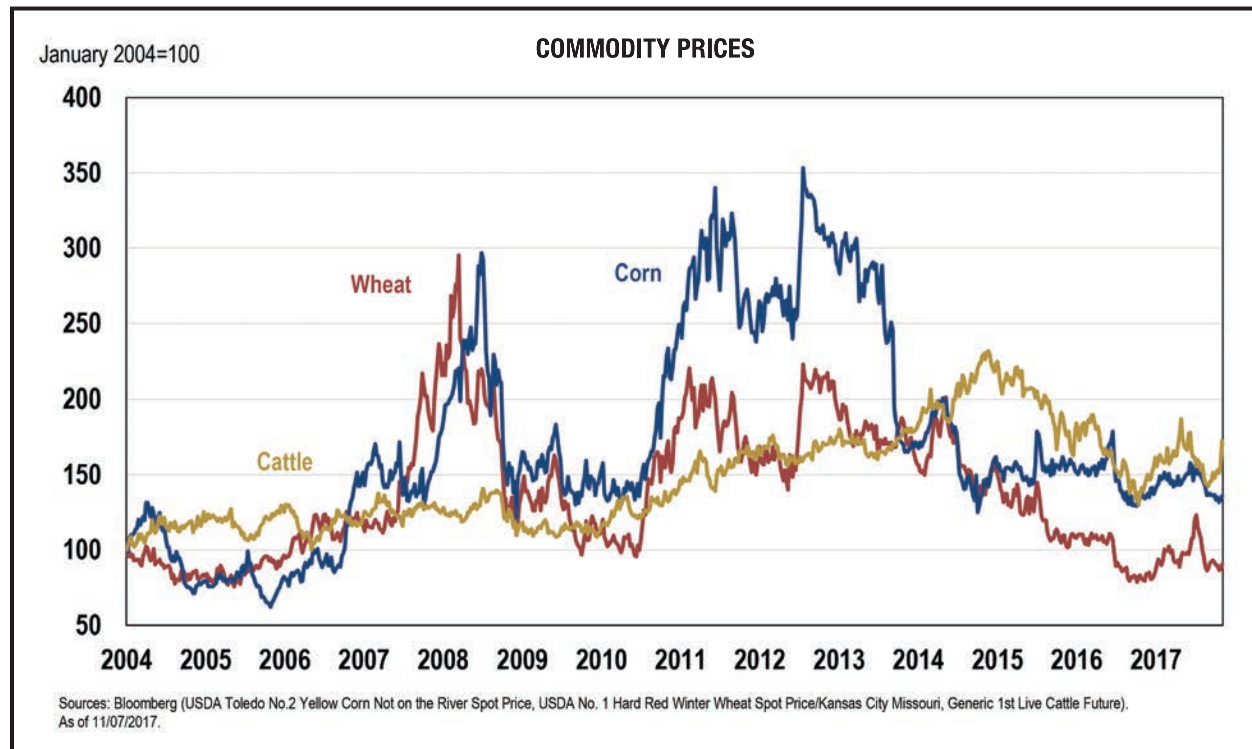
marketed for 2018 has not been seen since 2004. Based on the cowherd, both the 2018 and 2019 calf crops are expected to be even bigger, creating downward pressure on prices.

The United States is the largest beef producer in the world but we do not eat all of that beef. Only 83% is consumed here, making U.S. export markets such as Japan, South Korea, and Mexico very important. Cuts of meat that are less popular here are exported to those markets, and the United States imports some feeder cattle and beef, mostly lean beef from New Zealand to make ground beef, and live feeder cattle from Mexico.

Hog prices were a bright spot on the meat market, primarily because of continuing consumer demand for bacon. Colorado is still a big lamb feeding state, but the flock size is down due to uncertainty regarding foreign labor and the use of public lands for grazing.

Colorado's dairy herd has continued to grow, and is producing more milk per cow due to genetic and technological improvements. Nationally, the dairy industry is not making enough profit to motivate growth, or losing enough to force shrinkage. The fat and protein content of milk has increased in importance and value. Whole milk and butter sales have increased since 2013, while reduced fat and low fat milk sales have declined. Perceptions about the healthfulness of full fat milk and butter, as well as "bulletproof" coffee with butter added, have contributed to this trend. Many factors may contribute to the overall decline of consumption, including fewer children in the population and alternative plant-based "milks." Opportunity exists for niche marketing in dairy as it does in other sectors, with potential growth in organics products, milk-based energy drinks, and ultra-filtered milk.

The egg market turned around in 2017, and egg producers are seeing very robust egg prices. A perfect storm of exports, egg use in school meal programs and food service, and increasing retail sales created recent high egg demand and higher prices. Production is expected to catch up to demand after the 2017 holidays.



Sources: Bloomberg (USDA Toledo No.2 Yellow Corn Not on the River Spot Price, USDA No. 1 Hard Red Winter Wheat Spot Price/Kansas City Missouri, Generic 1st Live Cattle Future). As of 11/07/2017.

Great Commodity Yields, Low Commodity Prices

Corn and wheat prices continue to be low and below the cost of production for many farmers. Crop farmers are "farming equity" and have been for three years. If money was borrowed on revenue expectations from 2013, expected income will fall well short. While the current landscape is much different from the farm crisis of the 1980s, with much lower interest rates and higher participation in crop insurance programs, farmers who borrowed money in the last three years may have difficulty repaying loans, and agriculture will see more consolidation.

After four years of record global production, there is a lot of excess wheat in the world. That is not good news for farmers looking for higher prices. Colorado wheat production for 2018 is estimated at 87 million bushels, down from 105 million bushels in 2017, but 10 million more than the five-year average. Wheat acreage does not fluctuate greatly from year to year in Colorado because much of Colorado's farm ground is unsuited for growing other crops.

Colorado corn producers are forecast to harvest 184.2 million bushels in fall 2017. That is about a 15% increase from 2016, and tops the state's all-time corn-for-grain production record of 182.7 million bushels set in 2010.

continued on page 20

Agriculture

continued from page 19

Unfortunately, farmers are producing more grain for less money. Corn prices are largely determined by supply and demand, and there is currently an abundant supply of corn to feed hogs and supply Colorado's ethanol plants, so prices are not expected to rise significantly anytime soon. Colorado's 2017 corn price per bushel is estimated at $3.55 for 2017 and forecast down to $3.45 for 2018, a price not seen since 2007. The total value of the crop is expected to rise because production is also expected to grow.

Hay has seen stronger prices in 2017. New varieties with better digestion characteristics for livestock will be appealing to farmers with irrigation available to grow hay, and may be more profitable than corn. Colorado's horse population and dairy farms are major hay consumers.

Overall, Colorado is fortunate to have a diverse base of rotational crops: dry beans, millet, sorghum, and sunflowers. These crops continue to grow slowly in production. They do not have a tremendous price advantage over wheat or corn and show no signs of taking a major share of Colorado acres.

If You Plant It, Who Will Harvest It?

Demand for local, "Colorado Proud" food products remains strong. A total of 85% of Coloradans buy Colorado products at least some of the time when shopping or eating out.

Photo: Bryan Harding

However, local versus labor is the tale in the fruit and vegetable sector. Many producers are limited by a lack of labor to harvest their crops. While some have long-standing H-2A (temporary foreign agricultural workers program) workers who return annually, it is difficult to obtain new workers or change labor needs from year to year. There is increasing consumer demand for locally sourced fruits and vegetables, but farmers select crops that they will be able to harvest and maintain a profit.

"A good year is any year we have enough fruit on the trees to stay in business," according to a Western Slope fruit grower. This year's crop of Palisade peaches was 95% the size of 2016, with the crop down because of spring frost. There was market demand for peaches beyond those that were produced. More acres on the Western Slope are being planted to peaches, pushing out alfalfa hay and field corn. Growers are planting varieties that will yield later in the season in order to compete longer with peaches from around the country. Cherries, apples, and pear crops were also reduced somewhat because of weather but all had reasonable crops.

Yields for the Rocky Ford cantaloupe crop were down about 35% due to rain and hail. Growers are looking for more rain-tolerant varieties and are anticipating growing more personal-size watermelons as they were popular with consumers in 2017.

To the surprise of growers, Colorado grapes were ready to harvest early in 2017. It was the third year in a row for a bumper crop of grapes. Grape quality is good and demand is steady, with only so many wineries and so much tank space, leaving some grapes unharvested. It is still cheaper for wineries to bring in grapes or juice from California because of production levels there, making the primary motivation for using local grapes the "Colorado Grown" cachet.

Nursery and greenhouse continues to be another growth area for Colorado agriculture. Housing starts are projected to continue to grow but at a slower pace. Homeowners who are happy with their home and location often reinvest in their lawn, garden, and landscape to

increase quality of life and home equity. A recent study by Colorado State University indicates that every dollar invested in a home landscape yields a return of $1.35, and large street trees can increase a home's value up to 15%, so there is no downside in sight for the nursery and green industry as a whole.

Colorado hemp farmers are expected to harvest up to 9,000 acres of hemp, compared with just 200 acres in 2014. Hemp is still a risky crop because there is a lack of marketing and processing to use it and it is still federally illegal, leaving growers without crop insurance.

The impact of legalized marijuana on the ag economy remains uncertain. Since this is not a legal federal crop, USDA enumerators do not survey growers. The state of Colorado only collects data on retail sales. While this is certainly a crop grown in ways similar to other crops in Colorado, it is still a special case in terms of data measurement. Of some importance, Colorado's agricultural producers may benefit from advances in greenhouse technologies and indoor production practices stemming from Colorado's expanding marijuana production.

Increased profits in agriculture mostly come on the back of bad fortune elsewhere. Cattle prices go up when droughts cause ranchers sell off their herds, decreasing overall supply. If wheat and corn prices are high, another part of the world must have had devastating droughts, floods, or fires to reduce supplies. When a chicken disease wipes out part of the nation's flock, egg prices go up.

While farmers and ranchers would not wish these woes on anyone, they certainly hope for higher prices. Agricultural conditions have been favorable around the world the last few years. The United States and the world have abundant supplies of crops, especially wheat and corn, so prices are low. It would take a major disaster, weather or economic, to increase farm income in the crops sector, and it would

Photo: Luke Gubbels

continued on page 22

Agriculture

continued from page 21

certainly not increase quickly. Farmers and ranchers will continue to need to add value to the products they offer, maintain their reputation for high quality, and differentiate themselves in the marketplace as cheaper commodities are available from the rest of the world.

Individual producers and communities face challenges in different ways. Changing market conditions lead to both diversification and consolidation. Some choose to diversify by growing different crops such as hemp, quinoa, or aronia berries. Some look at raising different animals such as yak, goat, or even insect farming. Producers are also experiencing increasing opportunities in niche markets like gluten-free, cage-free, grass-fed, organic, or natural. We will also see consolidation, with farms getting bigger as prices go down as more acres are required to support family income.

This is not a turning point for agriculture, but simply another curve in a road that is unpredictable and easiest to map while looking back, rather than looking ahead.

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Natural Resources and Mining

The Natural Resources and Mining (NRM) Sector constituted about 0.9% of Colorado employment, or 23,700 jobs in 2016. Colorado is an energy- and mineral-rich state. In the U.S. Energy Information Administration's (EIA) most recent assessment of 2015 proved reserves, Colorado ranked 7th for petroleum liquids and 6th for wet natural gas. Colorado continues to be home to all, or part of, 12 of the top 100 natural gas fields in the nation and has the 4th-largest oil field (Wattenberg). In 2016, Colorado ranked 13th among the states in the production of coal, 3rd in gold production, and 2nd in the production of molybdenum. Although some production has decreased, the Climax Mine and Henderson Mine are two of the largest national primary producers of molybdenum in 2016.

In addition to traditional energy resource development, Colorado is also one of the nation's leading renewable energy states, developing a portfolio mix of wind, solar, biomass, and hydroelectric energy resources. Colorado law now mandates that investor-owned utilities (IOUs) generate 30% of electricity from renewable energy by 2020. Cooperatives must achieve a 20% standard by that same year. From 2005 to 2015, Colorado had a net increase in electricity generation of 3.3 billion kilowatt hours (kWh), all from wind and solar. This was the highest increase in renewables among the six mountain region states according to the EIA.

The NRM industries make a significant contribution to Colorado's GDP, and generate some of the highest per worker income levels in the state. The Niobrara resource play in the Denver Basin continues to be a key driver of the state's oil and gas industry, with the modest increase in average crude oil prices keeping the value of the overall NRM Sector stable in 2017 despite decreasing physical output across the state's natural resources portfolio. Expecting a continuing rebound in oil price in 2018, the state's NRM Sector is expected to slightly increase in total value by 6.9% to just over $14 billion in 2018.

NRM employment represents about 0.9% of total employment in Colorado. Employment increased by a larger than expected 5.5% in 2017, to 25,000 jobs. For 2018, the expectation is for employment growth of 4.4%, or 1,100 jobs, assuming a stable oil and gas price environment. More volatility, however, especially extended

continued on page 24

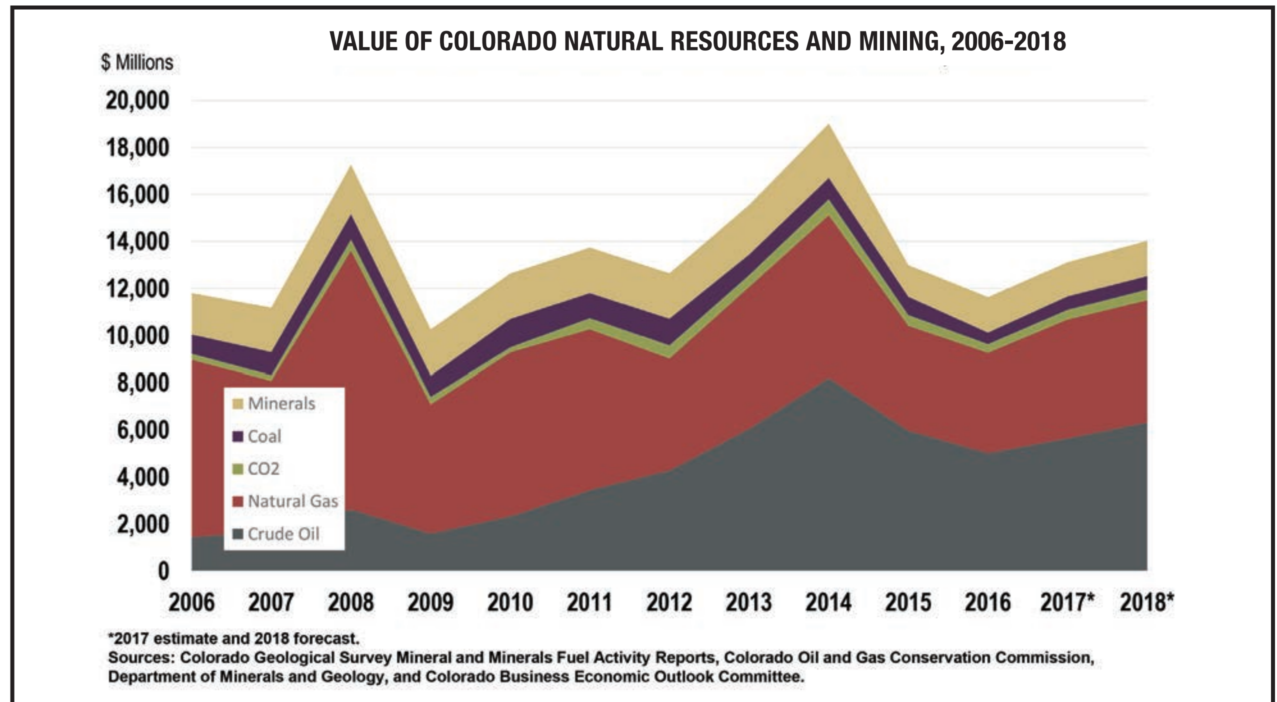
COLORADO NATURAL RESOURCES AND MINING EMPLOYMENT 2008–2018 (In Thousands)

Year	Employment	Percentage Change
2008	28.5	13.1%
2009	24.2	-15.1
2010	24.4	0.8
2011	27.9	14.3
2012	30.3	8.6
2013	30.6	1.0
2014	34.1	11.4
2015	30.7	-10.0
2016[a]	23.7	-22.8
2017[b]	25.0	5.5
2018[c]	26.1	4.4

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2006-2018



*2017 estimate and 2018 forecast.
Sources: Colorado Geological Survey Mineral and Minerals Fuel Activity Reports, Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

Natural Resources and Mining

continued from page 23

downward swings, will make painting an accurate employment picture challenging.

Oil and Gas

Colorado's total oil production will be valued just above $5.5 billion in 2017. The value of state's natural gas production is estimated to be around $5.0 billion. This represents a 15.3% increase in gross value of oil and gas from 2016. Assuming energy prices see a modest improvement in 2017, Colorado natural gas and crude oil are expected to have a 6%–9% increase in valuation in 2018. The Colorado Office of State Planning and Budgeting (OSPB) September 2017 economic outlook estimated severance tax collections for FY2016 (July 1, 2016–June 30, 2017) at just $19.5 million (compared to $268.7 million in FY2014) due in large part to lower oil and gas prices along with the continued impact of the April 2016 Colorado Supreme Court ruling regarding allowable operator tax deductions. For FY2017–18, OSPB is forecasting severance tax revenue to rebound to $150.5 million, then increase a bit more, to $157.7 million in FY2018–19.

In 2011, roughly 75% of Colorado's drilling activity targeted new natural gas production versus liquids. Fast forward to the past couple of years and the drilling activity target has reversed, with now more than 75% of the recent drilling activity going after oil. The rate of development in the Niobrara shale oil play continues to be robust. Many operators have been able to optimize production with favorable economics at $50 per barrel in the prime Wattenberg target areas.

In Colorado's regulatory regime, the balancing act continues between facilitating responsible hydrocarbon exploration and production, while ensuring public safety, welfare, and environmental protection. Prominent issues discussed in 2017 that will continue into 2018 include improving flowline regulation and safety, encouraging better oil and gas operational planning in rapidly growing residential areas, and further addressing the complex dynamics of state versus local control. The outcome of key public policy debates may have an impact on current and future oil and gas activity in the state.

The total revised value of Colorado's oil, gas, and carbon dioxide production for 2016 is $9.6 billion, an 11% decrease from 2015 and 39% decrease from the 2014 peak of $15.8 billion. On a more positive note, the value

VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2008–2018
(In Millions of Dollars)

	Oil and Gas Extraction					Mining				
Year	Crude Oil	Natural Gas	Carbon Dioxide	Subtotal	Percent Change	Coal	Minerals	Subtotal	Percent Change	Total
2008	$2,619	$10,993	$475	$14,087	69.2%	$1,075	$2,100	$3,175	11.0%	$17,262
2009	1,600	5,461	356	7,417	-47.3	887	1,960	2,847	-10.3	10,264
2010	2,323	6,998	371	9,692	30.7	1,203	1,930	3,133	10.0	12,825
2011	3,438	6,828	475	10,741	10.8	1,061	1,940	3,001	-4.2	13,742
2012	4,278	4,745	560	9,583	-10.8	1,129	1,930	3,059	1.9	12,642
2013	6,057	6,012	500	12,569	31.2	873	2,110	2,983	-2.5	15,552
2014	8,209	6,911	678	15,798	25.7	900	2,320	3,220	8.0	19,018
2015	5,975	4,437	467	10,879	-31.1	675	1,340	2,015	-37.4	12,894
2016	5,016	4,251	369	9,636	-11.4	481	1,510	1,991	-1.2	11,627
2017[a]	5,649	5,032	413	11,094	15.1	570	1,450	2,020	1.5	13,114
2018[b]	6,325	5,177	450	11,952	7.7	570	1,500	2,070	2.5	14,022

[a]Estimated. [b]Forecast.

Sources: Colorado Geological Survey, United States Geological Survey (USGS), Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

Note: 2015 and 2016 mineral production values are estimated and subject to change.

of oil, gas, and carbon dioxide production for 2017 is projected to increase again to nearly $11.1 billion, a 15% increase from 2016. For 2018, the value of Colorado's production is estimated to increase a modest 6%–9% based on an assumption of increased oil prices to an average $50–$55 per barrel (bbl) range and natural gas prices remaining in the $2.50–$3.50 per thousand cubic feet (Mcf) range. The complexities of current market supply and demand, coupled with macroeconomic and geopolitical uncertainties, continue to make predictions of value difficult.

Employment in the Colorado oil and gas industry grew in 2017—a welcome change after more than a 25% decrease (when combined with losses in the mining sector) in 2016. Employment in the oil and gas industries appears to have stabilized with locally based operators maintaining lean, productive workforces. Staff reductions and shifts in operations to locations outside Colorado in response to the downturn have been noticeably less in 2017 versus the previous two years. The top five producers of oil or gas in Colorado provide roughly 40% of the employment in the sector.

Oil

For 2017, the U.S. petroleum benchmark known as West Texas Intermediate (WTI) has fluctuated between $42 and $57 per barrel, with a mean daily spot average of $50 per barrel as of mid-November. This is a 15% increase from the 2016 WTI mean daily price of $42 per barrel, but nearly half the 2014 mean daily price of $93. Future energy prices depend on a myriad of factors across multiple scales, including economic and geopolitical situations, technological developments, and new resource discoveries.

Colorado crude production hit an all-time high in 2015, with nearly 123 million barrels produced. Since then, however, the state's output has receded by 5% in 2016 and is expected to decrease another 2% in 2017. For 2018, production is expected to increase modestly. Development of the prime Niobrara shale assets in the Greater Wattenberg Area continue—the rapid decline rates of lateral wells (estimates of 50% to greater than 70% in the first year are not unreasonable) being offset almost

continued on page 26

COLORADO PHYSICAL OUTPUT OF FOSSIL FUELS
2008–2018

Year	Coal Millions of Short Tons	Crude Oil Millions of Barrels	Natural Gas Billions of Cubic Feet	Carbon Dioxide Billions of Cubic Feet	Index (Base Year: 2008 = 100)			
					Coal	Crude Oil	Natural Gas	Carbon Dioxide
2008	32.3	29.9	1,519	369	100.0	100.0	100.0	100.0
2009	28.6	30.0	1,561	406	88.5	100.3	102.8	110.0
2010	25.2	32.6	1,617	268	78.0	109.0	106.5	72.6
2011	27.0	38.8	1,648	469	83.6	129.8	108.5	127.1
2012	28.8	48.7	1,658	439	89.2	162.9	109.2	119.0
2013	24.2	65.1	1,567	268	74.9	217.7	103.2	72.6
2014	22.8	94.7	1,581	355	70.6	316.7	104.1	96.2
2015	18.7	122.8	1,689	409	57.9	410.7	111.2	110.8
2016	12.8	116.5	1,689	444	39.6	389.6	111.2	120.3
2017[a]	15.0	114.2	1,669	438	46.4	381.9	109.9	118.7
2018[b]	15.0	115.0	1,670	450	46.4	384.6	109.9	122.0

[a]Estimated. [b]Forecast.

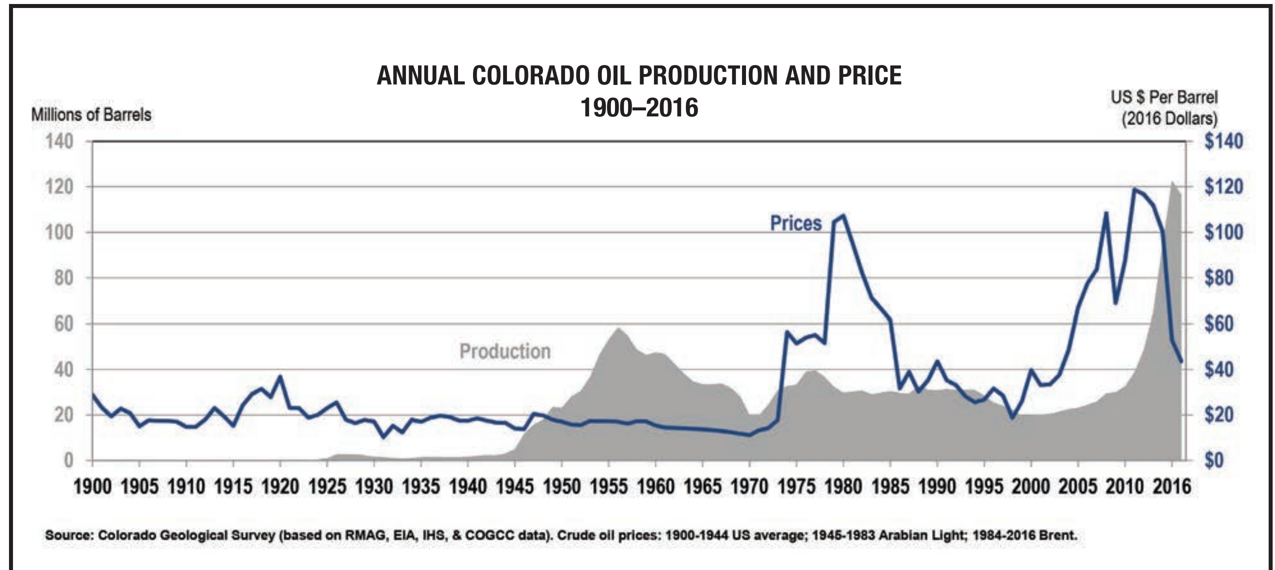
Sources: Colorado Geological Survey Mineral and Minerals Fuel Activity Reports, Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

Natural Resources and Mining

continued from page 25

equally by new wells being drilled. In the longer term, estimates of the Niobrara shale resource are as high as 2 billion barrels of oil, only a small fraction of which has been exploited thus far.

The International Energy Agency (IEA) is forecasting year-on-year global oil demand growth to be 1.6 million barrels per day (mb/d) in 2017 and 1.4 mb/d in 2018. Notably, second quarter 2017 demand was 2.2 mb/d higher than the same period in 2016, but the third quarter was only 1.2 mb/d higher than the same quarter in 2016 due in part to a weak July and August, as well as the impact of hurricanes in September. According to the EIA, consumption in the United States is projected to have increased modestly (1.2%) in 2017, to 19.92 mb/d, and will increase again in 2018, to 20.34 mb/d. The last time the nation saw greater than 20 mb/d consumption was in the 2003–2007 period. The healthy economy and lower petroleum product prices are important factors driving increased consumption. The EIA currently estimates that the average WTI will end at just under $50 per barrel average for the calendar year 2017 and be just over $50 per barrel for 2018.



Retail Gasoline

The Colorado average retail price of automotive gasoline at all grades through October 2017 was $2.38, a 10% increase from the 2016 average price. Nationally, the EIA expects the average for regular grade to be $2.39 per gallon in 2017 and $2.41 in 2018. Regional prices for diesel (averaging $2.46 for 2017) have been at a roughly 21% premium compared to the price of regular grade unleaded gasoline. Expectations are for Colorado gasoline to remain at a similar or slightly higher average price in 2018 (between $2.10 and $2.60 per gallon average for all grades).

Natural Gas

The EIA forecasts suggest that the average U.S. household using natural gas for heating will see a total winter 2017–18 (October through March) price increase of 12% (approximately $69) over 2016–17, due in large part to a 9% forecasted increase in consumption. Just under half of all households in the United States depend on natural gas as a primary heating fuel; for Colorado, this number climbs to more than 71%. This projected increase (made in early October) sees higher consumption due to expected colder temperatures nationally versus the winter of 2016–17, although residential natural gas prices are only thought to be 2% higher. A strong La Niña effect in coming months, however, may alter this scenario. The National Oceanic and Atmospheric Administration (NOAA) estimates that the total heating degree days for the entire nation in winter 2017–18 will be 13% more than 2016–17 winter. In the West, however, the forecast is for only 8.5% more heating degree days.

In 2016, Colorado moved up to fifth place (overtaking Wyoming) for marketed natural gas production in the United States. The EIA estimates that conventional and unconventional output from Colorado basins that year accounted for 6.2% of the annual U.S. natural gas production. The residential sector is the largest natural gas-consuming sector in the state, accounting for 26% of the total 472,751 million cubic feet consumed in 2016. Other significant end-uses include lease and plant fuel (24%), electric power (20%), industrial consumption (17%), and commercial consumption (11%). As of July 2017, the average residential gas price in Colorado was $14.69 per thousand cubic feet—the 11th lowest in the country. For 2018, the expectation is that Colorado natural gas will price in the range of $3.00–$4.50 per thousand cubic feet with 80% confidence. The EIA is currently forecasting the Henry Hub spot price average to be $3.19 per thousand cubic feet in 2018—up from the $3.01 average price through September in 2017 and the $2.51 average price in 2016.

There are nearly 20,000 active “gas” wells in Colorado that have produced (in combination with the associated gas generated from the state’s “oil” wells) over 1.65 trillion cubic annually since 2015. For 2018, with gas prices

likely to average just above $3/Mcf, the expectation is for production volume to remain flat.

Carbon Dioxide

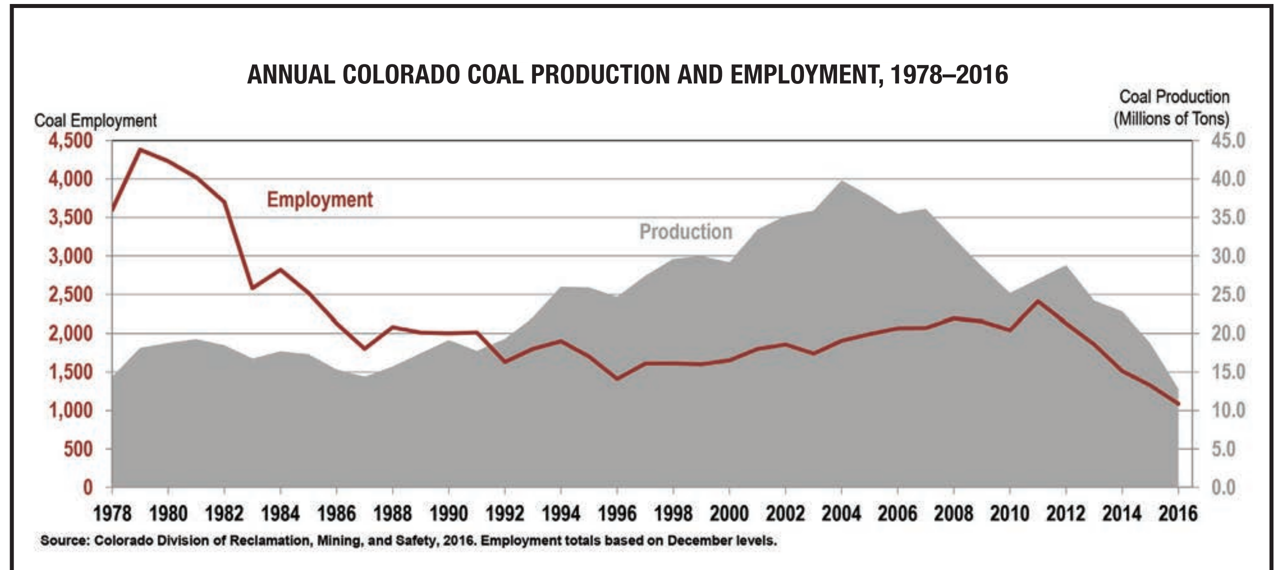
Colorado's carbon dioxide production is marketed almost exclusively for enhanced oil recovery (EOR) operations. In 2016, more than 440 million cubic feet of CO2 were produced in three counties (Montezuma, Dolores, and Huerfano), with the total production value grossly estimated at $369 million, a 21% decrease over 2015. For 2017, CO2 production levels are projected to increase to just over 400 million cubic feet.

Drilling Permits and Rig Activity

The Colorado Oil & Gas Conservation Commission (COGCC) reported 3,000 Applications for Permit to Drill were approved in 2016, a modest 3% decline from 2015. For 2017, the commission has approved 1,744 permits as of September 1, which is 7% below the level of permitting for the same period in 2016. There are 2,479 active permits statewide as of September 1, 2017, with 60% of these located in Weld County. The COGCC recorded 1,477 well starts in 2015 and 1,004 well starts in 2016. As of September 1, 2017, the agency had 1,261 well starts on the book—a positive trend suggesting this will be the most annual starts since 2014.

The 2017 active drill rig count in Colorado has averaged 32, a nearly 70% increase from the average of 19 active rigs the previous year. A total of 85% of the rig activity in the state has occurred in two counties: Weld and Garfield. It should be noted that operators have been improving drilling times and increasing average lateral lengths. These optimizations allow for more production per active drilling rig on average.

Horizontal drilling and hydraulic stimulation continue to be integral to Colorado's oil and gas activity. In 2010, only 5.6% of all Colorado drilling permits issued were for horizontal wells. In 2017, that number will be greater than 75% of all issued permits. Of the horizontal wells permitted in 2017, 82% were located in Weld County.



Source: Colorado Division of Reclamation, Mining, and Safety, 2016. Employment totals based on December levels.

Horizontal well starts totaled 956 through the beginning of September—76% of the state's total.

Coal

Coal mining in Colorado dates back to 1864. Colorado's clean, high-quality coal reserves help utilities meet the stringent requirements of the Clean Air Act. Production peaked at 40 million tons in 2004. Data provided to the Colorado Mining Association (CMA) indicate that in 2014 the industry accounted for $900 million in sales. With reduced production and lower prices, sales fell to an estimated $510 million in 2016 but are expected to increase in 2017 and 2018 based on forecast increases in production. According to the National Mining Association's survey Economic Contributions of Mining (2015), the industry contributed $1.9 billion to Colorado's economy, and directly employed 3,723 workers (including transportation), with 12,977 indirect and induced jobs. Federal royalties on Colorado coal production in FY2016 totaled more than $35 million, about half of which is returned to Colorado to support public education and other activities. Coal mines also paid property taxes, state royalties, and severance and sales taxes of about $18 million in 2016.

According to the EIA, coal is the fastest-growing major source of electricity worldwide. Sales of Colorado coal outside the United States was close to 25% of total production in 2012 and 2013, but fell to 10% of total production in 2015. CMA annual coal statistics estimate that sales outside the United States fell to 7% of production in 2016. (The increase in 2015 is the result of exports increasing 25% while production fell 20%.) Domestic sales both within Colorado and to other states have also dropped over the past decade. The state's total production rose from 27 million tons in 2011 to 28.8 million tons in 2012 before declining to 12.8 million tons in 2016. These are the lowest production levels since the mid-1970s.

continued on page 28

Natural Resources and Mining

continued from page 27

Colorado coal production is expected to recover to 15 million tons in 2017.

Coal must now compete in an environment where governmental mandates for renewable energy could limit sales in Colorado. The slated, and government-mandated, closure, or conversion to natural gas of nearly 1,000 megawatts (MW) of electricity generated by coal-fired plants along the Front Range will also cause annual production losses of up to 4 million tons. New Environmental Protection Agency regulations will also significantly curtail future production. Low natural gas prices in 2016 added to the impact of these mandates and other political action is leading to the closure of coal-fired power plants across the United States.

Mines

In 2016, Colorado coal mines produced bituminous and sub-bituminous coal for electricity generation at power plants, and to a lesser extent, cement and coking operations. Coal was produced in seven Colorado counties: Routt, Moffat, Rio Blanco, Delta, Gunnison, Montrose, and La Plata. Gunnison County was the leading coal-producing county between 2001 and 2016, producing 149 million tons, followed by Routt County with 126 million tons, Moffat County with 53 million tons, and Rio Blanco County with 31 million tons. Arch Minerals' West Elk Mine produced 4.2 million tons in 2016, making it the highest-producing mine in Colorado. In 2013, the Elk Creek Mine experienced geologic problems, resulting in a dramatic drop in production; the mine was idled in December 2013. Production at Elk Creek fell from 3 million tons in 2012 to 0.4 million tons in 2013 and no production since 2014. Elk Creek was abandoned in February 2016. In 2014, the Bowie Mine #2 in Delta County cut back production and laid off 150 miners due to the cancellation of a contract to supply coal to the Tennessee Valley Authority. In October 2015, Bowie announced that an additional 97 employees were being furloughed as it developed a new longwall panel. After producing 1 million tons in 2015, production was suspended in Q1 2016. In April 2017, the New Horizon North Mine was idled after producing 31,000 tons in 2017 and 188,000 tons in 2016. As the result of a lawsuit filed by WildEarth Guardians against the U.S. Office of Surface Mining (OSM), OSM was ordered to rework the environmental assessment of a mine permit issued to the Colowyo Mine in 2007. The OSM was given 120 days to complete the assessment. Colowyo avoided closure when the OSM completed the review, finding there was no significant environmental impact on climate change from the mine and validated the permit. As a result of the lawsuit, the Trapper Mine has undergone a new environmental assessment and with the same findings as the Colowyo environmental assessment. The Bowie Mine in Colorado, and mines in other states, has faced similar environmental reassessments.

Production

According to the Mine Safety and Health Administration (MSHA), in 2016, Colorado was the 13th-most productive coal mining state, producing 12.8 million tons of coal. This is down from a ranking of 10th in 2015 when 18.8 million tons were produced. Using MSHA's data for the first three quarters of 2016, along with EIA data and Colorado coal production reports, the state's total coal production by year-end 2017 is expected to increase to 15 million tons.

Value

Production and the price of coal fell in 2016. In 2012, the total value of coal sold in Colorado was estimated at $1.1 billion, with an average coal price of $37.54 per ton. EIA data indicate prices increased to $38.64 per ton in 2014 before falling to $36.12 per ton in 2015. The estimated average price of coal in 2016 was $37.60 per ton. The value of coal sold by Colorado mines has fallen from $1.1 billion in 2012 to under $500 million in 2016.

VALUE OF COLORADO NONFUEL MINERALS AND URANIUM PRODUCTION 2008–2018 (In Millions of Dollars)

Year	Nonfuel Minerals	Uranium	Total
2008	$2,084	$16.0	$2,100
2009	1,960	6.0	1,966
2010	1,930	0.0	1,930
2011	1,940	0.0	1,940
2012	1,930	0.0	1,930
2013	2,110	0.0	2,110
2014	2,320	0.0	2,320
2015	1,340	0.0	1,340
2016	1,510	0.0	1,510
2017[a]	1,450	0.0	1,450
2018[b]	1,500	0.0	1,500

[a]Estimated. [b]Forecast.

Source: U.S. Geological Survey, Mineral Survey Reports.

Employment

The Colorado Division of Reclamation, Mining and Safety tracks coal production and the employment of coal miners on a monthly basis. In 2011, employment at Colorado's coal mines was at a 25-year high of 2,411 miners in December. This was due, in part, to the employment of coal miners at the New Elk Coal Mine in Las Animas County. In December 2013, employment slid to 1,857 miners, due primarily to layoffs at the Elk Creek Mine. According to the Colorado Division of Reclamation, Mining and Safety, the number of persons employed

at Colorado coal mines was 1,086 at the end of 2016 and 1,091 at the end of August 2017.

Export Coal

Based on EIA data, in 2010, approximately 54% of the coal produced in Colorado was shipped by rail or truck to power plants in 14 other states, with destinations as far as Florida. In 2016, 39% of the coal produced in Colorado was shipped to nine other states. In 2016, the only state outside of Colorado that took more than 1 million tons of Colorado coal was Utah, which took 1.9 million tons of coal. Sales to Alabama, Kentucky, and Tennessee, which took almost 6 million tons in 2010, has fallen to 0 as the Tennessee Valley Authority eliminated its take of Colorado coal.

The EIA reports that 6.5 million tons of Colorado coal were exported abroad in 2012. These international exports fell to 3.8 million tons in 2014 and less than 2 million tons in 2015. Other data indicate foreign exports dropped to less than 1 million tons in 2016.

Consumption and Generation

According to EIA data (Form EIA-923, EIA-860), 50% of the 18.1 million tons of coal delivered to electric utilities in Colorado in 2010 came from Colorado mines, with the remainder from Wyoming. In 2016, 15.9 million tons were delivered while the percentage that came from Colorado mines fell to 40%. According to the EIA Electricity Data Browser, coal-fired power plants in Colorado consumed 16.6 million tons of coal in 2016, supplying the state with 55% of its electricity, down from 68% in 2010. Annual electricity generated at Colorado's 12 coal-fired power plants fell from 34.6 million megawatt hours (MWhs) in 2010 to 31.5 MWhs in 2016. Electricity generated from natural gas increased from 11.1 MWhs to 12.7 MWhs between 2010 and 2016. Wind-generated electricity increased from 3.5 MWhs to 9.4 MWhs.

COLORADO ELECTRIC POWER INDUSTRY GENERATION BY PRIMARY ENERGY SOURCE 2008-2016 (In Millions of Megawatt Hours)

Year	Coal	Natural Gas	Hydroelectric[a]	Wind	Solar	Biomass	Petroleum	Other[b]	Total
2008	34.8	13.5	2.0	3.2	0.018	0.045	0.019	0.033	53.4
2009	31.6	13.8	1.9	3.2	0.026	0.057	0.013	0.053	50.6
2010	34.6	11.1	1.6	3.5	0.042	0.060	0.017	0.070	50.7
2011	34.0	10.2	2.1	5.2	0.105	0.062	0.022	0.063	51.4
2012	34.5	10.5	1.5	6.0	0.165	0.058	0.011	0.055	52.6
2013	33.7	10.7	1.2	7.2	0.248	0.084	0.010	0.046	52.9
2014	32.5	12.0	1.8	7.4	0.253	0.126	0.010	0.047	53.8
2015	31.6	11.8	1.5	7.4	0.289	0.131	0.011	0.043	52.5
2016	30.0	12.7	1.6	9.4	0.550	0.090	0.010	0.050	54.4

[a]Includes pumped storage.

[b]Includes blast furnace gas, propane gas, other manufactured and waste gases derived from fossil fuels, non-biogenic municipal solid waste, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, tire-derived fuels, and miscellaneous technologies.

Source: U.S. Energy Information Administration.

Minerals and Uranium

Nonfuel mineral resources include metals, industrial minerals, and construction materials (e.g., cement, crushed rock, lime, sand, and gravel). The USGS estimates that the total U.S. 2016 nonfuel mineral production value was $74.6 billion. In 2016, Colorado produced an estimated $1.5 billion, or approximately 2% of the estimated total production value. The 2016 USGS estimated value for Colorado is subject to change.

There was no uranium mining in Colorado in 2016. Uranium prices continued to decline in 2016, which accounts for the lack of mining in the state. Despite the low prices, project development and proposed acquisitions continued in 2016 and 2017. In 2017, Western Uranium Co. (Western) announced its intent to purchase the Graysill Property from Pacific Gold & Royalty Corporation (Pacific). The Graysill Property is located in western Colorado, where Pacific owns 24 unpatented claims that encompass the Graysill Mine in San Juan and Dolores counties. The Graysill Mine was a past producer of vanadium and uranium. Western also continued to pilot test its ablation mining technology through a milling license for the company's proposed mining operation at the Sunday Mine.

Metals mined in Colorado include gold, molybdenum, and silver. The Colorado Geological Survey estimates that the 2016 production value of these metals was about $673 million. This is approximately a 22% increase compared to the 2015 production value of $551 million. This increase in value was due to the increase in gold production at Newmont's Cripple Creek and Victor (CC&V) mine located in Teller County. The average gold price in 2017 was $1,270 per ounce. Colorado was the

continued on page 30

Natural Resources and Mining

continued from page 29

third-largest producer of gold (396,000 ounces) in the United States in 2016, following Nevada and Alaska.

This increase in gold production value offset the 2016 decrease in Colorado's molybdenum production value. The combined molybdenum production at the Henderson Mine and Climax Mine, both operated by Freeport-McMoRan Inc. (Freeport), decreased from 48 million pounds in 2015 to 26 million pounds in 2016. The decrease in molybdenum production is due a continued decline in prices. In 2015, Freeport announced it would close the Henderson Mine in three to five years due to low molybdenum prices, and in 2016, the mine suspended mine development. In August 2017, the *Denver Post* reported that Freeport announced it will resume and extend the Henderson Mine life to 2026 due to the 2017 increase in molybdenum prices. Reportedly, the mine accounted for 70% of all property taxes collected in Clear Creek County. However, as reported by the *Denver Post,* the tax agreement is based on a 10-year rolling average for molybdenum prices and therefore, tax payments to the county will continue to decline. Colorado was the second-largest producer of molybdenum in the United States in 2016, following Arizona, which produces molybdenum as a by-product. In 2016, Freeport estimated proven reserves of 63 million metric tons at the Henderson Mine and 146 million metric tons at the Climax Mine.

In 2016, Colorado consumed approximately 52 million tons of aggregate. According to the Colorado Stone, Sand & Gravel Association (CSSGA), the production of construction aggregate, including crushed stone, sand, and gravel, was slightly up from 2015 levels due to continued construction primarily in the Front Range. Forecasts for 2018 suggest another slight increase in production in Colorado, primarily in the central and northern regions due to a continued strong construction market in the Denver, Colorado Springs, and Northern Colorado areas, combined with the slowdown in the oil and gas segment.

Photo: Colorado Tourism Office, Matt Inden/Miles

Renewables

Colorado's abundance of renewable energy resources includes wind, solar, hydroelectric, geothermal, and biomass resources. These additional electricity resources accounted for 21.5% of Colorado's net generation in 2016, a nearly four percentage point increase from the 17.9% generated from these sources in 2015. Remarkably, wind generation increased 26% and solar generation more than doubled from the previous year. Hydroelectric power also increased by 18.4% from 2015 to 2016 according to the EIA. Colorado's windy plains, high mountains and rivers, active subsurface heat flow, and abundant sunshine give it one of the highest potentials for renewable energy growth in the United States. In terms of overall renewable energy technical potential, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) ranked Colorado sixth nationally in 2012.

Colorado's Renewable Portfolio Standard (RPS) requires investor-owned electric utilities to provide 30% of their generation from renewable energy resources by 2020, with 3% coming from distributed generation. This is one of the most ambitious renewable portfolio goals in the nation, and the Colorado Public Utilities Commission (PUC) states that the existing wind and solar installations have already achieved this electricity goal, mostly by purchases through Xcel Energy. Notably, in July 2015, the Tenth Circuit Court of Appeals upheld the constitutionality of Colorado's RPS, saying it would not harm interstate commerce as a 2011 federal lawsuit alleged.

As of August 2017, residential electricity rates in Colorado were 12.46 cents per kWh, which is a 2.5% decrease compared to the prior year. This is below the national average of 13.19 cents per kWh and is the third highest in the eight-state Mountain West Region, which averages 12.26 cents per kWh. Colorado commercial rates are 10.41 cents per kWh, which is below the national average of 11.04 cents per KWh, yet the third-highest rate in the region. Colorado's industrial rate averaged 7.55 cents for August 2017, which is higher than the national average of 7.25 cents. Averaging across all consumer sectors, Colorado's year-over-year electricity rate has essentially remained the same as 2016.

Wind Energy

As of the middle of 2017, Colorado ranked 10th nationally for both total MWs currently installed and for overall wind energy potential. The U.S. Department of Energy estimates that installed wind power in Colorado grew by more than 133% from 2010–2017, with a notable 26% increase in 2016 alone. Cumulative wind power generating capacity has increased by nearly two gigawatts during this period, to reach 3,029 MW. There is an additional 76 MW currently under construction and another 600 MW is in advanced development. Colorado wind farms have 1,913 wind turbines in 25 projects, and in 2016 cumulatively produced more than 9.4 million MWhs of electricity—17.3% of the state's total net generation.

Most of Colorado's wind stations operate in rural areas with limited economic development opportunities, providing local jobs to hard-pressed areas. While hard numbers regarding the economic impact of renewable energy sources are difficult to come by, the wind industry adds to local economies through new lease payments to landowners, local income from taxes, wages of wind farm employees, and sales and use taxes arising from spending by these workers. The American Wind Energy Association found 6,000 to 7,000 jobs were directly or indirectly supported in 2016, and the total capital investment through 2016 was $5.9 billion. Annual land lease payments in 2016 were between $5 and $10 million.

Colorado also has a significant wind turbine manufacturing presence. According to the U.S. Bureau of Labor Statistics and American Wind Energy Association, Colorado's industry concentration in this manufacturing sector was 2.5 times the national average, with at least 15 manufacturing facilities located in the state. In September 2016, the Colorado PUC announced support for the $1.1 billion 600 MW Rush Creek Wind Project in eastern Colorado, with wind turbines supplied by Vestas Wind Systems, which has four manufacturing plants in Colorado. Construction for what will be Colorado's largest wind farm is now underway, and has a targeted in-service date of October 2018.

Solar Energy

Colorado is a leader in solar energy. In terms of cumulative installed solar electric capacity, Colorado ranks 11th nationally, with over 950 MW of installed capacity (roughly 2.25% of the state's net generation). Of that capacity, 374 MW was installed in 2016—nearly 40% of the state's total. Over the next five years, the Solar Energy Industries Association (SEIA) estimates the annual installed capacity will increase by another 956 MW, doubling the state's total capacity by 2022. According to the NREL's Open PV Project, Colorado currently has 2,606

continued on page 32

Photo: Denver International Airport

Natural Resources and Mining

continued from page 31

Photo: Colorado Tourism Office, Matt Inden/Miles

individual photovoltaic (PV) installations that generate more than 135 MW of power. The state ranks 19th in the nation in total count of PV installations. Over 430 solar companies currently operate in Colorado, employing around 6,000 people. The 2016 investment in solar installations was more than $500 million according to SEIA.

The longer-term outlook for solar in the United States is facing uncertainty with a trade dispute initiated by the domestic module and cell manufacturer Suniva in May 2017. Suniva's petition to the U.S. International Trade Commission could result in import tariffs, volume limitations, and other consequences that could affect the solar energy industry nationally. According to SEIA, Colorado alone could lose 2,000 solar jobs if Suniva's recommendations to the trade commission are adopted in full.

Like many states, the rooftop solar community in Colorado has been thriving with installation costs dropping more than 60% since 2010. For Q1 2017, Colorado had below national-average installation costs—modeled by NREL to be an estimated $2.66 per watt for residential PV systems. EnergySage, an online solar marketplace, estimates the average cost to install a 6 kW system in the state, after deducting the 30% federal solar tax credit, to be between $13,000 and $17,000.

Hydroelectric Power

For the past decade, Colorado's hydroelectric plants have been providing between 1.8% and 3.6% of the state's total electricity. For 2016, 3% of the state's total electrical output came from more than 60 hydroelectric generating stations with around 1.6 million MWhs of electricity generated. Most of these stations are owned by the U.S. Bureau of Reclamation, but some are privately owned or operated by local mountain towns such as Aspen, Nederland, Ouray, and Telluride. This renewable resource provides a constant but seasonably variable source of electricity. The industry employs several hundred individuals for operations and maintenance.

Geothermal Energy

There was limited progress for geothermal energy development in Colorado in 2017. Although potential high-grade geothermal drilling targets have been identified in previous years east-southeast of Mount Princeton and north of Poncha Hot Springs in Chaffee County, a hot reservoir is thought to be associated with Waunita Hot Springs in eastern Gunnison County, and a deep (approximately 8,000 feet), extensive, electricity-grade reservoir has been identified and mapped in the Raton Basin in Las Animas County west of Trinidad. Funds have not been available to drill to any of these potential resources. The low price of natural gas makes high-temperature geothermal resources in islands of the western Pacific more attractive to investors than Colorado resources at this time. Several attempts at obtaining federal funds to drill and test the high-potential geothermal targets in Colorado have been unsuccessful despite the similarity of these targets to producing resources in Nevada. Direct-use geothermal resources in the state continue to contribute to local economies on a small scale, used for heating domestic and commercial structures, including greenhouses and aquaculture, spas, and other bathing. The use of geothermal (also known as ground-source or geoexchange) heat pumps continues to slowly grow in Colorado. While these heat pumps are not strictly an alternative energy source, they consume electricity so efficiently (using one-half to one-quarter of the electricity consumed by conventional heating and cooling systems) that if they were used in all domestic and commercial buildings, the goal of 100% renewable energy use could be obtained by the energy saved much more quickly than with the status quo continued of using conventional heating and cooling systems.

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Construction

The Colorado construction industry will experience higher levels of activity in the near future but continue to suffer from labor shortages and growing costs. After averaging 155,100 jobs in 2016, Construction empoloyment grew to an estimated 162,000 jobs in 2017, although employment plateaued during the year. The industry is experiencing a "silver tsunami" from the retirement of baby boomers. The industry essentially is hiring one new employee for each worker who exits the trade, and thus, figuratively treading water. Additional employees, if they were available, could easily find job opportunities. Recent hurricanes, floods, earthquakes, and wildfires will exacerbate the labor shortages by drawing construction employees to those areas, making it harder to maintain a workforce in Colorado. The migration of workers from oil and gas exploration to the construction industry also has slowed. Construction firms can produce an increased volume of work only by using more overtime, prefabrication, and other productivity-enhancing techniques. The labor situation has forced production schedules to be delayed and that circumstance will continue throughout the time horizon of this forecast. The Construction Committee expects total construction employment to increase modestly in 2018, adding 2,500, or 1.5%.

Residential

Single-Family Housing

Year-end 2017 should finish with 23,700 permits for new single-family detached homes, a 9.8% increase for the year. Continued growth in 2018 will see another 9.7% increase, to 26,000 single-family permits.

Metro Denver and Northern Colorado typically account for about two-thirds of Colorado's new home sales, and the market has been strong in those areas in recent years. New home closings increased by about 9% through mid-year 2017, and new production housing contracts were up by 16% for the same period. While the current pace is robust by recent standards, single-family homebuilding has been as high as 40,000 a year (in 2004–2005). Homebuilding has recovered from the recessionary trough of 2009, when only 7,261 single-family permits were issued. Single-family permits have been rising steadily and will finish 2017 more than 250% higher than in 2009, although this level will still be only 58% of the 2005 peak.

continued on page 34

CONSTRUCTION EMPLOYMENT 2008–2018 (In Thousands)

Year	Employment	Percentage Change
2008	161.8	-3.6%
2009	131.3	-18.9
2010	115.1	-12.3
2011	112.5	-2.3
2012	115.8	2.9
2013	127.5	10.1
2014	142.2	11.5
2015	148.8	4.6
2016[a]	155.1	4.2
2017[b]	162.0	4.4
2018[c]	164.5	1.5

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment, Bureau of Labor Statistics, and Colorado Business Economic Outlook Committee.

VALUE OF CONSTRUCTION IN COLORADO BY TYPE 2008–2018 (In Millions of Dollars)

Year	Residential	Nonresidential	Total Building	Nonbuilding	Total Construction
2008	$4,041.8	$4,116.7	$8,158.4	$2,542.4	$10,700.8
2009	2,501.3	3,126.2	5,627.4	1,648.4	7,275.8
2010	2,903.0	2,967.3	5,870.3	2,214.4	8,084.7
2011	3,363.1	3,932.1	7,295.2	2,289.2	9,584.4
2012	5,368.2	3,675.2	9,043.5	3,329.2	12,372.7
2013	7,089.2	3,609.7	10,698.9	3,679.9	14,378.8
2014	7,563.3	4,307.0	11,870.3	2,366.8	14,237.2
2015	8,596.9	4,801.9	13,398.8	2,951.8	16,350.6
2016[a]	9,892.2	5,585.5	15,477.7	2,326.7	17,804.4
2017[b]	9,122.7	5,400.0	14,522.7	3,000.0	17,522.7
2018[c]	10,046.4	5,700.0	15,746.4	3,500.0	19,246.4

[a]Revised. [b]Estimated. [c]Forecast.

Sources: McGraw-Hill Construction Research and Analytics and the Colorado Business Economic Outlook Committee.

Construction

continued from page 33

RESIDENTIAL BUILDING PERMITS BY TYPE 2008–2018

Year	Single Family	Multifamily	Total Housing Units
2008	11,147	7,851	18,998
2009	7,261	2,094	9,355
2010	8,790	2,801	11,591
2011	8,723	4,779	13,502
2012	12,617	10,684	23,301
2013	15,772	11,745	27,517
2014	17,104	11,594	28,698
2015	20,025	11,846	31,871
2016[a]	21,577	17,397	38,974
2017[b]	23,700	17,000	40,700
2018[c]	26,000	17,400	43,400

[a]Revised. [b]Estimated. [c]Forecast.

Sources: U.S. Census Bureau and the Colorado Business Economic Outlook Committee.

Demand for housing is driven in large part by net in-migration. The State Demographer expects a net migration of 61,500 people in 2017 and 61,000 in 2018. Those numbers are more than double the population increases from births over deaths, and if the trend continues, the homebuilding industry will face an annual need for 35,000 to 40,000 new single- and multifamily homes over the next several years. Colorado's 8% single-family permit growth for 2016 matched the nation's 8% increase, and the state's August 2017 year-to-date 13% increase exceeded the 8% increase reported for the United States.

Due to a strong economy and increasing home values, Colorado's foreclosure rate remains very low, and the resale housing market has been undersupplied in many Colorado market areas since 2013. According to data from REColorado and IRES, LLC, in metro Denver-Boulder the 6,049 resale home listings as of mid-year 2017 represented just a 1.7-month supply. While up a bit from the mid-year average of the past three years, it was far below an average month's supply of the early 2000s.

Colorado's housing market improvement cannot be fully attributed to the state's economic recovery. The decline in 30-year mortgage interest rates, from 5.2% to 3.4% from 2010 through third quarter 2016, helped make housing more affordable and supported increased sales of both new and existing homes. An increase in mortgage rates to more than 4% for the first half of 2017 did not slow this momentum. The reliance on historically low mortgage interest rates for the housing market's recovery is of concern as the Federal Reserve moves toward higher rates. Home-loan underwriting policies also continue to suppress housing demand, with most lenders requiring higher down payments and strong credit.

A four-year regional and national trend of improving consumer confidence continued through 2016 and into the first half of 2017 to levels equal to or exceeding the mid-2000s. Healthy consumer confidence was undoubtedly influenced by reports of continued home price increases, including the S&P CoreLogic Case-Shiller Denver Home Price report of a 7.2% increase in Metro Denver in August 2017.

Rental occupancy rates remained in relative balance for single-family homes despite large supply increases, but some submarkets are experiencing a shortage of rental housing. The strong in-migration is resulting in rental rate increases in some submarkets, making home ownership a more attractive housing option for those who can qualify for a loan.

The decline in housing construction during and following the 2008–09 recession period significantly impaired the supply capacity of the homebuilding industry. Although builders are opening new projects and new lot development in the pipeline is adequate to meet current levels of construction activity, builders continue to report that a shortage of skilled labor is limiting their capacity to meet demand. Most builders intentionally limited offerings of new homes for presale in some of their projects during 2016 and the first half of 2017.

The economic recession, followed by higher new and resale home prices, have contributed to the drop in the homeownership rate and increased the percentage of renters. As a result, single-family permits in Colorado dropped from a 10-year average of 75% of total permits through 2008 to just 58% for the five-year period 2012–2016. With limited total construction capacity, many home builders have focused primarily on "A" locations (infill and affluent neighborhoods) to maintain profitability.

The average single-family permit value increased by 5.4% in 2016, then declined by 8% through August 2017. The recent decline contradicts the labor shortages and increasing materials costs reported by builders, as well as higher home sale prices. The committee attributes this disparity to a shift in consumer demand toward smaller homes and to the fact that single-family permits are typically issued for the base cost of a home, excluding optional features and upgrades selected by the homebuyer and lot premiums charged by builders. New homes along the Front Range are over 2% smaller than a year ago. The forecast for calendar year 2017 is for a 4.2% decline in permit value, to $293,900 per unit, followed by a 2% increase in 2018, to $299,800. (Note that permits do not include the land values.)

Multifamily Housing

Multifamily construction activity remained consistently strong in 2017. By year-end, expect 17,000 multifamily units to be permitted, slightly lower than the 17,400 in 2016. Since 2010, an average of 96% of multifamily permits in the state have occurred in the corridor between Colorado Springs and Fort Collins. Apartment construction has been strong post-recession, compensating for low levels of single-family construction and fulfilling the demand for households that are unable to meet the financial and credit requirements to purchase a home.

Continued in-migration will support an increase in multifamily construction in 2018. The market for new condominiums will grow disproportionately in response to statutory changes for construction-defect litigation. The committee forecasts 17,400 multifamily units will be

Photo: *CompanyWeek,* Jonathan Castner

permitted in 2018, a 2.4% increase from 2017, and similar to the number in 2016. Continued shortages of construction labor, however, may delay project completions.

New multifamily construction consisted overwhelmingly of apartments rather than for-sale condominiums. Apartments account for over 95% of multifamily units built since 2010, spurred by strong demand for rental housing and potential defects litigation concerns and related insurance costs. In 2017, however, condominiums are starting to return to the market, with several projects underway and more in planning. Confidence is bolstered by recent legislation intended to alleviate some litigation concerns. Except for units subject to government income restrictions, most of these condominiums offer high-end, luxury units.

Despite robust activity in recent years, demand is keeping pace with supply due to high population growth. Rental markets across the state are experiencing little change, with vacancy rates essentially unchanged from a year ago, at 5.1% during the third quarter of 2017. The highest vacancy rate is in downtown Denver, standing at 12%, after nearly 2,000 units were completed during 2017. Vacancy rates in Colorado range from 6.8% in Denver to a low of 1.4% in Greeley. Market conditions throughout the state may temporarily soften somewhat as a large number of projects are completed and leased.

As a result of the balanced market conditions, rent growth is slowing throughout the state. Following three years of increases averaging roughly 10% annually from 2014–2016, rent growth slowed to 4% in Colorado, to an average rent of $1,346 in the third quarter of 2017, according to data from the Colorado Division of Housing. Rents in the Denver-Boulder metro areas increased 3% over 12 months through the third quarter of 2017 to an average of $1,412. The strongest rent growth in the state was 18% in Pueblo. In Colorado Springs, the increase was 10%, despite the increased vacancy rate. Partially explaining the Colorado Springs increase is the hike of 4% in the basic allowance for base housing for enlisted personnel. Grand Junction was the only metropolitan area in the state that had declining rents, down 7%, to $496 per month.

The construction value per unit is expected to increase, primarily because of rising labor costs. The average value per multifamily unit will increase 2%, to $126,900, for 2017. Reflecting continued increases in construction costs, the value per unit is expected to rise about 2% again in 2018, to approximately $129,400. Rising costs have contributed to a trend of smaller units in areas such as Denver, Boulder, Fort Collins, and Greeley. The smaller sizes partially offset the increasing construction costs and reduce pressure of rent increases—the average size of new units built since 2014 has decreased 3% annually, according to Apartment Insights. Micro-unit apartments, with an average square footage of 350 square feet, are appearing on the market, primarily in the Denver area.

Nonresidential Building

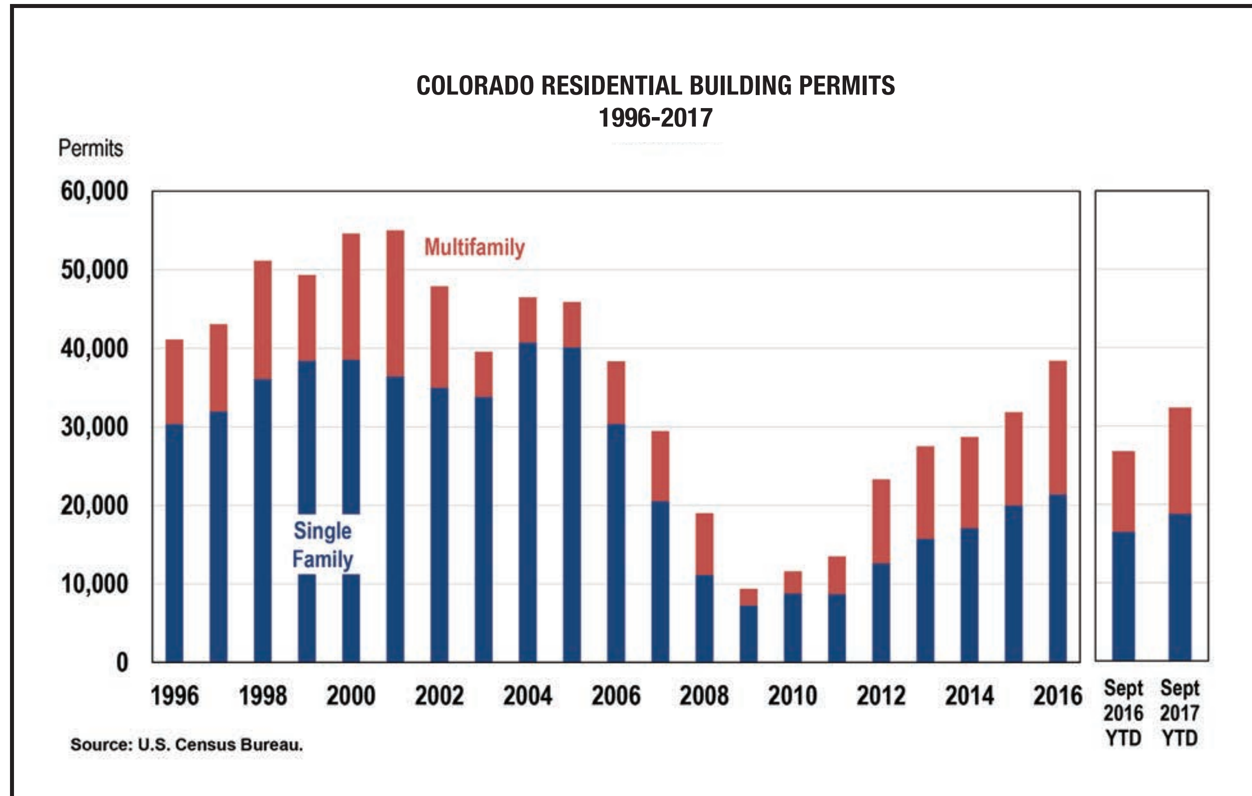
The nonresidential building sector tracks new, remodeled, and rehabilitated offices; retail; medical facilities; colleges; churches; schools; and government buildings. Building starts in 2017 are forecast to end the year at $5.4 billion, increasing 5.6% in 2018, to $5.7 billion.

Demand across a broad range of real estate sectors was responsible for increased activity in 2017, including office, retail, distribution warehouse, hotels, and medical facilities. Progress on multiyear projects in 2017 included a new Google campus in Boulder, mixed-use projects near Union Station, significant new commercial work along Brighton Boulevard in Denver's River North neighborhood, and the Gaylord hotel project in Aurora.

continued on page 36

Construction

continued from page 35



Demand continues in each of those market sectors, but activity will be slowed by rising costs and labor shortages, which will dampen or delay new projects. The committee expects a slowdown in starts in office and retail sectors. New construction on higher education campuses experienced a great deal of activity in recent years, including a new stadium at Colorado State University, but that level of work has been lower in 2017, and it appears that 2018 will be lower as well. Warehouse development, however, is expected to increase.

Major projects scheduled to start in 2018 include the $1.8 billion Denver International Airport (DIA) terminal upgrade, of which $650 million is construction and the rest operations and maintenance. DIA also will begin its Concourse B and C expansions of up to $1.5 billion. Other new projects are the Market Street Station redevelopment, at $150 million, and the $750 million Redbarre Campus project in Parker. Economic development groups in both the north and south of the Denver Metro area report substantial increases in retail building activity, especially between north I-25 and DIA, with more retail starts expected in 2018 and beyond.

A relatively small amount in school district bonding was on the ballot this past election, which is normal for an off-election year. Only $245 million was approved, and of that, the committee anticipates that only about one-third will be added to 2018 activity. Of greater consequence is the $375 million Poudre School District bond for three projects approved by voters in 2016 but delayed by a lawsuit.

Only a small portion of this forecast is potential work arising from Denver's $937 million bonds approved in the recent election, because it is likely that many building projects will not begin until 2019. The National Western Center project will eventually add more than a billion dollars in construction activity, including significant site and infrastructure improvements, three planned CSU buildings, and other convention space, but the start of that work should be in 2019.

Nonbuilding

Nonbuilding measures new construction in infrastructure projects. This sector tracks construction of roads and bridges, drainage and flood control, water and wastewater facilities, electric power generation and transmission, reservoirs, mass transit, and similar projects.

Our forecast of the final statistics of project awards for 2018 is for $3.5 billion, assuming the bulk of the construction costs for Central 70 shows up in 2018. This would represent a 17% increase over 2017, which the committee predicts will end the year at $3 billion in project awards.

Statistical data collected about this subsector do not always accurately capture the current level of activity due to the role of multiyear projects. In most instances, the recorded numbers are expected values reported when a multiyear project is started (permitted), although construction of such a project typically continues over several years. Since statistical reporting does not track work

put in place, the data tend to overstate activity during the year that multiyear projects—especially megaprojects of $1 billion or more—have been awarded, and then understate activity during the years of actual construction.

This issue is highlighted since the Colorado Department of Transportation's multiyear Central 70 project in Denver will create a spike in the official numbers. Although construction will last about five years, this project, which CDOT estimates will cost $1.2 billion, will be reflected in the official numbers upon "financial close" of this public-private partnership (P3) project. Financial close is expected to be in early 2018, and this assumption underpins the projections both for the rest of 2017 and for 2018. If financial close were to happen before the end of 2017, then the $1 billion spike in the official numbers would shift from 2018 to 2017.

The official numbers for 2017 are higher than 2016 due to the timing of the awards of some significant projects, including Xcel's Rush Creek Wind Farm ($1 billion), which kicked off in 2017, and CDOT's I-25 expansion between Johnstown and Fort Collins ($237 million), expected to be awarded before the end of 2017.

Looking ahead to 2018, the Construction Committee anticipates another busy year. In addition to the Central 70 project, a number of other significant nonbuilding projects are likely to be awarded in 2018: some initial construction packages connected to Denver Water's North System renewal ($500 million over six years); Phase 1 of the reconfiguration and reconstruction of Peña Boulevard ($50 million–$80 million); infrastructure projects connected to the redevelopment of the National Western Center; the first segments of Thornton's $400 million, 58-mile raw-water pipeline; and the first round of Denver's bond projects.

Another potential project is the expansion of I-25 between Monument and Castle Rock. If Colorado succeeds in securing a federal grant, the $300 million-plus project might be awarded before the end of 2018. Other highly anticipated projects, including Denver Water's expansion of Gross Reservoir and Northern Water's expansion, are not expected to be awarded until 2019 or later. Preliminary review of other parts of the state suggest that the current level of activity will continue, with some local governments staying busy while other areas that are suffering a lack of economic development will remain slow.

A method by which the committee confirms a year's activity is a review of "Call Before You Dig" statistics. Each year, the observations illustrate the high level of activity throughout the entire Construction Sector over the past six years, and also its relative stability. The data show year-over-year increases of 7%–11% in the volume of requests for identifying buried utilities every year since 2012. Once again, 2017 has been busier than the previous year, with 2017 volume on pace to be about 5% higher than 2016. This information supports the conclusion that Colorado nonbuilding construction continues to grow steadily, rather than experiencing the high volatility suggested by tracking only the official statistics of project awards data.

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Manufacturing

Against the backdrop of a surging national sector, Colorado manufacturing enjoyed modest growth in 2017, with a similar trajectory forecast for 2018. Much like its national counterpart, manufacturing in Colorado is a tale with two stories, with product and brand innovation fueling growth across several industries, even as automation and robotics reshape others and place downward pressure on overall manufacturing employment and GDP growth. America is making more with fewer workers.

Manufacturing in Colorado is a $23 billion industry, representing about 7% of the state's nominal GDP or the value of all goods and services produced in the state in 2016. Colorado was home to more than 5,700 manufacturing establishments employing 144,000 workers in 2017, which represented 5.4% of the total employment base in the state, a slight uptick in total employment year-over-year with 1.1% growth forecast for 2018.

Based on Q1 2017 data, nearly 80% of the companies in Colorado had fewer than 20 employees and represented just 17% of industry jobs. About 1.5% of establishments (85) had more than 250 employees and represented 38% of jobs. Although not reflected in the employment numbers discussed in this report, there were an additional 7,750 "nonemployer" establishments in Colorado in 2015 according to data from the U.S. Census Bureau. These primarily sole proprietorships highlight the importance of small business to the sector, producing a broad range of manufactured goods across the state.

At the national level, the Institute for Supply Management's Purchasing Managers Index, an overall measure of industry health, reached 58.7% in October 2017, a significant year-over-year increase from the 2016 reading of 51.9%. (Sector expansion is measured by a reading greater than 50.) Moreover, of the 18 manufacturing industries, 16 reported growth in October (Institute for Supply Management, November 1, 2017, release). Total manufacturing employment in the United States remained flat or slightly down year-over-year in 2016, ending five straight years of national employment growth in the sector. However, the U.S. Bureau of Labor Statistics

COLORADO MANUFACTURING EMPLOYMENT BY INDUSTRY
2008-2018
(In Thousands)

Industry	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017[b]	2018[c]
Food	18.3	18.4	18.5	19.4	19.3	19.9	20.6	21.6	22.2	22.6	23.0
Beverage and Tobacco	5.6	5.2	5.2	5.4	5.6	5.9	6.4	7.0	7.8	8.0	8.2
Printing and Related	7.2	6.1	5.6	5.3	5.3	5.3	5.4	5.5	5.5	5.5	5.4
Other Nondurables	17.3	15.6	15.0	15.2	15.5	15.7	16.0	16.7	16.8	16.9	17.1
Subtotal, Nondurable Goods	48.4	45.2	44.3	45.3	45.7	46.8	48.4	50.8	52.3	53.0	53.7
Nonmetallic Minerals	9.2	7.2	6.8	6.8	6.9	7.3	7.7	8.2	8.3	8.4	8.5
Fabricated Metals	15.3	13.1	12.5	13.3	14.1	14.8	15.6	15.4	14.7	14.9	15.1
Computer and Electronics	23.7	21.8	21.4	22.1	22.4	21.9	21.5	21.6	21.3	21.5	21.7
Transportation Equipment	9.5	9.2	8.8	8.9	8.8	8.8	8.8	9.4	9.7	9.7	9.9
Other Durables	36.2	31.5	30.4	31.7	33.0	33.2	34.6	35.6	36.2	36.5	36.7
Subtotal, Durable Goods	93.9	82.8	79.9	82.8	85.2	86.0	88.2	90.2	90.2	91.0	91.9
Total, All Manufacturing	142.3	128.0	124.2	128.1	130.9	132.8	136.6	141.0	142.5	144.0	145.6

[a]Revised. [b]Estimated. [c]Forecast.

Note: There was a reclassification of employees from the Computer and Electronics sector in Manufacturing to the Computer Systems and Design Services sector in Professional and Business Services in 2013.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

now measures total domestic manufacturing employment at roughly 12.4 million employees, an end-of-year number that would return the sector to growth.

At a regional level, results of the Federal Reserve Bank of Kansas City's October 2017 Manufacturing Survey point to strong growth. Chad Wilkerson, vice president and economist at the Federal Reserve Bank of Kansas City, noted, "Factory activity accelerated further in our region this month, posting its highest composite reading since 2011."

Yet the story of Colorado manufacturing will continue to be shaped by countervailing trends. Prospects seem favorable for:

- Food brands riding a wave of consumer interest in specialized products and local producers;
- Craft beverage makers in beer, distilled spirits, wines, and ciders, despite a much-anticipated slowdown in the number of craft breweries packaging beer for retail distribution;
- Outdoor industry product manufacturers intent on shortening global supply chains, with Colorado and other lifestyle-friendly states a top destination;
- Aerospace and medical device manufacturers tapping the region's robust R&D ecosystem; and
- Consumer and lifestyle manufacturing benefiting from a regional influx of entrepreneurial talent and capital.

At the same time, durable goods manufacturers, including contract manufacturers operating within original equipment manufacturer (OEM) supply chains, face tough headwinds, even as export prospects improve (fewer overseas economies are in recession today than at any time in decades), and construction activity along Colorado's Front Range continues unabated. Headwinds include:

- Severe workforce challenges caused by a lack of modern industrial skill sets as operations evolve to newer equipment and advanced processes
- Volatility of energy markets
- Uncertainty relating to public policy and geo-political events
- Strength of the U.S. dollar

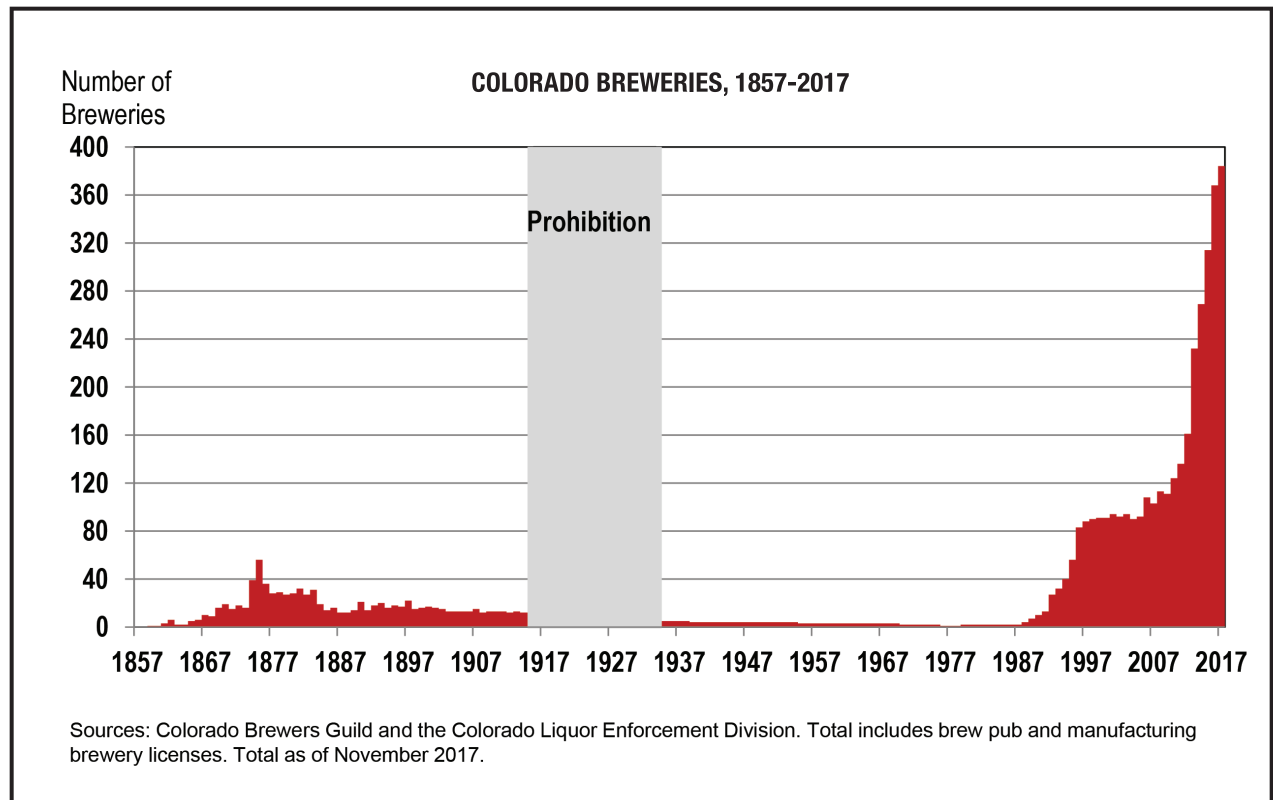
Nondurable Goods

Led by the state's ascendant, nationally recognized food and beverage sector, growth in nondurable goods continues to be a bright spot in Colorado's manufacturing ecosystem. About 37% of manufacturing employment is found in the nondurable goods industries, which include the production of goods that generally last for less than one year. Nondurable goods employment increased by 1.3% in 2017 and is expected to post a 1.2% gain in 2018, averaging about 53,700 workers for the year.

Food Manufacturing

The largest nondurable goods subsector in Colorado is food manufacturing. Colorado food brands and

continued on page 40



Sources: Colorado Brewers Guild and the Colorado Liquor Enforcement Division. Total includes brew pub and manufacturing brewery licenses. Total as of November 2017.

Manufacturing

continued from page 39

co-packers manufacture candies, baked products, tortillas, burritos, coffee, and animal feeds. They also process meat, grains, sugar, milk, cheese, and other dairy products. Beyond large food manufacturers, Colorado is home to many boutique manufacturers, many specializing in natural and organic products, a regional calling card. Canada, Mexico, and countries in Asia are major purchasers of Colorado-produced food products. Colorado food manufacturing exports totaled almost $1.5 billion in 2016, an increase of 12.4% over the $1.3 billion in 2015. Of the 2016 exports, 94.3% were to North America and Asia combined. Exports are expected to hold steady in 2017. Any changes in trade agreements are likely to impact future growth in this subsector; however, the continued strength of Colorado Proud products and many entrepreneurs with small food start-ups could provide a bright spot in this industry. Employment is expected to increase by about 400 jobs in 2017 and in 2018, reaching total employment of 23,000 workers, or over 43% of the nondurable goods subsector.

Beverage Manufacturing

An additional catalyst is the growing investment ecosystem that's developed in Colorado, particularly in Boulder County, fueled by the region's national reputation as a center of food product innovation. A mix of food-focused investment funds, equity firms, and strategic investors from established industrial brands are providing early-stage companies more capital options than at any time in the past.

Firms in the beverage subsector produce soft drinks, ice, bottled water, beer, wine, and liquor. Most of the subsector employment is located along the Front Range. According to the Brewers Association, in 2016 Colorado ranked second in the country for the number of craft breweries (334), and it was first in economic impact per capita. The state produced just over 1.4 million barrels of craft brew, the third-highest production in the country in 2016.

Photo: *CompanyWeek,* Jonathan Castner

Colorado craft distilling is following a similar arc. Colorado ranks fifth in the nation in total number of craft distillers, with 80; membership in the Colorado Distillers Guild now totals 50 companies. The number of active distilleries increased by 11% in 2017.

Exports of beverages and tobacco products in Colorado decreased 7.1%, from $112.7 million in 2015 to $104.7 million in 2016. Over the last three years, an average of 96% of the exports in this subsector have gone to North America so changes in NAFTA could be significant. Microbreweries, distilleries, and wineries are expected to continue to grow in the coming years, although the number of manufacturing employees added will be few in each new location. Employment in the beverage subsector is expected to increase by about 200 workers in 2017 and in 2018, reaching 8,200 workers.

Colorado's cannabis industry is a manufacturing wild card. Cannabis alone is a billion-dollar market, and growing.

Printing and Related

Colorado employment in the printing and related products subsector has shown minor growth in the last five years. Those in printing are finding ways to stay relevant, in part by reaching more targeted local audiences. There is growth in printing of labels and t-shirts for new products produced, particularly craft beers. The importance of new local business may be best shown when comparing the slight increase in the number of employees during 2016 with exports of Colorado's printed products, which dropped 19.4%, to $41.8 million. Employment is expected to stay fairly flat in 2017, at 5,500, and decline to 5,400 in 2018.

Other Nondurable Goods

The other nondurable goods subsector includes textiles, textile products, leather and allied products, apparel, paper products, petroleum and coal products, chemicals, and plastics and rubber products. In 2016, employment in the textiles to apparel subsectors averaged about 2,600 employees. This group of subsectors has been challenged over the past several years. Many companies in this subsector group offer niche products to small markets. Employment is expected to contract slightly in 2017 and then remain stable in 2018.

Paper products employed about 1,400 employees in Colorado in 2016, and petroleum and coal products employed about 740 workers. Paper products employment contracted steadily throughout the last decade and is expected to continue on a downward trend over the next few years. Petroleum and coal products manufacturing firms refine crude petroleum and coal into usable forms. Consistent with earlier years during the current economic expansion, employment in this subsector is expected to drop slightly during 2017 and 2018 but remain greater than 700 workers.

Chemical products manufacturing firms employ roughly 6,400 employees. Recent strength in this subsector, which added about 300 jobs in 2016, is expected to continue through the forecast period as raw material costs remain low and demand strengthens. Bolstered by strong performance during the first quarter, the chemical manufacturing subsector is expected to grow to 6,800 jobs in 2017 and to expand further to average nearly 7,100 jobs in 2018.

Colorado plastics and rubber products manufacturing firms make a diverse mix of goods ranging from window frames to plastic credit cards. Employment in this subsector has declined in each of the last four quarters but now shows signs of stabilizing. Largely on account of job losses in the final months of 2016, firms in this subsector are expected to lower employment from an average of 5,850 jobs in 2016 to slightly more than 5,700 jobs in 2017. Employment is projected to remain at about this level in 2018 as well.

Overall, employment in the other nondurable goods subsector will average an estimated 16,900 employees in 2017 and increase to 17,100 employees in 2018.

Photo: *CompanyWeek,* Jonathan Castner

Durable Goods

Durable goods industries represent about 63% of the employment in the Manufacturing Sector. Durable goods manufacturing includes the production of goods lasting longer than one year, such as nonmetallic minerals, fabricated metals, computer and electronics, transportation equipment, and other durable goods. Durable goods employment is expected to increase 0.9% in 2017 and 1% in 2018, representing the addition of 1,700 workers over the two years.

The nonmetallic minerals subsector employs approximately 8,400 workers in Colorado. Companies classified in this subsector in Colorado manufacture products largely made of glass and ceramics used in the electronics and construction industry. Demand from electronics remains steady but with only minimal growth, while construction demand remains strong. As most of the state's jobs in the industry produce plumbing fixtures, glass products, and concrete and stone products, employment in this sector tracks closely with the health of the construction industry. While construction remains strong in the state, productivity gains necessitated by low unemployment and the difficulty finding and retaining workers, will hold down job growth to a positive but small increase. Nonmetallic mineral product manufacturing will average about 8,400 jobs in 2017 and add another 100 jobs in 2018, reaching 8,500 positions.

The fabricated metals subsector is one of the larger manufacturing industries in Colorado in terms of jobs, employing about 14,700 workers in roughly 870 establishments in 2016, a significant contraction from 2015.

continued on page 42

Manufacturing

continued from page 41

The industry transforms metals into intermediate or end products, such as metal containers, tools and hardware, pipes and structural components, and other products used in construction and industry. The reduction in oil field activity caused a slight contraction during 2017, although some uptick in activity is expected by the end of 2017 and into 2018. Employment in this sector is expected to average 14,900 in 2017, with a slight increase, to 15,100, in 2018.

Computer and Electronic Products

The computer and electronic products manufacturing subsector includes industries such as communications equipment, audio and visual equipment, semiconductors, navigational equipment, laboratory measuring instruments, and optical media products. Nearly half of the employment in the subsector comprises navigational, measuring, electromedical, and control instruments, an industry group largely influenced by Colorado's aerospace and health care companies. Computer and electronic products employment in general declined by 25% from 2006 to 2016, partly due to global competition and consolidation activity. In particular, semiconductor and other electronic component manufacturing has declined for more than 15 years, falling more than 60%, from 12,900 employees in 2001 to 4,800 employees in 2016.

The subsector in the state will be influenced by positive and negative factors in 2017 and 2018. While computer and electronic products remain one of Colorado's largest exports, exports will have contracted for the fourth consecutive year in 2017. However, there are positive signs of growth nationally. After two years of contraction, gross private domestic investment in computers and peripheral equipment increased by more than 5% year-to-date through the second quarter of 2017, and shipments and new orders for the subsector are up. Colorado will benefit from the positive national trends. Overall, employment in the subsector is expected to increase to 21,500 jobs in 2017 and average 21,700 in 2018.

Large aerospace companies dominate the transportation equipment manufacturing subsector, which includes the manufacture of spacecraft, satellites, and aircraft parts, as well as of truck and auto parts, boat parts, and bicycles. The subsector is sensitive to international demand and federal spending on national defense and space exploration. Firms in the subsector employed nearly 9,700 workers on average during 2016, up 3% from the year prior.

Employment growth in the subsector slowed over the second half of 2016 as some aerospace firms cut jobs in order to match the reduced prices of their competitors.

Photo: *CompanyWeek*, Jonathan Castner

Photo: *CompanyWeek*, Jonathan Castner

A strong outlook for defense spending, together with a firming international economy, is expected to allow overall aerospace employment to rebound. In particular, the stimulative effects of new orders will serve to outpace the job reductions attributable to manufacturing efficiencies and corporate cost cutting measures. Production processes in this subsector are relatively labor intensive, and employment growth may slow further as a result of labor supply constraints and wage pressure effects. Total transportation equipment manufacturing employment is expected to grow 0.4%, to average over 9,700 employees, in 2017 and add a further 2%, to reach 9,900 jobs, in 2018.

Other Durable Goods

The six other durable goods subsectors include manufacturing of machinery, furniture, wood products, electrical equipment, primary metals, and miscellaneous other durable goods. Together, these subsectors employed an average of 36,200 workers in 2016. Employment in these subsectors is sensitive to a variety of economic factors, including business climate, consumer behavior, labor prices, and opportunities for automation.

Machinery manufacturing firms make products that apply mechanical force to perform work. Colorado's diverse machinery manufacturing subsector produces a broad array of goods, including wind turbine components, jet engine controls, HVAC and industrial cleaning equipment, compressors, and canning assemblies. The subsector employed nearly 12,500 workers in 2016 after adding just over 200 jobs, or 1.7%, from the year prior—versus a 4% drop nationwide. In 2016, Colorado machinery manufacturers benefited from wind energy orders and early signs of stabilization in the oil and gas industry, both of which provide specific boosts to state firms without lifting national business activity to the same extent.

Preliminary data for the first quarter of 2017 suggest that employment in the subsector fell 3.2% versus the same quarter the previous year, in line with national trends over the same period. A portion of the losses may be attributable to uncertainty over the future of U.S. investment in renewable energy production, though these risks have eased somewhat with the receipt of additional orders in the summer and fall of 2017. Denmark-based Vestas is the subsector's largest employer, although its tower manufacturing plant in Pueblo is classified as a fabricated metal manufacturing business. Though the speed of recent job losses will slow, machinery manufacturing employment is projected to average about 12,100 jobs in 2017 and decline further, to roughly 11,900 jobs, in 2018 on higher costs per employee and additional opportunities for automation.

Furniture and wood product manufacturing are expected to continue to grow alongside residential homebuilding. Employment in Colorado furniture and related products manufacturing firms, which accounted for about 5,500 jobs in 2016, has increased in each of the last five years. This subsector is expected to continue adding workers. Furniture makers are expected to average about 5,750 jobs in 2017 and just over 6,000 jobs in 2018. Large firms in this subsector include Hunter Douglas Window Fashions, which makes blinds and window shades in Broomfield, as well as a number of mattress, door, and other furniture firms. A cottage industry of smaller, artisanal wood fixture manufacturers and custom cabinet makers has evolved into a larger, statewide ecosystem of growth companies like Watson Mills, Azure Furniture, and Tharp Cabinet Company.

Companies in the electrical equipment, appliances, and components subsector manufacture diverse products, including lighting and fixtures, motors and generators, electric power equipment, batteries, wiring, cable, and other communications equipment. The subsector has a relatively small employment base in Colorado, averaging about 2,300 employees in 2016. Growth in the subsector slowed over the past few years due in part to a dip in export activity, which fell 21% in 2016 and remained flat during the first half of 2017.

The electrical equipment, appliances, and components subsector is influenced by construction activity, household growth, and consumer spending. Favorable economic conditions in the United States and globally are expected to support employment in the subsector, but wage pressure and a tight labor market may limit growth. In 2017 and 2018, the subsector is expected to remain at 2,300 jobs.

The primary metals manufacturing subsector, which includes firms that smelt or refine metals from natural ore and scrap, has seen a significant reduction in jobs during the past three years. Employment in the subsector averaged slightly under 2,000 workers during 2016 after dropping by 11% from the year prior. Firms in this subsector will continue to reduce employment as metal mining operations in Colorado ramp down, manufacturing efficiencies improve, and the labor market tightens. The subsector will average slightly less than 1,900 workers in 2017 and about 1,800 workers in 2018.

The miscellaneous manufacturing subsector encompasses durable goods manufacturers that are not classified elsewhere. In Colorado, the largest firms in this subsector are medical equipment manufacturers, though other businesses include those that make signs, snowboards, firefighting equipment, and bowstrings. Together, the firms in this subsector employed roughly 10,800 workers on average during 2016. Employment is expected to decline in 2017 as a result of job cuts at some of the largest medical equipment manufacturers, and will average 10,450 workers on the year before rebounding to 10,600 employees in 2018. Labor market constraints limit opportunities for strong employment growth in this sector, though incorporation of new small and midsize firms offers an upside risk to the employment outlook. ✜

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The Colorado Cannabis Market

Colorado's legal cannabis market has been the subject of international curiosity since it opened in 2014. This is the first system designed to control and tax the cannabis market, and state and local governments have implemented a comprehensive set of policies and regulations that span agriculture, zoning, advertising, security, transportation, food safety, dosing, packaging, and beyond. To date, there are 39 Colorado counties that allow recreational (or adult-use) or medical cannabis dispensaries, 5 that allow only medical dispensaries, and 25 counties where all cannabis sales have been banned or have a moratorium in place. Most of the state's population, however, lives in areas that allow production and sale of cannabis.

Colorado's model of local autonomy and clearly defined rules have become the model system for other governments seeking to legalize cannabis. Government officials from many states and nations have visited to tour facilities and learn from Colorado businesses and government officials.

Annual cannabis sales (medical and adult-use) in Colorado started at $669 million in 2014, and has grown significantly each year since then, hitting $1.3 billion in 2016 and on pace to eclipse $1.5 billion in 2017. In January 2014, statewide sales were about $47 million, and now, in 2017, every month of sales is over $100 million. This remarkable growth will not last, however, as this represents an absorption or shift of sales from the existing illicit market to the regulated market. Within five years, this growth is expected to slow considerably once this absorption is complete and as other states legalize. It is expected that market growth in the future will be driven by more secular factors, such as population growth and changes in prevalence of use.

The state of Colorado taxes adult-use cannabis at the wholesale and retail levels with special excise and sales taxes, and medical cannabis is subject to the standard state sales tax. There are additional license and administrative fees as well. As of September 2017, the state has collected nearly $600 million in taxes and fees since the market opened in 2014. The state is on pace to collect about $200 million in taxes and fees in 2017. To put that in context, the state collects about $44 million in alcoholic beverage taxes per year and $201 million in cigarette and tobacco product taxes per year, putting cannabis on par with other "sin" taxes in the state. The annual state budget is about $29 billion, so cannabis revenue is just a tiny drop in the ocean, compared to more traditional tax sources.

The state uses the funds in various ways through a complex apportionment system. The first $40 million of taxes collected through the state wholesale excise tax goes to a school capital construction grant fund for competitive grants, anything over that amount is allocated to the state public school fund. State marijuana retail taxes are appropriated to a host of state agencies and shared back to local governments to fund regulatory and enforcement systems, public health efforts, youth prevention, and substance abuse programs.

The Colorado cannabis industry is growing to resemble other industries in Colorado that produce consumer products. This industry, however, is highly localized, due to its continued status as federally illegal. Most industry inputs are sourced locally, unlike many consumer products purchased in the state, leading to relatively high economic multipliers compared to other industries (see MPG economic impact report for more details, www.mjpolicygroup.com). At the end of 2016, there were about 31,000 credentialed cannabis industry employees in the state, nearly double the 16,000 credentialed employees in December 2014. As of November 2017, there are 1,011 dispensary (adult-use and medical) licenses approved in the state, along with 1,461 cultivation licenses and 524 product manufacturer licenses.

Early on in 2017, the Trump administration's lack of a clearly defined position on cannabis, and recreational cannabis in particular, heightened the perceived level of risk and uncertainty within the cannabis industry. However, after almost a year of maintaining the cannabis policy status quo, much of the initial concern has been alleviated. The overall cannabis industry outlook is generally positive, as the nation and the world continue to evolve their views towards drug policy, the stigma of cannabis use gradually subsides and the therapeutic benefits of cannabis are further researched. We see market growth fueled by an increased number of product offerings, as consumers shift from traditional flower cannabis to concentrates, oil extract products, and edibles.

Contributor: *Adam Orens, Marijuana Policy Group*

Trade, Transportation, and Utilities

The Trade, Transportation, and Utilities Sector is the largest provider of jobs in Colorado. This industry includes wholesale trade, retail trade, utilities, warehousing, and multiple facets of transportation (air, truck, transit, rail, pipeline, etc.). More than one-sixth of Colorado workers are included in this industry. The industry gained an estimated 1.5% in 2017, to a total of 461,700. The sector is expected to grow another 1.9% in 2018, to total 470,400 jobs.

Trade

Wholesale

The wholesale trade industry currently employs more than 106,000 Coloradans with over 90% working for merchant wholesalers, firms that sell to retail outlets. More than 60,000 of these are in firms selling durable goods, particularly computers, peripherals and electronic equipment. Businesses selling groceries and related products account for the largest share of the 36,000 nondurable wholesale jobs. The remaining workers are employed by business-to-business sellers, electronic marketers, and agents and brokers. In 2017, solid gains in wholesale employment were made, with 1,400 new jobs expected. The durable goods sector will post strong growth while employment in the nondurable area is forecast to decline. Another relatively healthy year for both state and national economies will mean 1,500 more new jobs in 2018.

Photo: *CompanyWeek,* Jonathan Castner

Retail Trade

The retail sector accounts for $85 billion in sales and about 270,000 employees. It includes several of the largest employers in the state as well as many mom-and-pop stores. Colorado retailers include grocery stores, auto dealers, department stores, gas stations, and many other kinds of firms that sell to consumers. Many retail employees are part-time and average wages in the sector are relatively low.

While Colorado is benefiting from job growth at the Amazon fulfillment center, the rise of e-commerce is posing challenges to some traditional retailers in the state. A recent article in *The Economist* described the American retail industry as "descending into crisis." In 2016, electronic shopping and mail-order houses accounted for more than 10% of all U.S. retail sales, double the share 10 years ago. Through August 2017, sales in the category were up 12.3% over a year earlier compared to only 3.1% for brick-and-mortar stores. Online sales are becoming dominant in many categories. According to Cowen and Company, they make up two-thirds of all national sales of books, films, and music, and nearly half of office equipment and supplies purchases.

Industry giants such as Macy's, JCPenney, and Sears have announced massive store closures. For the first eight months of 2017, U.S. retail employment was up only 0.3% over the prior year, the weakest performance since the job losses in the years surrounding the Great Recession. Colorado is not immune to this trend. JCPenney announced four store closures in the state, and Sears-owned Kmart, two. But Colorado's booming economy

continued on page 46

**TRADE, TRANSPORTATION, AND UTILITIES EMPLOYMENT
2008-2018
(In Thousands)**

Year	Wholesale Trade	Retail Trade	Total Trade	Transportation and Warehousing	Utilities	Total TTU
2008	100.1	252.6	352.8	68.3	8.2	429.3
2009	93.3	238.3	331.6	63.9	8.4	403.9
2010	90.8	236.9	327.7	61.7	8.2	397.7
2011	91.9	239.9	331.8	61.8	8.1	401.7
2012	94.1	243.7	337.8	63.9	8.0	409.7
2013	96.5	249.1	345.6	66.8	7.9	420.3
2014	99.9	255.3	355.2	69.6	8.1	432.9
2015	103.4	263.0	366.4	71.6	8.2	446.2
2016[a]	105.1	268.6	373.7	72.9	8.2	454.8
2017[b]	106.5	273.0	379.5	74.1	8.1	461.7
2018[c]	108.0	278.8	386.8	75.6	8.0	470.4

[a]Revised. [b]Estimated. [c]Forecast.

Note: Components may not sum to total due to rounding.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Trade, Transportation, and Utilities

continued from page 45

WHOLESALE TRADE EMPLOYMENT
2008-2018
(In Thousands)

Year	Wholesale Trade Durable Goods	Wholesale Trade Nondurable Goods	Other Wholesale	Total
2008	54.8	33.4	11.9	100.1
2009	50.1	31.5	11.7	93.3
2010	48.6	30.7	11.5	90.8
2011	49.4	31.0	11.5	91.9
2012	51.0	31.8	11.3	94.1
2013	53.6	33.0	9.9	96.5
2014	56.7	34.3	8.9	99.9
2015	59.5	35.5	8.4	103.4
2016[a]	60.6	36.1	8.4	105.1
2017[b]	63.3	35.0	8.2	106.5
2018[c]	65.2	35.0	7.8	108.0

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

means that the outlook for most state retailers remains bright. Retail job growth through Q3 2017 is up 2.3%, well above the comparable national figure, although slower than some years in the recent past. Although retail sales figures for 2017 are unavailable, strong sales tax receipts suggest robust spending by Coloradans. State retail trade sales growth in 2017 is expected to reach nearly 5%, at least 2 percentage points above the national figure. While large retailers may be trimming back elsewhere, the Colorado market is still attractive. Planned major openings include a 400,000-square-foot IKEA furniture store in Broomfield, an Amazon fulfillment center in Thornton, and a Whole Foods flagship store in the Union Station neighborhood. The real estate advisory firm Newmark Grubb Knight Frank reports strong demand for Class A space from national firms seeking to enter the Denver market.

The outlook for 2018 calls for another year of healthy growth. Solid employment and income gains are expected to continue. A buoyant housing market will stimulate sales of housewares and building materials. Consumer confidence remains healthy, although rising interest rates and tightening lending standards may limit consumer ability to finance purchases. Price increases for most retail items will be moderate. Although the Denver-Boulder-Greeley CPI posted a 3.1% increase in the first half of 2017, the index for commodities rose only 0.5%.

Motor vehicles and parts make up nearly one-fourth of all retail sales and are typically one of the more volatile components. Auto sales are softening. J. D. Power reports that new vehicle retail sales in August were expected to decline for the fifth time in 2017. Banks are tightening lending standards as defaults on subprime auto loans increase. In other sectors, gas stations should see solid growth due to higher fuel prices. Strong home sales will boost demand for building materials and furniture. Electronics and sporting goods stores will suffer from the continuing shift to online purchases, while food and beverage store sales are expected to grow at about the rate of inflation. Overall, state retail store sales are forecast to grow 4.8% in 2017 and 4.6% the following year.

The state's tight labor markets have left many retailers struggling to fill their needs for workers and will limit job growth in 2018, as well as during the 2017 holiday season. The inability of many applicants to pass drug tests has also made hiring difficult. The January 1, 2018, scheduled increase in Colorado's minimum wage from $9.30 per hour to $10.20 will likely have limited effect in the high-wage areas such as Metro Denver or the northern Front Range, but the higher pay floor may price some workers out of the market in the rest of the state. But solid sales growth will mean continuing employment expansion in 2018. Colorado retail trade employment is anticipated to increase by 1.6% in 2017 for a gain of 4,400 jobs. The outlook for 2018 calls for modest slowing with 5,800 net new jobs or growth of 2.1%.

Transportation and Warehousing

The Transportation and Warehousing sector includes air, railroad, and water transportation; trucking; taxi services; urban transit; couriers; warehousing; and pipeline companies. These industries are expected to contribute 74,100 jobs in 2017, and 75,600 in 2018.

Transportation

Air Transportation

National data from the Bureau of Transportation Statistics show that U.S.-based airlines carried nearly 838 million passengers for the 12 months ending July 2017, an increase of 2.8% compared to the same period one year prior. These are the highest figures on record.

The seasonally adjusted systemwide load factor on U.S. airlines remained nearly flat, at 83%, over the past 12

RETAIL SALES, 2008-2018
(In Billions of Dollars)

Year	Total Retail Trade Sales[a]	Percentage Change
2008	66.5	-1.1%
2009	58.3	-12.3
2010	62.3	6.8
2011	66.7	7.1
2012	70.7	6.0
2013	74.1	4.8
2014	79.5	7.3
2015	83.4	4.9
2016	83.4	4.2
2017[b]	91.1	4.8
2018[c]	95.3	4.6

[a]The total includes motor vehicles and parts, general merchandise, gas stations, food/beverage, building materials/home improvement, furniture, clothing, electronics, and other retail stores. The total does not include food services.

[b]Estimated. [c]Forecast.

Sources: Colorado Department of Revenue and Colorado Business Economic Outlook Committee.

RETAIL TRADE EMPLOYMENT, 2008-2018
(In Thousands)

Year	Food and Beverage Stores	General Merchandise Stores	Other Retail	Total
2008	45.9	51.6	155.1	252.6
2009	44.7	50.7	142.9	238.3
2010	45.0	50.0	141.9	236.9
2011	45.1	50.7	144.1	239.9
2012	46.1	50.6	147.0	243.7
2013	48.0	49.8	151.3	249.1
2014	49.3	49.6	156.4	255.3
2015	51.1	50.3	161.6	263.0
2016[a]	52.3	51.9	164.3	268.6
2017[b]	53.3	52.6	167.1	273.0
2018[c]	54.1	53.4	171.3	278.8

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

months compared to a year ago. The load factor is the ratio of revenue passenger miles to available seat miles. While both increased year-over-year, the ratio remaining nearly flat reflects available seat miles increasing at the same rate as revenue passenger miles. Five U.S. carriers accounted for 68% of domestic passenger traffic in the 12 months ending July 2017: Southwest Airlines (21%), Delta Air Lines (16%), American Airlines (16%), United Airlines (11%), and JetBlue Airways (4%).

Airlines depend highly on the health of the economy. Economic activity affects air travel by business and leisure passengers, as well as air freight. Because many costs are fixed, the profitability of individual companies is determined by efficient operations, and favorable fuel and labor costs. Small airlines can compete by serving local or regional routes with substantial economic growth.

According to the International Air Transport Association's (IATA) October 2017 Airline Business Confidence Index, airline leadership expects profits to remain unchanged or improve over the next 12 months, "supported by ongoing robust demand."

Colorado air transportation jobs grew 3.5% in 2017 with increased passenger traffic. In September, passenger traffic was up 6.2% at Denver International Airport (DEN), and 23% at the Colorado Springs Airport (COS). In 2016, Colorado Springs saw nearly 1.3 million passengers pass through the airport, a 10% increase over 2015. Despite the impressive growth, Colorado Springs airport passenger traffic is less than 3% of the DIA volume.

Colorado has a total of 14 commercial service airports; 13 of those had scheduled passenger service in 2017. The only airport without scheduled commercial flights is Fort Collins/Loveland (FNL), which had service to Rockford, Illinois (RFD) on Elite Airways end in 2016. Three of Colorado's airports fall under the federal Essential Air Service (EAS) program: Alamosa (ALS), Cortez (CEZ), and Pueblo (PUB). These three EAS airports only have commercial nonstop service to Denver.

Southern airports, Alamosa (ALS) and Pueblo (PUB), experienced a decline in seat capacity of 8% in 2017

continued on page 48

Trade, Transportation, and Utilities

continued from page 47

COLORADO AIRPORT STATISTICS
2008-2016
(In Thousands)

Passengers and Cargo	2008	2009	2010	2011	2012	2013	2014	2015	2016
Passengers (in thousands)[a]									
Denver International Airport (DEN)	51,245.3	50,167.4	51,985.0	52,849.0	53,156.3	52,556.4	53,472.5	54,014.5	58,266.5
Colorado Springs Municipal Airport (COS)	1,993.0	1,864.0	1,738.3	1,621.1	1,639.1	1,299.7	1,250.0	1,179.5	1,298.4
Grand Junction Regional (GJT)	426.6	457.7	443.7	444.2	439.3	422.2	427.7	428.8	451.0
Aspen-Pitkin County Airport (ASE)	425.2	433.7	445.4	442.5	429.8	413.4	435.3	467.0	432.5
Durango-La Plata County Airport (DRO)	268.7	296.2	327.2	351.3	373.1	385.6	387.5	373.6	374.8
Eagle County Regional Airport (EGE)	426.0	363.3	402.2	378.6	335.8	334.3	330.0	313.9	329.3
Montrose Regional Airport (MTJ)	171.8	184.4	193.2	174.5	150.6	169.2	181.3	205.5	232.5
Yampa Valley Airport (HDN)	273.2	245.0	220.1	213.1	119.9	183.6	184.5	187.8	214.7
Gunnison-Crested Butte Regional Airport (GUC)	72.1	84.3	74.6	73.0	62.4	61.6	63.5	68.8	70.0
Fort Collins-Loveland Municipal Airport (FNL)	8.7	62.2	71.3	90.0	69.6	5.5	4.2	6.9	9.1
Cortez Municipal Airport (CEZ)	62.2	15.4	12.7	14.0	15.1	16.4	7.7	4.6	9.1
San Luis Valley Regional/Bergman Field (ALS)	14.3	12.6	13.5	14.2	13.9	14.0	7.8	6.2	7.7
Pueblo Memorial Airport (PUB)	16.8	10.4	23.3	44.9	19.6	13.5	13.6	7.3	4.6
Telluride Regional Airport (TEX)	26.7	13.5	18.5	22.0	15.7	12.9	7.2	0.1	0.1
Total Passengers	55,430.6	54,210.1	55,969.0	56,732.4	56,840.2	55,888.2	56,772.7	57,264.5	61,700.4
Cargo, Freight, and Air Mail (in millions of lbs.)									
DIA Freight and Express	527.1	468.2	517.7	511.8	488.1	470.1	486.6	490.8	504.1
DIA Air Mail	26.4	26.6	37.5	35.4	33.7	28.8	32.9	55.0	47.5
DIA Total	553.5	494.8	555.2	547.2	521.8	498.9	519.4	545.8	551.6
Colorado Springs Total Cargo, Freight, and Air Mail	24.0	23.0	22.3	21.7	23.8	23.0	23.8	24.4	23.8

Note: Excludes airports with few passengers.

[a]Passengers include enplanements and deplanements. For airports that do not report passenger traffic, enplanements from the Federal Aviation Administration are doubled to reflect estimated total passenger

Sources: Denver International Airport, Colorado Springs Municipal Airport, Grand Junction Regional Airport, Eagle County Regional Airport, Aspen-Pitkin County Airport, Durango-La Plata County Airport, and the Federal Aviation Administration.

Photo: Denver International Airport

compared to 2016. Mountain airports—Aspen (ASE), Vail/Eagle (EGE), Steamboat Springs (HDN), and Telluride (TEX)—experienced 1% growth in 2017 capacity. Western Slope airports—Cortez (CEZ), Durango (DRO), Grand Junction (GJT), Gunnison (GUC), and Montrose (MTJ)—experienced a 2017 capacity increase of 6% when compared to 2016. Aspen Airport announced new service to Dallas-Fort Worth and Los Angeles in 2017. Vail/Eagle Airport experienced expanded service to San Francisco, Dallas-Fort Worth, Chicago-O'Hare, and Phoenix in 2017. Eagle Airport also completed plans to start a terminal redevelopment project. From April to June 2017, Telluride Regional Airport closed to complete construction projects.

Denver International Airport

DEN is owned and operated by the City and County of Denver. The city's Department of Aviation employs approximately 1,000 people at the facility.

DEN served 58.3 million passengers in 2016, ranking the sixth-busiest airport in North America and the 18th-busiest in the world. This was the highest number of annual passengers in DEN's history. Passenger traffic increased by nearly 8% in 2016 compared to 2015, primarily driven by growth on DEN's two largest carriers, United and Southwest. For the year-to-date period September 2017, DEN's passenger traffic was up 6.2%. Airline capacity and passenger traffic growth at DEN is expected to slow in fourth quarter 2017, and the year is forecast to end with about 61 million passengers, surpassing the 2016 record of 58.3 million passengers by nearly 5%. Twenty-five airlines provide nonstop service to 190 destinations from Denver: 164 are domestic destinations, propelling DEN to boast the fourth-largest domestic air service network in the United States.

DEN's largest carrier, United, accounts for 42% of the airport's passengers, and the carrier provides nonstop service to 140 destinations from Denver. Denver ranks as the fourth-largest hub in United's network, behind Houston, Chicago, and Newark. It is important to note that Denver is the second-largest hub in the carrier's network in terms of domestic destinations served, solidifying both Denver's local market strength and competitive advantage as a central point for transcontinental connecting passengers. In 2017, United started new domestic service to San Luis Obispo, California, in June and Columbia, Missouri, in August. In December 2017, United will start service to Cozumel, Mexico, one of Denver's largest unserved destinations. This is a new, previously unserved route for Denver. In March 2018, United will initiate once daily service to London's Heathrow Airport (end of March through end of October). United previously served this route seasonally from Denver from 2008 to 2010.

Southwest Airlines ranks as Denver's second-largest carrier, accounting for 30% of DIA's passengers. In terms of destinations, DEN ranks as the third-largest station in the Southwest network, with 63 nonstop destinations. Among Southwest's top 10 stations, Denver had the third-largest capacity growth from 2016 to 2017, behind Houston and Oakland. Denver is the fourth-largest station for Southwest in terms of seat capacity, behind Chicago-Midway, Baltimore, and Las Vegas. In 2017,

continued on page 50

Trade, Transportation, and Utilities

continued from page 49

TRANSPORTATION AND WAREHOUSING EMPLOYMENT
2008-2018
(In Thousands)

Year	Truck Transportation	Couriers and Messengers	Warehousing and Storage	Air Transportation	Other Transportation	Total
2008	18.6	9.5	6.8	14.6	18.8	68.3
2009	17.3	8.7	6.6	13.4	17.9	63.9
2010	17.1	8.5	6.2	12.5	17.4	61.7
2011	17.9	8.5	6.2	12.3	16.9	61.8
2012	18.7	8.6	6.2	13.0	17.4	63.9
2013	19.4	8.9	6.3	14.2	18.0	66.8
2014	20.3	9.4	6.4	14.7	18.8	69.6
2015	20.8	10.3	6.7	14.1	19.7	71.6
2016[a]	20.1	10.8	7.0	14.3	20.7	72.9
2017[b]	20.0	10.7	7.2	14.8	21.4	74.1
2018[c]	19.9	10.8	7.4	15.1	22.4	75.6

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the sectors may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Photo: Colorado High Performance Transportation Enterprise

Southwest initiated new domestic service to Long Beach, California, in February and Pensacola, Florida, in June. Southwest also started new seasonal international service to Belize City, Belize, in March 2017. All three of these routes were unserved from Denver prior to Southwest's service.

Frontier Airlines ranks as DEN's third-largest carrier, accounting for 11% of DENs passengers. Denver is Frontier's main hub in terms of seat capacity and destination count. In 2017, Frontier inaugurated service to Providence, Rhode Island, previously an unserved market from Denver. The carrier also announced expansion to 21 additional markets from its Denver hub to start between fall 2017 and spring 2018. Although most of the destinations are already served from DEN by other airlines, Frontier's flights will increase competition, lower fares, and stimulate new demand. The announcement included Buffalo, New York, a new domestic destination for Denver, which will gain daily service in spring 2018.

Through September 2017, international passenger traffic at DEN increased 11% compared to the same period in 2016, nearly double the rate of the total airport passenger traffic growth of 6%. The expansion of nonstop flights to international destinations continues to be a high priority for DEN. Service to a record number of new international destinations has been initiated and/or announced in 2017, some noted above and also including:

- **May 2017:** Air Canada added service to Vancouver, Canada, the carrier's third destination from Denver
- **September 2017:** Norwegian became Denver's newest international airline with the inauguration of service to London-Gatwick, United Kingdom, a new destination for Denver
- **December 2017:** Copa Airlines inaugurates year-round flights between Denver and Panama City, Panama—another new carrier and new nonstop destination
- **January 2018:** Sun Country to begin seasonal non-stop service to Mazatlán, Mexico
- **March 2018:** Canadian low-cost carrier WestJet to launch daily, year-round flights to Calgary, Canada
- **April 2018:** Norwegian to add year-round service to Paris, France—another new destination for Denver
- **June 2018:** Edelweiss to add summer seasonal service to Zurich, Switzerland—another new carrier and new destination for Denver

Aeroméxico, British Airways, Icelandair, Lufthansa, and Volaris continue to offer nonstop international service at DEN. With these new airlines and new routes, 14 airlines at DEN operate nonstop service to 26 international destinations in 11 countries.

Growth in air service and passenger traffic in Denver has prompted the initiation of a number of major expansion and infrastructure projects. DEN is in the process of finalizing a gate expansion plan, which could bring over three dozen new aircraft gates to the airport's three concourses in the next few years. Pieces of this work are already underway, with the ongoing construction of seven new ground-level gates on the east end of the A Concourse. These new loading positions will provide much needed relief to airlines as the airport builds new permanent gates. At the same time, the airport is making sure that the Jeppesen Terminal is ready for the future and growing passenger numbers via the Great Hall project. This project will move and consolidate the TSA checkpoints; improve passenger flow; and enhance safety, security, and the overall passenger experience in the terminal. This $1.8 billion contract is expected to create 450 construction jobs and over 800 permanent jobs. It will also generate an estimated $3.5 million annually in city taxes, and continue to contribute to the airport's $26 billion annual economic impact. Groundbreaking will begin in summer 2018, with construction expected to last until late 2021.

Transportation and Warehousing

The Transportation and Warehousing sector is projected to add 1,200 jobs in 2017 and 1,500 in 2018, or growth of 1.6% and 2%, respectively. Modest gains are projected for most of the subsectors, with other transportation and air transportation gaining the largest number of jobs.

Utilities

Colorado natural gas rates rose with higher wholesale prices in 2017. Natural gas production dropped even with the price increase. Warmer weather kept retail natural gas consumption flat compared to 2016 despite continued economic growth.

Electricity rates rose by about 3% in 2017, with continued growth in utility infrastructure and higher natural gas costs for generation. Electricity consumption moved up slightly in 2017 with growth in commercial demand and electric vehicles offsetting continued energy efficiency efforts and ongoing adoption of on-site solar systems. These trends are expected to continue in 2018 with advances in efficient products for home and commercial use and additional rooftop solar installations offsetting natural growth in consumption.

In 2017, Xcel Energy filed the Colorado Energy Plan with the Colorado Public Utilities Commission (CPUC), proposing early retirement of 660 MW of coal-fired generation in Pueblo and add up to 1,000 MW of wind, 700 MW of solar, and 700 MW of natural gas or storage. The company forecasts that by taking advantage of cheap renewable energy, it can lower customer costs and increase the percent of renewable energy on the system to 55% by 2026.

Colorado utilities have continued with emission controls, retirement of coal-generating facilities, and fuel switching to meet the mandates of the Clean Air-Clean Jobs Act. In 2017, the Valmont plant was closed and unit 4 of the Cherokee station fuel switched from coal to natural gas, eliminating all coal-fired generation in the Denver-Boulder region.

continued on page 52

COLORADO ELECTRIC POWER AND NATURAL GAS CONSUMPTION
2008-2018
(In Millions of Kilowatt Hours)

	Electric Power (In Millions of Kilowatt Hours)				Natural Gas (In Billions of Cubic Feet)	
Year	Nonresidential	Residential	Total Electric Consumption	Percentage Change	Total Gas Consumption	Percentage Change
2008	34,422	17,720	52,142	1.6%	504.8	0.0%
2009	33,623	17,412	51,035	-2.1	523.7	3.7
2010	34,816	18,102	52,918	3.7	501.4	-4.3
2011	35,181	18,277	53,458	1.0	466.7	-6.9
2012	35,465	18,220	53,685	0.4	443.8	-4.9
2013	34,913	18,529	53,442	-0.5	467.8	5.4
2014	35,304	18,093	53,397	-0.1	479.0	2.4
2015	35,731	18,385	54,116	1.3	466.9	-2.5
2016	35,903	18,898	54,801	1.3	473.8	1.5
2017[a]	36,160	18,840	55,000	0.4	474.3	0.1
2018[b]	36,080	19,070	55,150	0.3	496.6	4.7

[a]Estimated. [b]Forecast.
Sources: *Edison Electrical Institute Statistical Yearbook,* Xcel Energy, and Colorado Business Economic Outlook Committee.

Trade, Transportation, and Utilities

continued from page 51

The CPUC approved Xcel Energy's application to spend around $600 million to upgrade the company's electrical distribution system to enhance security, efficiency, and reliability to safely integrate more distributed resources and to enable improved customer products and services. The distribution grid enhancements include Advanced Metering Infrastructure (AMI) to measure and transmit voltage, current, and power quality data to provide near real-time monitoring to the company and customers; Integrated Volt-Var Optimization Infrastructure (IVVO) to use the voltage information transmitted by AMI meters to automate, optimize, and ultimately reduce the voltage across the system; and the associated components of an advanced communications network (known as the Field Area Network or FAN) to support the AMI and IVVO. Advanced metering and communication infrastructure for all of Xcel Energy's Colorado customers will be implemented over the next several years.

In 2017, Xcel Energy filed requests to the CPUC to increase customer rates for electricity and natural gas service; Atmos Energy, serving several communities across the state outside of the Denver-Boulder metropolitan area, filed a request to increase natural gas rates; and Black Hills Energy, serving several parts of southern Colorado, filed a proposal to reapportion the amount of costs to operate its electricity system among its residential, commercial, and industrial customers—with increases in costs for residential customers. The CPUC is currently reviewing these requests and will issue decisions in 2018.

Xcel Energy continues to recruit voluntary participants to test its new energy time-of-use pricing plan, which will continue through 2019, at which point the new rate may become the default rate for electricity customers. Xcel is also running a pricing pilot for residential demand charges.

Colorado natural gas consumption grew by 0.1% in 2017, to an estimated 474.3 BCF. Electricity consumption also moved up by 0.4% in 2017, to an estimated 55,000 million kWh. Utilities employment fell slightly in 2017. This trend is expected to continue in 2018. ✤

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David Spector, Colorado High Performance Transportation Enterprise

The Colorado High Performance Transportation Enterprise—How Innovative Financing Improves Your Commute

In one of the fastest-growing states, ensuring that people and goods move efficiently is critical to Colorado's economy and quality of life. The Colorado Department of Transportation's (CDOT) High Performance Transportation Enterprise (HPTE) focuses on that goal, using partnerships with private industry and local communities to pursue innovative financing alternatives in a funding-constrained environment. HPTE was created in 2009 as a government-owned business within CDOT. HPTE is required by law to aggressively seek out opportunities for innovative and efficient means of financing and delivering important surface transportation infrastructure projects in Colorado, working quickly to deliver solutions that improve mobility and offer Coloradans choice.

Colorado's population is booming and is expected to nearly double by 2040. The state can no longer build its way out of congestion, and simply adding more lanes will not solve the problem. But adding Express Lanes, which are priced to manage congestion, is one of many creative solutions that deliver results. In the last three years, Express Lanes have opened on I-25, US 36, and I-70 in the mountains, with several more coming soon on Central 70, I-25 in Northern Colorado, and C-470. And the good news for Coloradans is that Express Lanes work—for everyone, including those who choose not to pay a toll.

In 2015, CDOT and HPTE implemented an Express Lane on I-70, one of the most congested corridors in the state and the gateway to the mountains. If you have ever driven home from the mountains on a Sunday, you know the frustration. After adding the Express Lane, travel times across all lanes, including the non-tolled general-purpose lanes, saw improvements of nearly 40%. In the past, traffic speeds were stop-and-go at 2,000 to 2,500 vehicles per hour (VPH); now the corridor has handled record travel counts of more than 4,000 VPH without breaking down. As a result, travelers spend more time at their destination and at home than in their car. Other Express Lanes corridors show similar benefits and time savings. For example, drivers along US 36 have seen peak travel speeds improve up to 20–29%, even in the non-tolled lanes since the addition of Express Lanes. As a result, commute times have become more consistent and reliable.

HPTE uses toll revenues generated from Express Lanes to repay the money borrowed to finance their construction, as well as to operate and manage the corridors. The CDOT and HPTE Express Lanes projects in Colorado have become a national model, both financially and technologically, for how to implement creative and highly effective solutions for reducing congestion—and for how to finance those efforts. In addition to managing congestion and leveraging funds to construct projects that otherwise would not get built, HPTE also works to accelerate project timelines and encourage multimodal solutions. The US 36 Express Lanes project was completed nearly 20 years early because of the public-private partnership model. The result is a truly multimodal system with options for commuting including carpooling, bus rapid transit, the option to pay a toll in the Express Lane, a commuter bikeway, and the first diverging diamond interchange in the Denver metro area (which has eliminated fatal accidents at the McCaslin and US 36 interchange). HPTE's private partner assumes the toll revenue risk while covering the costs of ongoing operations and maintenance, all while ensuring the roadway functions at the highest level.

And this is all just the beginning. In the coming years, HPTE will work on an overall interconnected Express Lanes system plan and work to facilitate transformative programs in the state, including Hyperloop and RoadX—a program that will use 21st century technology to create smarter roadways with more informed drivers and, eventually, connected and self-driving cars that can communicate with each other and directly with the road itself. HPTE will continue to help Coloradans make their commutes faster, safer and more reliable than ever before.

No, we cannot build our way out of congestion. But we can use innovative financing models to work smarter and improve your commute and quality of life. So you can spend less time in traffic and more time on what matters most to you.

Contributor: *David Spector, Colorado High Performance Transportation Enterprise*

Information

Overview

Companies in the Information industry are responsible for the creation, distribution, and transmission of information. In 2016, the Information industry added 1,000 jobs, with growth in film, broadcasting, and telecom more than offsetting declines in publishing. The industry is expected to grow by 400 jobs in 2017 and 300 jobs in 2018.

Publishing

The publishing sector includes any firm that issues print or electronic copies of original works for which they own a copyright, excluding internet firms. Products include software, newspapers, periodicals, books, directories, databases, calendars, and greeting cards. The types of products produced by the publishing industry has diversified to include an increasing amount of electronic and internet-based products, such as audio, downloadable files, digital books, and mobile device applications. The publishing sector is expected to continue to modestly shed jobs in 2017 and 2018.

Photo: *CompanyWeek*, Jonathan Castner

Newspaper Publishing

According to the Pew Research Center, fewer people are subscribing to newspapers, while increasingly more are looking to the internet and social media sites for news. The average weekly newspaper circulation, both print and digital, fell 8% nationwide in 2016 to 35 million—the lowest level since 1945. The decrease occurred even as digital subscriptions to many major papers increased significantly during the 2016 general election season. The newspaper industry managed to hold circulation revenue steady at $10.9 billion between 2015 and 2016. Overall revenue fell, however. The Pew Research Center estimates that total advertising revenue decreased 10% in 2016, to $18 billion, an amount that is not quite one-third of that generated from advertising 10 years prior, in 2006.

Meanwhile, the Pew Research Center reported that the share of U.S. adults who "often" get their news from print newspapers fell from 20% in 2016 to 18% in 2017, while the percent who often get their news from online sources increased from 38% to 43%. Facebook was the social media site most often used to access news, with 45% of U.S. adults using Facebook for news in 2016—half of which relied solely on it for their news.

The internet has caused the dissemination of information to be increasingly fragmented and democratic. A new generation of bloggers hailing from the traditional journalism industry, private firms, nonprofit organizations, and the general population has harnessed social media to provide diverse, targeted, and sometimes real-time news. While consumers continue to look to an increasing variety of news sources, most Americans trust traditional news outlets more than social media sources. According to the Pew Research Center, the percent of U.S. adults who have "a lot" or "some" trust in national news organizations fell from 76% in 2016 to 72% in 2017. While the share of U.S. adults with this level of trust in social media site news increased, it did so from the much lower level of 34% in 2016 to 37% in 2017.

Employment at traditional Colorado newspapers has been declining since 2005. Colorado newspapers employed 2,951 people in 137 establishments in 2017, down from 7,080 people in 181 establishments in 2005. Newspaper employment is expected to continue to fall through 2018.

Book Publishing

The internet has also transformed the book publishing industry from an industry dominated by a handful of large firms to a competitive marketplace. Market power has shifted to authors, who now have the tools they need to choose among a continuum of self- and traditional publishing options.

Previously, the U.S. book publishing industry was dominated by a handful of large firms, primarily located on the East Coast, that controlled which books went to print and provided a one-stop set of services including editing, production, marketing, and distribution. Access to online markets is increasingly chipping away at this model, significantly reducing barriers to entry for authors' and small publishers' niche markets, including unbundling the services required to publish a book, and providing new forums for social interaction among authors, readers, and publishers.

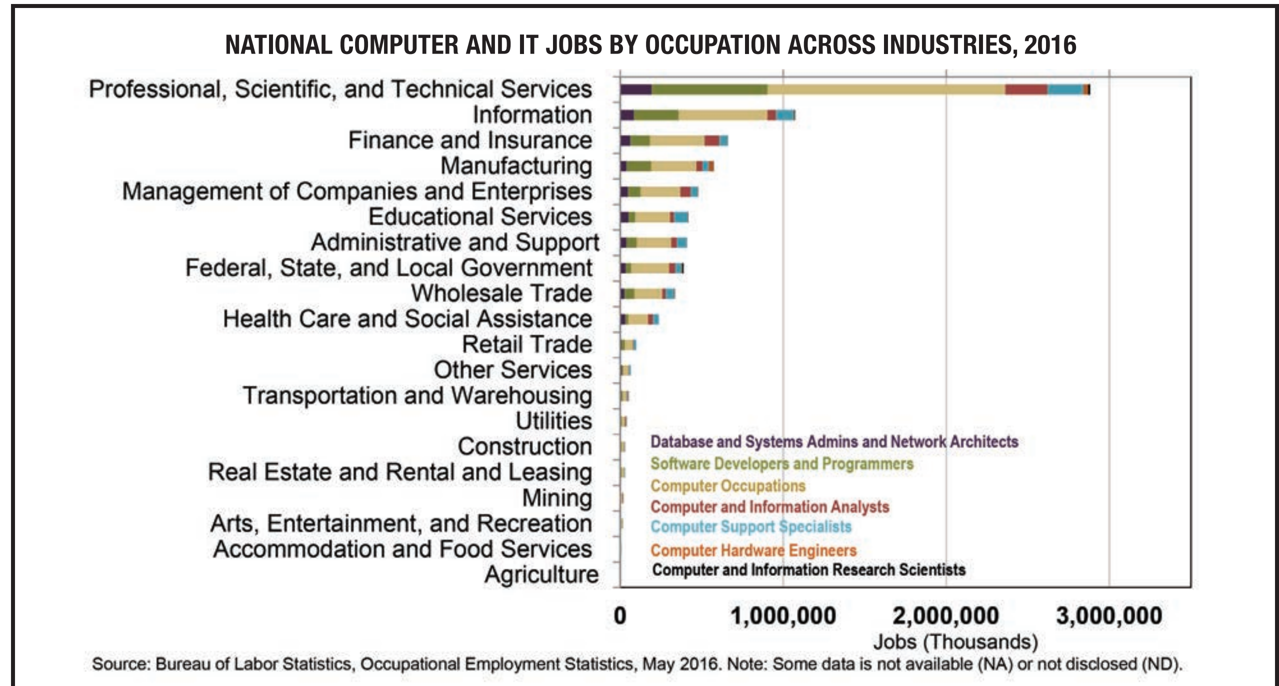
The book publishing industry is also becoming increasingly democratic and fragmented, with most books sold to a niche and targeted market. Smashwords, an online e-book publishing platform for independent authors founded in 2008, had published over 450,000 books by April 2017. Crowdfunding sites, such as Unbound and Kickstarter, have eliminated the need to seek funding from traditional publishing firms altogether. Google analytic tools and sites, including findmyaudience, are allowing authors to identify and connect with their markets.

Online resources have allowed vastly more titles to be published each year than previously accommodated by the traditional book publishing industry. According to Bowker, the number of ISBNs issued for self-published titles increased 8.2%, to 786,935, in 2016, compared with 247,210 issued in 2011. However, publishers' book sales were down 0.2% in 2016, to $7.1 billion, according to the Association of American Publishers.

The traditional book publishing industry in Colorado employed 782 people in 2016, down 5.2% from 2015 and 45.7% since 2001. Employment will continue to fall in the traditional book publishing industry in 2017 and 2018 as the evolution of the publishing industry continues.

Directory Publishing

Employment in Colorado's directory publishing industry decreased 12% in 2016, to 1,237 jobs. With most consumers now taking for granted online and mobile directory applications, the traditional directory publishing industry has focused on targeted niche products. Employment in this industry is expected to continue to fall in 2017 and 2018.



Source: Bureau of Labor Statistics, Occupational Employment Statistics, May 2016. Note: Some data is not available (NA) or not disclosed (ND).

Software Publishing

After many consecutive years of decline, software publishing in Colorado made an about-turn in 2014, when the state started adding software firms, and then began adding software employment in 2015. Colorado's software industry has experienced growth fueled by start-ups, expansions, acquisitions, and company relocations. Employment is expected to continue to increase in 2017 and 2018.

In 2016, there were 553 software publishing companies with 12,632 employees. These represent a year-over-year increase of 17.4% in total companies and 2.8% increase in jobs. Average industry wages in Colorado are more than twice the state average ($128,741), and have been outpacing average wage growth in the state.

The software publishing industry includes a wide range of products, including business analytics and enterprise software; database, storage, and backup software; design, editing, and rendering software; operating systems and productivity software; smartphone apps; and video games. (Note: The closely related custom computer programming services sector is included in Professional and Business Services.)

Software publishers in Colorado range in size from small startups to major corporations with offices in the state such as Cisco Systems, Google, Hitachi, IBM, and Oracle.

continued on page 56

Information

continued from page 55

While Colorado has a high concentration of employment in the software industry (twice the national average), more than 80% of the state's software publishers have fewer than 25 employees.

Telecommunications

A total of 27,500 people were employed in the Telecom Sector in 2016 in 691 establishments throughout Colorado. Just over half of these establishments are located in metro Denver; however, since many larger companies are based in the metro area about 70% of all telecom jobs are in the Denver MSA. Broadcasting and telecommunications are combined for GDP reporting; this combined sector posted GDP growth of 5.8% in 2013, but contracted 0.7% in 2014 and 5.1% in 2015 (newest available data).

Mergers and acquisitions have been commonplace in this industry over the past handful of years, dating back to CenturyTel merging with Denver-based Qwest Communications in 2011 to become CenturyLink. In October 2016, AT&T announced that it would acquire Time Warner in a deal valued at $85.4 billion; however, this deal is still pending approval from regulators and the timeline for the merger agreement was recently extended from October 2017 extended to the end of 2017. In 2015, AT&T shelled out $48.5 billion in a merger with DirecTV. With these acquisitions, the line between telecommunications and broadcasting becomes less obvious. The original "Mother Bell" has evolved over the years from a wired telephone company to a wireless phone provider to become the largest pay television provider and may soon become a provider of television and movie content.

At the end of October 2016, CenturyLink unveiled plans to buy Broomfield-based Level 3 Communications for $34 billion. This deal increases CenturyLink's broadband footprint as it now has 450,000 miles of fiber optic cable, but Colorado will lose another corporate headquarters (at least temporarily) and Fortune 500 company as the firm will be headquartered in Monroe, Louisiana. There could be some reduction in staffing as the result of this merger that was finalized on November 1, 2017.

INFORMATION EMPLOYMENT 2008–2018 (In Thousands)

Year	Publishing	Telecommunications	Other	Total
2008	26.6	29.3	20.9	76.8
2009	24.1	30.2	20.4	74.7
2010	22.9	28.5	20.6	72.0
2011	22.5	28.0	20.9	71.4
2012	21.6	27.2	21.0	69.8
2013	20.6	27.4	21.8	69.8
2014	20.2	27.5	22.6	70.3
2015	20.1	27.0	23.6	70.7
2016[a]	19.9	27.5	24.3	71.7
2017[b]	19.7	27.5	24.9	72.1
2018[c]	19.6	27.4	25.4	72.4

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Verizon Wireless was involved in three mergers in 2017 totaling about $10 billion; the largest was a $4.8 billion deal for Yahoo that closed in June, followed by a $3.1 billion deal for Straight Path Communications and its valuable wireless spectrum, and a $1.8 billion deal to buy XO Communications that closed in February. Zayo Group Holdings was also involved in a $1.4 billion acquisition of Electric Lightwave in March 2017.

Employment in the Telecom Sector experienced a 40.6% decline from 2001 to 2006 as the industry shed nearly 19,000 jobs. This trend was reversed for three years, from 2006 to 2009, as 4,000 jobs were added over this period. Job losses were again the norm from 2009 to 2012, with payrolls falling a combined 4,700 or 14.7% (with a considerable portion of this loss due to the aforementioned cuts at CenturyLink after its merger with Qwest).

The volatile employment swings have abated over past four years since 2012. The trend of losses reversed in 2013 and 2014, with sector payrolls edging up about 263 combined over these two years. Employment trended down 375, or 1.4%, in 2015.

In 2016, Telecom employment expanded by 500, growth of 2.2%. Of the component sectors, the wired (telephone, internet, and cable), wireless (cell phones and wireless internet service providers) components, and satellite telecommunication all saw small gains, while other telecommunications gained 425 jobs. The smallest industry group, satellite telecom, has grown by 63% from 2011 to 2016 but this totaled just 205 new jobs.

Sector employment is likely to be little changed in 2017 due to potential losses from the most recent CenturyLink merger with Level 3. In 2018, Telecom employment will edge down by 100 positions. Developments that could impact employment changes in various components of the telecom industry are outlined in the following paragraphs.

Broadband

Broadband has emerged as a critical component of economic development. Economic research shows the introduction and improvement of broadband services boosts employment growth, reduces unemployment rates, and helps attract and retain high value-added firms and workers. These impacts are particularly large in rural or isolated areas.

Broadband provisions in Colorado communities located outside the Front Range present unique challenges. Nearly 84% of the state's population lives in urban areas along

continued on page 58

IT and Software

In 2017, technology companies accounted for 196,651 jobs in Colorado and an estimated 11.5% direct contribution to the Colorado economy, ranking Colorado 14th in overall tech employment in the United States. As many tech jobs include enabling technologies, these jobs span many different business types—only 47% of total tech jobs are actually in tech companies; the remainder include tech jobs imbedded in other industries. Tech jobs make up 7.8% of the total Colorado workforce. Colorado is home to 16,124 tech-based businesses with an average wage of $106,935 (the average wage for all Colorado workers is $54,100), ranking the state 10th overall in average tech wages in the nation. Colorado ranks 4th in innovation per capita, which, combined with Colorado's steady growth of tech-sector employment (CompTIA's Cyberstates Report 2017) and Colorado's overall strong economy, suggests another strong year of growth for the IT and software industry.

IT and software cover a wide range of technology jobs. Leading job sectors include IT services/software (57,160 jobs), engineering services (33,920 jobs), telecomm tech (27,250 jobs), R&D testing (15,560 jobs), and internet services (12,780 jobs). IT service and software, along with internet services, lead the way with 6.9% and 7.4% year-over-year growth, respectively, in 2016.

Leading the Way

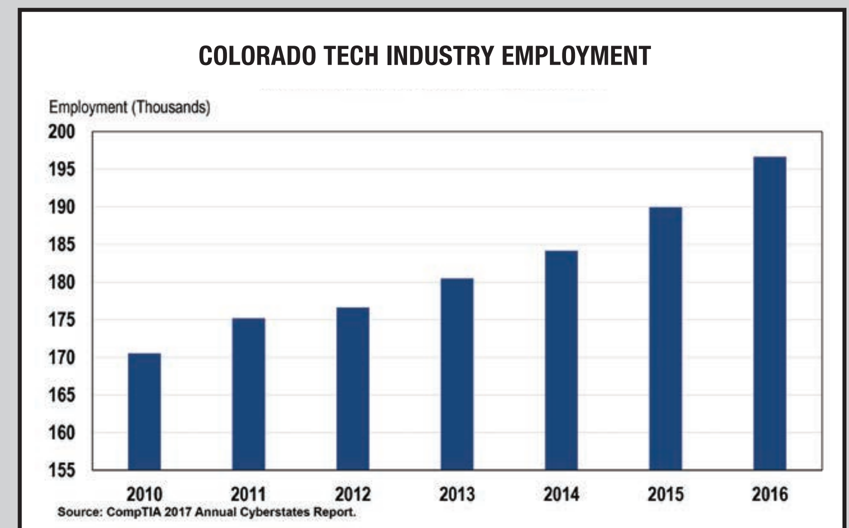
According to the Colorado Technology Association (CTA) CEO Andrea Young, "I see Colorado as having strong broad based growth. Colorado is a leader in tech innovation, and we see opportunities for growth in software engineering, data sciences, and cyber security in Colorado. Cyber security affects just about anyone who is doing business and Colorado has some leaders in that market." Here are some of the Colorado-based cyber security firms that made the Cyber Security Ventures Hot 500: Optiv, LogRythm, Level 3, Webroot, CoalFire, VirtualArmor, Rogue Wave, Swimlane, Ping Identity, Red Canary, and InteliSecure. Young adds, "One of the hot topics is how to train more workers in artificial intelligence (AI). We are working closely with all of our companies and Colorado's educational institutions, from major four-year colleges like Regis and DU to cutting-edge boot camps at places like Galvanize to bring more people into that rapidly growing market." Young also commented that it is really encouraging to see more angel and venture capital coming from Colorado investors, increasing the chances that those companies will stay in Colorado and at the same time attract new young companies to come to Colorado. Young sees digital health as an emerging market in Colorado.

Challenges in the Colorado Market

As Colorado experiences growth and its associated challenges, such as low unemployment, the tech sector is feeling that pinch as well. Regarding the issues of the day facing software and IT companies, Matt Wendel of CTA comments, "Workforce availability, cost of living, and tracking sales tax from each home rule city in Colorado are things that give members concern about Colorado." Wendel notes, "while they are concerns, there is not an IT company out there that does not like to deal with growth concerns."

Overall employment in the technology sector, including IT and software, should continue to thrive in Colorado in 2018, and the sector is demonstrating by every indicator that it will exceed projections in job growth and new company creation in 2017–18. Significant Colorado-based angel and venture capital is encouraging to the tech industry overall, especially new start-ups and emerging companies. The obvious challenge to the sector is the low unemployment rate in Colorado and thus the availability of the highly skilled tech workforce. It will be a limiting factor to the pace and scalability of growth in the technology sector.

Contributor: *Frank Gray, Castle Rock Economic Development Council*



Information

continued from page 56

the Front Range. Rural areas of the state have historically been underserved as mountainous and rugged terrain poses challenges to infrastructure projects, which are reliant on large population bases to offset the high initial investment costs. State legislation, namely Senate Bill (SB) 05-152, which was intended to proscribe unfair competition between publically and privately provided broadband, has presented barriers to broadband efforts in many rural parts of the state.

Over the past few years, a number of municipalities and counties have voted to opt out of the restrictions in SB 05-152 that prohibit communities from running their own internet service. According to the Colorado Municipal League (CML), as of May 2017, a total of 68 communities have voted to allow the provision of municipal internet service and another 28 counties have voted to override the provisions in SB 05-152. However, these referenda are costly to hold and do not require the areas to build the networks, but gives them the power to do so. Partnering with a private provider to roll out municipal broadband can be a costly venture, especially in areas with smaller or widely dispersed populations. Larger towns like Longmont, Loveland, and Centennial have implemented plans to roll out their fiber networks, while smaller communities have been slower to engineer and deploy broadband utilities infrastructure. Successful deployment in small towns, such as Red Cliff and Meeker, provide innovative and inspiring examples for other communities to follow.

Additionally, expanding broadband provision is a key focus of Colorado economic development, information technology, and local government capacity-building efforts. Colorado has developed a program through the Department of Local Affairs (DOLA) that has awarded over $20 million in matching grants for a statewide investment of $34 million to numerous rural communities through the state, like Estes Park, Red Cliff, Park County, and Rio Blanco County, to help with strategic broadband planning and deployment of middle-mile broadband projects. Many small, rural local telephone companies in Colorado stand to benefit to from the final phase of the Federal Communications Commission's (FCC) Connect America Fund designed to subsidize voice and broadband networks in high-cost rural areas over a 10-year period. The Governor's Office of Information Technology developed a broadband map that focuses on broadband infrastructure throughout the state and is updated twice per year.

Broadband access allows many rural communities the potential to attract remote workers and location-neutral businesses that can help diversify the economic base, but there are many other benefits, including public safety and health care. Many rural areas of the state would benefit greatly from tele-medicine and remote health care monitoring that have the promise to reduce health care costs while improving outcomes.

Broadband availability to schools and educators across the state, especially in rural areas, is also a critical need that has been addressed over the past decade by the state. The Kids Link Colorado initiative is entering its second year of helping local schools take advantage of federal programs to close the connectivity gap. In partnership with Education SuperHighway and managed through the Office of Information Technology, the effort will work with local school districts to identify gaps and find solutions. Additionally, the Broadband Deployment Board awarded its initial round of grant awards for last-mile connectivity throughout the state. The grants totaled $2.4 million and were awarded to variety of companies to provide basic broadband service as defined by the FCC to Colorado citizens.

Telephone

Telephone, the legacy business for telecom providers, has been experiencing a protracted decline since the turn of the century. In May 2017, the Center for Disease Control and Prevention, which tracks landline use to assure representative samples in its health studies, reported that nearly 51% of U.S. households had only cellphone service as of late 2016. According to this study, less than 46% of all households still had a landline (and about 3% have no phone service at all). This marked the first time that households with cellphones only represented a majority due to the shift away from land lines. Improvements in VoIP services have allow internet and cable TV providers to compete with traditional wireline telephone services. Additionally, many of these legacy providers have lost landline subscribers to wireless and other competitors that offer free or lower cost long-distance calling. The most viable telecom companies focus on higher margin business-to-business sales and have diversified into separate wireless, wireline, internet, cable TV, and providers of emerging cloud-based and data center technologies.

Television

Similar to the decline in land telephone subscriptions, pay TV companies have been losing subscribers at a continued steep rate. An August 2017 report from Leitchman Research revealed that cable, satellite, and telecom pay TV providers lost about 655,000 subscribers in second quarter 2017 compared to a loss of about 715,000 reported in second quarter 2016. As internet speeds have become more reliable and faster and increased competition has caused prices to drop in some markets in recent years, customers have been "cord-cutting" and leaving traditional cable and satellite services for subscription video on-demand (SVOD) services such as Netflix, Hulu, and Amazon Prime. Leitchman reported that 64% of U.S. households have a subscription to one of these services in 2017, with 51% of households subscribing to multiple services. Additionally, over-the-top video services, such as Roku, Sling TV, AT&T's DirecTV Now, Sony's PlayStation Vue, and YouTube TV, continue to rise in popularity. Sling TV is a subsidiary of Dish Network Corp., based in Douglas County. (Over-the-top refers to the delivery of video content through the internet.) Telecom companies are trying to stem this decline through the use of new technologies like high-definition, on-demand, online, mobile, and multicasting. These technologies help develop alternative revenue streams for traditional cable companies;

telecoms that provide both cable and internet might lose a cable subscriber through cord-cutting but can continue to sell internet services to the same household.

Wireless

Advances in wireless communications have enabled consumers continue to move away from land lines and pay TV providers. As more content is delivered wirelessly and with 5G (fifth-generation) mobile networks on the horizon, telecoms are fighting to expand their spectrum to meet the demands of bandwidth-intensive consumers. According to the FCC, the number of connected devices exceeds the 325 million people living in the United States. According to Pew Research Center, 95% of Americans own a cell phone and 77% own smartphones (more than double the 35% share reported in the first smartphone ownership study in 2011). Additionally, about half of Americans now own tablet computers, and about 20% own an e-reader. The uptick in ownership of these data-hungry devices has resulted in increased demand for spectrum. The FCC launched an Incentive Auction in two stages during summer and fall 2016. This plan, which was authorized by Congress in 2012, helped to align the use of broadcast spectrum with consumer demands for video and broadcast services by enabling broadcast TV stations to generate additional revenue by making "low-band" broadcast TV airwaves available for wireless broadband. Eighty-four megahertz of spectrum were repurposed, and the auction brought in nearly $20 billion in revenue, with more than $7 billion going to the U.S. Treasury. This shared spectrum and vacating of unused TV channels will help to ease congestion on wireless networks, lay the groundwork for 5G wireless services, and spur job creation and economic growth.

Film, Television, and Media

In May 2012, the Colorado legislature passed a law providing an incentive that allows for a 20% rebate for films, television, commercials, and video games produced in Colorado. Since the incentive's inception, the increase in inquiries and applications has been palpable: a total of $15.8 million was awarded to productions as of June 30, 2017. The Colorado Office of Film Television & Media (COFTM) estimates that the productions brought to Colorado under the incentive generated $194 million in economic impact to 49 counties in Colorado and created over 5,900 jobs.

A multiplier effect was used based on the reported actual and predicted expenditures of $112.6 million and 3,058 jobs. The multiplier effect was extrapolated from the University of Colorado's Leeds School of Business 2011 study "Economic and Fiscal Impact Analysis of Actual Film Budget Scenario on Colorado" and "Colorado Film Incentives and Industry Activity" reported in 2015.

Over the last five years, Colorado's film scene has benefited from high-profile new productions from major film studios and reputable independent production companies, such as Universal Studios and Netflix. A few notable films include the Netflix original films *Our Souls at Night* (Robert Redford, Jane Fonda) and *Amateur* (Josh Charles, Michael Rainey Jr.); Robert Kennedy III's *Freak Power; Furious 7* (Vin Diesel, Paul Walker); *Cop Car* (Kevin Bacon, Cameron Manheim); *Dear Eleanor* (Jessica Alba, Luke Wilson); and *Heaven Sent,* a family friendly Christmas film directed by Michael Landon Jr. Additionally, Colorado's growing video game industry was boosted by an incentive for the choose-your-own-adventure game Idol Minds produced out of Westminster. Colorado's documentary film scene continued to boom in 2017, increasing the total incentivized documentaries to 11, all of which are helmed by Colorado directors. Several reality shows have been incentivized, including five shows for Discovery Communications and locally produced reality series airing on the Weather Channel, the Great American Country Channel, Trinity Broadcasting Network, Velocity Channel, RFD-TV, and BravoTV. Colorado continues to

Photo: *Walden,* COFTM Film Incentive Recipient

continued on page 60

Information

continued from page 59

be a hub of commercial production and has incentivized big brands, such as Coors Brewing Company, UC Health, Hyundai Motors, Toyota, and Kia.

Colorado's infrastructure is continuously growing. There are a number of rental houses statewide that enable production companies—both local and out-of-state—to access gear within Colorado. This infrastructure is attractive to out-of-state companies that do not incur the added expense of traveling with gear. Additionally, a number of warehouse spaces have become available over the past few years, enabling productions to build sets for feature productions. Plans are in the works for RedBarre to open a $750 million, large-scale soundstage and media center in Parker, which will tentatively open in 2020.

The increase in film, television, and commercial production is supplementing Colorado's already substantial crew base with a new, younger crew population. Gaining experience in Colorado's workforce is essential to a thriving industry. Anecdotally, producers who have worked in the state were so pleased that several have elected to return with new projects.

As of June 30, 2017, the Colorado Office of Film Television & Media was allocated $16.4 million for incentives. This continued funding reflects the success of the program thus far, and confidence is high that the legislature will continue to fund the program. COFTM was allocated $750,000 for FY2018, which is a dramatically smaller amount than the $3 million allocated in FY2017 and FY2016. Note that neighboring states set aside larger incentive allocations. For example, New Mexico allocates $50 million annually, while Utah allocates over $8 million each year. With fewer incentive dollars compared to previous fiscal years, COFTM plans to focus on incentivizing projects submitted by Colorado content creators. As of the end of FY2018 first quarter, four projects have been incentivized consisting of three television shows and one video game. Given the smaller amount of funds allocated, the office anticipates fewer and smaller projects incentivized throughout the year. To accommodate the influx of inquiries, more incentive funding is required. As long as the state keeps the incentives flowing, content creation will build to a significant Colorado business within the next few years.

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Financial Activities

The Financial Activities Supersector consists of two sectors that make up 6.1% of statewide employment: (1) Finance and Insurance, and (2) Real Estate and Rental and Leasing. Beginning in 2006, the Financial Activities industry lost 16,500 jobs, or 10.3% over five years before bottoming out in 2011. The industry has recorded uninterrupted job growth beginning in 2012. Growth increased at a slower pace in 2017—the industry is expected to end the year with 167,600 jobs, an increase of 2.4%. Employment growth will continue in 2018, increasing 2,000 jobs, to 169,600, on the foundation of a strong overall economy that supports more banking, insurance, and real estate employment.

Approximately 70% of the employees in the Financial Activities industry work in the Finance and Insurance Sector (i.e., banks, credit unions, securities and investment firms, insurance carriers, etc.). About 30% of the workers are employed in the Real Estate and Rental and Leasing Sector, which includes real estate-related payroll jobs and companies that lease anything from real estate to equipment to formal wear.

FINANCIAL ACTIVITIES EMPLOYMENT 2008-2018 (In Thousands)

Year	Finance and Insurance	Real Estate and Rental and Leasing	Total
2008	107.4	48.2	155.6
2009	103.8	44.2	148.0
2010	101.7	42.6	144.3
2011	101.4	42.5	143.9
2012	103.4	43.2	146.7
2013	106.8	44.2	151.0
2014	107.8	46.1	153.9
2015	110.6	48.4	159.0
2016[a]	113.4	50.2	163.6
2017[b]	115.7	51.9	167.6
2018[c]	117.1	52.5	169.6

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the sectors may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Finance and Insurance

Capital Markets

The 2018 outlook for the capital markets is an exercise in uncertainty. While a single point of uncertainty can cause consternation, there are numerous points of uncertainty, each with the potential to dramatically influence the financial markets and the economy at large.

At the time of this writing, the nomination of the future chair of the U.S. Federal Reserve had just been announced. Current Federal Reserve Governor Jerome Powell is the nominee. Powell has no formal monetary policy training, but has served the Fed with Chairs Bernanke and Yellen. He is a Republican political appointee that was selected by President Obama in 2012. He has a private equity background and has served the government as the Treasury Department's undersecretary for finance during President George H. W. Bush's term. From the list of prospective candidates, he is generally seen as most palatable to Wall Street—meaning he is expected to maintain the course already in place. Current Fed Chair Janet Yellen's term expires in February 2018. Additionally, the vice chair position is open, with Stanley Fischer having tendered his resignation effective October 2017, well ahead of the scheduled expiration of his term in January 2020.

This is a time when the interest rate market appears to be at an inflection point. The range on the 10-year U.S. treasury in 2017 has been between 2.04% and 2.63% with the average yield being 2.32%. In Q4 2017, the 10-year U.S. treasury has crossed above its 200-day moving average of 2.31%, which is seen as a bearish indicator portending higher rates. The Fed has tightened the fed funds target twice so far in 2017, in 25 basis point increments for a total of 50 basis points. The current fed funds target is 1.25%. Market expectations are that there will be a third tightening in December 2017 for another 25 basis points. Interestingly, this is occurring at a time when the Fed's preferred measure of inflation, PCE-Core, is languishing at 1.3% as reported for September 2017. The Fed's stated inflation goal is 2%. Which begs the question, if the Fed's dual mandate of full employment and stable prices is being met, (September 2017 unemployment was reported at 4.2%, its lowest level since April 2000 when it was reported at 3.8% and inflation is well below 2%), why is the Fed persisting on the tightening campaign? Are they getting ahead of themselves? Are they simply trying to afford themselves some maneuvering room?

With each move by the Fed to tighten monetary policy by raising the Fed Funds rate, the yield curve has been flattening. Measuring the yield curve between the 2-year treasury and the 30-year treasury, it is positively sloped (short-term rates are lower than long-term rates) at less than 150 basis points. On October 17, 2017, the 2s to 30s yield curve hit a low of 125 basis points, the flattest in more than nine years. Over the last nine years, the 2s to 30s curve has averaged 272 basis points, with the peak in February 2011 at 401 basis points. Flat yield curves are generally associated with subdued economic growth and inverted yield curves (there are some predictions that we will see curve inversion in 2018 if the Federal Reserve continues to increase the Fed Funds rate) are seen to portend economic recession.

Concurrently, the Federal Reserve is in the midst of plans to reduce its more than $4 trillion balance sheet as it commences the great unwinding of quantitative easing (QE). Just as there was uncertainty as to how multiple rounds of QE would impact the economy, and a lack of consensus as to what the results were, there is uncertainty as to what impact the unwinding of QE may have on the economy. A mountain climbing aphorism fits—the descent is the most dangerous part of the climb. Unwinding QE is the descent.

continued on page 62

Financial Activities

continued from page 61

Next, we will take a cursory look at legislative uncertainty. The financial markets are agnostic, focused upon actions that will presumably increase profits, reduce regulatory burden/expense, and stimulate economic growth irrespective of other factors. As the first calendar year of the 45th president draws to a close, the financial markets have watched (and perhaps reacted) in anticipation of legislative changes to the Affordable Care Act (ACA), the Dodd-Frank Act (DFA), and promises of tax reform. Given the lack of progress and clarity on these initiatives, coupled with recent indictments of parties involved with the president, investors and business owners alike may have to readjust their expectations for legislative progress in 2018. The year 2018 also brings the added distraction of mid-term elections. Will businesses postpone capital expenditures and hiring plans in hopeful anticipation of favorable legislative progress on these issues? How long are they prepared to wait? Another variable is the interplay of legislative action and monetary policy. Legislative action has the ability to significantly alter the economic landscape. This could necessitate offsetting action by the Federal Reserve to respond to their dual mandate of full employment and stable prices lest the inflation genie is let out of the bottle or the economy slides into a recession. Will the next Federal Reserve chair have the fortitude to take politically unpopular actions and serve as a political lightning rod to remain true to the Fed's dual mandate?

Looking to the U.S. equity market, there is debate as to whether or not U.S. equities are in a bubble of inflated valuation. As of October 27, 2017, the Dow Jones was up more than 18%, the S&P 500 was up more than 15%, the NASDAQ was up more than 24%, and the Russel 2000 was up more than 10%. However, the United States exists in a global economy, and many of the global indices are at similar lofty levels. Germany's DAX is up more than 15%, Brazil's IBOVESPA is up more than 26%, Japan's NIKKEI is up more than 15%, and Hong Kong's Hang Seng index is up nearly 30%. Put in that context, the returns in the U.S. stock market are not so unique. What does raise concern is the uncertainty of U.S. trade policy. With the U.S. exit of the Trans-Pacific Partnership (TPP) and the current "renegotiation" of the North American Free Trade Agreement (NAFTA), what will the impact be on the U.S. economy and our relationship with our major trading partners? When looking at London's FTSE 100 index, it is posting a comparatively anemic return in the mid-single digits, currently about 5%. This in the wake of the populist vote for Britain to exit the European Union. Will a policy misstep or legislative frustration be the catalyst for a stock market correction?

Finally, all of this needs to be viewed in the broader context of the present economic expansion. While the current expansion may not be described as robust (with U.S. GDP struggling to reach and hold 3%), it has certainly been persistent. The United States is currently enjoying the third-longest economic expansion, looking all the way back to the year 1854. The longest expansion was from March 1991 to March 2001 for a total of 120 months. The second-longest expansion occurred from February 1961 to December 1969 for a total of 106 months. The present expansion started in June 2009, which has the United States entering its 101st month at the time this is being written. The nation may not have a great deal of velocity, but it does have momentum that suggests this expansion will move into the number two spot, and we may have just enough juice to make a run for the longest expansion, carrying through 2018.

Given the recent momentum—with Q2 and Q3 2017 GDP in 3% territory, with personal consumption expenditures (PCE) core inflation well under the Fed's 2% target, and with the U.S. unemployment rate

sub-4.5%—it seems reasonable to expect a continued positive trajectory in 2018. As the numerous issues touched upon here are addressed, increased clarity may bring a commensurate change to velocity. Colorado continues to benefit from a growing density of financial services companies making Colorado a key hub, aided and facilitated by the Colorado Investment Services Coalition. Companies are forging relationships with area colleges and universities to mitigate low unemployment rates and source employees, not to mention in-migration from other financial services hubs. Despite numerous points of uncertainty in 2018, one thing is clear: Colorado's outlook remains bright.

Commercial Banking

The current makeup of banks operating in Colorado consists of roughly 55% of deposits residing in the four largest banks. In this context, deposits can serve as a rough proxy for loans, too. Conversely, community banks with less than $100 million face a situation where those 55 banks (39.3% of all banks doing business in Colorado) collectively hold $3.1 billion in deposits (2.3% of the industry total). Again, deposits can serve as a rough proxy for loans.

Capital and Earnings

Financial institutions and their customers in Colorado are enjoying improved and positive economic conditions, according to a recent 2017 FDIC State Profile.

Currently, U.S. banks hold nearly $2 trillion in capital and reserves to support all banking activities. Median Tier 1 leverage capital rates are the highest they have been since 2015, and median rates of return on assets are also the highest since 2015.

In a first step to simplify capital rules for banks, regulatory agencies proposed a rule to pause the full transition to the Basel III treatment of mortgage servicing assets, certain deferred tax assets, investments in the capital of unconsolidated financial institutions, and minority interests pending a new rulemaking addressing these topics. Since advanced capital approaches are principally used by banking organizations with over $250 billion in assets or foreign bank subsidiaries with over $10 billion in assets, the pause would apply broadly to community, midsize, and even several regional banks.

Also in 2017, DFA mandated stress tests conducted by the Federal Reserve showed the largest U.S. banks would remain well-capitalized even under severe stress. Even with the hypothetical declines, capital levels at the banks would still be much higher than they were following the 2008 financial crisis, when Tier 1 capital ratios for the firms fell to about 5.5% at the end of that year.

Loan Demand and Mergers and Acquisitions

Many Colorado bankers say that loan demand is solid, especially among the most creditworthy borrowers with equity to fund new ventures. While bank lenders to small business are busy, it is often a race among several banks to the lowest rate and, while good for the customer, results in very little net new business. Often banks are trading business among themselves, frequently resulting in unprofitable loan pricing for the successful bank and great rates for the borrower. Fee income is pressured

continued on page 64

FINANCIAL MARKETS: STOCKS
2008-2017 YTD
(Year-End Close)

	Index				Annual Percent Change			
Year	S&P 500	Dow Jones	NASDAQ	Russell 2000	S&P 500	Dow Jones	NASDAQ	Russell 2000
2008	903.3	8,776.4	1,577.0	499.5	-38.5	-33.8	-40.5	-34.8
2009	1,115.1	10,428.1	2,269.2	625.4	23.5	18.8	43.9	25.2
2010	1,257.6	11,577.5	2,652.9	783.7	12.8	11.0	16.9	25.3
2011	1,257.6	12,217.6	2,605.2	740.9	0.0	5.5	-1.8	-5.5
2012	1,426.2	13,104.1	3,019.5	849.4	13.4	7.3	15.9	14.6
2013	1,848.4	16,576.7	4,176.6	1,163.6	29.6	26.5	38.3	37.0
2014	2,058.9	17,823.1	4,736.0	1,204.7	11.4	7.5	13.4	3.5
2015	2,043.9	17,425.0	5,007.4	1,135.9	-0.7	-2.2	5.7	-5.7
2016	2,238.8	19,762.6	5,383.1	1,357.1	4.7	5.2	3.7	5.2
YTD Nov. 8, 2016	2,139.6	18,332.7	5,193.5	1,195.1	4.7	5.2	3.7	5.2
YTD Nov. 8, 2017	2,594.4	23,563.4	6,789.1	1,481.7	15.9	19.2	26.1	9.2

Note: YTD represents the growth year-to-date through November 8 from the prior end-of-year close.

Source: Bloomberg.

Financial Activities

continued from page 63

greatly due to competition and price fixing by the federal government in the formerly profitable line of debit card interchange fees. Fee income from various sources will continue to deteriorate.

Colorado has seen a steady stream of mergers and acquisitions (M&A) activity in 2017, and more of those transactions are taking place on the Front Range.

M&A among banks stand at 173 nationally in 2017, down from 178 at the same time the previous year. If this pace continues, M&A for banks in 2017 could be at the lowest level since 2009.

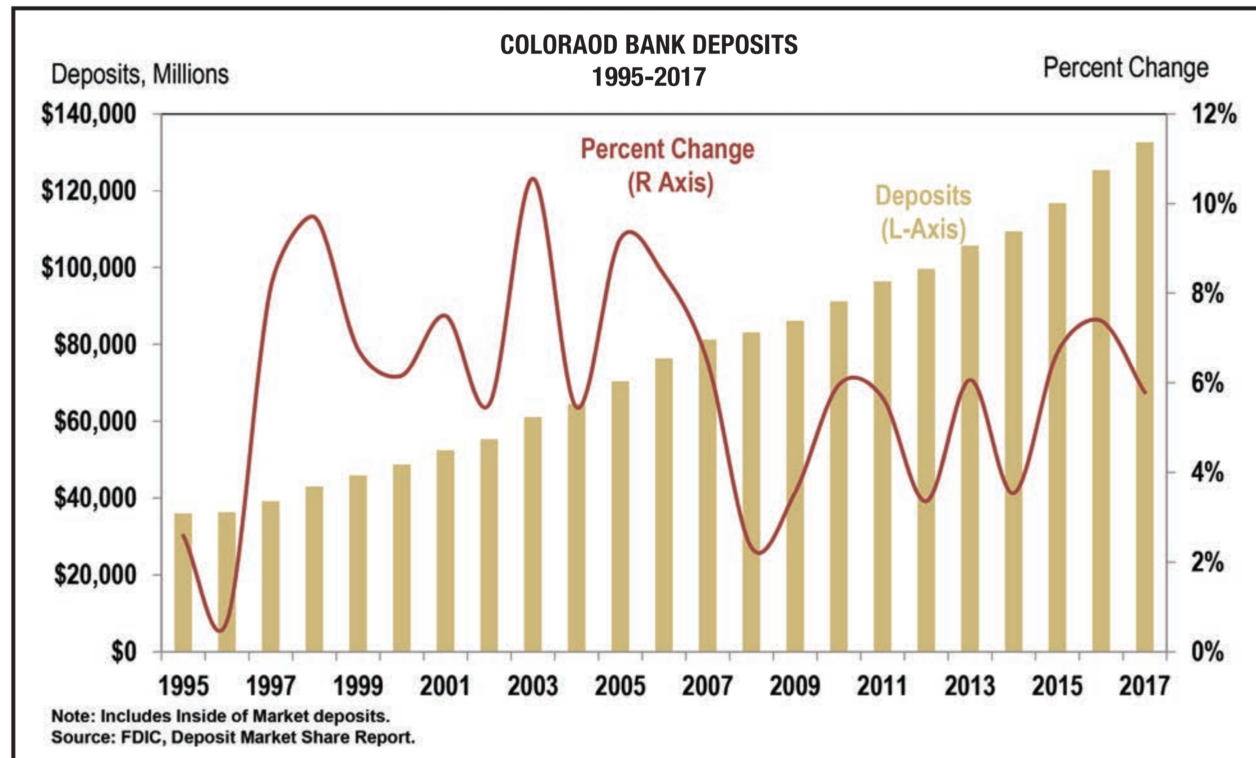
In Colorado, 10 mergers have been completed or are in process, an increase of 300% over a year ago. Two of the 10 banks are larger than $500 million in assets.

While some smaller banks have completed deals, a number of executives from larger regional banks said recently that they are not planning on any mergers. Meanwhile, the largest banks are unlikely to partake in major acquisitions due to a number of reasons, including deposit limits and political resistance.

More than 80% of banks that have announced sales in 2017 have assets of less than $1 billion. Just two have assets of more than $10 billion.

Regulation

Banks continue to grapple with ever-changing and ever-growing regulations that increase the pressure to raise capital. Regulatory burdens have escalated compliance costs. Those greater costs must be spread over a larger asset base to achieve the needed return on investment in order to attract capital. That needed larger asset size and the cost, difficulty, and even inability to raise capital are fueling consolidation among community banks nationwide and in Colorado. When faced with the need for greater size and challenges in raising capital, the only viable option for some community banks is to sell.



Note: Includes Inside of Market deposits.
Source: FDIC, Deposit Market Share Report.

The DFA continues to have banks in an environment full of uncertainty as rulemaking by the Consumer Financial Protection Bureau is incomplete and ongoing. Now regulatory risk outweighs credit risk for banks. Customers are "protected" to the point of losing access to credit since the cost and complexity of regulation incents the bank to either discontinue that type of lending or tighten underwriting to the point marginal customers are excluded from credit or priced out of it. As detailed below in the Qualified Mortgages section, several groups of customers often lose access to credit.

Under the new rules, it is harder for certain customer groups to find loans they need. For example, 6,000 pages of new mortgage rules were put into effect by the Consumer Financial Protection Bureau (CFPB) in January 2014. A full 4,000 pages were effective then, and 1,900 pages of the Truth in Lending Act and Real Estate Settlement Procedures Act reform (TILA-RESPA) real estate disclosures went into effect in August 2015. The scope and complexity required expensive personnel and procedures to comply with the requirements and that precludes smaller banks that can spread that cost only over a small book of loans. Thus, it is unprofitable, and the bank often decides to discontinue mortgage lending—not due to credit risk but due to regulatory compliance risk. Smaller community banks often are forced to buy others to grow larger to get the necessary scale or exit the business by selling to another institution.

A 2017 survey from the Federal Reserve and Conference of State Bank Supervisors, shows that compliance costs for community banks alone have increased by $1 billion in just two years. Economists at the St. Louis Fed estimate total 2016 compliance costs of $5.4 billion, or 24% of

community bank net income. That is up from $5 billion in 2015 and $4.5 billion in 2014.

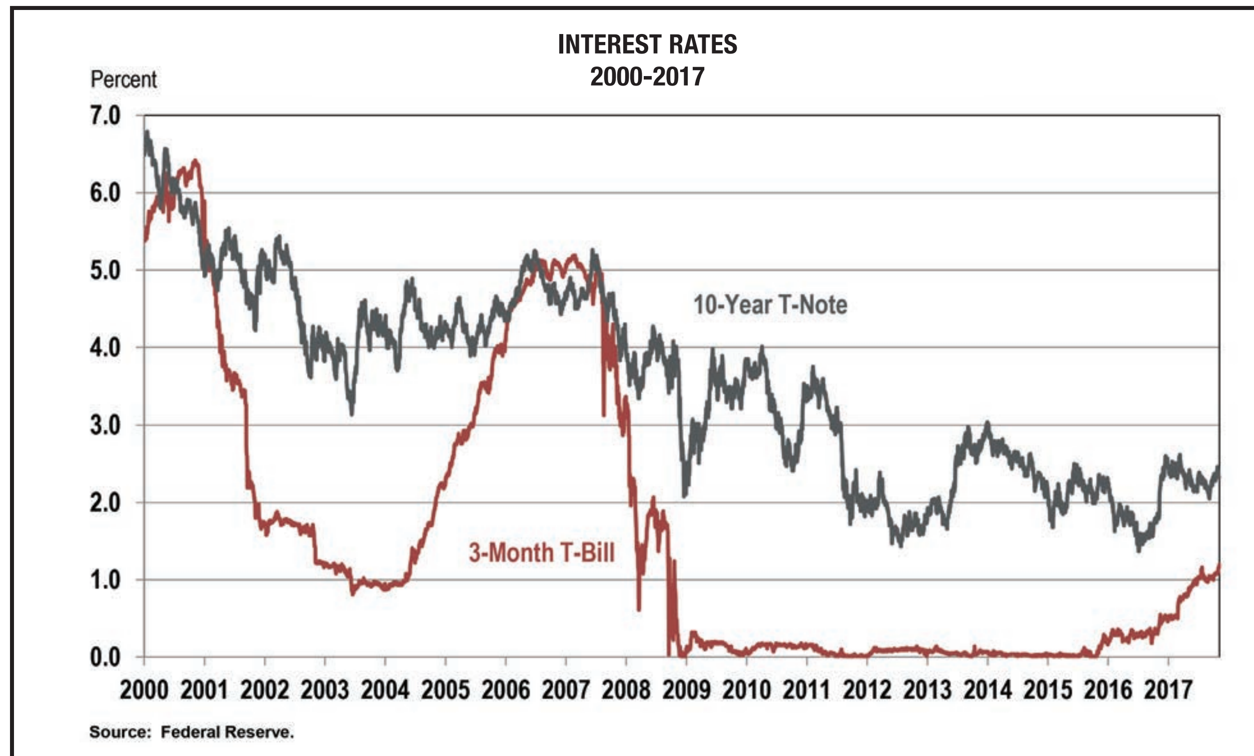
The survey of more than 600 community banks said the costliest regulations are affiliated with the Bank Secrecy Act and TILA-RESPA, which accounted for 22.3% and 21.2%, respectively, of respondent banks' compliance expenses. They were followed by deposit account compliance, qualified mortgage, Community Reinvestment Act, ability-to-repay, non-call report financial reporting, and Basel III capital regulations.

Regulation Impact on Lending

Lenders facing uncertain rules are cautious and restrict lending until rules and resulting risks are clear, hurting customers. Similar negative impacts could occur in community development lending, including financing of affordable housing (both loans and bonds).

A new small-dollar lending rule announced by the CFPB could push borrowers in need to unscrupulous lenders, industry leaders say. The regulation, issued in early October 2017, would require lenders to determine if borrowers can repay their debts and cap the number of loans lenders can make to a borrower. Though it must clear two more hurdles before it could become effective in 2019, industry leaders say the CFPB should have worked with other regulatory agencies to examine the use of small-dollar lending programs, such as deposit-advance products, to protect Americans' ability to acquire short-term loans from their lender of choice.

As stated earlier, regulation is leading to increased consolidation among banks. Competition among banks drives up the quality of products and keeps prices lower.



Source: Federal Reserve.

Despite decreasing numbers of financial institutions in the country, borrowers in certain categories, such as commercial real estate, usually find their needed financing. By working together in participation (creating a syndicate), banks can extend the credit borrowers need while complying with federal limits.

Dodd-Frank Act 2017 Update

Passage of the 2,300-page DFA in 2010 created the CFPB and required creation of 398 separate new rules, some of them enormously complex. As of August 2017, about 30% of the rules mandated by the reform package had yet to be implemented.

There is concern about the pace and complexity of potentially conflicting rules under the DFA. For example, seven separate rules with substantial impact have been adopted or proposed covering real estate lending:

- Qualified Mortgages (QM) and Ability to Repay (ATR)
- Qualified Residential Mortgages (QRM)
- TILA-RESPA Reform
- Servicing
- Mortgage Loan Origination Compensation
- Appraisals
- HOEPA Standards for High Cost Loans

Federal Legislative Efforts toward Regulatory Reform

Banks and credit unions are currently regulated under a "one-size-fits-all" approach, regardless of size or risk profile. This often means that regulations designed and intended for big banks are also applied to small community banks or credit unions, imposing compliance regimens and costs that many of them find unbearable.

The Colorado Bankers Association (CBA), working with an alliance of other state banking associations and the American Bankers Association (ABA), is seeking to

continued on page 66

Financial Activities

continued from page 65

address the problem of mortgage loan access legislatively. One proposal is for loans made and held in portfolio be automatically compliant with federal qualified mortgage standards as banks are taking on all the risk in such transactions.

However, the legislative proposals face a number of challenges, most formidable are the handful of "tier one" priorities Congress must tackle before even considering regulatory reform for banks. Those include: health care, tax reform, the national budget, immigration, trade policy, and infrastructure.

Congress and the White House have repeatedly said health care is a priority, but the failure of health care reform has made action on many issues more difficult. House Financial Services Committee (HFSC) Chair Rep. Hensarling (TX) passed the broad regulatory reform CHOICE 2.0 in the House by a partisan vote but Senate Banking Chair Crapo (ID) has said he will be bipartisan.

In October 2017, some provisions of the Financial CHOICE Act were introduced in the House Financial Services Committee as separate bills, a sign that an overhaul of DFA is not likely. The HSFC approved the following measures:

H.R. 1116, the Taking Account of Institutions with Low Operation Risk Act of 2017 (TAILOR Act). This bipartisan legislation introduced by Rep. Scott Tipton (CO) directs federal bank and credit union regulators, when taking a regulatory action, to consider the risk profile and business model of an institution or class of institutions involved. The regulator is directed to "tailor" that regulatory action, given the costs and complexity involved, to limit its compliance impact, cost, and other burdens. In its simplest terms, H.R. 1116 directs regulators to exercise common sense, applying rules (and the burdens that come with them) only where appropriate while cutting back those burdens where it is not appropriate.

H.R. 2226, the Portfolio Lending and Mortgage Access Act, was reintroduced by Rep. Andy Barr (KY), in 2017. It reforms the Qualified Mortgage rule imposed by the CFPB to allow banks and credit unions to hold mortgages in portfolio, therefore retaining 100% of the risk, to satisfy the requirements of the rule. The act was passed by the U.S. House of Representatives during the 114th Congress with bipartisan support.

H.R. 2121, the Pension, Endowment, and Mutual Fund Access to Banking Act. This bipartisan bill, as introduced by Reps. Keith Rothfus (PA), Bill Foster (IL), and Randy Hultgren (IL), would allow custody banks to exclude central bank deposits from the denominator of the supplementary leverage ratio. Custody banks, and banks that provide custody services, occupy a critically important space in our financial system.

H.R. 2396, the Privacy Notification Technical Clarification Act, a bipartisan bill introduced by Rep. David Trott (MI) and Financial Institutions and Consumer Credit Subcommittee Ranking Member William Lacy Clay Jr. (MO), would simplify the notice requirements for financial institutions that have not changed their privacy policies. In addition to the relief provided by the FAST Act for financial institutions that only share information within the statutory exceptions, it would create a simple disclosure mechanism using the internet for financial institutions that have not changed their privacy practices.

H.R. 2706, the Financial Institution Customer Protection Act. This legislation, as introduced by House Financial Institutions and Consumer Credit Subcommittee Chairman Blaine Luetkemeyer (MO), would dictate that federal banking agencies could not request nor order a financial institution to terminate a banking relationship unless the regulator has material reason. The legislation further states that account termination requests or orders would be required to be made in writing and rely on information other than reputational risk.

H.R. 2954, the Home Mortgage Disclosure Adjustment Act. This legislation, as introduced by Rep. Tom Emmer (MN), would provide community banks with relief from compliance burdens that are ill-suited and unnecessary for community banks. Specifically, the bill exempts small banks and credit unions from new reporting requirements of the Home Mortgage Disclosure Act (HMDA) if they are lenders that have originated 1,000 or fewer closed-end mortgages in each of the two preceding calendar years or are lenders that have originated 2,000 or fewer open-end lines of credit (such as a typical home equity loan) in each of the two preceding calendar years. Additionally, the bill repeals the HMDA amendments included in the DFA and withdraws the CFPB's rule to impose the new and modified HMDA data points scheduled to take effect in January 2018.

H.R. 3072, the Bureau of Consumer Financial Protection Examination and Reporting Threshold Act of 2017. This bipartisan legislation, introduced by Financial Institutions and Consumer Credit Subcommittee Ranking Member William Lacy Clay Jr. (MO) and Rep. Steve Stivers (OH), raises the examination threshold for institutions subject to the supervision of the CFPB from the current $10 billion to $50 billion. The legislation would also increase the threshold to $50 billion for institutions subject to CFPB reporting requirements.

H.R. 3312, the Systemic Risk Designation Improvement Act of 2017. This bipartisan legislation was introduced by Chairman Blaine Luetkemeyer (MO) and a number of members on the Financial Services Committee. This legislation would replace the DFA's automatic systemically important financial institution (SIFI) designation with a process for the Federal Reserve Board (Fed) to make a determination that an individual financial institution, or group of institutions, is systemically important and subject to enhanced supervision and prudential regulation

Under the DFA, an institution with $50 billion or more in consolidated assets is automatically deemed to be a SIFI, and subject to higher levels of regulation regardless of the real "risk" it might pose to the financial system. This arbitrary size threshold—and the significant regulatory requirements that come with it—has unnecessarily ensnared many banks without cause, limiting their

abilities to provide needed credit and other services to consumers, businesses, and their communities.

H.R. 3857, the Protecting Advice for Small Savers Act of 2017. This legislation, introduced by Rep. Ann Wagner (MO), would repeal the Department of Labor (DOL) Fiduciary Rule, a rule bankers assert is deeply flawed and should be significantly revised or rescinded. As currently written, the Fiduciary Rule presents a difficult if not insuperable compliance challenge. It provides no clear path to compliance and has the potential for numerous regulatory pitfalls that, when paired with the Fiduciary Rule's class action enforcement mechanism, creates significant liability and litigation risks for financial institutions.

H.R. 3971, the Community Institution Mortgage Relief Act. This bipartisan legislation, introduced by Reps. Claudia Tenney (NY), Brad Sherman (CA), and Roger Williams (TX), would provide needed relief for smaller lenders with regard to escrow practices. The legislation would exempt lenders with $25 billion or less in assets from escrow requirements on higher priced mortgage loans they hold in their portfolios, and it would provide regulatory relief for small servicers, defined as those servicing 30,000 loans or fewer, by exempting them from various servicing requirements.

CLEARR Act. Former banker and Rep. Blaine Luetkemeyer (MO) is the sponsor of this bill that provides relief on: safe harbor for portfolio mortgage loans (ATR/QM), CFPB supervision (moves from $10 billion to $50 billion threshold), CFPB authority to issue rules on the DFA's "abusive" standard, mortgage lending appraisal requirements, small bank holding companies, capital for mortgage servicing, small business loan data collection, deposit account terminations, alleged discrimination under Equal Credit Opportunity Act and Fair Housing, Home Mortgage Disclosure Act reporting, "Operation Choke Point," and other measures. CBA, ABA, the Independent Community Bankers of America (ICBA), and others support the bill.

TILA-RESPA

The new TILA-RESPA integrated disclosure rule (TRID)—also known as the "know before you owe rule"—took effect a year ago in October and tweaks continue to be made. The rule, intended to help borrowers understand the terms of home buying transactions, poses significant compliance and litigation risks unique to each financial institution.

In early October 2017, additional changes were proposed to the integrated disclosures that would allow creditors to use either initial or corrected closing disclosures to reflect changes in costs for purposes of determining if an estimated closing cost was disclosed in good faith, regardless of when the closing disclosure was provided relative to consummation. The proposal is aimed at correcting the "black hole" problem, in which consumers are subject to forced regulatory closing delays because of legitimate fee changes in the origination process.

Bankers expressed support for the CFPB's removal of the four-business day limit for resetting tolerances that exist in current law, while requesting additional TRID clarifications, such as the application of the rule in instances concerning fee variations due to interest rate changes, and the timing allowed for the delivery of the corrected closing disclosure.

Meanwhile, Reps. French Hill (AR) and Ruben Kihuen (NV) introduced legislation to change TILA-RESPA rules to give consumers what Hill says will be an "accurate disclosure" of title insurance premiums. The TRID Improvement Act of 2017 seeks to ensure that consumers know the exact cost of their title insurance—not the number reported as one price on a lending estimate and another price on a closing document.

Arbitration Rule

In October 2017, the Senate voted to overturn the CFPB's controversial final rule on arbitration by a vote of 51 to 50. With a tie-breaking vote by Vice President Mike Pence, the Senate exercised its authority under the Congressional Review Act to reject new federal regulations finalized by the CFPB earlier in the year.

The rule sought to limit the use of mandatory arbitration clauses for financial products and services that are frequently used by banks of all sizes to manage the unpredictable costs of class action lawsuits and ensure prompt resolution of disputes.

CBA and others previously pointed out that this could impose a significant burden on customers whose claims cannot be resolved through class actions as it would require them to go to court for minor, nonsystemic disputes.

Once President Trump signs the resolution, as expected, the action by the Senate will stop the rule from taking effect and prevent government agencies from issuing any similar rule in the future.

Marijuana Banking in Colorado

Three years after the passage of Amendment 64, which legalized recreational marijuana in Colorado, related businesses are no closer to accessing secure financial services. Despite consistent efforts to find work-arounds and other local-level solutions, federal rules continue to preclude banks from serving these businesses.

In July 2017, the 10th Circuit U.S. Court of Appeals overturned the Federal Reserve's account denial for Fourth Corner Credit Union, which is seeking to serve marijuana businesses in Colorado. The ruling does not mean the credit union, which has sat closed since its formation in 2014, can begin serving customers; it must wait until federal laws explicitly allow it to do so.

The CBA maintains the position that the only solution to the issue is an act of Congress.

The CBA is aware that bank regulators are not prohibiting financial institutions to service the marijuana industry if the financial institution is in compliance with the 2015 FinCEN guidance and operating on a small

continued on page 68

Financial Activities

continued from page 67

scale. Out of the 140 banks operating in Colorado, CBA estimates a dozen small banks are doing so.

Any institution serving the industry does so at its own risk. Although regulators are not prohibiting the activity, the federal law has not changed and could be enforced, meaning prosecuted, at any time.

An act of Congress is the only true and lasting solution to the issue of conflicting state and federal laws. A bipartisan group of Senators—Senator Jeff Merkley (OR), Senator Cory Gardner (CO), Senator Ron Wyden (OR), Senator Michael Bennet (CO), and Senator Patty Murray (WA)—in May 2017 again introduced the Marijuana Businesses Access to Banking Act, legislation to ensure that legal marijuana businesses can access banking services.

The CBA is supportive of the legislation that would bar regulators from punishing banks that serve legitimate, state-sanctioned marijuana businesses, while maintaining banks' right to choose not to offer those services.

Expected Headwinds and Challenges

Colorado banks will continue to face the following headwinds:

- **Regulatory Reform.** While managing excessive regulatory burden is a significant challenge for all banks, it is overwhelming for community banks. The cost of regulatory compliance as a share of operating expenses is two-and-a-half times greater for small banks than for their larger counterparts. Compliance burdens must be spread over a large asset base. Thus, industry consolidation is significantly being driven by government policy (extremely detailed regulation) and not only by market forces.
- **Succession Planning.** Along with capital and liquidity, succession planning ranks as one of the three biggest issues that spur bank mergers. As baby boomers retire in record numbers, it has become increasingly difficult for banks to replace those who have guided them through some of the industry's most challenging years. Therefore, banks are growing and diversifying efforts toward broad internal training, leadership development, and recruitment. If that is not done, sale of the bank often must be considered.

Small Business Administration

U.S. Small Business Administration (SBA) loan volume was up again in 2017 in Colorado, although the total number of loans was down slightly. The Colorado data are in line with the national trends for the federal fiscal year ending September 30, 2017. The Colorado trends are more pronounced than nationwide averages, however.

The SBA provides loan guarantees to lenders that encourage them to make loans that would otherwise be outside their standard credit risk profile. Borrowers pay an SBA guarantee fee that acts as an insurance premium, offsetting the potential default risk. A variety of factors contribute to the decision to use an SBA guaranteed loan including: the availability of conventional credit, perceived risk, and the specific terms available to the borrower. Therefore, SBA lending is not a perfect proxy for economic activity or even lending generally.

Colorado loan volume was up with total lending volume increasing 9.2% to $902 million. The rate of increase slowed from the 17.9% growth rate of 2016. The number of SBA-guaranteed loans in Colorado is down 12% from 2016. The SBA guaranteed 1,778 loans, 238 fewer than in fiscal year 2016. These trends resulted in an average loan size of $513,294 for Colorado, up 24% from the previous year. Colorado reflects national trends, although the trends are more pronounced in the Centennial State. Nationally, SBA guaranteed $30.5 billion in loans in 2017, up 5.5% from the prior year. The number of loans was down 1.95% nationally, to 68,648.

Colorado Credit Unions

Bolstered by rising home values and one of the lowest unemployment rates in the nation, Colorado's not-for-profit credit unions witnessed double-digit asset, loan, and savings growth during the 12-month period ending June 2017, as well as strong membership growth and earnings.

Colorado credit union memberships continue to grow at remarkably fast rates. Through June 2017, year-over-year memberships grew 6.4%, significantly faster than the national rate of 4.2% and over three-and-a-half times the growth rate of population (the U.S. Census Bureau estimates that the population of Colorado grew 1.7% in 2016). If credit union memberships continue to grow at this pace through the end of 2017, it would be the fastest annual membership increase since 1986. Colorado memberships now total 1.8 million, or roughly one-third of the state's population of 5.5 million (32.9%).

A remarkable 87.5% of Colorado's 80 credit unions experienced increasing assets in the period from June 2016 to June 2017. Total assets grew 12.5%—substantially higher than the national rate of 7.6% and savings grew 12.8%—well above the national rate of 8.1%.

Although annual loan growth has slowed slightly since the recent peaks of 14.1% and 16.4% in 2014 and 2015, respectively, Colorado credit union loan portfolios are on pace for the fifth straight year of double-digit loan growth at 13%, which would be the first time that has happened since the period from 1993–1997. The recent

SBA LENDING COLORADO VS. TOTAL UNITED STATES

Fiscal Year	Colorado: Total ($ Millions)	Colorado: Percent Change	United States: Total ($ Millions)	United States: Percent Change
2016	$826.7	17.9%	$28,868.5	3.5%
2017	902.4	9.2%	30,461.2	5.5%

Source: Small Business Administration.

loan growth has been led by member business loans, which grew 24.4% during the four quarters between June 2016 and June 2017, followed by new automobile loans (22.2%), home equity line of credit (HELOCs) and second mortgages (17%), used automobile loans (13.4%), first mortgages (9.1%), other unsecured loans (5.9%), and credit cards (3.3%). It is noteworthy that all seven loan portfolio categories tracked by credit union regulators showed strong increases. While most of these growth rates follow national trends, surging Colorado home values have led to a growth rate of HELOCs and second mortgages that is nearly three times the national rate of 5.8%. On the other hand, the growth rate of credit cards at Colorado credit unions is less than half the national rate of 8.1%.

As loan growth has outpaced savings in recent years, Colorado credit unions have experienced an increasing loan-to-savings ratio, which grew from 79.2% at mid-year 2015 to 85.2% through June 2017, well above the national level of 80.0%. However, after increasing sharply from 79.2% in June 2015 to 85.1% in June 2016, liquidity seems to have stabilized at a loan-to-savings ratio of around 85%, increasing only slightly between June 2016 and June 2017.

Strong loan growth has helped Colorado credit unions maintain a healthy loan portfolio and solid earnings. Period end delinquencies and annualized mid-year net charge-offs were both at 0.41% as of June 2017, substantially below national levels of 0.75% and 0.56%, respectively. These figures also reflect significant improvements from the 25-year averages of 0.86% for delinquencies and 0.58% for net charge-offs. Annualized ROA (net income as a percentage of average assets) totaled 0.80% in the first half of 2017, marginally above the national figure of 0.76%. Overall, 86% of Colorado's credit unions experienced positive ROA during the first-half of 2017.

Colorado capital adequacy remains near its all-time high of 11.6% reported in June 2015. As of June 2017, capital adequacy was 11.1%, down slightly due to the strong loan growth; however, the figure is still above the national aggregate capital ratio of 10.8% and well above the 7% threshold level at which federal regulators deem credit unions "well capitalized." In fact, all 80 of Colorado's credit unions are above this threshold.

Colorado credit unions also have a significant impact on the state's economy. Using an economic input-output model with data from the U.S. Bureau of Economic Analysis, the Credit Union National Association (CUNA) economists estimate the impact of credit unions on employment and economic output. This is accomplished by adding up the following: (1) direct impacts: the output, jobs, and earnings within credit unions; (2) indirect impacts: the additional demand for goods and services in other sectors of the economy that are stimulated by direct expenditures from credit unions; and (3) induced impacts: expenditures of employees directly and indirectly supported by credit union operations. In total, the estimated economic contribution of Colorado credit unions to the state's economic output in 2016 was $2.7 billion. In addition, CUNA economists estimate that credit union operations lead to 4,448 direct credit union jobs and another 10,499 indirect and induced jobs, for a total of 14,947 jobs created by the credit union industry.

Looking forward, CUNA economists expect the strong Colorado credit union performance to continue through 2017 and into 2018 as the U.S. economy shows strong growth in GDP, stock market and housing wealth increases, and as employment grows and unemployment settles at historically low levels.

According to Zillow, Colorado home prices grew 8.3% during the previous 12 months through September 2017, the eighth-highest rate in the nation. This has led to increased wealth via home equity and significant demand for HELOCs and second mortgages. With historically low interest rates, this trend is expected to continue.

CUNA economists also expect continued strong demand for new and used automobile loans as there remains significant pent-up demand from the recession. With low unemployment and increased wealth, overall consumer demand should stay strong, driving loan growth. However, as pent-up demand dwindles and the Fed gradually increases interest rates, credit unions expect to see loan demand fall slightly in 2018 and into 2019.

Insurance

Employee Benefits

Given the volatility of the political environment, the long-term changes and modifications that may impact the insurance industry are uncertain. According to CNN, the Presidential Executive Order Promoting Healthcare Choice and Competition Across the United States signed on October 12, 2017, theoretically is designed to increase competition and choice, but is predicted to deal a major blow to the Affordable Care Act. The executive order does the following:

continued on page 70

FHFA HOME PRICE INDEX, Q2 2017

Colorado MSA	Compound Annual Growth Rate 1 Year	3 Year	5 Year	10 Year
Boulder	10.8%	11.7%	9.7%	5.0%
Colorado Springs	9.7	7.8	5.1	2.3
Denver-Aurora-Lakewood	11.3	11.6	10.5	4.7
Fort Collins	12.1	11.3	9.6	4.4
Grand Junction	5.4	6.1	2.2	2.0
Greeley	10.7	11.4	10.1	3.3
Pueblo	10.0	8.3	3.7	1.6
Colorado	10.4	10.7	8.8	4.1

Data Source: Federal Housing Finance Agency, All Transactions Index (NSA), through Q2 2017.

Financial Activities

continued from page 69

- Allow insurers to cover less benefits
- Let small businesses join together to buy coverage
- Extend short-term coverage policies
- Expand employers' ability to give workers cash to buy coverage elsewhere
- Dramatically modifies or eliminates consumer premium subsidies

Many more modifications may be included when these changes are implemented, but it is very difficult to predict what and when those changes will be implemented. That is not to say that we will not see a single payer, "socialized, public" health insurance proposal in the next several years, but a national program versus the current state-based insurance regulations would require massive changes to both state based insurance and federal regulation.

Given that we have been implementing the ACA for seven years and numerous deadlines and requirements have been delayed, the Cadillac tax "might now finally be suspended indefinitely," according to the Society for Human Resource Management.

As the nation prepares for a health care-driven economy, the financial pressures on consumers from out-of-pocket costs and insurance premiums have caused them to seek different avenues for care. Combine the economic pressures and the huge administrative burden health providers face, it is becoming increasingly difficult to receive payments and operate within the rules dictated by the insurance companies. Because of these frustrations, a significant market of direct primary care (DPC) has been created. Physicians have changed the operational structure of their practice to cash only, or to what has been called "concierge" health care clinics.

According to Jon Hernandez, CEO of Colorado based PeakMed, DPC is advancing access for doctor/patient relationship-based health care at an affordable price. Imagine a scenario where patients have access to their doctor for emergency medical advice by telephone or text 24/7, and they enjoy the benefit of making same-day or next-day appointments with little or no wait times. According to Hernandez, there is no limit to the number of times members can visit their doctor. In the DPC relationship, nonurgent communications can be addressed through email during normal business hours M–F. But if the patient needs to reach a physician on a weekend or after business hours via text or telephone, it is not a problem.

As the financial stakes and the administrative burden for consumers and providers escalates, more creative and efficient methods for delivering care will continue to be seen in the United States.

Large health insurance premium increases are again predicted in 2018 for both the group and individual health plans, especially for those policies sold to individuals through Connect for Health Colorado. Legislated changes in underwriting, rating, mandated coverage, and increased utilization are now fully realized after three full claims cycles, causing massive increases. Many insurance companies have opted out of the state and federal exchanges, and several have exited the individual health insurance market altogether.

The job loss anticipated due to two major health insurance company mergers never came to fruition. The Aetna-Humana and Anthem-CIGNA mergers never occurred due to a variety of reasons. However, it was announced in October that CVS Pharmacy is going to buy Aetna, which is a unique merger of health care and health insurance giants. Any merger will most likely cause layoffs and job loss in Colorado at these large employers.

Overall, the health and benefit segment of the insurance sector job growth will be down slightly as the implementation of technology and online services replace many administrative functions. In 2017, given the unknowns of the both the property and casualty (P&C) and employee benefits, the industry saw a decrease in the number of insurance agency mergers and acquisitions. Regardless of size, all agencies/brokers have had to refocus or reinvent themselves in order to continue to deliver a high level of service to their clients. Most job creation and hiring has been limited to these noncore, insurance-related, complementary service areas.

Property-Casualty

In the P&C market, 2018 is predicted to be a year of large premium increases not only for Colorado but across the country. Hurricanes Harvey, Irma, Jose, and Maria have caused an unprecedented $200 billion in damage to the South East, Central America, and the Caribbean. Wildfires in the West and Southwest, especially those in California, are estimated to have burned nearly $4 billion in property. It is staggering to consider that the total losses will be approximately double those amounts when the additional commercial claims for business interruption, loss of use, and theft (due to post-event looting) are considered.

Given these figures and the massive amount of local damage, the additional associated claims from spring storms and hail damage, it is easy to see why both the commercial and personal P&C insurers are predicting significant rate increases.

Auto and property coverage will continue to lead the P&C insurance sector in premium increases. Alex Pederson, president of Day Larsen Pederson (DLP) Insurance, has confirmed that "Personal Auto rates in Colorado are increasing an average of 17% in 2017 as compared to 2016, which saw increases of 15%. Increases could average over 20% in 2018. According to Rocky Mountain Insurance Information Association (RMIIA), property coverage continues to see significant premium and deductible increases specifically for wind and hail related claims." The year 2017 was an unusual year with more than normal numbers of severe hail storms, given the long range global changes in weather, insurers are assuming large hail and thunderstorms are going to be the norm in Colorado. Pederson went on to say, "property premiums have also experienced increases due to the

significant increase in cost of construction.... We continually review the replacement values on our customer's policies because, what was adequate 5 years ago, may no longer cover the true cost to rebuild." Also, due to the popularity of "full replacement" endorsements for both property and auto coverage, we have noted significant rate creep year over year.

The casualty market has continued to remain flat from a premium standpoint. Most sectors of business, including construction, are experiencing this. There may be a reduction in casualty premium in the construction sector as significant changes to the construction defect regulations are implemented. Colorado is already starting to see the development of new condo projects that will help the new home inventory problem. The insurance industry continues to support legislation that encourages condo/townhome development and places limits on the ability to sue developers and contractors for construction defect.

The direct writers, including All-State, State Farm, American Family, Nationwide, and Farmers Insurance, continue to dominate the personal lines marketplace and are opening many new agencies and policy service centers in Colorado. They are constantly recruiting locally and nationally for agents and service/support positions to be based in Colorado.

Local, national, and worldwide events continue to create insurable exposures supporting the purchase of additional commercial P&C policies and increased limits to cover cybercrimes, employee practices liability, kidnap, and ransom. Violence in the workplace and in public areas has also created insurable exposures that were never even contemplated 10 years ago. Couple these factors with numerous incidents of hail, wind, fire, and flood claims, and it is certain that premium volumes will be increasing for the foreseeable future.

Employment in the entire P&C segment, for both commercial and personal coverage lines, is on the upswing. The growth in the number of insurable individuals and businesses creates additional policies that need to be serviced. Given booming economic factors, population growth, and increases in insurable values, it will continue to create some job growth across the insurance sector for the foreseeable future.

In 2018, look for the Colorado-based insurance industry to have rising premiums, increased revenues, but flat to slightly down employment growth.

Real Estate and Rental and Leasing

Real Estate

Commercial Real Estate

Colorado's major metropolitan markets and economic development organizations have been remarkably successful at promoting their respective community strengths in an effort to diversify their economic base. Business growth along the Front Range and on the Western Slope has resulted in a state unemployment rate of 2.5% that is second lowest in the nation. Industries leading the expansion include agriculture, construction, technology, R&D, defense, and health care. Commercial real estate (CRE) market fundamentals continue forward on solid footing in response to population and job growth.

Metro Denver

Commercial real estate markets in metro Denver posted another year of strong growth and generally improving trends due to ongoing net in-migration, diversified job growth, and capital infusion on both the development and investment fronts.

Office—Strong office-using job growth is paralleling improving market trends for the office sector, such as record-high asking lease rates and a 292-basis point decrease from prior peak vacancy, to 12.6%, as of Q3 2015. Tight labor market concerns remain, although absorption of new office space is occurring at a strong clip. As of Q3 2017, about 2.7 million square feet of shadow space available for sublease is on the market, which is down from the 2016 peak of 3.5 million square feet. More than one-third of the sublease glut is downtown and largely due to sustained weakness in the oil and gas sector. Skyline-changing new construction abounds in downtown Denver, the Denver Tech Center, Interlocken/Northwest, and Boulder. Developers are responding to tenant's demand for Class A new construction with amenities both nearby and internal to the project, as well as transit-oriented locations. Pre-leasing is strong for new developments, particularly in downtown Denver.

Corporate users in the technology, health care, professional and business services, and financial services industries led market activity and are expanding into new space, as well as backfilling vacant space. At least 40 technology firms expanded their Colorado footprints in the past year with downtown Denver at the epicenter and strong activity in Boulder, Southeast Denver, Colorado Springs, and Fort Collins. Start-up companies often lease coworking space, which occupies about 1.3 million square feet in the metro area, but more mature tech firms are selecting well-located offices with attractive amenities and cost effective rental rates.

Corporate relocations and expansions into the Denver market have translated into meaningful demand for commercial real estate. Since 2015, 77 key corporate relocations and expansions have led to 3.6 million square feet in space requirements, including key announcements from British Petroleum (BP), the Partners Group, and Toastmasters.

Industrial—Denver's industrial market is primarily an end-user market rather than a port distribution or export/manufacturing market, such that population and economic growth are the sector's primary drivers. Strong population growth coupled with the e-commerce supply chain rollout, resulted in another strong year for industrial real estate where asking lease rates hit a record high and vacancy hovered around a low 5%.

E-commerce giant Amazon and others will ultimately culminate in an estimated 5.0 million square feet

continued on page 72

Financial Activities

continued from page 71

footprint by 2019 among the "last-mile" distribution facilities and major sorting and fulfillment hubs.

While industrial construction activity is robust at 4–5 million square feet, supply and demand remain in check. The Denver market has seen 30 consecutive quarters of positive net absorption so far, which also reflects national trends, and healthy pre-leasing. More than half of all industrial leasing activity in the past two years is from transportation/logistics/distribution (21%), building materials and construction (13%), food and beverage (12%), and e-commerce (11%) users on a square footage basis.

Retail—Retail market trends reflect a demand divergence between core, grocery-anchored, and regional malls that are in high demand versus strip center neighborhood centers and big box centers with generally weaker market fundamentals. More desirable Class A spaces and locations are commanding increasingly higher rents as their availability is shrinking, while availability in Class B and C spaces/locations is growing.

As the e-commerce wave matures, many traditional brick and mortar retailers are adapting by offering customers omnichannel options to shop: online, in-store, and catalog experiences. Nordstrom and other well-known discount department stores have dealt with rising rents and the popularity of online shopping by reducing their retail footprints and boosting omnichannel shopping experiences.

Consistent leasing activity from fitness, fast casual restaurants, grocery, and entertainment venues are helping to offset big box closures, resulting in the moderately negative net absorption through Q3 2017. Development are currently underway on 1.4 million square feet of prime retail space. Of note, downtown Denver will soon have a second grocery store, and Target will open a location in summer 2018.

Despite the often negative headlines of store closings, the mountain region reports high levels of consumer confidence, strong net in-migration, and continued household formation—all factors that support retail real estate.

Investment—Investors place high value on the Denver's solid real estate market trends and dynamic Denver economy—specifically citing infrastructure investment (airport, light rail, and highway), population growth, and the diversified economy. According to CBRE's Investor Intentions Survey 2017, Denver ranks eighth among U.S. markets for domestic investor preference. The influx of capital seeking multifamily, core, and value-add office and industrial assets is driving up pricing and overall sales volume.

NORTHERN COLORADO COMMERCIAL VACANCY RATES

	Industrial		Retail		Office	
City	Dec 2016	Jun 2017	Dec 2016	Jun 2017	Dec 2016	Jun 2017
Fort Collins	4.0%	3.6%	6.0%	4.2%	6.0%	4.8%
Greeley	6.0%	3.1%	7.0%	4.6%	6.0%	3.5%
Loveland	13.0%	11.7%	4.0%	3.4%	9.0%	8.2%

Source: CBRE.

Northern Colorado

The Northern Colorado CRE market shows solid fundamentals. In June 2017, CBRE reported that Fort Collins' unemployment rate of 2.1% was the lowest among all metropolitan areas in the nation, and Colorado had the lowest rate of 2.6% among the states. Northern Colorado is experiencing a growing population and robust job growth. Industries showing strongest growth include agriculture, technology, R&D, government, and health care. The Group Inc. reports that Weld County is #1 in Colorado for overall business growth, and Windsor has become the hottest housing market in the region and is especially inviting for distribution facilities. CRE vacancy rates tightened overall for industrial, retail, and office properties located in Fort Collins, Greeley, and Loveland between at December 2016 and June 2017. CRE net absorption was positive and rents steadily increased. With continued population and job growth, expect 2018 to be another positive year in CRE markets.

Southern Colorado

Southern Colorado, and Colorado Springs in particular, is a secondary and cost-efficient alternative to metro Denver as noted by Quantum Commercial Group. The city is taking steps to attract business by actively investing in key infrastructure projects, including transportation and storm water system upgrades, and improving conditions at the Colorado Springs Airport to attract additional carriers. The National Cybersecurity Center and the Catalyst Campus chose to locate in Colorado Springs given the area's robust defense contracting presence, a competitive advantage. These organizations seek to establish the city as a hub for these new fields. Data from the Colorado Department of Labor and Employment show that employment growth in the Colorado Springs MSA topped 1.1%, or 3,100 jobs, in September 2017 over the previous year. Unemployment rests at 2.7% (not seasonally adjusted), slightly higher than the state, but below the national average of 4.1%.

Given these solid metrics, national investors and tenants are showing renewed interest in the area. All CRE product types (office, industrial, retail) are reporting decreases in vacancies, increases in rents, and mostly positive net absorption, together increasing property values and investment sales. During 2018, the strong local economy and ongoing job growth will support new development and related lease up.

Western Slope

Efforts by Western Slope communities to diversify their economy away from the energy industry is taking root. Heritage Title reported that 2016 was the

fifth-consecutive year of growth in Mesa County. In addition to agriculture, the Grand Junction Economic Partnership (GJEP) is targeting outdoor recreation and tourism. *The Daily Sentinel* newspaper reported in October 2017 that Mesa County had 1.6 million visitors in 2016, accounting for $1.4 million in lodging taxes and $12.8 million in sales tax revenue. There were 5,500 local tourism-related jobs in 2016, accounting for 10.8% of Mesa County jobs and $139.9 million in wages. Equally exciting, Denver officially landed the Outdoor Retailer trade show in July 2017 when it decided to leave Utah. GJEP will leverage the conference to promote the Western Slope to outdoor recreation companies.

A positive sign of forward economic progress, the *Daily Sentinel* reported sales tax revenues are growing in Grand Junction. Prudent community voices would like to see the surplus used to further diversify the economic base, such as installing solar powered industrial parks. Tech companies look to use renewable energy sources to power their data centers, which also do not require transportation of goods. Another upside of a bright economy, Heritage Title reports foreclosures completed were 219, a 20% decline year-over-year, and as of August 2017, the median price of a single-family home was $229,900, an increase of 13% from 2016. Economic diversity is getting a foothold along the Western Slope. Expect CRE metrics to continue a slow march toward strengthening.

Residential Real Estate

Overview

The pricing and sales forecasts for 2017 proved to be on point. Residential real estate was projected to continue its upward motility, albeit at a slower pace than years past. This year has shown these projections to be accurate; appreciation in Denver was in the 7.8% range, according to Zillow, which was lower than the 11% range seen in 2016 and the 12% range seen in 2015. Based on the factors presented herein, 2018 should see growth in the 3%–5% range and will continue "…transitioning to something that looks more normal," according to Steve Danyliw with DMAR's Market Trends Committee.

Denver

Residential real estate in the Denver Metropolitan Statistical Area (MSA) continues to be robust and has outpaced most of the nation's top markets with strong price appreciation and record low inventory levels, this again according to DMAR's Market Trends Committee.

Denver continues to beat national averages. In fact, according to Zillow, pricing across the nation has increased approximately 6.9% in 2017. This compares to a local appreciation of 7.8% in the Denver Metro area. While the "fall" selling market has seen an expected, seasonal slowdown, last year's strong real estate year has been outpaced by this year's market with a sales growth of 3.3%, according to DMAR's November Real Estate Market Trends Report.

According to a September 2017 report from the U.S. Bureau of Labor Statistics, Denver's unemployment rate stands at 2.2% and Colorado's at 2.3% (not seasonally adjusted). These figures compare to the national unemployment rate of 4.1%. Denver has done a good job diversifying its workforce, with the metro area's major employers in the fields of health care, education, aerospace, and financial services. This trend, coupled with Colorado's geographic proximity to the coasts, its temperate weather, and access to "quality of life" amenities, continues to help drive corporate and employee in-migration. In fact, Denver was one of the 238 cities to submit a proposal for Amazon's Headquarters 2 and is widely considered to be in the top 10 finalists.

Due in large part to many of the preceding factors, inventory levels have remained at historic lows. In 2016, forecasters predicted inventory levels would rise to a more "stable" level (five–six months of supply). Unfortunately, that did not happen. This fact certainly contributed to rising prices even in the face of a rising interest rate environment. Furthermore, according to a report by the State of Cities Data Systems (SOCDS), residential building permits pulled in 2017 in Metro Denver again reported its highest levels ever, outpacing the peak of the market in the mid-2000s.

The real question is what can we expect from 2018? Consensus throughout real estate and economic forecasters seems to be continued growth of population and corresponding housing price appreciation, albeit at a slower, more sustainable pace. However, in order for a slowdown of rampant price appreciation to happen, supply levels need to measurably increase. With the 2015 building codes from the City of Denver having been enacted in 2017, the pace and timeline of infill, new construction has slowed. Unless that side of the construction world changes, prices may well continue to rise at a rate that exceeds the 3.1% expectation presented by several economists. Fortunately for many in Metro Denver, high-quality jobs are being produced, thereby absorbing some of the price increases. With Denver still more "affordable" than many other major metropolitan markets, according to the National Association of Realtors and Numbeo, it is the conclusion of this group that pricing will likely continue its upward march in 2018 but likely in the 3%–5% range.

Mountain Markets

The mountain markets generally had a tremendous year in 2017. According to Land Title, sales in Eagle County surpassed $1 billion in the first six months of the year, the first time this milestone was reached since 2008. Aspen has seen a similarly robust market with sales volume topping $618 million as the end of Q3, representing a 181% increase from 2016. Breckenridge and other Summit County markets have also exhibited strong growth, with Breckenridge boasting prices that have increased by more than 18%, and Winter Park seeing unit sales increase by 56% and prices increase by approximately 6.5%, according to the Grand County Board of Realtors.

continued on page 74

Financial Activities

continued from page 73

Due to the proximity to Denver, and in the case of Aspen and Vail, the proximity to a regional airport, these mountain markets are forecasted to continue building strength in 2018.

One interesting development that will likely affect Colorado's mountain markets is the $1.7 billion portfolio purchase of Intrawest's ski resort portfolio by KSL Capital, the biggest deal in ski resort history. This will undoubtedly create an environment of growth in Steamboat and Winter Park, the latter of which is just over 60 miles from Denver and can now be accessed by the re-introduced Ski Train.

New Home Sales

Metrostudy serves as one of the preeminent firms that conducts quarterly research on new home construction, including data on finished lots and home starts. At the end of Q3 2016, in the Denver and Boulder MSAs, there were over 10,000 annual starts reported, which represented the highest number since 2006. According to a recent Metrostudy report, in Denver County alone, the 2017 home starts increased by more than 10%.

One important takeaway from the new home sale numbers is within Denver County, the number of starts has outpaced annual closings. While these factors do not necessarily have a direct correlation based on lengthening of permitting and construction timelines detailed previously in this report, the year-over-year change is notable. In fact, new home sales within Denver County have dropped by 2.6%, even though starts have measurably increased. This is in the face of drastically reduced supply but might lend itself to the conclusion that pricing is outpacing demand for new construction.

In 2018, as forecasted in other sections of this report, a greater equilibrium of new construction starts and closings may be reached, although this will likely lead to a softening of pricing in this segment of the market. Note, however, this does not necessarily mean a drop in pricing but simply a slowing of appreciation that will likely be more in line with previous conclusions presented herein.

Conclusions

Residential real estate in Colorado proved yet again to be among the nation's strongest performers in 2017. With average growth over the last three years in the low double-digit range, the market has been a shining star for many. In 2018, many forecasters are projecting the upward march to continue, albeit at a slower pace. However, one major factor that could hinder this more measured slowing continues to be housing inventory. With record-low levels never seen in Denver, population continuing to rise and unemployment far below the national average, pricing may well increase at a rate faster than expected. However, from a recent article in the *Wall Street Journal,* a notable mention was that the millennial generation, the largest segment of our country, has begun to settle down and purchase homes. This has been evidenced locally and nationally in higher apartment vacancy rates, and certainly, this segment of buyers will contribute to the strength of the market.

Similar to what was seen and forecasted in 2016, a continued challenge may well be interest rate exposure forecasted in 2018 and the perceived "unaffordability" of real estate in Denver. Added density is an obvious solution to combat rising prices, given the increased scarcity of land. Because prices have continued to show strong appreciation, and as the city continues its gentrification process, more density naturally is added, and should continue to be added, thereby adding to new supply in the market. While these figures still fall substantially short of the percentage of high-density units seen prior to the Great Recession, specifically within the condo segment, Denver seems to be moving in the right direction.

Colorado has been lauded as one of the nation's leading markets for many of the factors presented herein. This will likely continue into 2018, and with the push to attract market-leading companies such as Google and Amazon, there could be big opportunity for Denver over the next year and beyond. ✣

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Professional and Business Services

Professional and Business Services (PBS) aggregates a wide variety of sectors that include Professional, Scientific, and Technical Services; Management of Companies and Enterprises; and Administrative Support, Waste Management and Remediation Services. Across Colorado, these sectors sustained 405,300 jobs in 2016. The committee projects growth of 2.4%, or 9,900 jobs added, in 2017, and continued growth of 2.4%, or 10,000 jobs, in 2018.

PBS has shown consistent employment growth over the last six years, adding about 75,000 jobs in Colorado since 2010. In particular, PBS is benefiting from the "clustering effect" that has taken hold along the Front Range. By their nature, PBS sectors support higher compensation than most other sectors because employees typically leverage college education, and have unique, and/or deep subject matter expertise that often takes years to accumulate and apply in the business-to- business marketplace. This is particularly true for the technology and information sectors where professionals make more money—98% more—than the average private-sector worker. In short, the economic value of higher education, subject matter expertise, and accumulated experience contributes to solid job growth across the majority of PBS subsectors, as well as the rest of the economy.

Colorado's educational attainment, strong job growth, and an attractive business environment were cited in support of Colorado's #1 ranking for the economy in 2017 by *U.S. News and World Report*. This ranking, combined with many other accolades, gives confidence to PBS employers moving to, or expanding in, Colorado. The state is consistently known for attracting highly educated PBS talent, and ranks first in the percentage of associate degree holders or college-experienced adults, and second in educational attainment according to WalletHub and *U.S. News and World Report*.

Colorado has a highly educated population. The state ranks second or 8.6 percentage points higher than the national average in the percentage of the population age 25 and over with a bachelor's degree or higher, according to the 2016 American Community Survey. A total of 39.9% of Colorado residents held a bachelor's degree or higher compared to 31.3% nationally in 2016. By gender, 40.3% of female residents and 39.5% of male residents held at least a bachelor's degree in Colorado.

In addition to the current supply of degree holders, 56.5% of Colorado's 2015 high school graduating class went on to enroll in a postsecondary institution immediately after graduation according to the Colorado Department of Higher Education's *2017 Legislative Report on the Postsecondary Progress and Success of High School Graduates*. Although the percentage in 2017 was up nearly half a percentage point over the previous year, it was still lower than the peak of 58.8% in 2009.

Vitally important, particularly to the PBS workforce pipeline, are those graduating with a science, technology, engineering, mathematics (STEM) degree. There has been an increasing number of college graduates with STEM degrees in Colorado—7,108 bachelor's degrees awarded in 2014–15 compared with 6,153 in 2013–14 according to the Colorado Department of Higher Education's *Degrees Awarded Summary for STEM Programs* report in 2015. However, a large disparity remains across genders; males received 59% of the STEM degrees in 2014–15.

Despite the competitive advantages an educated and talented workforce provides, headwinds are coming from full employment, housing and daycare affordability,

TOTAL PROFESSIONAL AND BUSINESS SERVICES SUPERSECTOR EMPLOYMENT
2008-2018
(In Thousands)

Year	Professional, Scientific, and Technical Services	Management of Companies and Enterprises	Support and Waste Management and Remediation Services	Total[a]
2008	178.9	28.9	145.9	353.7
2009	171.7	28.5	131.5	331.8
2010	169.0	29.0	132.8	330.8
2011	173.7	30.2	137.5	341.5
2012	180.2	32.3	144.4	356.9
2013	189.2	34.6	148.8	372.6
2014	196.8	35.5	154.2	386.5
2015	204.5	36.6	157.3	398.4
2016[a]	210.1	36.7	158.5	405.3
2017[b]	216.4	37.1	161.7	415.2
2018[c]	222.8	37.4	165.0	425.2

[a]Due to rounding, the sum of the individual items may not equal the total. [a]Revised. [b]Estimated. [c]Forecast.

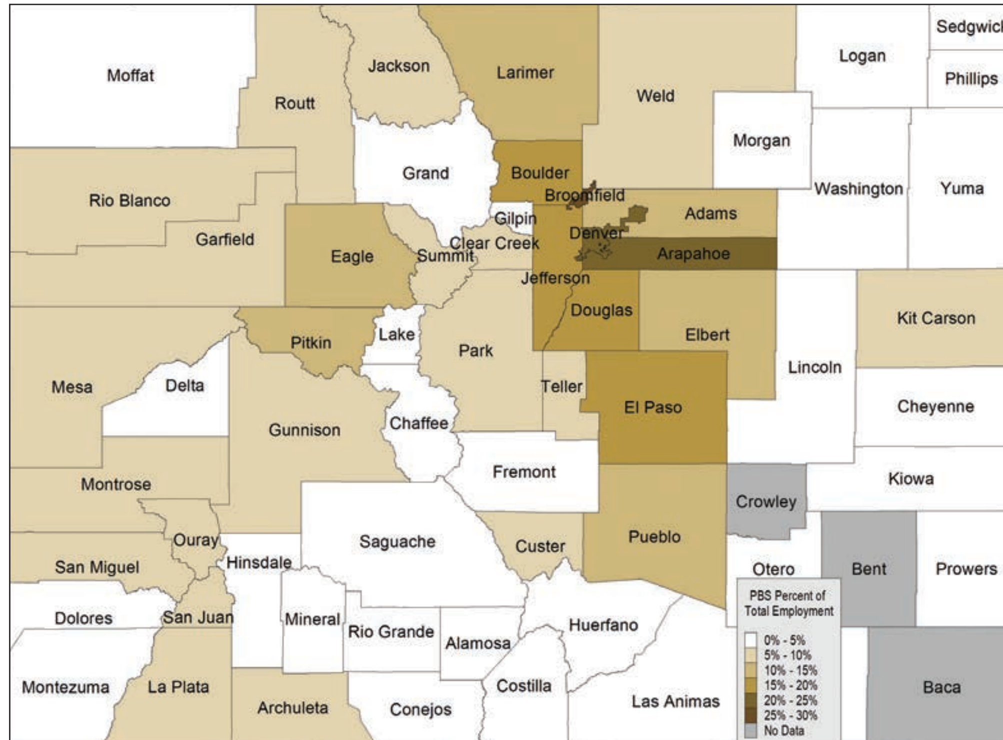
Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

continued on page 76

Professional and Business Services

continued from page 75

PROFESSIONAL AND BUSINESS SERVICES EMPLOYMENT AS A PROPORTION OF TOTAL COUNTY EMPLOYMENT, 2016



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

as well as transportation and communications infrastructure, which have begun to temper expectations of growth. Some employers and employees have hinted at these headwinds as reasons to look outside Colorado for opportunity.

Another headwind for some sectors has been the use of technology to counter the tight labor markets. This substitution effect enables competition from further afield to more easily make an impact in the marketplace. Interestingly, according to Bloomberg Businessweek (June 26, 2017), the movement of people across state lines has become less common. Only 1.5% of Americans made such moves from early 2015 to early 2016 reports the U.S. Census Bureau, down from 3.6% from 1969 to 1970. Moves across county lines within the same state have also declined.

The legal, engineering, architecture, and accounting professions; computer systems design; services to buildings; and business support services are being affected by the increasing use of technology. Bloomberg Businessweek (June 26, 2017) predicts that paralegals, legal secretaries, accountants, and bookkeepers are more likely to be replaced by automation in the future, while lawyers, engineers, and IT managers are least likely to be replaced by automation. The main areas of the automation of jobs is in the support staff providing research and production support for law, engineering, and architectural firms. Research is now more often accomplished through the use of the internet by the attorney or engineer, and the production of their work is increasingly accomplished by more robust software that delivers the product in an automated way, thus reducing the need for support staff.

Despite these headwinds, the great quality of life, opportunity, climate, outdoor recreation, and other environmental benefits of living in Colorado are driving net in-migration, particularly among millennials. These newcomers are disproportionately bringing the PBS skills required for our knowledge-based workforce of the future. Google's expansion in Boulder is a good example. Colorado companies are, in fact, ideally positioned to take advantage of the rapid growth of employed business professionals, scientists, technologists, and engineers.

PBS Employment

Professional and Business Services Concentration by County

The more populated counties clustered along the Front Range corridor continue to have the highest levels of PBS employment compared to counties outside of the Front Range. The map illustrates the PBS industry's proportion of total county employment in 2016. The county with the highest concentration of PBS employment is Broomfield, with 28% of the workforce working in the industry. Arapahoe, Denver, and Boulder counties also have high concentrations of PBS employment—21%, 20%, and 20%, respectively—illustrating the clustering effect of PBS employment.

Professional, Scientific, and Technical Services

The Professional, Scientific, and Technical Services (PST) Sector comprises establishments that provide services that require high levels of expertise and training, including legal advice, engineering, computer and design services, and advertising services. This sector accounted for an estimated 216,400 jobs in 2017, an increase of 3% over 2016. The committee expects the PST Sector will increase employment by 3%, or 6,400 jobs, in 2018.

Legal Services

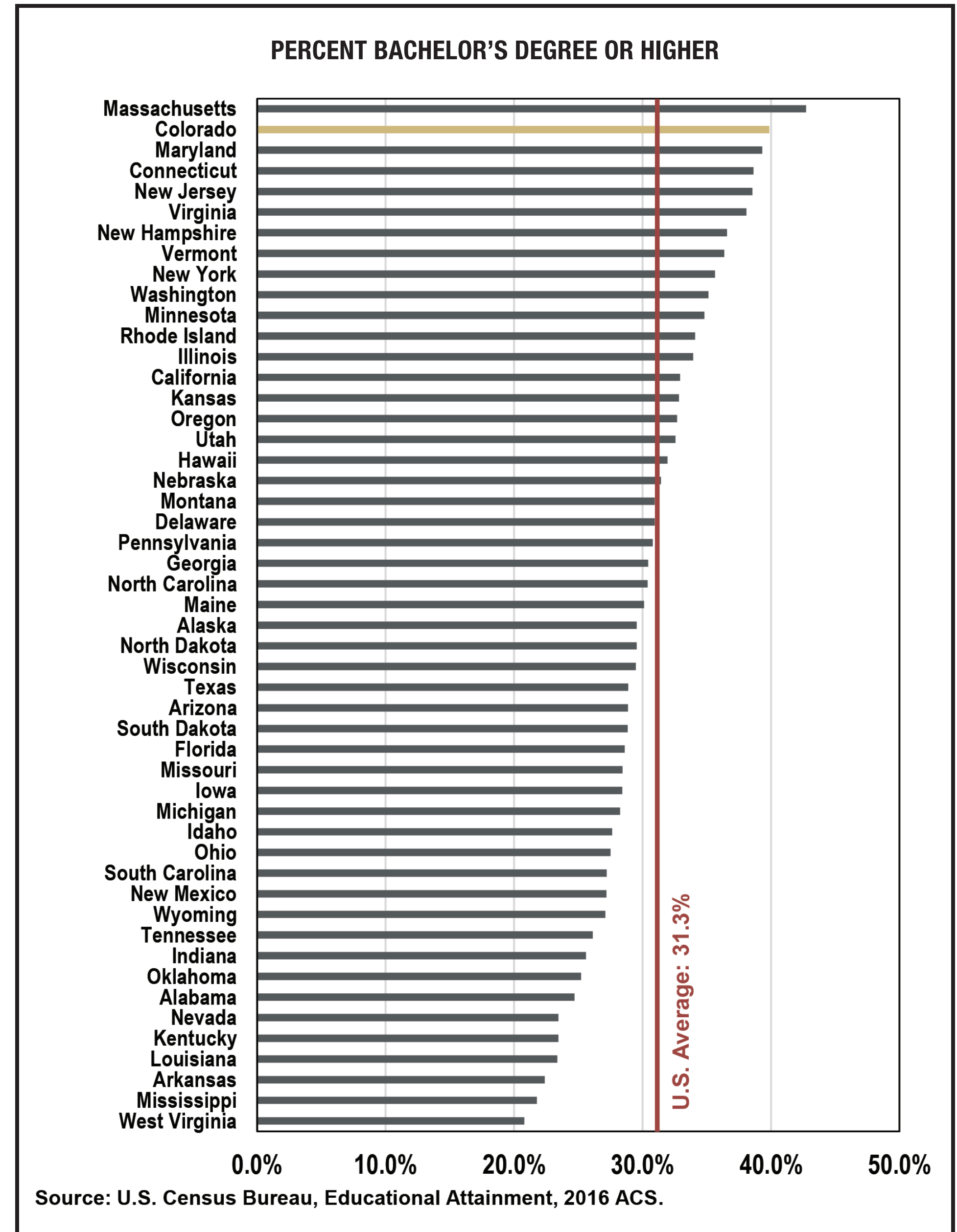
Legal Services employment across Colorado remained unchanged, at about 18,700 jobs, throughout 2016 and 2017.

The Legal Services subsector continues to evolve and commoditize as globalization, outsourcing, and technology play an increasingly larger role in legal analysis, operations, and organizations. Demand for legal services is increasing in some complex regulatory areas but is also shifting due technology and outsourcing. A June 2016 Deloitte global research survey, Future Trends for Corporate Legal Services, highlighted several critical trends, emphasizing a moving and growing market, changing purchasing patterns, evolving expectations for legal services, and demand for broader professional services bundled with legal advice.

The profession is changing rapidly with the use of more technology and continued merger and acquisition activity. Use of technology for legal research is more prevalent, which reduces the need for paralegals and legal secretaries for performing research for trials or negotiation. Decades ago a large law firm could bring in dozens of attorneys and paralegals to research and produce briefs that would overwhelm an opponent. Continuing advances in technology allow for much smaller firms and law staffs to perform the same research in less time and with less effort, which has leveled the playing field significantly. All sizes of law firms are not hiring as many support staff, thereby affecting the employment picture for the legal profession over the last couple of years. The number of mergers has been on the rise, and growth has been realized by some firms by offering complementary legal services, such as family law, and becoming more full service.

The *Denver Business Journal* (August 17, 2017) reported that fee arrangements are changing, with small firms embracing a flat fee concept and large law firms holding on to hourly billing due to their litigation and transactions being more complex and unpredictable in nature. Law school enrollment has declined over the last five years, and more graduates are going directly into practice rather than finding or taking opportunities to work at a large firm for a few years before leaving for individual practice. The view is also that the demand for legal services and practices' ability to grow is directly affected by the growth of the economy.

In short, globalization and outsourcing are holding down the need for additional hiring across Legal Services. That said, corporate legal practices will favor strong candidates with technical expertise and those with experience and training in diverse areas. Additionally, the competitiveness of the industry is driving the hiring and incentives for partner-level candidates with established relationships. Employment for Legal Services has been declining over the last three years, ranging from a loss of 0.5% to 2%. The committee expects this subsector to add 200 positions in 2017 and pick up slightly through 2018, adding perhaps 300 new positions.



continued on page 78

Professional and Business Services

continued from page 77

Colorado's Bioscience Industry

With over 720 companies and 30,000 direct employees, the bioscience industry plays a significant role in Colorado's economy, according to a report by TEConomy Partners and the Biotechnology Innovation Organization. The bioscience industry comprises companies researching, developing, commercializing, and manufacturing biotechnology, pharmaceutical, medical device, diagnostic, digital health, and ag-bio products.

Colorado's drug development sector recorded a 40% increase in the number of establishments from 2012 to 2014. Additionally, bioscience-related distribution saw an increase of 28% in the number of establishments (compared to a national increase of 8%), as well as direct employment gains of 9%. Both commercial and contract manufacturing companies, like Agilent, AstraZeneca, KBI Biopharma, CordenPharma, TOLMAR, Agilent, and Avista Pharma Solutions, have an increased presence in Colorado. All have announced facility acquisitions or expansions, which translates to both an increased footprint in the state as well as hundreds of new jobs in the industry in the years ahead.

The medtech sector has remained relatively flat in the number of new establishments and employment growth from 2012 to 2014 after experiencing substantial growth, in the 18–23% range, between 2007 and 2012. The medical device and equipment sector remains 60% more concentrated than the national average, with a location quotient of 1.6.

Additionally, the emerging field of mobile/digital health is a robust sector in Colorado with nearly 140 companies. The sector includes mobile apps, wearable tech, data analytics, and telehealth technologies, among others—all oriented toward achieving the triple aim of lower per capita health care cost, improved patient experience, and improved population health. The convergence of technology, life science, and health care—with Colorado's leadership nationally in all three areas—has accelerated the growth of this community.

The overall bioscience industry has seen a 15% increase in the number of establishments and a 4.4% increase in employment from 2012 to 2014, with a location quotient of 1.03. With the success of continued growth comes the challenge to train and attract the necessary workforce. Industry partners are working side by side to evaluate (both short- and long-term) workforce needs and forge programs and partnerships to address identified gaps in training, recruitment, and retention efforts.

Contributor: *April Giles, Colorado BioScience Association*

Architectural, Engineering, and Related Services

Employment in the Architectural, Engineering and Related Services Sector is exhibiting slow but steady growth in the 1.6% range for the last couple of years.

Employment in the first quarter of 2017 was flat but starting in April employment grew quickly into the summer months. The committee expects 3% growth in 2017 and 3.5% in 2018.

Economic growth continues to lead to increases in appropriations for infrastructure renewal for public services, such as roads, bridges, water, wastewater, and drainage, and for private-sector growth in warehouses, office buildings, single- and multifamily housing, health, and other commercial facilities.

With low interest rates and continuing demand, the construction of single- and multifamily housing and commercial office buildings continues at a brisk pace. A record number of apartment units are being opened on the market with some signs of softening demand; however, rents and lease rates remain steady or even slightly higher in the fall of 2017. The construction of new condominiums is still a very small percentage of the new supply of total multifamily units. Demand for "affordable" housing of all types is still present. Existing pricing of housing of all types is still on an upward trend, with total average sales pricing of about $240,000; however, the average price of new homes is just over $400,000. The need for design of residential and commercial buildings is expected to remain steady through 2018.

Congressional appropriations for the nation's surface transportation programs are expected to increase in 2017 for the transportation systems to be safer, more innovative, and more efficient. The FAST Act focuses on the need to establish a new program for highway freight projects, address large-scale projects of national or regional importance, streamline environmental review and permitting of projects, improve flexibility of project financing, and increase safety and use of passenger and freight rail carriers. The most significant aspect of this Act is its length of five years, which will allow for the type of long-term appropriations for the design and construction of needed very large infrastructure projects. Several projects are in the I-70 Corridor to the east of I-25, the north I-25 expansion toward Loveland and Fort Collins, and the south I-25 expansion from Castle Rock to Monument. The C-470 expansion from I-25 to Wadsworth is currently under construction with anticipated completion by summer 2019.

Statewide funding for infrastructure projects continues to fall behind the pace of growth with resulting deterioration of roads and bridges of the state, municipalities, and counties. Senate Bill 267 provided an additional $1.8 billion over the next 20 years; however, estimates of the needed infrastructure funding are 10 times that over the same period. This is the only additional appropriation that survived the 2017 General Assembly. An attempt for an additional $3.5 billion extension of the current bond issue to be placed on the fall 2017 ballot to fund capital projects all over the state for the next 20 years died in a senate committee. State revenue forecasts for the next few years indicate that an additional $400 million is expected. How much of that will be allocated for transportation projects will be determined by the Joint Budget Committee and the General Assembly in 2018.

Many Denver area municipalities are anticipating the need to increase their appropriation to transportation projects as populations grow and infrastructure deteriorates, requiring greater maintenance. Denver citizens passed nearly $1 billion in bond projects for maintenance and capital projects for the city's roads, bridges, buildings, cultural facilities, and other projects. The widening of the E-470 Tollway from Parker Road to Quincy is due to be completed in late 2017. Additional widening projects for that will require design services and construction are anticipated from Quincy to the north in a few years.

The Regional Transportation District (RTD) University of Colorado A-line from Union Station to Denver International Airport (DIA) opened in spring 2016, followed by the B-line. The Gold Line to Wheat Ridge is delayed from opening until sometime in 2018. The North Line design and construction is underway, which will add a new line from the Union Station north to the west of Brighton at State Highway 7.

Denver International Airport will be looking for design services and the related construction of additional capacity for Peña Boulevard and adding capacity to the existing concourses. A significant expansion of more than 39 gates was announced in late October 2017, which will create the need for engineering and architectural design. Development around the airport, including hotels, restaurants, and housing, is continuing along Tower Road and from 40th Avenue to 56th Avenue. Denver is also adding capacity to those roads due to the increased commercial and residential growth. This growth is expected to be maintained for several years. The Gaylord Hotel to the southwest of the airport is currently under construction and will add to the capacity for conferences and lodging in the area.

PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES SECTOR EMPLOYMENT
2008-2018
(In Thousands)

Year	Legal Services	Architectural and Engineering Services	Computer Systems Design Services	Management, Scientific, and Technical Consulting Services	Other	Total[a]
2008	18.1	44.8	43.1	17.9	55.0	178.9
2009	17.8	41.6	40.2	16.7	55.4	171.7
2010	17.9	39.2	40.0	17.6	54.4	169.0
2011	18.2	39.3	41.6	18.9	55.7	173.7
2012	18.8	40.4	44.0	20.0	56.9	180.2
2013	19.4	42.0	47.9	22.4	57.4	189.2
2014	19.2	43.3	50.6	23.9	59.8	196.8
2015	19.1	44.1	53.5	25.8	62.1	204.5
2016[b]	18.7	44.8	56.3	27.0	63.5	210.1
2017[c]	18.9	46.1	58.4	28.1	64.9	216.4
2018[d]	19.2	47.7	61.3	29.2	65.3	222.8

[a]Due to rounding, the sum of the individual items may not equal the total. [b]Revised. [c]Estimated. [d]Forecast.

Note: There was a reclassification of employees from the Computer and Electronics sector in Manufacturing to the Computer Systems and Design Services sector in Professional and Business Services in 2013.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Computer Systems Design and Related Services

The Computer Systems Design (CSD) subsector continues to see increased investments in information security, social networks, and mobile and cloud computing. Businesses within this subsector create software, design computer systems, integrate technologies, and manage computer systems. CSD employment grew 2,800 in 2016 but will likely moderate, to 3.7%, in 2017, resulting in 58,400 jobs. Growth is expected to continue in 2018, at about 5%, or 2,900 additional jobs, for a total of 61,300.

Colorado's strong technology network puts the state in a position to benefit from the national growth in this industry. According to CyberSecurity Ventures, a researcher and publisher of reports covering the global cybersecurity industry, experts expect cybersecurity firms to face a shortfall of up to 1.5 million workers by 2019. The National Cybersecurity Intelligence Center in Colorado Springs brings synergy between businesses, nonprofits, and government agencies in this critical area. Reflecting that shortage, Careers in Colorado reports that Colorado cyber security professionals are already paid

continued on page 80

Professional and Business Services

continued from page 79

ADMINISTRATIVE AND SUPPORT AND WASTE MANAGEMENT AND REMEDIATION SERVICES SECTOR EMPLOYMENT 2008–2018 (In Thousands)

Year	Employment Services	Services to Buildings and Dwellings	Business Support Services	Other	Total[a]
2008	40.1	40.6	24.9	40.3	145.9
2009	30.0	38.2	23.9	39.4	131.5
2010	33.7	36.9	24.0	38.2	132.8
2011	36.8	37.0	23.7	39.9	137.5
2012	40.7	37.8	27.1	38.9	144.4
2013	43.0	38.9	28.4	38.5	148.8
2014	46.9	40.9	26.9	39.5	154.2
2015	47.3	42.8	25.7	41.5	157.3
2016[b]	47.7	44.1	24.6	42.3	158.5
2017[c]	48.4	45.9	22.9	44.5	161.7
2018[d]	49.4	47.7	21.7	46.1	165.0

[a]Due to rounding, the sum of the individual items may not equal the total. [b]Revised. [c]Estimated. [d]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

about 9% more than other IT workers, and workers with industry certifications command even higher wages.

Cloud computing is another critical field that is driving growth in the sector, which benefits from a long history of data and storage companies and appreciation of processing power. As these services move to the cloud, Colorado companies stand to benefit.

According to *Forbes,* the median advertised salary for cloud computing professionals in 2016 was $124,300. The Denver-Aurora-Broomfield MSA is the #13 metropolitan area for open positions for cloud computing professionals.

The adoption of platform as a service (PaaS) is predicted to be the fastest-growing sector of cloud platforms according to KPMG, projected to grow from 32% in 2017 to 56% in 2020. Results from the 2016 Harvey Nash/KPMG CIO Survey indicate that cloud adoption is now mainstream and accelerating as enterprises shift data-intensive operations to the cloud. By 2018, at least half of IT spending will be cloud based, reaching 60% of all IT infrastructure and 60%–70% of all software, services, and technology spending by 2020. International Data Corporation estimates that by 2018, most analytics will use the cloud.

Additional growth is being seen in enabling faster and more reliable cloud services. For example, Peak 10 + ViaWest, a hybrid IT infrastructure provider in Greenwood Village, Colorado, and Charlotte, North Carolina, is offering "colocation, connectivity, cloud, and managed solutions." The company recently announced a new core network backbone featuring 100 gigabit connectivity across nine of its data center and cloud node locations spanning the United States, which will result in more reliable cloud computing.

The State of Colorado is pursuing several notable activities to enhance paths to IT employment in Colorado. This includes the Colorado Technology Association, which has been a critical player in moving forward the development of statewide IT Career Pathways. It has also been working closely with Skillful to identify IT job competencies and better align curriculum to occupations. In tandem with the governor's initiative to launch the National Cyber Intelligence Center, a consortium is building new aligned cyber pathway programs from middle school through graduate school. Additionally, CareerWise Colorado developed an IT youth apprenticeship program.

Management, Scientific, and Technical Consulting Services

Management, Scientific, and Technical (MST) Consulting Services averaged 7% growth over the last few years, including 4.7% growth in 2016 to total 27,000 jobs. The committee expects this pace to continue, 4% in 2017 and in 2018.

The variety of organizations across Colorado that rely on the expertise of management, scientific, and technical consultants continues to grow. These individuals include executives, planners, developers, managers, and many others. Whether public or private sector, start-ups, or established aerospace organizations, the deep expertise required continues to draw in additional MST consulting talent in Colorado.

As a percentage of the state's payroll, Colorado's space and defense industry ranks fifth nationally according to the Computer Technology Industry Association. Jobs

in the state range from protection and exploration to innovation. The space industry in Colorado continues to be a significant source of jobs—an industry estimated to be larger than aerospace in Florida and Texas.

Half of the U.S. population was transfixed by the sky for at least three minutes in August 2017. With the 2017 solar eclipse visible across all 50 states, hopefully the next generation of space enthusiasts was born. In Colorado, many were able to experience the eclipse with National Oceanic and Atmospheric Administration (NOAA) scientists and the NASA live feed. The contagious excitement of space and science continues to bring in passionate people and dedicated resources. The Colorado STEM Report card available through the Alliance for Science & Technology Research in America estimates 14% growth in aerospace engineers and 17% growth in environmental scientists between 2016 and 2025. These jobs continue to have above average salaries.

Federal contracts continue to be a large economic driver for space, science, and engineering jobs in the state of Colorado. In 2016, defense contracts worth over $6 billion were awarded to contractors within the state. The governmentcontractswon.com website gives details by contractor, county, and even type of service. Colorado is home to large government facilities as well as hundreds of small business partners. The Advanced Industries Accelerator Grant Program has been successful at bringing industry, education, and government groups together. It has awarded 375 grants with more than $49 million in funding. This early development funding fosters future job growth by allowing proof of concept costs to be shared. In 2017, three companies received a second stage of funding—Arthroventions, Optienz Sensors, and IM Therapeutics. Some of the exciting developments in the state include:

- School of Mines SunShot Initiative research on improving the efficiency and manufacturing of silicon-based solar cells.

Photo: University of Colorado

- United Launch Alliance's Atlas V Rocket will be launching the next Landsat 9 mission.
- NOAA is operating the Joint Polar Satellite System and the Geostationary Operational Environmental Satellite that will improve weather forecasting.
- Digital Globe's high-resolution satellite imagery is being used for hurricane and wildfire damage assessment.
- Sierra Nevada's reusable Dream Chaser is on track for Space Station deliveries in 2020.
- Lockheed Martin started construction of a $350 million satellite factory southwest of Denver.
- Colorado State University is researching carbon sequestration modeling and monitoring to protect soil deterioration.

In addition to private venture capital, the Colorado Office of Economic Development and International Trade plays a pivotal role in funding new ventures.

continued on page 82

Professional and Business Services

continued from page 81

Photo: University of Colorado

A new report from the Leeds School of Business at the University of Colorado Boulder has found that the National Institute of Standards and Technology (NIST), a federal research lab operating in Boulder and Gaithersburg, Maryland, added $319 million to the Colorado economy and supported the equivalent of 2,823 jobs in 2016. Nationwide, NIST has had a $2.7 billion economic impact with 17,068 jobs in 2016, with a 9-to-1 return on investment from their scientific research and development.

Management of Companies and Enterprises

One of the most diverse PBS sectors is Management of Companies and Enterprises, which includes a very broad cross section of company headquarters and regional offices for businesses. Many of these businesses are company headquarters. The sector, which continues to represent less than 2% of Colorado's economy, has generally produced modest job growth over the last few years. Companies in this sector include Vail Resorts, DaVita Healthcare Partners, Comcast, MDC Holdings, and DISH Network.

Job growth in this sector is driven by national and international economic conditions as well as corporate headquarter relocations. Colorado has seen many corporate headquarters either relocate or announce relocations to the Front Range over the past couple of years. While companies are increasingly choosing to locate in Colorado due to the highly educated workforce and appealing quality of life, the increasing cost of living is becoming an emerging liability and may be discouraging some companies from considering a move to Colorado.

The recent announcement of Amazon's HQ2, and its perhaps 50,000 positions to follow, has sparked a flurry of over 200 economic development responses from cities around the country. Many industry observers believe Denver and the Front Range are competitively positioned. This decision will have no effect on 2018, but good publicity during the race for HQ2 will support future decision makers who may select the Front Range for other headquarter relocations.

The sector posted a modest gain to a total of 36,700 jobs in 2016. It is expected to gain 1.1% and 0.8% in 2017 and 2018, respectively, to total 37,400.

Administrative and Support and Waste Management and Remediation Services

This sector comprises establishments meant to perform routine support activities for the day-to-day operations of other organizations. It includes office administration, hiring and placing personnel, cleaning, document preparation and clerical services, and waste disposal, among others. This sector is anticipated to grow 2%, or 3,200 jobs, to 161,700 in 2017, with growth steady, at 2%, in 2018.

Employment Services

Employment Services is related to hiring and placing personnel and has typically, but not consistently, served as an early indicator of future hiring trends. Given employment trends highlighted below, the PBS Committee expects the subsector to grow 1.6%, to 48,400 jobs, in

2017. As these trends continue to make a greater impact on hiring decisions, growth is expected to increase 2.1%, in 2018, which will result in an additional 1,000 jobs across Colorado.

Projections for U.S. staffing market growth provided by Staffing Industry Analysts (SIA) underwent a revision late in 2016, from 6% to 4% growth in 2017. In September 2017, the organization projected 3% growth in 2017 and in 2018, expecting to top $145 billion in revenue, which was the same amount projected in 2016. Second quarter 2017 GDP growth of 3.1% and advanced estimates of 3% in the third quarter should prevent any further downward revisions in SIA's forecast and could set the stage for a better-than-expected growth and revenue outcome. An increasingly tight labor market in the United States and low unemployment could be one reason for SIA's lower projections.

According to the Bureau of Labor Statistics, the U.S labor force participation rate is 63.1%. In September 2017, Colorado's labor force topped three million people for the first time, the unemployment rate was 2.5%, and the state's labor participation rate was up over 68%. This suggests a tightening labor market as people who were previously discouraged from looking for work move back into the labor market.

The supply/demand rate (total number of unemployed persons divided by the number of total ads) in the United States fell from 1.63 in August 2016 to 1.59 in August 2017, according to The Conference Board Help Wanted OnLine (HWOL) Data Series, also indicating a tightening of the labor market. In Colorado, where unemployment fell from 3.2% to 2.5% from September 2016 to September 2017, The Conference Board reports a dramatic drop in the supply/demand rate (year-over-year in September) in both Colorado, where it fell from 0.87 to 0.65, and in Denver, where it fell from 0.69 to 0.56.

Even though the American Staffing Association reported revenue for placement services nearly tripled from 2009 to 2016, in Colorado's tight labor market some placement firms that rely on money-for-time models report that the low rate of joblessness is not ideal for their firms. "We were busier when unemployment was at 5 percent," one owner said to the *Daily Camera.* "Now, there are many services fighting for the same few qualified workers."

Even though some staffing firms report problems finding candidates in tight labor markets, the growing economy should be a boon to local staffing businesses. "It's a good time for recruiting agencies," Peggy Shell, owner of a Boulder-based staffing firm, told the *Daily Camera.* "For us it's been a matter of keeping up with growth rather than going out and finding new business." For Colorado staffing firms hoping to keep up with this growth, using the latest recruiting techniques and tools/technologies, and partnering with motivated employers that recognize the impact a tight labor market and record low employment has on hiring will be paramount.

Small to medium-size employers that have unrealistic expectations in terms of how tight the labor market is will find it more difficult to compete for job seekers coming from big companies in locations such as San Francisco and Boston. According to the Boulder Economic Council, 96% of Boulder's 7,000 employers have between 5 and 50 employees, which highlights the importance of having effective staffing and compensation plans in place when planning to compete in the state's very competitive and nuanced recruiting environment.

A potential source of untapped talent in Colorado could be what's termed "underutilized workers," which stood at a rate of 7.3% in 2016 in Colorado according to the *Denver Business Journal.* According to the journal, the unemployment rate and labor force figures do not include workers who have not sought a job recently or are discouraged but want a job and do not think one is available, and leaves out people working part-time who say they cannot find a full-time job.

Larger companies like Vertafore, which decided to relocate its headquarters from Seattle to Denver and is now Colorado's largest private software company, are positioning themselves to take advantage of the state's abundant tech staffing market. Vertafore's Senior Vice President and Chief Sales and Marketing Officer BJ Schaknowski told Insurance Business America in August 2017, "We are now the largest privately held software company in Colorado, already. It's helped us just recruit top folks into the company… I'll tell you: the amount of talent available to us is so amazing," he noted. "We've simply been blown away by the level of resources, the connections we have with the local schools—we've just been so impressed with the level of tech talent here in Denver."

In September, the *Wall Street Journal* named Boulder as the fourth-best city for women, behind New York, San Francisco, and Iowa City, reporting that a typical woman in Boulder earns about $10,000 more than the national median wage for women.

Services to Buildings and Dwellings

The Services to Buildings and Dwellings subsector has more than fully recovered from the previous recessionary period. It grew 3% in 2016 is projected to grow 4% in 2017 and 2018, adding 1,800 positions across Colorado.

Building occupancy rates along the Front Range remain strong, and several large new developments are underway or recently completed across metro Denver. Pre-leasing activity has been strong for many new developments, which will spur even more new construction.

RISE Commercial Property Services is a full-service property management company overseeing buildings from North Denver to Colorado Springs. T.J. Tarbell, president of RISE, says the strong market fundamentals have resulted in increased hiring for quality managers, facilities personnel, and trade workers. This sector continues to experience above average wage growth due to increases in building supply and an already limited labor pool. Strong market fundamentals will continue to put a

continued on page 84

Professional and Business Services

continued from page 83

strain on hiring. "Hiring in a strong market like this can be difficult, and there is a shortage of quality property managers and facilities personnel in Colorado right now. We are having to plan far ahead and give ourselves more time than usual to find talented employees," said Tarbell.

Tarbell expects that over the coming years, new development and a slowdown in the economy will eventually put upward pressure on vacancy rates, leading to a decline in both new construction and the hiring of skilled property management personnel.

For 2018, the demand for maintenance of these buildings is expected to drive increased job growth in this subsector.

Control Solutions Inc. (CSI) is a leading Colorado-based building services company specializing in building automation and temperature controls. According to Gary Bales, with CSI, "Due to the strong residential and commercial construction market, we continue to be faced with a shortage of qualified people. The trades are also experiencing a shortage of the younger generation entering the trade profession."

Bales reported that CSI continues to have a generous back log of business. Most of the school districts throughout the Front Range passed bonds for new schools and are retrofitting existing facilities. Multifamily housing is dominating the construction market in Denver where approximately 90% of the cranes towering over the Denver skyline are for multifamily dwellings.

Support Services

Support Services includes a broad variety of advisory, security, payroll, logistics, and other professional office functions. This sector experienced contraction of 5,500 jobs in the last four years due to a variety of contributing factors. Given recent employment growth across the state, the PBS Committee expects Support Services to shed nearly 7%, or 1,700 jobs, in 2017. Given broader trends in the industry, another reduction of 5% is expected in 2018.

Waste Management and Remediation Services

In the waste handling services industry, waste collection accounts for about 61% of industry revenue, treatment and disposal including landfills account for 23%, transport and processing account for 11%, and waste to energy represents about 5% of total revenue according to RecyclingBin.com. Data from Hoovers indicate that small companies typically operate in only one of these segments while larger companies often have vertically integrated operations that include all of these components.

Waste management volumes generally trail demographic trends and related housing and commercial growth. This includes demolition, aggregate societal activity, mixed with consumer spending (meaning waste material generation and to a certain extent recyclable material). Despite a general sense that local ordinances that enable or require recycling and composting creates jobs, there is scant data on which to base that premise. Rather, the real-world market forces, especially the highly variable demand for recycled material, have not been a factor in sustained employment growth.

In Colorado, Waste Management and Remediation Services will likely see a seventh-straight year of employment gains as these services are a trailing indicator of overall population growth and, to a lesser extent, new and replacement (infill) commercial development. The committee expects this subsector to provide for job growth of 5.2%, to 44,500, in 2017, and another 3.6% in 2018. Industry consolidation among major players has slowed, and regional haulers are adding slightly more staff as recycling, composting, and more sophisticated customer-service protocols are evolving.

PBS Sector Summary

The many subsectors of Professional and Business Services will continue to collectively drive employment growth across the Front Range of Colorado in 2018. The overall strength in the economy, demographic trends, and the business environment will support steady growth of 2.4% in jobs across all PBS sectors in 2017 and in 2018. ✜

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Education and Health Services

The Education and Health Services Supersector includes private-sector education, as well as four health care and social assistance sectors, including ambulatory care, hospitals, residential and nursing facilities, and social assistance. This industry represents almost one of every eight jobs in the state of Colorado. Nearly 88% of industry employment is made up of Health Care and Social Assistance, while slightly more than 12% is related to private education. Education and Health Care employment totaled 326,700 jobs in 2016. The industry is on track to add about 8,300 jobs in 2017, a growth rate of 2.5%. In 2018, jobs are projected to grow by 8,400, a growth rate of 2.5%.

Educational Services (Private)

Private-sector educational services can be classified as private not-for-profit, private for-profit, religious exempt, and private occupational, as well as private companies delivering training and development and other ancillary and support services. Public elementary and secondary educators are in local government; public higher education is in state government. Employment numbers for the private education sector for 2017 declined slightly, with year-end totals expected to be down 100 jobs over 2016. The employment outlook for private education in 2018 is modestly positive, with growth of 100 jobs.

COLORADO EDUCATION AND HEALTH SERVICES EMPLOYMENT 2008–2018 (In Thousands)

Year	Educational Services	Health Care and Social Assistance	Total
2008	30.6	219.9	250.5
2009	31.3	226.0	257.2
2010	32.3	232.4	264.7
2011	33.7	239.9	273.7
2012	35.4	247.2	282.6
2013	36.1	250.7	286.7
2014	37.1	261.8	298.9
2015	38.5	275.6	314.2
2016[a]	39.8	286.9	326.7
2017[b]	39.7	295.3	335.0
2018[c]	39.8	303.6	343.4

[a]Revised. [b]Estimated. [c]Forecast.
Note: Due to rounding, the sum of the individual sectors may not equal the total.
Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

The education sector is typically countercyclical relative to the economy; the growth in this sector during the last two economic downturns supports this theory. As such, as the economy continues to improve, for-profit education revenues are expected to increase at a slower rate, and overall employment growth in this sector will continue to be flat or modest at best. Private nonprofits and other related businesses will be slightly stronger and provide the counterbalance needed to attain slight growth. In fact, the three biggest schools for enrollments (Regis University, University of Denver, and Colorado College) claim the majority of employees (*Denver Business Journal,* April 21, 2017).

The private education sector also includes career schools and colleges that provide training in the trades and crafts, helping to meet a growing national demand. According to the Career Education Colleges and Universities (CECU, formerly the Association of Private Sector Colleges and Universities) in citing data from Bureau of Labor Statistics and the U.S. Department of Education:

- "The Bureau of Labor Statistics reported that 6.8 million Americans were unemployed in June, while at the same time 6.2 million jobs remain unfilled in America. This jobs gap exists because millions of prospective employees lack appropriate career education, training and skills" (10/6/2017). Examples of how private career colleges help to close that gap include:
  - Skilled commercial drivers—"Private sector career colleges and universities had a 90% share of completions in commercial driving programs in 2016 – 855 out of the 948 completions that year" (8/4/2017).
  - Skilled surgical technologists—"private sector career colleges and universities had a 39% share of completions of surgical technology programs in 2015, a total of 3,279 in that year" (7/7/2017).
  - Electricians—"Private sector career colleges and universities produced over 26,000 academic awards in the electrician field from 2011–2015. By 2025, these institutions are projected to produce over 40,000 academic awards in this field—nearly half of the 85,900 new jobs that will be added" (4/7/2017).

The private career schools in Colorado represent only a small percentage of overall employment, but their importance cannot be overlooked.

Concerns that May Limit Employment Growth

Driving the cautious optimism are several hurdles, including the following:

- Reported enrollments were down across the private-for-profit college sector, with reported declines of as much as 55% between 2011 and 2015. There were no signs of a rebound in 2016 and 2017. However, according to The National Center for Educational Statistics, overall undergraduate enrollment is projected to increase by 14% (from 17 million to 19.3 million students) between 2015 and 2026.
- Closures related to legal difficulties will also limit growth.
  - Pressure from the U.S. Department of Education have led to past closures in Colorado of three Everest College campuses. Similar pressure forced the closure of ITT Technical Institute in September 2016.
  - Heritage College closed 10 schools (one in Colorado) at the beginning of November 2016 due to cash flow concerns.

continued on page 86

Education and Health Services

continued from page 85

While revenue growth in parts of this sector, mainly in the private, nonprofit schools, and the supporting services side, is expected to continue modestly, for-profit colleges will continue to face increasing cost challenges due to the economy. However, the legislative pressures that the for-profit schools have faced in the last decade are being eased with the new president and education secretary indicating support for the for-profit colleges and universities. However, at the writing of this report, little had changed. Overall, employment will be down modestly in 2017, with a slight increase in 2018.

Description of the Private Education Sector

Contributions to Colorado's employment come from many schools with the state's private postsecondary institutions, accounting for approximately one-third of all postsecondary enrollments. The largest employers in the private education services subsector come from private postsecondary education. Among Colorado's more prominent private nonprofit schools are the University of Denver, Regis College, Colorado College, and Johnson & Wales University. Private for-profit accredited colleges include Arizona-based University of Phoenix, which has three locations in Colorado. A total of 86 private accredited colleges are listed on the Colorado Department of Higher Education website; 65 of those are nonprofit and 21 are for-profit. Of the 65 schools, 40 are private seminary schools and 18 are not based in Colorado

A total of 333 in-state occupational schools and 23 out-of-state occupational schools (approved to market in Colorado) are registered with the Colorado Department of Private Occupational Schools. Among Colorado-based private accredited colleges is Alta Colleges, a privately held for-profit education company based in Denver. Private occupational schools include Denver-based Bel-Rea Institute and IBMC College, with four locations. Universal Technical Institute (UTI) and WyoTech are out-of-state schools that are approved to operate in Colorado.

Employment in the private education sector is driven by both business demand for continuing education programs and consumer demand for training that improves employment prospects or general quality of life. In the corporate and business sector, skill development of employees through learning curricula continues to play a critical role in developing competitive competencies of businesses, especially in the high-tech and consulting arenas. Corporations consider reinvestment in their employees a required business development function. Furthermore, certification within specific industries drives both corporate and consumer consumption of learning to remain competitive.

Colorado is also home to paraeducation organizations. For example, Pearson Learning Technologies Group (LTG) has offices in Colorado and has experienced several years of modest growth. Increases are expected to continue into 2018 in online higher education services, including the higher education, preK–12 education, and professional education markets. Other software businesses in the learning and education delivery sector in Colorado include Amplifire. As education companies such as these continue to create more content, learning technologies, and educational analytics opportunities, Colorado has the potential to be a strong player in e-learning.

Education is in the midst of significant transformation and reform, including an increase in adoption of online high school classes. This heavy reliance on technology both requires more strategic thought specific to pedagogy, as well as instructional design, but also provides tremendous opportunities for data-driven education. When this "big data" can provide at-risk reports on behaviors, such as dropped classes within a week of course starts, an understanding of how students learn best, and the development of courses that are tailored to student needs in real-time, personalized learning is very close to becoming reality.

Health Services

The private Health Care and Social Assistance Sector provided employment to 286,900 workers in 17,000 establishments in 2016. Workers who make up this sector are diverse and range from nurses, personal care aides, and technicians to administrative personnel. About two-thirds of total health care workers are employed in medical offices and hospitals. Colorado has a greater percentage of employees in the medical offices and hospitals subsectors and a lower percentage in the residential and nursing facilities and social assistance subsectors compared to the nation.

The average annual wage for employees in the Health Care and Social Assistance Sector was $48,801 in 2016 (health care, $54,721; social assistance, $23,443). The average annual wage varies significantly based on occupation, with health care practitioners and technical occupations earning an average of $85,550 and health care support occupations earning an average of $33,650.

Health Care and Social Assistance employment continues to grow each year; in 2016 employment increased 4.1%. Salaries grew 1.3% over that same period.

The Health Care Landscape

Demand for health care services and workers is expected to increase primarily from:

- A growing and aging population
- Chronic conditions such as asthma, heart disease, or diabetes
- Residents' behavior and lifestyle choices (e.g., smoking and alcohol abuse)
- Expansion in the number of persons eligible to receive health insurance coverage

At the same time, the supply of care providers, especially physicians and nurses, is anticipated to lag compared to demand. Forty percent of physicians and advanced

practicing registered nurses are over age 55 and 26% are over 60. These practitioners will soon transition from providing care to consuming health care. In some counties, especially rural counties, this retirement exposure will be extreme. People who live in those counties may have difficulty finding replacements for their health care provider. Workforce expansion may prove difficult as supply levels are impacted by expected annual retirement rates among current practitioners, limited professional interest in primary care, and restricted capacity to train new health care professionals.

It is not surprising that the call for health care affordability dominates the health care services industry. Purchasers of health care, including employers, government entities, and individuals, recognize that without comprehensive change to the overall health system soon the ability to afford health care coverage and services may be out of reach for many.

The 2017 Colorado Health Access Survey reports that one in five Coloradans skips some component of their care due to concerns with cost. This includes skipping doctor visits and specialist care or filling needed medications. Coloradans buying their health care through the individual market are two times more likely to skip components of their care than individuals with employer-based coverage.

Furthermore, 16.2% low-income Coloradans (those between 0 and 138% of the federal poverty level) spend 20% or more of income on out-of-pocket medical costs compared to 1.4% of Coloradans at 400% or more of the federal poverty level.

One positive trend in health care affordability is the drop in Coloradans reporting that they are having problems paying their medical bills. A total of 14% of Coloradans reporting having issues in 2017 compared to 21.9% in 2009. This is a 7.9 percentage point drop. The following trends will impact the size and characteristics of the workforce.

Aging

As of 2017, Colorado's projected population is about 5.6 million people of which about 14%, or 780,000, are 65 or older. Colorado's State Demography Office reports that between 2010 and 2017, the overall population growth was 11.6%, while its senior population grew by 41.2%, the third-fastest rate overall. This disproportionate growth in the 65 and older population will increase overall health care spending as spending increases with age. A total of 34.5% of health care spending was by individuals 65 and older across all states in 2012. Even though Colorado seniors rank among the nation's healthiest, the expected 1 million workers aging out of the workforce over the next 20 years will require shifts in the health care infrastructure.

Select Populations and Health Status

Factors that determine overall good health are 70% controllable by individuals, their friends and families, and the larger community. Influencing behaviors, policy, and the management of physical and medical environments can significantly impact the health of citizens.

Colorado ranks as the leanest state in the nation—20.2% of its population has a body mass index of 30% or higher and 17.9% of its population was identified as physically inactive in 2016. However, this is up from 6.9% of the population in 1990 as reported in America's Health Ratings.

Health risks associated with obesity, especially in children, include high blood pressure and high cholesterol, insulin resistance and type 2 diabetes, breathing problems, and social and psychological problems. The costs attributed to overweight and obesity are a significant burden on the health care system and economic output. Coloradan's lifestyle choices that negatively impact health outcomes include drug use, excessive drinking, and smoking. Statistics for health risks for 2016 from America's Health Ratings include:

- Coloradans reporting binge or chronic drinking: 19.1% versus 17.7% nationally
- Colorado drug deaths per 1,000: 15.9 versus 14.0 nationally
- Coloradans smoking: 15.6% versus 17.5% nationally

Colorado has significant disparity between adults with a high school education who report their health as very good or excellent and those without a high school education who report their health as very good or excellent. The difference was 33.9% in 2016 versus the national average of 29.5%. Based on the America's Health Ratings, Colorado ranked 48th in this metric.

Overall, Colorado continues to be one of the healthiest populations in the country, and it attracts businesses seeking to hire a healthy, therefore more productive, workforce. States with a healthy workforce, all else being equal, provide companies with an economic advantage over those states with a less healthy workforce. With the leanest adult population of any state and low incidences of death from cancer, diabetes, and heart disease, Colorado is well positioned to continue to attract and retain businesses. However, public and private organizations must continue to advance initiatives to improve the health of the state's workers. As Coloradans begin to age in healthy ways, the expected outcome is less use of intensive resources devoted to health care. This result will influence the makeup of our health care workforce.

Health Insurance Coverage

Employer Sponsored

A total of 49.4% of Coloradans have insurance through their employers. This is down from 57.7% in 2009, or a decline of 8.3 percentage points. This drop mirrors national trends. Employer-sponsored insurance is driven by job growth, employers offering coverage and defining eligibility requirements, and employees choosing to purchase the insurance offering and deciding on single or family coverage.

continued on page 88

Education and Health Services

continued from page 87

In 2016, approximately 98% of all businesses in Colorado have fewer than 100 employees, employing 63% of the state's private workforce. Small businesses continue to erode their offering of health insurance coverage, citing the cost of premiums as a significant barrier.

According to the Medical Expenditure Panel Survey (2015), roughly half of workers in Colorado's small businesses are offered health coverage, with 69% of those firms with over 25 employees having the opportunity to purchase health insurance. Only 25% of businesses with 24 or fewer employees offer health insurance coverage. The Marketplace (Connect for Colorado Public Exchange) provides coverage to more than 3,000 small businesses while the remainder buy privately. Small group employers have experienced a relatively stable market and expect modest premium increases, averaging around 2% in 2017.

Lockton's 2017 Colorado Employer Benefits Survey Report indicates that Colorado employers are seeing higher rate increases on medical benefits than the national average and are actively seeking ways to bring these increases down to come into better alignment with the national average. Employers are continuing the trend of cost shifting to employees and identifying and trying to mitigate specific cost drivers. However, health benefits are still an important component of an employee's benefit package in Colorado's competitive labor market. Focus has been on improving employees' understanding and utilization of their benefits and wellness programs to target high cost drivers.

In an effort to mitigate rising costs, plan changes include increasing employees' premium costs, deductibles, and out-of-pocket limits, or reducing benefits or moving to a lower cost carrier. Colorado has averaged 9% annual increases (before plan design changes) since 2012 compared to annual rate increases averaging 14% from 2004–2011.

As employers and their employees are increasingly bearing the burden for the rise in health care costs, there are rallying cries for pricing transparency for premiums and services; fast, online transactions; and convenient access, including retail clinics, improved patient experience, and affordable pricing.

Individual and Family Coverage

The market size for individual and family purchasers is about 435,000 of which 43.1% (187,000) buy medical coverage through the Marketplace according to the 2017 Colorado Health Access Survey; the remainder buy coverage privately. The Centers for Medicare and Medicaid Services reported that 38.5% of individuals determined eligible received financial assistance during the 2017 open enrollment period. The average across all states is 77.5%.

Colorado purchasers will pay premiums that are on average 32.2% higher in 2018 based on currently published rates. In prior years, the tax credits (federal subsidies) would mitigate these large increases for some purchasers as credits also increase. Subsidies are only available for those who buy coverage through the Exchange. However, the president's executive order in October 2017 puts the subsidies at risk and could drive up the premiums paid by individuals. Other aspects of the executive order aim to provide leaner, cheaper policies and allow for shorter term policies. However, new regulations and guidance are needed to implement the order and it could take months to carry out. This continues to drive uncertainty in the market.

Eight insurers continue to offer plans on or off the Exchange in 2018: Anthem, Bright Health, Cigna, Denver Health, Freedom Life Insurance, Colorado Choice, Kaiser, and Rocky Mountain HMO.

Medicaid and Uninsured

Colorado's Medicaid program, known as Health First Colorado, covers over 1.4 million people, which

HEALTH CARE AND SOCIAL ASSISTANCE EMPLOYMENT, 2008–2018
(In Thousands)

Year	Ambulatory Care	Hospitals	Nursing Care	Social Assistance	Total[a]
2008	90.5	53.7	37.7	38.0	219.9
2009	93.3	54.9	39.1	38.7	226.0
2010	96.8	55.7	39.3	40.5	232.4
2011	101.1	56.5	40.3	42.1	239.9
2012	104.6	57.9	40.8	44.0	247.2
2013	106.8	55.9	41.1	46.8	250.7
2014	112.7	57.7	41.7	49.7	261.8
2015	120.0	60.4	42.6	52.6	275.6
2016[a]	126.5	62.5	43.5	54.4	286.9
2017[b]	129.1	63.9	43.9	58.3	295.3
2018[c]	131.8	65.5	45.0	61.2	303.6

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

represents approximately one of every four people in the state. Among the enrollees, approximately 560,000 are children, 700,000 are adults without disabilities, and 178,000 are seniors and people with disabilities. Colorado opted to increase Medicaid eligibility under the Affordable Care Act (ACA) beginning January 1, 2014; more than 490,000 people are covered under the ACA provisions, which covered the full costs of newly eligible individuals from 2014–2016, and phases down to a 90% federal contribution by 2020. Colorado also covers another 78,000 children and pregnant women through a stand-alone Children's Health Insurance Program (CHIP), known in Colorado as the Child Health Plan Plus (CHP+). The Department of Health Care Policy and Financing, which administers the Medicaid and CHIP programs, is the largest state department by appropriation in Colorado, with expected expenditures of over $10.2 billion in state fiscal year 2018–19, including $2.9 billion from the general fund.

Colorado's Medicaid Program began experiencing significant growth in FY2008–09, at the start of the Great Recession, and experienced double-digit percentage growth in caseload every year through FY2015–16. Growth began to slow dramatically in FY2016–17. Projections indicate that caseload growth will slow to 3% in FY2018–19 and 2% in FY2019–20.

Most Health First Colorado members are enrolled in a managed care program known as the Accountable Care Collaborative. Expansion of the Accountable Care Collaborative allows for the implementation of significant changes to payment methodologies, allowing Health First Colorado to pay providers for the increased value they deliver, instead of a strict fee-for-service reimbursement. By FY2018–19, over 1.2 million members of Health First Colorado will be enrolled in the Accountable Care Collaborative.

To continue to improve health and streamline costs, Colorado was awarded a State Innovation Model (SIM) grant in 2015, resulting in federal funding for health delivery system transformation to better coordinate physical and behavioral health. The state will improve health by:

- Providing access to integrated primary care and behavioral health services in coordinated community systems,
- Applying value-based payment structures,
- Expanding information technology efforts, and
- Finalizing a statewide plan to improve population health.

Independent research indicates that the Medicaid expansion authorized by the Affordable Care Act has had a positive impact on Colorado's economy. In a report for the Colorado Health Foundation, the Colorado Futures Center at Colorado State University found that Colorado's economy, as measured by state GDP, is $3.8 billion (1.1%) larger as a result of Medicaid expansion. Furthermore, the Colorado Futures Center found that Colorado's economy added over 31,000 jobs and that household earnings are $643 higher due to the effects of the Medicaid expansion.

The Health Care Workforce

The health care sector is an engine for Colorado's economy. Health care employed 286,900 people in the state in 2016, and growth has been strong. Between 2008 and 2016, the state added nearly 67,000 jobs in health care, accounting for more than 25% of the total job growth in Colorado.

The number of Coloradans with health insurance surpassed the five million mark for the first time in 2017 according to the Colorado Health Access Survey (CHAS). This reflects the general growth in the state's population, but it also reflects the fact that Coloradans have gained greater access to insurance. Only 6.7% of residents are uninsured. This means strong demand for health care services.

Another important trend is that the growth in health care jobs is not restricted to doctors and nurses. The health care system is enormously complex and involves many support roles in information technology (IT) and insurance, for example. For every doctor in the United States, there are eight clinical professionals and eight nonclinical workers according to one national estimate. Health care, therefore, drives employment across a wide range of occupations and skill levels.

Physical Health

Colorado gained 686 physicians between 2016 and 2017, which brings the total number of active licensed physicians to 15,686 according to data from the Colorado Department of Regulatory Agencies. With 2.8 physicians for every 1,000 residents, Colorado has roughly the same number of physicians per capita as the national average. However, because Colorado is so geographically diverse, some areas have much better access to care than others. Denver County has at 5.4 doctors per 1,000 residents, well above the national average of 2.9, while more rural counties have much lower rates, and two counties do not have any licensed physicians.

Registered nurses (RNs) make up the largest subcategory of the health care workforce, with more than 60,000 RNs licensed to work in Colorado. The position has seen a 41% increase since 2006, and is predicted to grow another 40% by 2025. The number of Certified Nurse Assistants (CNAs) increased rapidly following the implementation of the Affordable Care Act, from 27,114 in 2011 to 46,811 in 2014, but has since stabilized between 40,000 and 45,000. This group is especially important because it provides around 80% of the hands-on services needed by Colorado's senior population, which is expected to double to 1.3 million by 2030.

The number of licensed physician assistants (PAs) and nurse practitioners (NPs) in Colorado has grown relatively slowly. In 2017, there are about 2,900 PAs and 4,000 NPs—slight upticks from 2016. Due to the ever-increasing cost of health care, hospitals and other health care providers have sought to cut costs by expanding the

continued on page 90

Education and Health Services

continued from page 89

PHYSICAL HEALTH OCCUPATIONS, 2009-2017
(In Thousands)

Year	Registered Nurses	Certified Nurse Assistants	Physicians	Nurse Practitioners	Physician Assistants	Total[a]
2009	48.9	28.0	13.1	2.6	1.7	94.2
2010	50.9	34.1	13.2	2.7	1.8	102.7
2011	53.6	27.1	13.8	2.7	1.9	99.2
2012	53.7	34.8	14.1	2.8	2.1	107.6
2013	56.0	40.2	14.6	2.9	2.2	116.1
2014	57.8	46.8	14.8	3.1	2.4	125.0
2015	59.3	41.6	15.2	3.4	2.5	122.0
2016	59.3	46.8	15.0	3.6	2.7	127.4
2017	61.8	41.2	15.7	4.0	2.9	125.6

[a]Due to rounding, the sum of the individual items may not equal the total.

Source: Colorado Department of Regulatory Agencies.

OTHER HEALTH OCCUPATIONS, 2009-2017
(In Thousands)

Year	Dental Hygienists	Dentists	Pharmacists	Total[a]
2009	3.0	3.4	4.5	10.9
2010	3.2	3.6	4.7	11.4
2011	3.2	3.6	4.8	11.6
2012	3.4	3.7	4.9	12.1
2013	3.4	3.7	5.1	12.2
2014	3.6	3.9	5.3	12.8
2015	3.6	3.7	5.2	12.6
2016	3.7	3.8	5.5	13.1
2017	3.8	3.9	5.5	13.2

[a]Due to rounding, the sum of the individual items may not equal the total.

Source: Colorado Department of Regulatory Agencies.

range of services that can be legally provided by these mid-level providers who cost less than physicians.

Behavioral Health

Behavioral health, including mental health and substance use treatment, continues to gain attention as a critical part of the health care system. For example, Colorado is making substantial investments to integrate physical and behavioral health through initiatives such as the State Innovation Model. In addition, the growing crisis of substance abuse, especially opioids, is causing many policymakers to search for ways to improve access to behavioral health professionals and services in Colorado. For example, in 2017 the General Assembly approved Senate Bill (SB) 1351, which requires the state to examine options for funding residential and inpatient substance use disorder treatment for Medicaid enrollees.

The number of licensed certified addiction counselors (CACs) has decreased from 2,501 in 2011 to 1,891 in 2017 even as the need for CACs has grown with the opioid epidemic. This rate is equal to just 0.3 CACs per 1,000 Coloradans, and 17 counties do not have any licensed CACs.

Licensed addiction counselors (LACs) are even more scarce, with only 695 in the state. But their numbers have been steadily increasing since 2013, when there were 277 in Colorado. With the increasing need for addiction counselors in rural areas, recruitment and loan repayment options are being discussed at the state level to help address the shortage. Options are also being discussed at the state level for recruiting more CACs—especially in rural areas which have been hit hard by the rise in opioid abuse. In addition, the state has added 1,266 licensed professional counselors since 2014, bringing the 2017 total to 6,026. Psychologists also saw a slight increase in their ranks, up to 2,641 from 2,435 in 2016.

In rural areas especially, scarcity of providers will remain a major barrier to Coloradans receiving needed behavioral health care. The movement to integrate primary

BEHAVIORAL HEALTH OCCUPATIONS, 2014-2017
(In Thousands)

Year	Psychologists	Licensed Professional Counselors	Certified Addiction Counselors	Licensed Addiction Counselors	Registered Psychotherapists	Total[a]
2014	2.4	4.8	2.2	0.3	3.1	12.8
2015	2.5	5.3	2.4	0.5	4.1	14.7
2016	2.4	5.4	1.4	0.6	3.4	13.2
2017	2.6	6.0	1.9	0.7	4.4	15.6

[a]Due to rounding, the sum of the individual items may not equal the total.

Source: Colorado Department of Regulatory Agencies.

care and behavioral health has transformed care delivery, but it has also created a need for more behavioral health providers.

Other Health

Colorado has seen a steady increase in the number of pharmacists in the past decade. The number of active licenses increased 39% between 2005 and 2017, reaching 5,547.

Access to oral health care in Colorado has expanded dramatically since the implementation of the ACA. More Coloradans have dental insurance than ever before, according to the Colorado Health Access Survey. This increase in insurance will translate into an increase in access to oral health care, which will mean expanding the capacity of the oral health workforce. Colorado has 3,852 licensed dentists in 2017, an increase from 2016. The average rate around the state is 0.7 dentists per 1,000 residents, but this is not evenly distributed across the state. Population centers have much higher concentrations of dentists, while 19 rural counties have either one or no practicing dentists.

Dental hygienists who provide much of the care received in an average dental visit, saw a slight uptick from 3,748 in 2016 to 3,757 in 2017. Pilot programs that use dental hygienists to provide care in rural areas have established that this is a field with potential for growth in the workforce.

Regional Disparities

The Colorado Commission on Affordable Health Care identified workforce shortage issues as a major barrier to health care in rural areas of Colorado. Low reimbursement for primary care limits the number of physicians that can be recruited in areas with low population densities. Loan repayment programs such as the National Health Service Corps and the Colorado Health Service Corps provide loan forgiveness to physicians who work in eligible rural clinics after completing medical training. But as of September 30, 2017, the National Health Service Corps budget was not renewed by Congress. Even with the Colorado Health Service Corps still intact, this could make it more difficult to recruit rural providers.

Health Connectors

Health connectors are an emerging area of the health care workforce that aims to connect community members to health services through various means. Regional health connectors are locally based individuals whose full-time job is improving the coordination of local services to advance health and to address the social determinants of health. They focus on connections between clinical care, community organizations, and public health and human services.

Numerous initiatives are underway to train and develop health connectors. For example, the Colorado Department of Public Health and Environment is leading an effort to establish a competency-based credentialing program and registry for the state's rapidly growing patient navigator workforce. A patient navigator is a part of a health care team that helps an individual overcome barriers to quality care, including access, literacy, transportation, and more. Funding from the Colorado Department of Public Health and Environment has helped to establish the Patient Navigator Training Collaborative. Partnering with the Center for Public Health Practice at the University of Colorado School of Public Health, the Denver Prevention Training Center, the Denver Health and Hospital Authority, and Red Rocks Community College, this initiative offers a range of patient navigation curricula for individuals seeking to enter the job market, and the Collaborative offers consultation to transform health care systems through innovative, evidence-based approaches to deploying patient navigators and improving patient outcomes and satisfaction, and reducing costs.

Hospitals

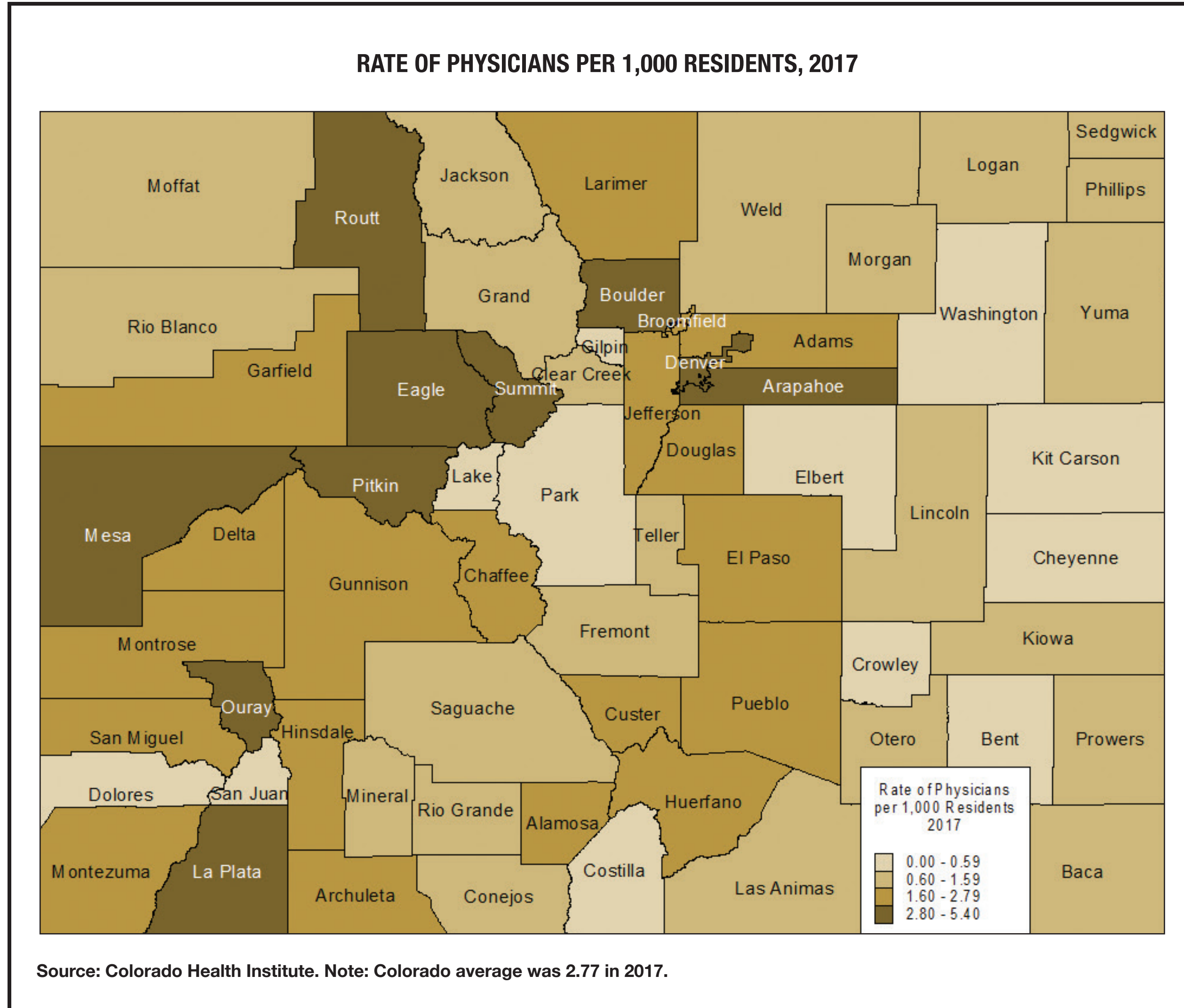
Colorado hospitals are significant contributors to the state's economy, employing thousands of people in communities throughout the state each year. In 2017, the Occupational Employment Statistics estimates that

continued on page 92

Education and Health Services

continued from page 91

RATE OF PHYSICIANS PER 1,000 RESIDENTS, 2017



Source: Colorado Health Institute. Note: Colorado average was 2.77 in 2017.

88,400 Coloradans are employed in general, surgical, psychiatric, substance abuse, and other specialty hospitals.

Additional hospital economic contributions that are often overlooked include the following:

- During the recent recession, Colorado's hospitals did not experience the depth of job losses that affected many other industries.
- Average annual employee compensation at Colorado hospitals is fair and competitive.
- Hospitals provide a variety of stable job opportunities to workers regardless of education level—from physicians with graduate degrees and advanced training to service and maintenance workers with high school diplomas.

Hospitals are a key component in the health care continuum and the Triple Aim, a national initiative from the Institute for Healthcare Improvement, is a major effort intended to improve the quality of care, satisfaction of patients, health of populations, and the per capita costs of health care. Health care systems struggle to implement the Triple Aim as there is an inherent tension: to achieve better quality, improve patient outcomes, and lower costs in the long run, the system must incur significant upfront and ongoing operational costs. New health insurance models, such as high deductible health plans (HDHPs), have also shaped consumer perceptions and expectations around the cost and delivery of health care services. According to the National Center for Health Statistics, HDHPs now represent 40% of all health plans purchased by Americans, exposing consumers to higher out-of-pocket health care costs. This shift in financial responsibility has made consumers more acutely aware of the cost of care, and subsequently, consumers developed new expectations for the health care market around what information should be readily available to them when making health care purchasing decisions.

In addition to national efforts Colorado has taken many steps to improve transparency and quality in health care:

- Colorado's All Payer Claims Database provides transparency in cost to consumers.
- Colorado legislature has passed legislation requiring health care providers to provide cost of any nonemergent procedure and to provide information about financial assistance and charity care policies.

This has led to Colorado receiving an A grade from Catalyst for Payment Reform for affordability and transparency in health care.

Both the national and state-specific efforts are particularly impactful to hospitals as determining the cost of care has been historically very difficult.

In rural parts of Colorado, hospitals are often the largest employers in communities. They face unique challenges as many are the single source of care in their communities. They continually struggle to attract and retain medical staff, especially physicians. Patients in rural areas tend to be sicker and older, and have a lower income than their counterparts in urban areas. Rural hospitals that have fewer resources do not always have the opportunity to participate in arrangements that tie hospital payments to the quality of the care delivered.

Joining the metropolitan Denver hospital systems in January 2018 will be the new Veterans Affairs Medical Center in Aurora. The facility will serve more than 400,000 veterans in Colorado and neighboring states. The new 184-bed hospital is a collection of a dozen buildings located on the Anschutz Medical Campus. Health care facility construction continues to positively impact local economies. Examples include the UCHealth Greeley Hospital, the Pagosa Springs Medical Center, the St. Thomas More Hospital (Cañon City) footprint expansion, the recently announced new UCHealth Sports-Medicine Center in Englewood, and the hospital expansion and medical building projects in the Colorado Springs area, totaling about $1 billion.

Colorado Rural Health Clinics

Over 73% of Colorado's geographic area is rural or frontier, and almost one-sixth of the state's population lives in this area. Of Colorado's 64 counties, 24 are considered rural and 23 are considered frontier (a rural county having six or fewer people per square mile). These counties tend to typically have:

- Lower income populations
- Higher poverty
- Higher percentage of elderly
- Shortage of health care providers
- Decreased access to health care services
- Fewer insurance carriers
- Increased insurance costs

Many of these rural areas are just sustaining or even losing population over time. There are 12 rural or frontier counties that are projected to lose population growth between 2010 and 2020, with Bent County seeing the largest losses, at 10%, over the decade.

With low population density and lack of population growth in these communities, rural health care providers, similar to rural hospitals, are in an especially precarious situation as health care economics of high fixed costs and reimbursement pressures make it difficult to achieve financial stability. Staffing and recruitment of rural health workers—plus the national effort incorporating health information technology, including electronic medical records—is especially daunting due to the lack of access to a technical workforce and financial resources. In addition, rural health care communities often suggest their voice is unheard since urban providers greatly outnumber rural providers.

Colorado has 49 federally certified Rural Health Clinics (RHCs) and another 50 rural clinics that do not have federally certified RHC designation but provide vital access to health care services in their communities. RHCs are required by federal regulation to accept Medicare and Medicaid patients. Additionally, RHC care for the uninsured and underserved populations in their communities. Many clinics accept managed care and private pay patients; however, these payer types account for a small percentage of the patient population in rural Colorado.

Other Trends

Colorado Health Care Legislation

During the 2017 legislative session, the General Assembly devoted a significant amount of time to health care legislation. Although part of a wide-ranging bill related to the sustainability of rural Colorado, SB 17-267 created the Colorado Healthcare Affordability and Sustainability Enterprise (CHASE), allowing additional fees from hospitals to be collected with the major effect of increasing Medicaid reimbursements to hospitals by $564 million. Multiple bills increasing scrutiny on insurers passed in 2017, including requirements preventing insurers from discriminating against high-risk populations (SB 17-088), expanded public notice requirements for companies seeking to purchase a Colorado-based health insurance company (SB 17-198), requirements on fees for non-covered services by dentists (SB 17-190), and requirements prohibiting an insurance carrier from retaliating against health providers over coverage decisions (HB 17-1173).

The General Assembly also targeted behavioral health and substance use issues, providing funding to expand medication-assisted treatment in Pueblo and Routt counties (SB 17-094); allocating $1 million to establish the Center for Research Into Substance Use Disorder Prevention, Treatment, and Recovery Support Strategies (SB 17-193); and appropriating $7 million for crisis service facilities to help prevent people going to jail during a mental health crisis. In addition, the General Assembly directed the Department of Health Care Policy and Financing to study and report on the options to establish residential and inpatient treatment in Medicaid for substance use disorders.

The General Assembly began work on establishing high-risk pools or reinsurance programs with SB 17-300 (High-Risk Health Care Coverage Program), which directed the commissioner of insurance to study and report on methods of providing health care coverage to high-risk individuals and reducing health insurance premiums in the individual market.

Multiple bills seeking additional transparency in health care costs, particularly related to hospital and pharmacy costs, failed during the legislative session.

continued on page 94

Education and Health Services

continued from page 93

Consolidation and Competition

In July 2015, Aetna announced its plan to purchase Humana for $37 billion. The combined companies will cover 33 million people nationally. Shortly after this announcement Anthem agreed to acquire Cigna for $54 billion, covering 53 million people and creating the nation's largest health insurer. However, the U.S. Justice Department blocked both acquisitions in January 2017 due to antitrust concerns.

In July 2016, United Healthcare acquired Rocky Mountain Health Plans. United Healthcare, which currently has more than 1 million enrollees, will now have access to 250,000 residents who primarily reside in rural and western Colorado, and a presence in the Medicaid market.

Pharmacy

According to the Department of Health and Human Services, in 2015 prescription drug spending in the United States was about $457 billion or 16.7% of overall personal health care services. Seventy-two percent ($328 billion) was for retail drugs and the remainder, 28% ($128 billion), was for nonretail drugs. Colorado spends over $3.5 billion annually on prescription medications. Expenditures are rising and are projected to continue to increase faster than overall health spending, thereby increasing prescriptions' share of health care expenditures.

Factors underlying the rise in prescription drug spending from 2010 to 2014 can be roughly allocated as follows:

- 10% due to population growth
- 30% increase in prescriptions per person
- 30% to overall, economywide inflation
- 30% shift toward the use of higher priced drugs

The projected specialty drug/biotechnology trend rate for 2017 is high, at 19%. Typically, less than 1% of all medications are specialty drugs; however, those drugs now account for 35% of total projected prescription drug cost trends for 2017—a 10 percentage-point increase from two years prior. Several factors are driving up specialty drug costs, including an aging population and increased prevalence of chronic disease.

Cancer is a major factor in pharmacy costs due to significant use of specialty drugs and extremely high cost drug treatments. With currently available and potentially new agents coming, more patients may not be cured but more will be living longer with disease. Along with this increased cost, the increasing incidence and aging population continues to increase the demand for oncology services. According to The State of Cancer Care in America from the American Society of Clinical Oncology, 26.1 million Americans will be living with a history of cancer by 2040 and need ongoing care services.

Given the high number of pharmaceutical products available for conditions that use specialty medications, care providers and health plans are implementing strategies to manage patients who use these drugs to control costs. Strategies include utilization-management controls, formulary or preferred step-therapy, tiered copayment structures, split fill, and network management, including aggressive drug contracting terms that maximize client and patient value. Despite these strategies for cost containment, pharmacy trends continue to rise.

Pharmacy costs also continue to account for a significant and growing part of public assistance health care spending. Colorado's Medicaid fee-for-service payments for pharmaceuticals increased to $965 million in FY2016–17 from $334 million in FY2012–13. This is an increase of 289% in five years—although these costs do not reflect rebates collected from manufacturers that are required by federal law as a condition of allowing a drug to be covered under the Medicaid program.

Because of the rapidly increasing cost of pharmaceuticals, a number of states are actively seeking ways to control costs similar to health plan strategies. For example:

- Massachusetts recently submitted a demonstration waiver request to the Centers for Medicare and Medicaid Services to adopt a commercial-style closed formulary, exclude drugs with limited or inadequate evidence of clinical efficacy, and procure a selective specialty pharmacy network
- Vermont passed legislation requiring manufacturers of products that account for significant state spending to submit price increase justifications to the state attorney general.
- New York passed legislation to impose a Medicaid prescription drug spending growth cap.
- Maryland passed legislation to allow penalties to be imposed on the makers of essential generic and essential off-patent medications for excessive price increases.
- Utah and Montana both passed legislation enabling studies of prescription drug pricing.

States continue to look for alternative pricing methodologies (APMs) to allow for better cost controls and value-based payments; however, there is no clear answer as to whether states will be successful in implementing these APMs. In particular, high-cost drugs continue to be a significant driver of cost. According to the Center for Evidence-based Policy, in federal FY2015, Medicaid programs spent an estimated $16.9 billion on 64 high-cost

drugs, accounting for 3.1% of total national Medicaid spending. Frequently, as in Colorado, states are price-takers: Medicaid agencies are required by federal regulation to reimburse pharmacies for their cost of purchasing drugs and so remain at the whim of manufacturers to set prices. While mandatory federal rebates and state supplemental rebates offset much of the cost, market forces and regulatory obstacles combine to make growing pharmaceutical prices a concern to state programs.

Conclusion

Despite an uncertain future of the ACA, in 2017 the state's insured rate is holding at 93.5% and the uninsured is at 6.5%. This has remained relatively consistent since 2015. However, the way that Coloradans have accessed health coverage has continued to shift. As a percentage of the population, fewer Coloradans are receiving coverage from their employers, down 8.3 percentage points between 2009 and 2017. Medicare has increased 4.4 percentage points, and Medicaid has increased 10.8 percentage points. Government programs, including Medicare and Medicaid, cover one-third of the Colorado population. The individual market has remained virtually unchanged from the 2013 numbers, at 8.1%—even with the implementation of the ACA.

Affordability is still the key concern for employers and individuals alike. Employers have continued the trend of shifting cost to the employee, and there has been growth in the prevalence of high deductible plans. Health plans continue to seek ways to mitigate growth in premiums given increasing costs in key areas like pharmacy and cost of care.

As an industry and source of jobs, health care is expected to grow at a steady pace due to long-term trends, including population growth, an aging population, and eroding health status for key factors such as weight. However, health care has been a very high profile political topic since the implementation of the Affordable Care Act. As health care policy continues to evolve, this could cause disruption in the market and impact how and whether Coloradans obtain health care coverage. The Colorado market has remained relatively stable through the uncertainty in the market in 2017. The executive order established by the president will require time to implement, and the impact to the health care market remains uncertain at this time. The Milken Institute School of Public Health at George Washington University analyzed early legislative attempts to overhaul the ACA and estimated negative employment impacts to health care and other supporting services, such as construction and real estate, retail trade, finance and insurance, and other private and public employment sectors. While this analysis is not necessarily relevant to the president's current order, it is important to note that changes in access to health care coverage have broad-reaching economic impacts to a number of industries (whether positive or negative). ✜

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Leisure and Hospitality

Overview

This report reviews trends in key sectors that are the primary economic drivers for Colorado's tourism industry: conventions and meetings, hotels, restaurants, gaming, skiing, and outdoor recreation. The analysis reviews the infrastructure, events, and marketing activities that shaped the industry in 2017 and looks ahead to the challenges and opportunities that will steer future growth. The Leisure and Hospitality Supersector includes performing arts, entertainment, sports, recreation, accommodations, and food services used by Colorado residents, tourists, and business travelers.

The Leisure and Hospitality industry accounts for more than one in eight jobs in Colorado. The industry was one of the first to add jobs following the recession and 2017 marks eight years of consecutive employment growth. Leisure and Hospitality employment grew by an estimated 7,500 jobs (2.3%) in 2017, and is projected to increase by 6,200 jobs, or 1.9%, in 2018.

National Trends in the Tourism Industry

Optimism prevailed at the Travel and Tourism Research Association's annual Travel Outlook Forum held in Baltimore, Maryland, in late October 2017. The global economy is strengthening, consumers are spending, profits are strong, and commodity prices have stabilized.

U.S. economic growth is expected to rise in 2018, driven by moderate GDP growth, strong consumer spending, and elevated consumer confidence. Despite hurricane and wildfire setbacks, job growth has been robust, and wage growth is accelerating. Since the U.S. economy is solid, travel growth will come from both domestic and business travel. In 2018, domestic business travel is expected to increase 2%, and leisure travel, 1.8%. Domestic U.S. leisure travel expenditures are expected to increase 5.4% in 2018, while domestic U.S. business travel expenditures are expected to grow 4.1%.

Trends to look for in 2018 are incremental growth in leisure travel, greater focus on family travel, and increasing desire for short getaways.

Other forum highlights include:

- Growth is expected to continue across the attractions industry as it recorded a gain of 1.5% in 2017. An increase of 1.4% is forecast for 2018.
- The meetings industry forecast is for continued growth with increases in employment, business conditions, and attendance.
- While domestic travel is recording strong increases, foreign travel to the United States is down 3% in 2017 and is expected to be weak in 2018.
- Global data benchmarking firm STR reported the hotel industry is strong and still growing after seven good years. The U.S. hotel industry will see supply continue to grow, causing occupancy to decline, but rate growth will continue. The 2018 forecast shows supply increasing 2.1%; demand increasing 1.9%; occupancy dropping 0.2%; average daily rate (ADR) increasing 2.5%; and revenue per available room (RevPar) rising 2.3%.

The forum challenged attendees to start thinking about voice search, artificial intelligence, augmented reality, virtual reality, connected cars, self-driving cars, true high-speed trains, and changing demographics.

Tourism in Colorado

In May 2017, the Colorado Tourism Roadmap was released. The roadmap is a comprehensive strategic plan to build the Colorado tourism industry's competitive advantage through closer collaboration, creation of new traveler experiences across the state, and a fresh focus on sustainable tourism.

LEISURE AND HOSPITALITY EMPLOYMENT
2008–2018
(In Thousands)

Year	Arts, Entertainment, and Recreation	Accommodation	Food Services	Total Accommodation and Food Services[a]	Total Leisure and Hospitality[a]
2008	45.7	42.3	185.0	227.3	272.9
2009	44.6	39.9	178.0	217.9	262.4
2010	44.7	39.5	178.8	218.3	263.0
2011	45.6	41.0	184.8	225.8	271.4
2012	46.5	41.8	191.4	233.2	279.7
2013	47.3	42.8	199.3	242.1	289.4
2014	49.0	43.6	207.8	251.4	300.4
2015	50.8	44.5	217.5	262.0	312.8
2016[b]	52.5	46.0	224.9	270.8	323.3
2017[c]	54.1	47.4	229.4	276.7	330.8
2018[d]	55.2	48.2	233.7	281.8	337.0

[a]Due to rounding, the sum of the individual items may not equal the total. [a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Ten months in the making and led by the Colorado Tourism Office (CTO), the 24-page roadmap incorporates the voices of more than 1,000 tourism industry professionals, elected leaders, and Coloradans who took part last year in 20-plus listening sessions throughout the state. The plan also was shaped by a deep dive into the CTO's existing research as well as a new study by the National Laboratory for Tourism and e-Commerce (NLTeC) in Gainesville, Florida. Prepared by a tourism consulting partnership that included the Nichols Tourism Group, the Radcliffe Company, and the NLTeC, the roadmap reports that Colorado has gained stature as one of the very top western U.S. destinations, with traveler spending increasing at nearly twice the national average since 2009.

A new Image and Perception Study fielded to 1,930 experienced travelers across the United States in 2016 found that Colorado's top competitors for long-haul travel are California, Arizona, Florida, Nevada, and New York. A different picture emerges for travelers living in Colorado and its border states, with the list of competitors shifting slightly to California, Utah, Nevada, New Mexico, and Arizona.

The roadmap creates clear guidance for the state's tourism industry with the development of mission and vision statements supported by four foundational pillars—Compete, Create, Steward, and Advocate.

A key driver in the effort to attract visitors to Colorado is CTO and its partners. CTO's mission is to drive traveler spending through promotion and development of compelling, sustainable travel experiences throughout our four-corner state. During FY2017, CTO continued expanding the national reach of the highly successful "Come to Life" marketing campaign, generating its highest-ever return on investment and record-setting economic impact for Colorado.

Colorado Tourism Highlights

- Colorado welcomed 82.4 million visitors in 2016, an all-time record for visitation and up 6% from 2015, according to Longwoods.
    - The totals for 2016 were 37.7 million overnight visitors and 44.7 million day travelers.
    - This is the sixth consecutive year the CTO has seen record-setting growth.
    - The state posted a 37% increase in visitation, double the 17% growth in travel nationally since the depths of the recession in 2009.
- Total direct travel spending in Colorado in 2016 reached $19.7 billion.
- Marketable leisure trips reached an all-time high of 18.7 million, representing a 9.3% increase over 2015.
    - The strong gains in visitor numbers pushed Colorado's share of marketable leisure travelers to 3.1%, up from 2.8% in 2015.
    - Colorado's market share rank rose from 13th place to 9th place nationally for 2016.
- The Colorado tourism industry generated $1.2 billion in local and state tax revenues in 2016, a 7.3% increase from 2015.
    - Replacing those taxes generated by visitors would have required an additional $216 tax payment from each of Colorado's 5.56 million residents.
- The CTO's April 2016 through March 2017 advertising campaign generated $4.2 billion in economic impact to the state and 2.6 million incremental trips.
    - An incremental trip is a subset of marketable trips that can be linked to a specific seasonal CTO advertising campaign and reports the level of travel from ad-aware households that is above the level of travel among non-aware households. Incremental trips are one indicator of the CTO's overall tourism marketing effectiveness.
- The return on investment (ROI) for Colorado's Come to Life advertising campaign, running April 2015 through March 2016, was $534 in travel spending for every $1 invested in paid media, up from $478 the previous year.

International Travel to Colorado

In 2016, Colorado received 942,000 international visitors, a 20% increase over the past five years. Mexico and Canada remain at the top of the international visitor numbers, with Canada increasing year-over-year. The mix of overseas visitors has changed since 2015, with the United Kingdom, Australia, Germany, and France remaining the top overseas markets; however, China has taken a marked jump to the fifth-highest number of overseas visitors to Colorado, followed by Japan, Brazil, and Italy. International travelers are Colorado's highest-value travelers, with an average spend per trip of $1,664, per Tourism Economics data.

The introduction of six new international flights into Denver International Airport (DEN) between September 2017 and June 2018 will give international travelers more convenient access to Colorado. Norwegian Air recently began service to London Gatwick and this winter Copa Airlines begins service from Panama City, Panama, connecting Denver to Central and South America. Also upcoming are United's new flight to London Heathrow, Edelweiss Air's flight from Zurich, Norwegian Air's flight to Paris, and WestJet's service to Calgary. Combined, these new flights will generate $200 million in economic impact and create 1,500 new jobs. DEN's nonstop international reach now includes 26 markets in 11 countries. See the airport section in Trade, Transportation, and Utilities for more information on flights.

Tourism and Conventions in Denver 2016–17

For the 11th consecutive year in 2016, Denver had record tourism results, and trends show that 2017 is on pace to be another strong year for both conventions and leisure tourism.

Research firm Longwoods International indicated that Denver welcomed a record 31.5 million total visitors in 2016 (the latest figures available), including 17.3

continued on page 98

Leisure and Hospitality

continued from page 97

Photo: Colorado Tourism Office, Matthew Inden/Miles

million overnight visitors, an increase of 6% from 2015. Overnight leisure visitors grew by 7% versus a national increase of only 1%. Travel spending grew 5% to a record $5.3 billion by overnight visitors. For the 13th straight year, the number of marketable visitors also grew, setting a new record of 6.4 million.

Denver set a record for lodger's tax collections in 2016, generating $88.9 million, up 7.9% from 2015. Through the end of July 2017, lodger's tax collections in Denver were up 6.5% year-over-year. Since 2005, when Denver voters approved an increase in the lodger's tax to go toward tourism marketing, Denver has seen a 62% increase in leisure visitors. Over the same time period, the rest of the nation has recorded only a 22% increase in tourism.

Denver is also very strong for both conventions held and future bookings. Denver recorded one of its top three convention years in 2016, with 858 meetings generating $749 million in spending, and 2017 is on pace to continue this trend. Future bookings during the first six months of 2017 totaled 517 conventions that will draw 231,676 delegates who represent $411.9 million in spending. The value of all future bookings is $4.1 billion.

Helped by a strong convention calendar, a number of national and international events and cultural exhibitions and other factors, the first three quarters of 2017 were very strong in Denver. In 2017, Denver has been able to quickly absorb the new hotel supply with very little loss in occupancy. According to STR, through September, occupancy in the City of Denver fell 0.6%, to 77.5%, in 2017 from about 78% in 2016. The average room rate increased 2.3%, to $152.24, in 2017 from $148.86 in 2016. RevPAR increased 1.6%, to $117.94, in 2017 from $116.07 in 2016. For Metro Denver, occupancy fell 0.7 percentage points, to 76.1% in 2017 from 76.8% in 2016. The average room rate increased 2.7%, to $132.44 in 2017 from $128.91 in 2016. RevPAR increased 1.8%, to $100.77 in 2017 from $99.01 in 2016.

2016–17 Tourism Highlights

Denver is experiencing an unprecedented period of tourism growth. Top Denver convention and tourism industry stories from 2016–17 include:

- The Denver Tourism Roadmap was launched at the end of 2016 and will help guide Denver's tourism industry to smart growth and prosperity for the next 10 years.
- Emerald Exhibitions announced that Denver will host its two Outdoor Retailer shows and retain an expanded January Snow Show, which together constitutes the largest convention booking in Denver's history and solidifies Denver's reputation as the #1 outdoor city in the nation. Together, these shows will annually bring about 85,000 delegates to Denver and generate an economic impact of nearly $110 million.
- Residents and visitors alike enjoyed blockbuster exhibitions, such as Star Wars and the Power of Costume at Denver Art Museum; Calder: Monumental at Denver Botanic Gardens; Vikings: Beyond the Legend at Denver Museum of Nature & Science; and, DINOS! Live at Denver Zoo. The Denver Center for Performing Arts recently hosted the pre-Broadway opening of *Frozen* and in 2018 will welcome *Hamilton*.
- In sports, Denver hosted several successful major events, including the return of procycling to Denver and Colorado with the Colorado Classic that featured 100+ professional men and women riders. The U.S. men's national soccer team took on Trinidad & Tobago in a World Cup qualifier at Dick's Sporting Goods Park, and Denver hosted Gold Cup matches at Sports Authority Field at Mile High Stadium with attendance exceeding 50,000.
- For the second year, VISIT DENVER ran a post-holiday winter campaign, targeting key regional markets, as well as Houston, Dallas, and Chicago, to encourage visits to the Mile High City in the first and second quarters of 2017. The multichannel campaign promoted the stellar events taking place in Denver in the early part of 2017.
- Denver's annual $5 million spring/summer tourism consumer campaign targeted markets in Texas, the Midwest, and, for the first time, Portland, Oregon, as well as developing an expanded national presence. The creative highlighted summer exhibitions and activities in Denver. Regional ads were placed in regional cities, including Albuquerque/Santa Fe, Cheyenne, Phoenix, and larger in-state markets around key summer weekends.
- In June, VISIT DENVER again conducted a major interactive marketing event in Chicago, chosen

for its dual appeal as both a strong leisure market and a strong convention sales market (due to the number of associations headquartered there). VISIT DENVER sponsored the Taste of Randolph Street Festival for the second consecutive year, and bands played within the walls of a large replica of Red Rocks Amphitheatre. The festival drew more than 68,000 people over three days.

- Coming up on its 14th year in 2017, the Mile High Holidays campaign, valued at $1 million, will continue to encourage Denver hotel stays during the traditionally slow “need period” of November, December, and January, taking advantage of holiday events, festivals, dining, shopping, New Year’s Eve fireworks, and the National Western Stock Show & Rodeo. The campaign includes promotions to Hispanic/Latino audiences.
- The culinary scene in Denver is receiving national and international attention as Zagat named the city the #3 hottest food city in the country in late 2016. Denver welcomed Slow Food Nations, and the hit TV show Top Chef selected Denver and Colorado as the location for the 15th season. Filming is complete, and the show will begin airing at the end of 2017.
- The Winter Park Express, aka the “Ski Train,” resumed operations in the winter 2016–17, connecting Denver to the slopes in a scenic route. The route will return for the 2017–18 season with an expanded schedule.

Upcoming enhancements to Denver’s tourism infrastructure and appeal in 2018 and beyond include:

- Denver hotels voted in November on the creation of a Tourism Improvement District (TID). The funds raised will provide sufficient resources to complete the vision of the Colorado Convention Center expansion, while generating new funds for Denver tourism and convention marketing.
- Denver voters decidedly approved a package of seven General Obligation (GO) projects totaling $937 million at the November 7, 2017, election. Several projects will bolster tourism and advance roadmap initiatives, including improvements to the 16th Street Mall, enhanced bike lanes, and support for new and existing parks.
- Denver is preparing to host the U.S. Travel Association’s IPW in 2018, a prestigious international trade show and marketplace with several thousand international travel planners and media. The economic impact from this event will ultimately be larger than hosting the Super Bowl as Denver prepares to welcome an additional 1 million international visitors who will spend $1.7 billion in the coming years.
- Denver will host a three-day music festival beginning in 2018 at the Overland Park Golf Course. Over the course of the event, an estimated 30,000–60,000 people per day are projected to attend, elevating Denver’s brand and music scene at regional and national levels. The festival will also highlight and incorporate Denver’s culinary, arts, and cultural experiences.

Photo: Colorado Tourism Office, Matt Inden/Miles

continued on page 100

Leisure and Hospitality

continued from page 99

Challenges to Denver's Tourism Industry

At the same time Denver is enjoying these successes, competition for tourism and convention business is increasing. Like much of the world's travel industry, Denver is subject to increased competition and a fluctuating world economy that could impact the industry's performance at any time. Other unknown factors, such as government shutdowns, terrorism, natural disasters, and geopolitical turmoil, can also have an unexpected impact. Current challenges to Denver's future tourism growth include:

- Denver continues to add small, luxury boutique hotels downtown that increase the number of rooms and bring character to the hotel package, but do not necessarily add room blocks for citywide conventions or meeting space that drives new demand.
- The 16th Street Mall continues to present challenges for residents and visitors alike. The physical condition of the mall is poor due to gaps in the grouting and chipped pavers that require significant time and resources to repair and maintain. Social conditions, including vagrancy, aggressive panhandling, and marijuana consumption, lead to negative experiences for visitors. Updated lighting and a private security team along the mall are helping to address some of these challenges.

Denver Hotel Supply

New hotels add to Denver's lodging package for leisure and convention visitors. According to STR, metro Denver will add nearly 6,000 new hotel rooms between 2016 and 2020. In 2017, the following properties began welcoming guests:

- Hotel Born, near Denver Union Station, opened with 200+ rooms.
- Hotel Indigo, also near Union Station, opened with 180 rooms.
- The dual-branded AC Hotels/Le Meridien opened with a combined 495 rooms and includes the highest rooftop bar in Denver.
- The Maven Hotel, part of the Dairy Block development downtown, opened with 172 rooms.

The following properties are under construction:

- The Source Hotel, the first hotel in the River North (RiNo) neighborhood, will open in late 2017, with 100 rooms adjacent to The Source artisan food market.
- Moxy will soon open in Cherry Creek North with 170 rooms.
- Hilton Garden Inn will open in early 2018 near Union Station with 233 rooms.

Denver Transportation

Denver International Airport

Denver International Airport (DEN) is the 6th-busiest airport in the United States and 18th-busiest in the world, with more than 1,500 daily flights to more than 185 worldwide destinations. It serves the fourth-most domestic destinations of any U.S. airport. Air traffic at DEN set a record in 2016, serving 58.3 million passengers and making it the busiest year for passenger traffic in Denver's aviation history. It was also the ninth consecutive year with more than 50 million passengers. August 2017 marked the 24th consecutive month of record year-over-year passenger traffic increases. The airport is the primary economic engine for the state of Colorado and generates more than $26 billion for the region annually.

Regional Transportation District

FasTracks is a multibillion dollar transit plan to build 122 miles of new commuter rail and light rail and 18 miles of bus rapid transit (BRT) in the Denver metro area. Downtown Denver's Union Station is a hub for rail and bus lines that branch out to all parts of the metro region.

Current progress includes:

- Direct commuter rail service from DEN to Union Station began in April 2016 with trains leaving as often as every 15 minutes for a 37-minute trip to the heart of downtown. This service is achieving nearly a 93% on-time rate.
- The new R Line in Aurora opened in early 2017.
- A new North Line to Thornton and the G Line servicing Arvada and Wheat Ridge are under development and testing with opening dates yet to be announced.
- The aging MallRide buses have been replaced with 36 all electric, air-conditioned buses.
- Since closing in mid-2016, the redevelopment of Civic Center station is progressing and is expected to reopen in late 2017 or early 2018.

Casinos

Colorado's casino and gaming industry has continued to experience a slow, but steady economic growth with customers feeling more comfortable spending money on entertainment, including casinos. New ownership of properties and large investments in capital construction projects has increased the market with additional improvements on the horizon. Colorado's gaming towns of Black Hawk, Central City, and Cripple Creek are moving forward with plans that increase visitation, including nongaming amenities. The gaming industry is taxed on gross revenues rather than net revenues and continues to provide significant funding for the recipients of gaming tax revenues, including community colleges and the state's historic preservation program. These gaming tax revenues help bolster their budgets and maintain their commitments to enhancing quality education for students at a more affordable price and preserving Colorado landmarks. The gaming tax also continues to fund the tourism promotion budget for the CTO.

For the fiscal year ending June 2017, Colorado casino adjusted gross proceeds (AGP), which is defined as the amount wagered by players less payout from the casinos to all players, were $813.4 million. Gaming taxes paid to the state were $117.4 million, reflecting a small increase from the previous year and a steady increase over the last five years.

Black Hawk continues to dominate the Colorado casino sector with 17 casinos, 7,370 devices, and a majority of the AGP. Cripple Creek has 12 casinos and 3,591 devices, and Central City has 6 casinos and 1,895 devices.

While the gaming industry has made strides to increase revenues since the 2008 smoking ban, it remains threatened by the continued attempts to expand gaming to the Front Range, either by authorizing video lottery terminals and keno machines, or instant racing machines at racetracks and other locations. The industry's annual polling on these types of gaming expansion continues to reflect that 75% of state voters oppose casinos located outside the historic towns of Black Hawk, Central City, and Cripple Creek. Moving into the future, the industry and regulators will look to games that implement new technologies and attract younger customers while continuing to keep current customers entertained.

COLORADO CASINOS 2007–2017

			Adjusted Gross Proceeds[a] (In Millions)			
Year	Casinos Open	Devices (Thousands)	Black Hawk	Central City	Cripple Creek	Total
2007	43	16.8	581.4	79.8	155.0	816.1
2008	41	16.8	508.7	67.1	140.1	715.9
2009	40	16.1	530.0	64.3	140.4	734.6
2010	39	15.4	559.4	65.7	134.4	759.6
2011	39	14.7	550.9	67.8	131.4	750.1
2012	41	15.0	558.5	74.6	133.2	766.3
2013	40	14.6	553.1	67.6	128.0	748.7
2014	36	14.2	560.6	62.3	123.4	746.3
2015	36	13.8	595.8	66.2	128.0	790.1
2016	35	13.5	609.8	69.6	131.4	810.8
YTD. Oct. 2016	35	13.3	514.2	58.8	112.1	685.1
YTD. Oct. 2017	33	12.8	519.3	60.0	114.0	693.2

[a]AGP calculated on an annual basis, hence different from the state fiscal year.

Source: Colorado Division of Gaming.

Colorado Restaurant Industry Outlook

Colorado's restaurant industry remains on a positive trajectory with eight consecutive years of sales growth. Jobs, population, and disposable income are important indicators for restaurant industry growth, and in Colorado these expanding economic indicators are helping restaurant industry sales continue to advance. The Rocky Mountain region is out-performing the rest of the country in restaurant sales, even as restaurant operators face continued margin pressures, a tightening labor market, and some lingering consumer uncertainty.

Colorado's restaurant industry is once again projected to register sales of more than $12 billion in 2018. This is a 40% increase in restaurant sales since 2010; however, the rate of growth is slowing somewhat. Colorado boasts more than 11,500 eating and drinking establishments and nearly a quarter of a million jobs.

Five key trends are shaping the restaurant industry in Colorado:

1. A Challenging Business Environment. While restaurant operators are generally optimistic about the outlook for future business, a range of challenges will put a damper on their enthusiasm. Rising labor costs and a complex legislative and regulatory landscape on federal, state, and local levels add pressure on business performance and bottom lines. Energy prices and food prices are expected to grow slightly. Especially along the Front Range, increased competition with other food service outlets for customers has become a top challenge.

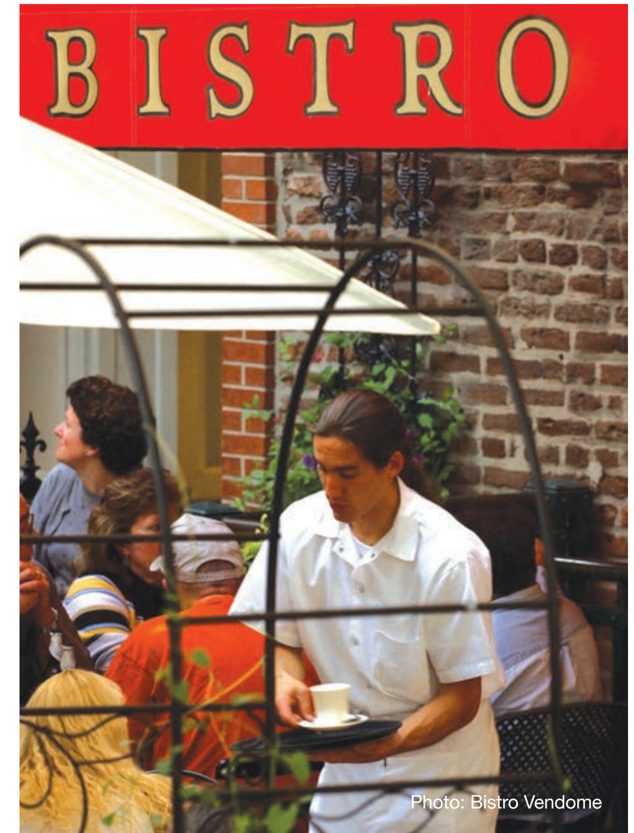

Photo: Bistro Vendome

Restaurants operate on extremely thin profit margins, averaging 3%–6%, so any change in operating costs results in a dramatic change to their bottom line. In 2016, a constitutional amendment passed that raises the minimum wage, as well as the tipped minimum wage,

continued on page 102

Leisure and Hospitality

continued from page 101

by more than 40% by 2020. Many restaurant owners are frustrated because this impacts their ability to hire and retain workers. This is causing restaurants to consider raising prices, cutting hours, and cutting positions; move toward automation; and institute service charges to help pay for these increased costs.

2. Recruiting is a Top Challenge. Recruitment and retention of employees continues to be a top challenge for restaurant operators. As the economy keeps improving and employment levels rise, there is more competition for qualified employees to fill vacant restaurant positions. For the 17th consecutive year, in 2016, restaurant job growth outpaced the overall economy. In Colorado, the high number of eating and drinking places opening, plus the numerous other sectors growing across the state, puts extra pressure on an overstretched labor pool. The main focus of this staffing challenge lies with filling kitchen positions.

Restaurants are responding to this challenge by increasing their focus on creating a positive workplace culture to assist in attracting workers. Adding new benefits, showing staff appreciation, and instituting wellness programs all contribute to creating an environment that encourages positive interaction with coworkers and hopefully reduces worker turnover.

3. Pent-Up Demand. Consumers remained far from bullish about the national economy but signaled more optimism about their personal finances and prospects for improvement in 2018. Although more consumers are saying they are more confident in their spending habits, this does not mean they have reached full capacity. According to the National Restaurant Association's 2016 National Househould Survey, consumers' pent-up demand for restaurant services remains elevated compared to historical levels. As long as Americans remain relatively cautious with their spending, restaurant operators will engage in social media marketing and other innovative tactics to highlight exceptional quality, service, and value to nudge consumers into action.

Photo: PhotoDune

4. Technology Gains Ground. Driven in part by consumers increasingly interested in streamlining their restaurant experience, technology adoption will keep growing among restaurant operators, but the process is not without challenges. Cost in various forms remains a significant barrier, and while acceptance of the more common types of restaurant technology—such as online ordering, kiosks, and mobile payment—gains ground among consumers, some are still on the fence about more advanced technologies. Additional challenges facing restaurant operators when introducing technology include the risks associated with cybersecurity and the liability associated with handling customer data.

When looking at using technology in marketing, the expanding availability of options gives restaurant operators a variety of cost-effective ways to reach new and existing guests. A greater number of restaurant operators report they plan to devote more resources to social and electronic marketing than to traditional marketing channels. This is wise considering 9 in 10 smartphone users say they use their phones to look up restaurant locations, directions, and hours. Adding the ability to view menus, see reviews, and order online via a smartphone app are the next logical steps.

5. Food and Menu Trends Lean toward Concepts. As their food-decision matrix grows increasingly complex, consumers are more engaged and discerning than ever when dining out. Diners are more knowledgeable about food and have come to expect menu options that fit their dietary preferences, no matter when or where they visit restaurants. This has resulted in food trends becoming more concept-based than ingredient-based, with an evolving focus on production, sourcing, and preparation. Restaurant operators are constantly evolving their menus to meet the increasingly particular preferences of today's diners, be it following trendy diets, looking for natural or

Photo: Colorado Tourism Office, Matthew Inden/Miles

minimally processed food options, or conserving natural resources and preventing food waste. This is happening against the backdrop of restaurateurs experimenting with everything from tasting menus to third-party delivery services and virtual restaurants. Retail sales of restaurant foods are also emerging in popularity.

The dining landscape is changing, but some things remain the same—Americans' love of restaurants. Eight in 10 consumers say dining out is a better use of their leisure time than cooking at home, and more than two in five consider it an essential part of their lifestyle.

Restaurant operators are on the front line of the U.S. economy and often the first to notice changes in consumer behavior or economic conditions. Restaurants remain the nation's second-largest private-sector employer, providing jobs and careers for about 1 in 10 working Americans.

Parks and Outdoor Recreation

Outdoor recreation in Colorado continues to be an important aspect to Colorado's economy. The Leisure and Hospitality industry benefits from the variety of outdoor recreation opportunities offered throughout Colorado. Millions of people each year, both residents and out-of-state visitors, take advantage of Colorado's extraordinary outdoor recreational opportunities.

Outdoor Recreation—National Trends

According to the 2017 report, *The Outdoor Recreation Economy,* published by the Outdoor Industry Association (OIA), the outdoor recreation industry has an $887 billion economic impact on the national economy. Outdoor recreation includes camping, fishing, hunting, motor sports (on and off-road), snow sports, trail sports, water sports, human powered wheeled sports, and wildlife viewing. Outdoor recreation consumers spend $184.5 billion on outdoor products and $702.3 billion on their trips and travel. This spending supports 7.6 million jobs in the United States and generates $125 billion in federal, state, and local taxes. As a comparison, the oil and gas extraction industry directly employs about 180,000 people. Conversely, hunting and fishing alone directly employs 483,000 people in the nation. Each year, Americans spend more on water sports gear ($14 billion) than on movie tickets ($11 billion).

Outdoor Recreation—Colorado

Colorado remains a national leader in outdoor recreation. Public lands, a healthy and active lifestyle, robust wildlife populations, and diverse recreational opportunities provide residents and nonresidents alike with ample choices and endless ways to enjoy the outdoors. Seventy-one percent of Coloradans participate in outdoor-related recreation each year.

In Colorado, the OIA report shows outdoor recreation generates $28 billion in consumer spending and 229,000 jobs directly related to outdoor recreation. This consumer spending also provides $9.7 billion in wages and generates $2 billion in state and local taxes.

In part because of Colorado's support for public lands and its outdoor lifestyle, Denver won the right to host the two national Outdoor Retailer shows and retained an expanded January Snow Show, which together constitutes the largest convention booking in Denver's history and solidifies Denver's and Colorado's reputation as the outdoor capital of the country. Together, these shows will annually bring about 85,000 delegates to Denver and generate an economic impact of nearly $110 million.

continued on page 104

Leisure and Hospitality

continued from page 103

COLORADO PUBLIC LAND VISITS
2008–2018
(In Thousands)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017[a]	2018[b]
Colorado State Parks[c]	11,800.0	12,000.0	12,300.0	12,300.0	12,200.0	11,500.0	11,900.0	13,200.0	14,296.0	15,266.0	16,210.8
National Parks and Sites											
Bent's Old Fort NHS	25.0	28.1	29.1	26.8	25.8	23.3	24.6	26.2	31.9	26.6	30.7
Sand Creek Massacre NHS[d]			4.1	3.9	4.4	4.8	7.4	5.9	6.8	6.5	7.1
Black Canyon of the Gunnison NP	160.2	171.5	176.3	168.3	192.6	175.9	183.0	209.2	238.0	299.6	311.9
Colorado NM	391.0	400.3	433.6	435.5	454.5	409.4	419.9	588.0	391.1	670.6	643.9
Curecanti NRA	1,007.4	953.2	969.5	924.5	862.6	814.2	931.4	944.7	982.5	1,033.7	1,088.3
Dinosaur NM[e]	149.3	150.9	146.4	158.0	224.1	203.1	185.4	215.9	225.2	240.6	248.5
Florissant Fossil Beds NM	57.0	64.3	65.4	61.3	62.6	58.0	63.3	69.1	73.6	70.7	77.6
Great Sand Dunes NP	273.9	290.0	283.3	280.1	254.7	242.8	271.8	299.5	388.3	525.8	550.4
Hovenweep NM[e]	11.2	12.3	12.1	11.4	11.7	11.0	11.8	15.4	18.9	16.8	20.4
Mesa Verde NP	551.4	550.4	559.7	572.3	488.9	460.2	501.6	547.3	583.5	617.1	660.6
Rocky Mountain NP	2,757.4	2,822.3	2,955.8	3,176.9	3,229.6	2,991.1	3,434.8	4,155.9	4,517.6	4,506.7	5,155.4
Total Visitors to Parks and Sites	5,383.8	5,443.3	5,635.3	5,819.0	5,811.5	5,393.8	6,035.0	7,077.1	7,457.4	8,014.7	8,794.8
Bureau of Land Management	6,000.0	5,576.0	6,448.0	6,844.0	7,310.0	6,963.0	7,536.0	7,694.0	7,739.0	7,967.7	8,144.8
National Forest[f]	24,000.0	24,000.0	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	26,100.0	26,100.0
Total Public Land Visitation[g]	47,183.8	47,019.3	51,383.3	51,963.0	52,321.5	50,856.8	52,471.0	54,971.1	56,492.4	57,348.4	59,250.4

[a]Estimated. [b]Forecast. [c]42 state parks managed by Colorado Parks and Wildlife. [d]Sand Creek Massacre NHS was dedicated as an official park unit in April 2007.

[e]Dinosaur NM and Hovenweep NM cross into Utah, but the number of visitors reported in this table is only for the Colorado portion of the parks.

[f]Yearly visitor numbers were not available; reported numbers based on limited data.

[g]Due to rounding, the sum of the individual items may not equal the total.

Note: Yucca House National Monument does not report visitations, therefore it is not included.

Definition: NHS = national historic site, NP = national park, NM = national monument, and NRA = national recreation area.

Sources: National Park Service Visitor Use Statistics and Colorado Business Economic Outlook Committee.

Public Lands

Public land constitutes more than 45% of Colorado and accounts for the majority of outdoor recreation. The Colorado Division of Parks and Wildlife (CPW) manages 41 state parks throughout the state. State parks are on track to set a new visitation record for the fifth consecutive year. Visits to state parks should exceed more than 15 million visits in 2017, an increase of 7% from the 2016 record visitation.

In Colorado, the national park system manages four national parks, five national monuments, a national historic site, and a national recreation area. In 2016, the National Park Service (NPS) celebrated its centennial. Continued interest in national parks has spurred record visitation to Colorado's 11 national parks. Park visitation for 2017 should exceed 8 million visitors. Additionally, Bureau of Land Management lands will have 8 million visitors, and U.S. Forest Service lands, 26.1 million visitors (skiing accounts for 8.5 million visits), with the White River National Forest accounting for nearly half of all national forest visits in Colorado.

Wildlife Related Recreation

Colorado boasts the largest elk heard in the world as well as world class fishing, hunting, and wildlife viewing opportunities. Colorado Parks and Wildlife issued 563,000 hunting licenses, a slight increase, and it issued 1.2 million fishing licenses, a 20% increase. Sportsmen and women provide 80% of Colorado Parks and Wildlife's funding for wildlife through hunting, fishing, and recreational shooting. This allows the state to manage 960 species of wildlife without general tax dollars. Hunting and wildlife viewing have economic benefits to every county in Colorado.

Skiing Industry

According to the National Ski Areas Association (NSAA), the United States recorded 54.8 million downhill skier and snowboarder visits during the 2016–17 season, up from 52.8 million visits during the 2015–16 season, primarily because of improved snow and weather conditions for resorts along the East Coast.

In Colorado, the state's 31 ski areas had a strong year, with approximately 12.6 million skier/snowboarder visits in the 2016–17 winter season, a slight decrease from the 2015–16 record of 13 million visits. Additionally, soaring numbers of affordable season passes have spurred spikes in local visitation. Strong season pass sales, a well-established reputation for reliable, consistent snow conditions relative to other parts of North America, resort investments in the on-mountain experience, strong airlift to Denver and mountain airports, and recent improvements along the I-70 corridor, among other factors, have contributed to industry's strength. However, resorts did experience some headwinds in 2016–17 as well, including warm temperatures and low snowfall in the early and latter parts of the season, a comparatively late Easter (dampening spring break visitation), and a strong U.S. dollar (impacting international visitation).

For four seasons in a row, Colorado ski areas operating on federal land have sent record-setting rent payments to the federal treasury. Those revenue-based payments reached $25.6 million for the 2015–16 season, up 11% from the 2014–15 ski season. Rent payments from Colorado ski areas to the federal government—which are based on total revenues generated on federal lands—have climbed 56% since 2012.

Colorado continued to maintain its dominance as the leading skiing destination in the nation in 2016–17, capturing 22.9% of total U.S. resort skier visits—far ahead of the next closest states (California, with an 11.8% share, and Utah with an 8.3% share). Colorado was home to 7 of the country's 10 most visited ski resorts in 2016–17, and has 10 of the 20 top-rated ski resorts in western North America (as ranked by the 2018 SKI Magazine Resort Guide).

Colorado's lead role in the ski industry will not be changing anytime soon as a new resort operator has emerged to rival Broomfield-based Vail Resorts, the largest ski resort operator in North America. The partnership between the Crown family, which owns Aspen Skiing Co., and Denver private equity firm KSL Capital Partners quickly assembled 13 iconic ski areas— including Winter Park and Steamboat—in the spring and summer of 2017, creating a pending rivalry with the industry leader Vail Resorts.

Now Colorado is not only home to the busiest ski areas, but the continent's two largest resort operators. That bodes well for Colorado's ski resort communities, which are thriving with year-round tourism and increasingly busy summer and winter seasons. While winter visitation may have plateaued in the 2016–17 ski season, visitor spending continued to climb. For five years in a row, resort-anchored communities, like Aspen, Vail, Breckenridge, Steamboat Springs, Winter Park, Crested Butte, and Telluride, have seen healthy annual increases in winter taxable sales at area lodges, restaurants, bars, and shops. Between the 2012–13 and 2016–17 ski seasons, each major Colorado resort community has seen taxable sales between December and March climb: Aspen up 31%; Breckenridge up 40%; Crested Butte up 52%; Snowmass Village up 18%; Steamboat Springs up 29%; Telluride up 44%; Vail up 6%; and Winter Park up 34%.

With record levels of visitation in the past four seasons, Colorado resorts have strong momentum going into the 2017–18 ski season. Additionally, resorts are likely to benefit from a strong macroeconomic environment (an important influence on visitation, visitor mix, and spend per visitor). Early indicators of business volumes are favorable, including announcements of strong preseason pass sales from leading ski resort companies and solid resort town lodging bookings for the 2017–18 season as reported by Inntopia. A relatively early Easter in 2018

continued on page 106

Leisure and Hospitality

continued from page 105

(April 1) should be favorable for spring break visitation, plus a somewhat weaker U.S. dollar should be more favorable for international visitation. Weather remains uncertain, with the National Oceanic and Atmospheric Administration issuing a La Niña Watch in October 2017 for the winter 2017–18 season. La Niña favors drier, warmer winters in the southern United States and wetter, cooler conditions in the northern part of the country. Located between these northern and southern regions, Colorado and its snow and weather advantage relative to other western ski regions is unknown.

The summer period (May to October) is also important to ski resort communities, accounting for a lower, secondary peak in retail sales. The lower summer sales volumes are typically due to a combination of lower spend per visitor and lower volumes of key visitor segments (particularly paid lodging guests as lodging occupancies are typically lower in summer than winter). However, summer sales activity has shown strong growth, increasing 4% across the selected communities in May–July 2017 from May–July 2016 after climbing 9% year-over-year in summer 2016 (i.e., May–October), 8% in summer 2015, and 12% in summer 2014. Ski resort communities are increasingly looking at summer as a growth opportunity by leveraging a wide variety of activities and offerings and pursuing new types activities as enabled by the 2011 Ski Area Recreational Opportunity Enhancement Act, which allows for more recreational uses on public land.

The Colorado ski industry has been characterized by moderate visitation growth over the past several seasons, with snow conditions and the economy having an important influence on visits and revenues year-to-year. While Colorado maintains a preeminent position within the skiing industry, evolving generational preferences, vigorous competition from ski resorts in other states and from other vacation and leisure options, climate change, concerns about the impact of congestion and travel delays along the I-70 corridor, and maintaining a welcoming atmosphere for international visitors remain top of mind for Colorado resorts. ✤

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Other Services

The Other Services Supersector comprises establishments that provide services not specifically categorized elsewhere in the classification system. As a result, the businesses under this category are highly fragmented and diverse. Car washes, beauty salons, religious organizations, funeral homes, grantmaking foundations, and labor unions are examples of the type of industries in the Other Services Supersector. In 2016, more than 15,000 businesses were classified in the Other Services Supersector. Industry growth is influenced by the demographics of the population, disposable income, and consumer confidence. In 2016, Colorado total employment for this supersector was approximately 105,200, up 2.1% from the previous year. The supersector is expected to end 2017 with approximately 106,300 jobs. In 2018, Other Services is expected to add another 1,700 jobs, a 1.6% gain. Improvement is expected across all three subsector groups.

Religious, Grantmaking, Civic, Professional and Similar Organizations

Industries in the Religious, Grantmaking, Civic, Professional and Similar Organizations subsector group are establishments that organize, support, and/or promote various professional, social, and political causes. It is the largest industry in the Other Services Supersector, employing nearly 50% of the other services employees. Establishments in this subsector include various labor unions, nonprofits such as the Denver Dumb Friends League and the Boy and Girl Scouts organizations. The sector also contains social advocacy and political organizations. As a result, employment in this sector increases in election years as political groups hire more workers. In 2016, job growth in this subsector increased 1.5%, primarily driven from jobs added for the general election. Likewise, job growth will slow slightly in 2017 as these jobs are eliminated because there was no statewide election. The sector is anticipated to pick up again in 2018, growing by 1.6% from the previous year.

Repair and Maintenance

The Repair and Maintenance Sector encompasses businesses that provide repair and maintenance services for automotive, commercial machinery, electronic equipment, and household goods. This subsector has been buoyed as the average age of vehicles has increased, pushing up demand for services in this sector. It is expected to end 2017 with 25,400 total jobs, up 1.6% from the previous year. Job growth in this subsector is expected to continue to improve in 2018.

Personal and Laundry Services

Industries in the Personal and Laundry Services Sector are vastly diverse. They include firms that provide services such as hair, nail, and skin care; death care (i.e., funeral homes and cemeteries); dry cleaning (including coin-operated); pet care (except veterinary); photofinishing; and parking lots. Industry growth in this sector is based on changes in population, income, and consumer confidence. The sector grew by a healthy 4.2% in 2016 and is expected to end 2017 with 28,000 total jobs. The improvement is from strong demand for personal services, such as pet amenities, beauty salons, barbershops, and spas. ✤

***Contributor:** Louis Pino, Colorado Legislative Council*

OTHER SERVICES EMPLOYMENT, 2008-2018
(In Thousands)

Year	Repair and Maintenance Services	Personal and Laundry Services	Religious, Grantmaking, Civic, Professional, and Similar Organizations	Total
2008	22.7	23.6	48.6	94.8
2009	21.5	22.6	49.6	93.7
2010	21.4	22.2	48.9	92.4
2011	21.6	22.6	49.4	93.7
2012	22.0	23.2	50.8	96.0
2013	22.5	24.1	51.1	97.7
2014	23.4	25.2	52.1	100.7
2015	24.7	26.3	52.0	103.0
2016[a]	25.0	27.4	52.8	105.2
2017[b]	25.4	28.0	53.0	106.3
2018[c]	25.8	28.4	53.8	108.0

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual items may not equal the total.
Sources: Colorado Department of Labor and Employment, and Colorado Business Economic Outlook Committee.

Government

The Government Supersector includes federal, state, and local workers and is the second-largest provider of jobs in Colorado, representing roughly one in six jobs. Government activities include a variety of services ranging from space research and technology to public safety, program administration, and education.

In 2016, Government employment in Colorado increased 2.4%, to 427,300. Local government, including public K–12 education, represented 60% of government employment, followed by state government, including higher education, with 27.3%. Federal government made up the remaining 12.6%. Government employment is expected to increase 2%, to 435,800, in 2017, then rise 1.1%, to 440,400, in 2018.

Government employment is impacted by a variety of factors. The biggest influence on federal government employment has been the federal budget that has impacted the budgets of federal agencies, national laboratories, and the military. The federal budget is expected to continue to restrain federal government employment growth over the next couple of years. State government employment growth will be impacted by a tight state budget environment with limited new resources available. Local government employment has largely recovered from the Great Recession and is expected to grow at about the same rate as the state's population.

Federal Government

The U.S. Government Accountability Office's Federal Fiscal Outlook and the Congressional Budget Office's (CBO's) 2017 Long-Term Federal Fiscal Outlook reached similar conclusions: the United States will reach record, unsustainable debt levels in the coming decades due to major revenue and spending imbalances under current fiscal policy. Deficits are expected to rise annually through the next three decades and beyond as increased government spending continues to outpace revenue growth. The CBO projects that the annual deficit will rise from 2.9% of GDP in 2017 to 9.8% of GDP in 2047. By 2035, the federal debt is forecasted to surpass 106% of GDP (the previous peak in 1946) and reach 150% by 2047. The current debt held by the public accounts for approximately 77% of GDP in 2017. According to the CBO, "large and growing federal debt over the coming decades would hurt the economy and constrain future budget policy."

According to the CBO, government spending is expected to be 20.7% of GDP in 2017 and rise to 28% of GDP between 2038 and 2047. The main cause of this imbalance stems from increased spending on mandatory programs, including Social Security, Medicare, Medicaid, and other major health care programs. Government spending on mandatory programs is expected to average 17.4% of GDP between 2038 and 2047 compared to 13% in 2017. The key factor driving this is the retirement of baby boomers who will increasingly live longer and will

GOVERNMENT EMPLOYMENT IN COLORADO
2008–2018
(In Thousands)

Government Sector	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017[b]	2018[c]
Federal	52.4	53.5	56.2	54.9	54.6	53.6	52.7	53.4	54.0	53.8	53.4
State	87.8	90.7	93.0	95.4	97.6	107.8	109.6	112.8	116.8	121.0	121.8
State General	32.4	32.6	32.7	33.2	34.0	42.7	43.2	44.2	46.1	47.7	47.9
State Education	55.4	58.1	60.3	62.2	63.6	65.1	66.4	68.6	70.7	73.3	73.9
Local	244.0	246.3	244.7	242.6	242.6	242.3	246.3	251.0	256.5	261.0	265.2
Local General	118.9	119.2	117.9	116.5	117.2	115.1	116.4	118.2	121.3	122.6	123.3
Local Education	125.1	127.1	126.8	126.1	125.4	127.2	129.9	132.8	135.2	138.4	141.9
Government	384.1	390.5	393.8	392.9	394.8	403.7	408.5	417.1	427.3	435.8	440.4

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual components of government may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

become beneficiaries of these federal programs. By 2047, 22% of the U.S. population is anticipated to be age 65 or older, a 7 percentage-point increase from today's level of 15%. Additionally, as interest rates rise from their current low levels, interest payments on existing and new borrowing are expected to grow alongside the federal debt. In comparison, revenues are expected to rise from 17.8% of GDP in 2017 to just 19.3% of GDP between 2038 and 2047, driven mostly by increases in individual income tax collections.

Significant changes to fiscal policy are necessary to reduce or even stabilize the current level of federal debt. The CBO estimates that in order to reduce the amount of debt in 2047 to 40% of GDP, revenues must increase or spending must decrease (or a combination of the two) by 3.1% of GDP annually starting in 2018 (roughly $620 billion). To hold the current level (77% of GDP), spending (revenues) must decrease (increase) by 1.9% of GDP over the same period. Similarly, according to U.S. Government Accountability Office projections, in order to close the fiscal gap (the gap between revenue and programmatic spending), spending would need to be cut by 25% or revenues would need to increase by 33% annually in order to hold debt constant as a percent of GDP for the 75-year period beginning in 2016.

The federal government remains one of Colorado's largest employers. Almost 54,000 civilian employees and a diverse mix of Department of Defense (DOD) military installations employ more than 74,000 active duty military personnel plus military contractors. Significant contributors to federal job growth in Colorado between Q1 2016 and Q1 2017 included additional employment within the Department of Veterans Affairs, the U.S. Postal Service, the Department of Justice, the Department of Agriculture, and the Department of Transportation.

Federal government employment is in a time of transition due to federal budget pressures in Washington and a new administration. Concerns about the national debt led Congress to pass legislation making across-the-board cuts to discretionary spending, which has slowed employment growth in the federal government, and the Trump administration has announced a hiring freeze on most federal agencies. In addition to policy changes, demographic changes are shaping the federal workforce as millennials are replacing retiring baby boomers. As this generational shift in the federal workforce begins, it will test the ability of federal agencies to successfully implement succession policy plans in order to attract and retain highly qualified federal workers.

As of October 1, 2013, the 2011 Budget Control Act (BCA) required the federal government to reduce spending by $109.3 billion in FY2014—half from defense programs and half from nondefense spending. In December 2013, the Bipartisan Budget Act of 2013 made additional changes to the mandated sequestration. It set new caps that keep defense and nondefense discretionary levels basically flat from FY2014 through FY2016. The act also extended the mandatory sequester for two years, through FY2023. In 2017, the adjusted BCA caps for defense and nondefense will total $634 billion and $553.6 billion, respectively.

The BCA threatens the $52 billion increase in defense spending recently proposed by the Trump administration. The White House has called for the end of the defense sequester, but under the current law, the DOD—Colorado's largest federal agency—is anticipating substantial reductions in the military and civilian workforce over the next decade. While it is trying to absorb the cuts through retirements and attrition, the DOD may have to resort to reductions in the workforce and buyouts. The U.S. Postal Service has also struggled in the past decade, but may be showing signs of a rebound. While total mail volume is down by over 27% since 2007, operating revenues have grown for four straight years—likely due to increased package volume from online retailers. The number of USPS delivery routes and vehicles both increased in 2016.

Federally funded science and research centers located in the state continue to generate significant employment and economic impacts. Colorado has 33 laboratories that receive significant federal funding—one of the highest concentrations of federally funded science and research centers in the nation. These laboratories employ 7,800 direct workers who earn a total of $783 million in wages and benefits and generate approximately $2.6 billion in annual economic impact to Colorado. The labs also contribute greatly to the state's high-tech industries, stimulating significant tech-transfer opportunities for higher education and area companies in critical areas, such as renewable energy, space science, and natural resource management. However, a number of Colorado's federally funded labs face an uncertain future due to funding cuts proposed in the 2018 federal budget published by the White House. The National Science Foundation, the Department of Energy, and NASA all face budget reductions of 10.7%, 5.6%, and 0.8%, respectively, in FY2018.

State Government

State government employment growth in Colorado has followed very stable trends over the past decade, slowing substantially only during the Great Recession as falling tax revenue sharply limited state resources. Over time, state government employment grows with population growth as tax revenues allow.

continued on page 110

Government

continued from page 109

Although growing state revenues have supported hiring growth since 2011, Colorado's unique constitutional requirements have recently restrained growth in the state budget. One provision, referred to as the Taxpayer Bill of Rights (TABOR), specifies a limit on the amount of revenue that can be collected and retained by Colorado governments. A fee on hospitals was contributing to state revenues exceeding the TABOR limit, and creating a refund obligation from the general fund. The General Assembly passed SB 17-267, which created the Colorado Healthcare Affordability and Sustainability enterprise that will provide more flexibility in the state's budget and ultimately allow the state to retain and spend more revenue. In addition to SB 17-267, the General Assembly lowered the residential assessment rate to comply with the state constitution, impacting all subnational sectors of government employment (see Gallagher Amendment and Property Tax section that follows.)

State government employment, excluding higher education, is expected to increase 3.5%, with 47,700 jobs in 2017 and growth of 0.5% in 2018.

Higher Education

Employment in Colorado's higher education accounts for slightly more than 60% of total state government employment. These workers include both part-time and full-time faculty and nonfaculty staff. Employment in the state's higher education increased 3.1% in 2016. State higher education employment is anticipated to rise 3.7% in 2017 and 0.8% in 2018.

Colorado's higher education system includes 31 public institutions of higher education, 354 private occupational schools, and 103 degree-granting private colleges and religious training institutions. The 60,354 degrees or certificates awarded by these institutions during the 2015–16 academic year represented a 3.9% increase over the prior year. Of the degrees earned, 43.9% were bachelor's, 22.4% were certificates, 16.3% were associate's, and 17.3% were graduate or professional degrees.

In recent years, higher education employment growth has accelerated due to the University of Colorado Hospital System adding hospitals around the state. UCHealth added Yampa Valley Medical Center in Steamboat Springs in 2017, after adding Memorial Hospital in Colorado Springs and Poudre Valley Hospital in Fort Collins in 2012. These mergers are noneconomic reclassifications that shift employment from the private health services subsector to the state government higher education subsector; however, the reclassification does not change the number of hospital employees in the state.

Local Government

General

Local governments generally derive their revenues from property taxes, sales and use taxes, fees, and intergovernmental sources. More than 3,000 local governments in Colorado provide a variety of services through counties, school districts, special districts, cities, and towns. Their powers and duties are defined by state law and range in authority from overseeing K–12 education, maintaining park programs, providing public safety, serving judicial functions, and regulating land use. State and federal governments transfer various revenues to local governments, such as state-collected highway revenues derived from gas tax and motor vehicle registration fees that are transferred to counties and municipalities. The majority of revenue available to local governments is collected locally in Colorado through property and sales and use taxes. In general, cities rely primarily on sales taxes supplemented by property tax revenue. Counties rely mostly on property taxes that are supplemented by sales taxes.

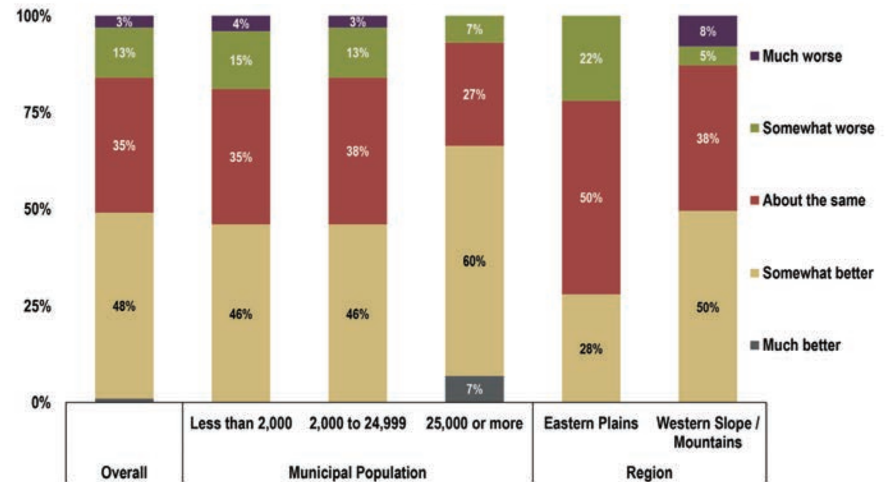
Each year, the Colorado Municipal League (CML) conducts a statewide survey entitled The State of Our Cities and Towns as a way to measure the economic outlook of Colorado's communities compared to previous years. CML groups the responses received into three categories according to a municipality's size (i.e., population of less than 2,000, between 2,000 and 24,999, and 25,000 or greater). It also groups responses regionally, providing a more realistic snapshot of what is happening on the Eastern Plains versus the Front Range or Colorado's mountain communities.

The results of this year's survey paint an optimistic portrait of Colorado emerging from the Great Recession fully recovered and with economic confidence at a record high. Of the 105 municipalities that participated, half felt their local economy is better than it was in 2016, and 37% said their economy is performing at roughly the same level as it did the year before. Only 13% reported a weaker economic outlook.

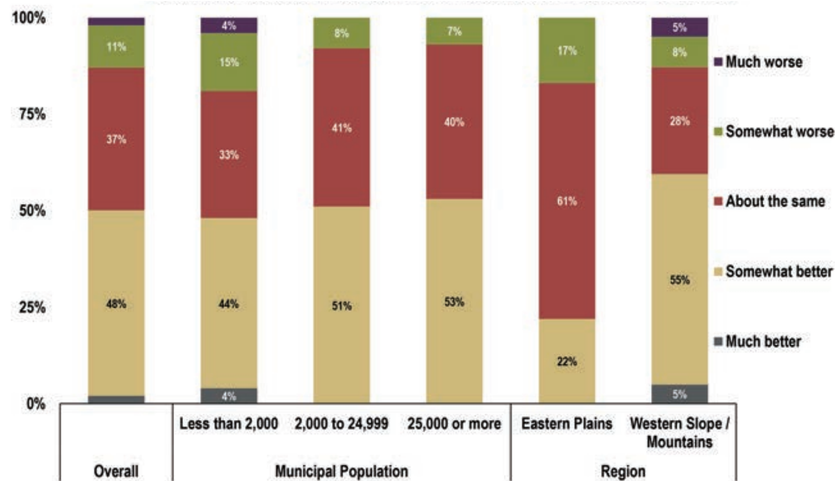
The same enthusiasm was confirmed on the revenue side as well, with over 75% of respondents expecting revenue increases or that revenue would stay the same in 2017. Half expected sales and use taxes to increase, while two in five expected increases in charges for services, property taxes, and licenses/permits/fees as well.

Large and medium-size towns were somewhat more likely to articulate economic confidence than their small town counterparts who have not benefited as directly from Colorado's economic resurgence. Additionally, large cities were much more upbeat on revenue projections, with 67% anticipating "better" or "much better" revenue growth compared with 2016. The Western Slope also fared better on the revenue question compared to Eastern Plains communities, with 50% Western Slope respondents projecting a stronger revenue forecast compared to 28% on the Eastern Plains. Furthermore, 54% of municipalities expected an increase in sales and use tax in 2017 while only 8% expected a decrease.

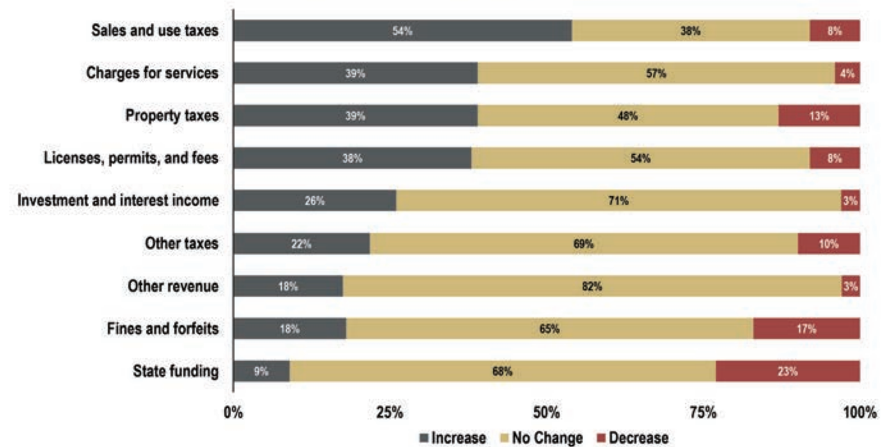
Source: Colorado Municipal League.



Source: Colorado Municipal League.



Source: Colorado Municipal League.



Source: Colorado Municipal League.

continued on page 112

Government

continued from page 111

When asked about the greatest challenges municipalities were facing, lack of affordable housing and unfunded street maintenance and improvement needs were on the top of the list. This was in contrast to the 2016 survey, which reported the tight labor market and increased health insurance costs as the biggest challenges facing cities and towns.

Local government employment increased 2.2% between 2015 and 2016. In 2017, local government employment is expected to increase by 1.8% as local governments integrate the new hires from 2016 into their workforce. This slower growth rate is projected to continue in 2018 with a growth rate of 1.6% expected.

Education

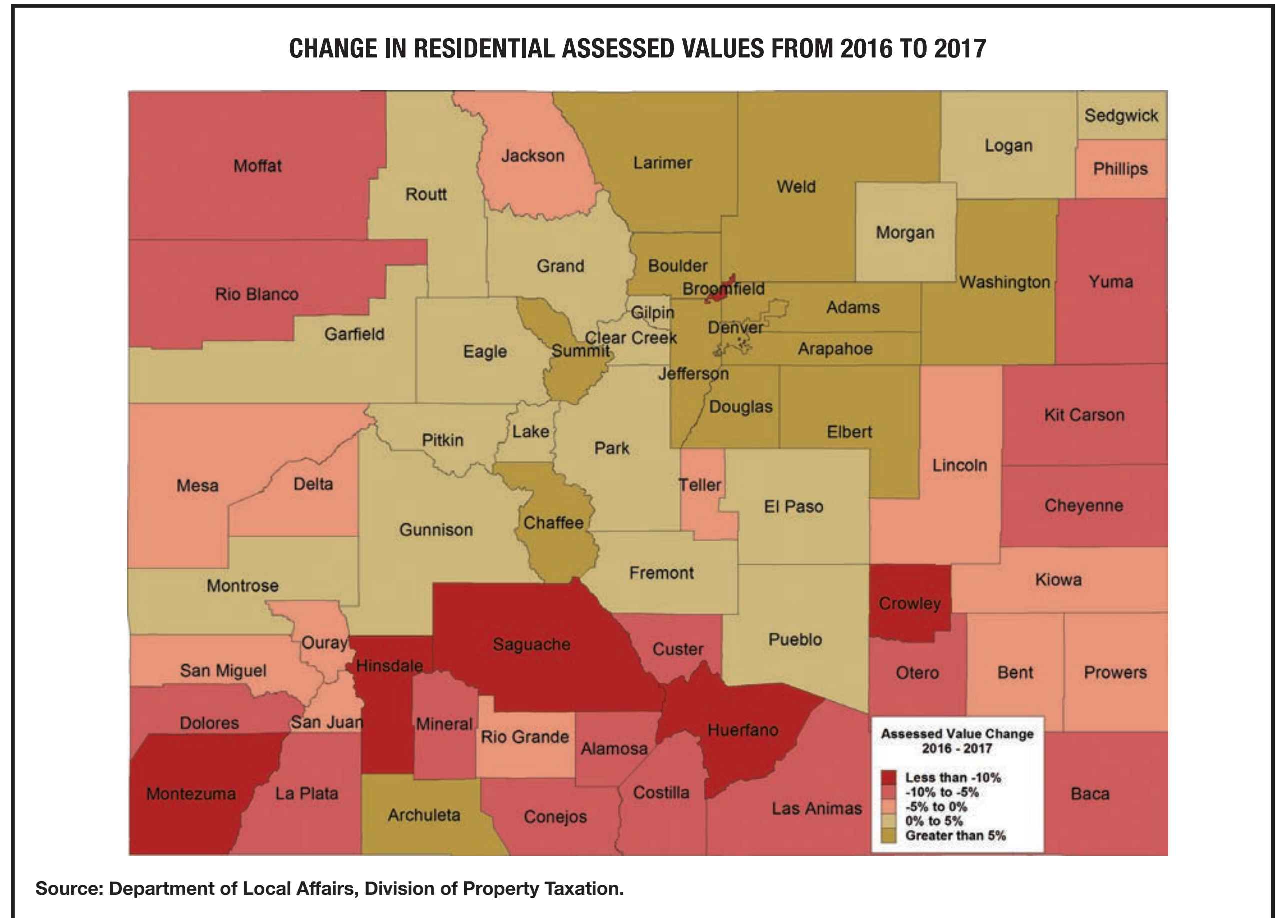
More than half of local government employees in Colorado are teachers or staff in public K–12 education. Two factors that impact K–12 employment are the number of students and the amount of funding.

The number of K–12 students increased 1.1% between the 2014–15 and the 2015–16 school years, to 898,845 students. These students include attendance at both traditional K–12 and charter schools. Charter schools are semiautonomous public schools operated by a group of parents, teachers, and/or community members that operate under a contract with the local school board. In the past 10 years, charter school enrollment has increased 129% while total public school enrollment has increased 20.9%.

Another factor in determining local government employment growth is the level of funding that is available. In Colorado, two large components of school funding are property taxes and the state general fund.

Property values are growing as the housing market recovers from the Great Recession, which is reflected in the assessed value of residential property. However, the Colorado Constitution limits the growth in residential property values by requiring the share of residential

CHANGE IN RESIDENTIAL ASSESSED VALUES FROM 2016 TO 2017



Source: Department of Local Affairs, Division of Property Taxation.

and nonresidential property is constant each year. This is achieved by adjusting the residential assessment rate every two years. The residential assessment rate is expected to decline for the first time since 2003, which will dampen the growth in property taxes paid by residential property owners. In addition, weakness in the oil and gas sector will have a large impact the local property taxes paid in several school districts.

The state general fund is facing other demands, including funding health care, corrections, transportation, and other state government services. While the state's share of education funding is the largest appropriation in the state budget, there is limited room to increase state spending on K–12 education because of other needs in the budget.

The number of public and charter school students is expected to continue increasing, which means that

demand will increase for school faculty and staff. An improving revenue outlook will allow school districts the finances to make those hires. As a result of these trends, local government education employment will grow 2.4% in 2017 and 2.5% in 2018.

Gallagher Amendment and Property Taxes

Property taxes are the largest source of government revenue in Colorado, generating over $8 billion in revenue for schools and local governments. Property taxes are determined by three things: the value of property, the assessment rate, and mills set by local governments. In 2017, the constitution required the assessment rate for residential property to decrease for the first time since 2003, impacting the tax base in every county and school district in the state.

The Gallagher Amendment in the Colorado Constitution, approved by voters in 1982, requires that the proportion of taxable value for residential and nonresidential property remain constant between each reassessment cycle. This proportion is known as the target percentage and is adjusted for any new construction and mineral production that occurs during the reassessment cycle. When the amendment passed, residential property constituted about 45% of the tax base. After adjusting for new construction and changes in mineral production, the Division of Property Taxation calculated a new target percentage of 45.67%.

The vehicle for achieving the target percentage is the adjustment of the residential assessment rate. Based on estimated 2017 property values, a residential assessment rate of 7.20% is necessary so that residential property will constitute 45.67% of the statewide property tax base in 2017.

Property Tax Explanation

The type of property, the value of the property, the assessment rate, and the mill levy determine property taxes. The actual value of individual properties are determined by the county assessor. Only a portion of the actual value of each property is taxed, which is determined by the assessment rate that varies by type of property, and is set by the state. Local taxing jurisdictions, like schools, cities, counties, and fire protection districts, set mill levies that determine the level of local services provided. Mill levies vary widely by location in Colorado. The average county levy in 2016 was 80.322 according to the Department of Local Affairs, Division of Property Taxation 2016 Annual Report.

EXAMPLE COLORADO PROPERTY TAX CALCULATION

Property	Value	Assessment Rate	Assessed Value	Example Mill Levy	Tax Calculation	Taxes
Residential	$500,000	7.20%	$36,000	100	$36,000 x (100/1,000)	$ 3,600
Commercial	$500,000	29.00%	$145,000	100	$145,000 x (100/1,000)	$ 14,500

The calculations for the Gallagher Amendment are done on a statewide basis. Home values increased the fastest in the largest housing markets in the state, which was primarily responsible for the reduction in the rate. The residential assessment rate decreased from 7.96 percentage points to 7.20 percentage points, a decline of 9.5%. If home values increased by more than 9.5% in any district, then residential assessed values in that district will increase between 2016 and 2017. If home values did not increase by 9.5%, the reduction in the assessment rate will lead to an absolute decrease in the assessed values of residential property in the district.

The map on the previous page shows the estimated change in residential assessed values in counties across the state. Assessed values are expected to increase along the Front Range, while rural areas of the state that had less home price appreciation in the 2017 reassessment cycle will have a decline in residential assessed values. Residential assessed values are estimated to decline in 33 of the state's 64 counties between 2016 and 2017.

Property taxes are collected by K–12 schools, cities, counties, special districts, and community colleges. The change in the residential assessment rate directly impacts the finances of each of these jurisdictions and indirectly impacts state finances.

Schools are jointly financed by the state and individual school districts. Property taxes are the primary means for generating local funding for schools, and the state backfills the rest to maintain a consistent level of per pupil funding across the state. The reduction in the residential assessment rate decreased property taxes compared with an assessment rate of 7.96%, creating an offsetting state general fund expenditure. In addition, many school districts have local property taxes that increase funding above a base level that were also impacted by the reduced residential assessment rate.

continued on page 114

Government

continued from page 113

Cities and counties also receive property tax revenue. In some areas of the state, the reduced residential assessment rate will lead to a declining property tax base. Local governments may increase local mills, or they may have to provide government services with less revenue.

Even institutions of higher education were impacted by the change in the residential assessment rate. In 2017, voters in western Colorado voted against a measure to increase the mill levy for Colorado Mountain College to offset future decreases in the residential assessment rate.

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Photo: PhotoDune

International Trade

Overview

Once again, Colorado exports were on par with U.S. exports. U.S. exports increased by 6.4% while Colorado exports increased by 6% according to data from WISERTrade. U.S. exports have remained consistent with some key categories seeing increases, whereas Colorado's numbers should raise some concern. Optics continues to drop year-over-year. It has consistently been one of the state's largest exports, but it has dropped to number two, supplanted by meat exports, which moved up from number three to the top. If meat is removed, as well as categories like steel and aluminum that have been impacted by 20%–30% price increases, year-to-date August 2017 exports are up only 0.6% over the same period from 2016. Beef exports should continue to grow based on issues with Brazilian beef and new markets in Europe and China continuing to be opened to U.S. beef exporters. Prices of steel and aluminum should stabilize going forward as they have been driven by Chinese demand and supply concerns.

A total of 44% of Colorado's exports come from the top three categories (beef, optics, and electric machinery). Beef exports are up nearly 30% year to date through September, with optical and machinery dropping approximately 8% and 1.2%, respectively. For the most part, manufacturing exports are down or flat for the state, with a few notable exceptions: glassware (444%), plastics (28%), vehicles (12%), and pharmaceuticals (16%). Glassware continues to increase, climbing from the 43rd-largest export for the state in September 2016 to 15th in September 2017.

Mexico and Canada continue to be two of Colorado's largest markets, and exports increased to both countries in 2017. Overall, they account for 35% of Colorado's total exports. For Mexico, Colorado saw a 37% spike. The top increases came from meat, aluminum, and dairy products. Of interest, the Netherlands and Japan saw gains of 31% and 8%, respectively. The increase in the Netherlands is due to the increased exportation of molybdenum ore. It is used in the refining process, electrical industry, and military applications. Japan's increase was due to the

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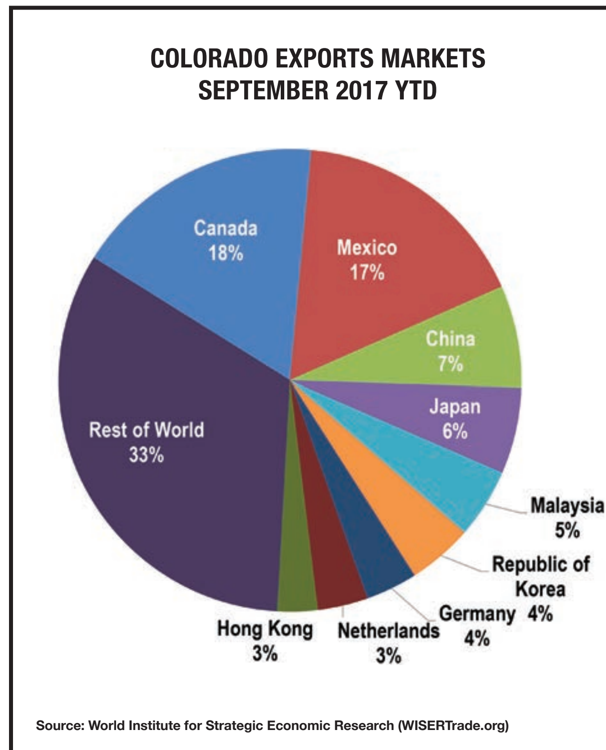

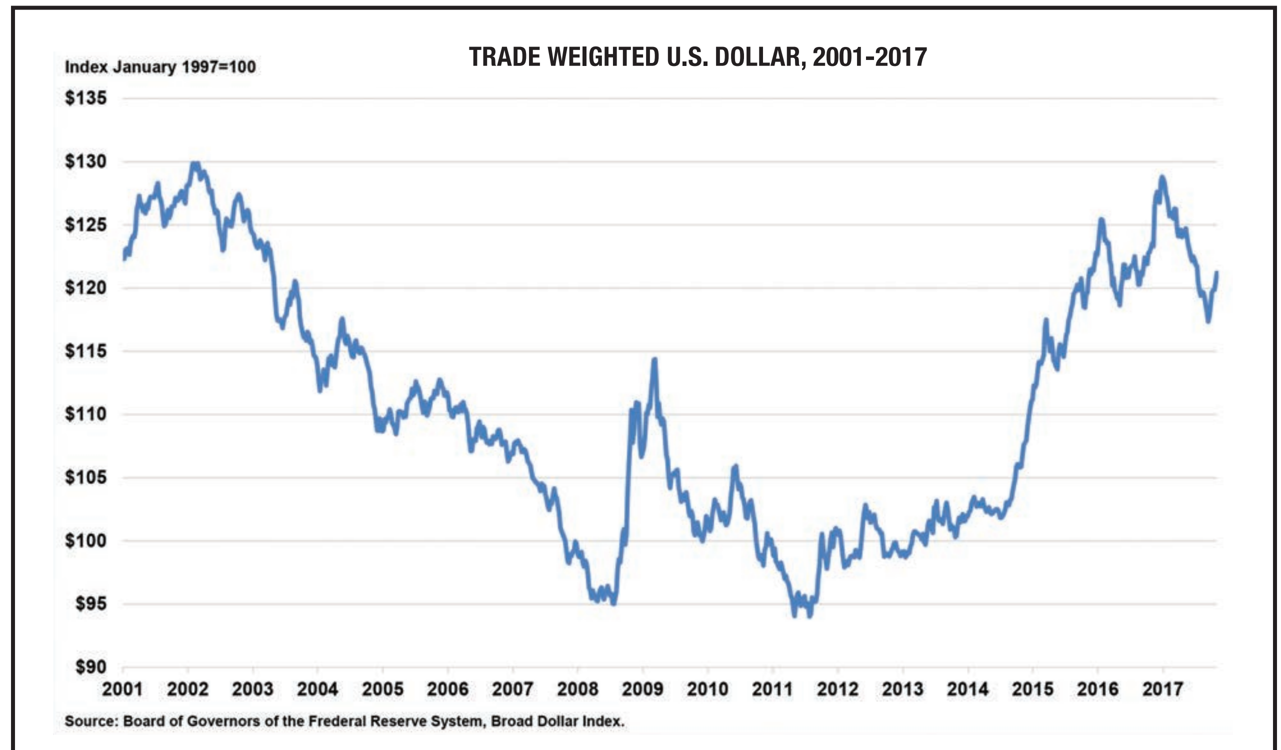

International Trade

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growth in beef imports, nearly 33%. At the same time, exports of optical equipment to Japan dropped 35%.

Global Economic Outlook

According to the International Monetary Fund (IMF) October 2017 World Economic Outlook, 2018 is projected to record respectable growth throughout much of the world. Growth in the advanced economies is expected to remain in the 2% range, unchanged from the previous year's forecast, although 2017 growth rates are expected to come in about 0.2% higher than 2016. The 2018 U.S. forecast is for 2.3% growth. It should be noted, however, that even with a positive growth forecast, the IMF acknowledges the risk of recession. The IMF puts the probability of a recession in the United States, the euro area, and Latin America in the next 12 months at 20% to 25%, while East Asia shows little potential for a recession.

The emerging market and developing economies (EMDF), however, are expected to grow at a significantly higher rate than the advanced economies, about 4.6% in 2017 and 4.9% in 2018, due to better-than-expected growth in Eastern Europe, former Commonwealth of Independent States (CIS), and China. The Chinese growth rate is influenced by continuing internal infrastructure expenditures. India's growth rate is forecasted to grow 7.4% in 2018, reflecting both structural tax and exchange rate policies and government spending. The ASEAN countries can expect a 5.2% growth rate in 2018. The World Bank June 2017 report forecasts similar but slightly lower growth rates for the EMDFs.

Globally, commodity prices are expected to see an uptick, with oil rising around 17% and other commodities rising about 7%. Inflation in the advanced economies, however, is expected to remain below 2% on average and 4% in the rest of the world. While the IMF forecasts a U.S. core inflation rate of just over 2% for 2018, that could change significantly depending on how the Fed unwinds its balance sheet.

TOP 20 COLORADO EXPORTS
2014–2017 YTD
(In Millions of Dollars)

Description	2014	2015	2016	Sept 2016 YTD	Sept 2017 YTD
Meat And Edible Meat Offal	$1,012	$853	$1,037	$718	$924
Electric Machinery Etc; Sound Equip; Tv Equip; Pts	1,137	1,159	1,119	865	875
Optic, Photo Etc, Medic Or Surgical Instruments Etc	1,329	1,279	1,251	940	864
Industrial Machinery, Including Computers	1,208	1,207	1,030	789	790
Photographic Or Cinematographic Goods	326	312	275	221	188
Plastics And Articles Thereof	188	166	164	121	154
Aircraft, Spacecraft, And Parts Thereof	271	195	200	146	146
Aluminum And Articles Thereof	94	149	147	78	142
Raw Hides And Skins (No Furskins) And Leather	278	215	182	134	137
Articles Of Iron Or Steel	179	137	143	109	131
Miscellaneous Chemical Products	85	122	136	99	107
Vehicles, Except Railway Or Tramway, And Parts Etc	196	161	113	90	100
Beverages, Spirits And Vinegar	81	112	104	73	95
Pharmaceutical Products	110	149	102	73	84
Glass And Glassware	15	16	34	13	68
Dairy Prods; Birds Eggs; Honey; Ed Animal Pr Nesoi	82	66	61	45	64
Art Of Stone, Plaster, Cement, Asbestos, Mica Etc.	80	98	93	69	63
Organic Chemicals	159	150	91	73	63
Ores, Slag And Ash	165	121	58	39	62
Cereals	42	26	27	16	54
Total Top 20 Commodities	7,039	6,693	6,368	4,713	5,112
All Others	1,325	1,257	1,212	944	843
Total All Commodities	$8,364	$7,950	$7,580	$5,656	$5,954

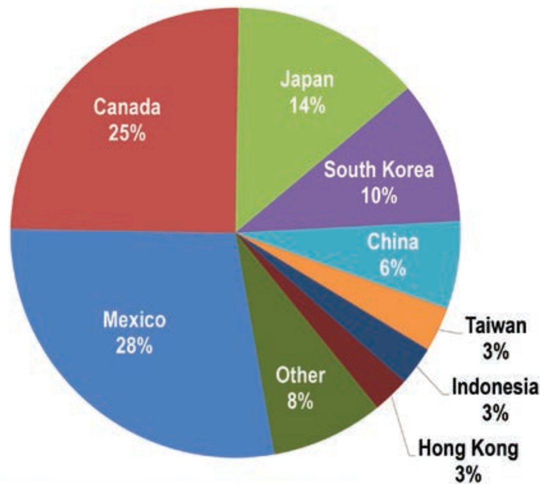
Source: World Institute for Strategic Economic Research (WISERTrade).

Agriculture

From the U.S perceptive, agricultural exports are projected to be at around $139 billion for 2018, which reflects a slight down tick from 2017 projected forecast of $139.8 billion. The reasons attributed to the slide are mainly due to decreased exports in corn and cotton. For Colorado, from January to August 2017 the export numbers are very encouraging. The year is looking to finish strong, with a nice uptick from the $1.7 billion in exports in 2016.

Colorado agricultural exports in total are up 29% in 2017. The biggest gains are:

1. Meat, up $310 million (29%)
2. Cereals, up $39 million (304%)
3. Beverages, up $20 million (31%)
4. Dairy, up $18 million (40%)
5. Animal feed and food industry residues, up $19 million (68%)



6. Sugars and confectionary, up $8 million (65%)

Two main contributing factors to this growth are an increased beef supply and the relative strength of the U.S. dollar. The dollar has been in decline and has lost about 7% of its agricultural export-weighted value since January 2017. This has helped exports climb back in Japan, Europe, and Mexico in particular.

Trade issues to keep an eye on for 2018:

- NAFTA—The renegotiation of NAFTA may have many possible outcomes. Aside from the overall negotiations, what will be interesting from a Colorado agriculture perspective is if Mexico will finally be forced to allow Colorado potatoes into the interior of the country. For Canada, the big question will be dairy access, will this be eased?
- Beef—The Chinese market is opening for U.S. beef for the first time since 2003. At this time, only a few beef plants have been cleared to ship.
- Brexit—Will the United Kingdom stay in the European Union Customs Union? If not, then a trade deal with United States would be likely.

Agriculture Export Forecast for 2018

The agriculture export forecast for Colorado is for a modest gain in 2018, in the single digits percentage-wise. Factors impacting the agriculture trade forecast include:

- U.S. agriculture outlook: The U.S. outlook for 2018 is projected to be down slightly from 2017.
- Demand: Commodity prices for grains and pulses continue to be under pressure. There is a worldwide glut of grain on the market, which does not bode well for pricing. In particular, corn will continue to slide as Canada and other countries continue to grow more. Wheat pricing could be on the weak side, but millet should rise as the harvest was bad in Ukraine in 2017. Grain could be offset potentially by robust pricing on beef, with the Chinese market coming online. For beverages—in particular alcohol, which has become a booming industry for Colorado—the outlook is mixed. The domestic market shows signs of saturation, but providing industry can find new international markets there is room for continued growth.
- Currency: The U.S. dollar is expected to be slightly stronger against key international currencies for 2018 but is not expected to return to highs seen in 2014.
- Transportation: Oil prices are projected to remain steady or slightly lower heading into 2018, which is good news for land/sea and air shipping. Tougher regulation on truckers, including the use of microchips to track hours, has industry worried and could cause trucking rates to rise.
- General weather forecast: In 2018, Colorado will be heading into a La Niña phase, which is the cooling phase of El Niño. Because of this weather shift, a higher-than-average snowpack across the Rockies in Colorado is expected. Areas that will be impacted the most will be the northwestern and northcentral regions of the United States. The Steamboat Springs area is expected to experience the highest snowpack gains in the 2017–18 winter. The I-70 corridor is also forecast to be impacted by the higher-than-average snowpack. Temperatures are expected to be a bit higher than average; however, at higher altitudes precipitation should still be in the form of snowfall. In addition to the temperature increase, precipitation is also expected to increase across the state.

Foreign Direct Investment in Colorado

In 2016, a total of 23 projects were initiated in Colorado by international companies, including those based out of the United Kingdom, Canada, France, Germany, and China, generating a total of $707 million in capital investment in the state and creating 1,500 jobs.

Colorado has attracted a diverse group of companies; between 2003 and 2016, nearly 200 companies invested in the state, including Vestas Wind Systems, Envision Energy, and SAP. Major sectors, software and IT services, accounted for almost one-fifth of the project tracks. Denver, Boulder, and Fort Collins are the most popular destinations for foreign direct investment projects (fDi Markets, www.fdimarkets.com).

International Students in Colorado

Colorado saw an increase in the number of international students enrolling in the state's colleges and universities and the economic impact of those students to Colorado. In the 2016–17 academic year, institutions of higher

continued on page 118

International Trade

continued from page 117

education reported 11,527 international students, a 2% increase from the previous year, according to the Colorado Department of Higher Education and data provided by the Institute of International Education's annual *Open Doors Report* on International Educational Exchange. The leading countries of origin for students coming to Colorado are China (31%), India (14%), Saudi Arabia (10%), Kuwait (2%), and South Korea (2%). For the United States as a whole, the top countries of origin are China, India, Saudi Arabia, South Korea, and Canada.

International student expenditures in Colorado totaled an estimated $429 million for 2016–17 according to an economic impact analysis conducted annually by the organization NAFSA: Association of International Educators. This figure takes into account tuition, fees, and living expenses and subtracts U.S. support provided to students. The largest number of international students was reported by the University of Colorado Boulder (with 3,424 students), Colorado State University, the University of Denver, the University of Colorado Denver, and the Colorado School of Mines.

While student mobility overall continues to increase, the rising cost of higher education in the United States and the uncertainty around the administration's actions regarding visas have led to speculation that numbers of international students may level off or even decline in future years. Colorado nonetheless remains an attractive destination, and many of Colorado's public and private institutions of higher education and English language schools are working together under the state's StudyColorado initiative to market Colorado's higher education opportunities. These efforts will help ensure that Colorado continues to attract international students.

The number of Colorado students studying abroad increased slightly, to 5,524, in 2015–16 (data for students studying abroad lag other data by a year). Colorado students who choose to study abroad cite preparation for the increasingly globalized economy as a key benefit.

MAJOR DESTINATIONS FOR COLORADO EXPORTS OF MANUFACTURED GOODS, MINERALS, AND AGRICULTURAL PRODUCTS, 2011-2016
(In Millions of Dollars)

Country	2011	2012	2013	2014	2015	2016	Percentage of Total
Canada	$1,540.6	$2,000.3	$2,062.9	$1,645.2	$1,408.4	$1,356.8	17.9%
Mexico	755.0	849.1	917.3	1,069.1	1,077.4	1,069.4	14.1
China	636.8	675.9	658.6	653.4	659.2	589.5	7.8
Japan	393.3	426.5	441.0	508.9	466.7	444.1	5.9
Malaysia	208.6	223.7	274.3	337.1	356.0	366.6	4.8
Republic of Korea	225.8	266.2	340.5	334.9	332.8	400.0	5.3
Germany	315.0	281.8	239.9	253.6	261.6	326.3	4.3
Netherlands	316.5	279.7	304.5	341.1	290.1	228.4	3.0
Hong Kong	174.3	233.0	250.3	258.6	238.0	207.0	2.7
United Kingdom	247.6	204.7	211.1	222.3	261.4	219.9	2.9
Taiwan	180.7	144.2	182.9	191.8	205.8	205.5	2.7
Philippines	222.4	191.4	195.7	200.0	162.3	142.6	1.9
Switzerland	241.5	245.4	329.0	234.5	250.0	230.3	3.0
Australia	179.3	171.6	181.2	167.4	155.2	142.8	1.9
Belgium	131.4	136.9	171.1	207.9	161.8	125.8	1.7
Brazil	105.7	172.2	185.1	167.4	98.4	102.6	1.4
France	142.0	155.5	150.8	145.8	133.3	139.4	1.8
Italy	64.8	84.7	62.4	64.4	83.2	70.4	0.9
Singapore	104.9	91.9	88.1	83.9	71.0	80.3	1.1
India	119.1	119.0	111.7	88.6	92.6	82.1	1.1
Total Top 20 Countries	6,305.3	6,953.8	7,358.3	7,175.9	6,765.3	6,529.7	86.1
All Other Countries	1,033.0	1,216.3	1,186.8	1,187.8	1,185.0	1,050.6	13.9
Total All Countries	$7,338.2	$8,170.1	$8,545.0	$8,363.7	$7,950.3	$7,580.3	100.0%

Source: World Institute for Strategic Economic Research (WISERTrade).

Projections

An overarching theme for 2018 will be the ongoing NAFTA negotiations. A negative turn could have an extraordinary impact on Colorado exports. Since most other possible trade agreements have been stalled, and the repercussions of pulling out of negotiations have already been felt, there should be little other impact on this front.

Over the past year, the U.S. dollar has become less expensive for many of Colorado's most significant trading

partners. The exchange rate for the Mexican peso has dropped from around 22 pesos per U.S. dollar to around 19, the Canadian dollar has fallen from around 1.35 CND to about 1.2, and the Chinese yuan has fallen from around 7 CNY to 6.5. This has the effect of making U.S. products cheaper to buy in those countries, potentially increasing U.S. and Colorado's exports. The euro, on the other hand, has strengthened, rising from 0.95 euro to the dollar to 0.85 euro. This bodes well for U.S. and Colorado exports, as it will become less expensive to import U.S. goods. At the same time, capital investment in the United States will stall due to the weaker buying power of U.S. companies. That being said, if companies have not taken advantage of the dollar's relative strength to invest in capacity building and automation in the last two years, they may struggle to keep up with increased demand while staying price competitive.

The agricultural sector should experience modest gains in 2018, with single-digit growth expected. Potential gains realized in beef exports due to restrictions being lifted could be offset by declines in grains and other commodities. Of interest will be the continued high duties on beef to Japan and the opening of the Chinese market. Grain prices should also decrease based on steady demand and an abundance of supply.

Decisions made by the central banks of the United States, Japan, and the European Union may also be a factor in trade growth over the next few years. While the central bank balances have not increased since 2014 in the United States, they have almost doubled in Japan in the past two years. The European Central Bank, after tightening from 2013–2015, has reversed course and increased its balance sheets by about 40% in the past year. That monetary expansion may well increase economic activity and with it, exports to these regions.

At this point in time, it is not possible to predict how or which trade agreements may change. Trade agreements are intended to lower barriers to trade, improving the economic well-being of all partners. With discussion of renegotiating NAFTA, pulling out of the proposed Trans-Pacific Partnership, trade discussions in summer 2017 between the United States and China, uncertainty about U.S.-European trade relations, and potential future trade agreement changes, no forecast of change in trade volumes with current or prospective trade partners is being made in this report. ✜

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INTERNATIONAL STUDENT ENROLLMENT

Institution	2010-11	2011-12	2012-13	2013-14	2014-15	2015-2016	Percentage Change
University of Colorado Boulder	1,553	1,681	1,910	2,163	2,614	2,951	12.9%
Colorado State University	1,216	1,352	1,598	1,793	2,148	2,305	7.3%
University of Denver	1,250	1,430	1,590	1,617	1,690	1,688	-0.1%
University of Colorado Denver	940	1,116	1,348	1,457	1,463	1,446	-1.2%
Colorado School of Mines	570	652	660	767	823	875	6.3%

Sources: Institute of International Education, annual Open Doors report.

Summary

Following three consecutive years of employment growth in excess of 3%, the pace of growth slowed to 2.3% in 2016. The state continued the job-building momentum in 2017, adding an estimated 56,300 jobs, or 2.2%. In 2018, Colorado's pace of employment growth is projected to slow further, to 1.8%, as Colorado increases employment by 47,100.

The majority of jobs in every state are in services-producing industries. On the high side, 21.4% of wage and salary jobs in Indiana were in goods-producing sectors in 2016, and on the low end, Hawaii had 8% of employment in goods-producing industries. In 2016, 36 states added services-producing jobs at a faster pace than goods-producing jobs. As one of those states, Colorado had the 37th-highest concentration of jobs in goods-producing sectors (12.3%), or inversely, the 14th-highest concentration of services jobs (87.7%). In 2017 and 2018, Colorado will record growth in both goods and services, with the most jobs added in services. Over the past decade ending in 2016, all of the job growth has been in services—the state added nearly 335,000 jobs in services industries, but lost nearly 15,000 jobs in goods-producing industries.

In 2018, the three industries projected to add the most jobs will be Professional and Business Services; Trade, Transportation, and Utilities; and Education and Health Services. The greatest pace of growth will be in Natural Resources and Mining, Education and Health Services, and Professional and Business Services.

Agriculture—The Agriculture Sector will post lower net income for the second consecutive year in 2017 with profitability concentrated among only a few sectors. Following a decrease in net income of $70 million, from $1.23 billion in 2016 to $1.16 million in 2017, profits are expected increase slightly, to $1.37 billion, in 2018. Trade has had a large impact on Colorado farmers, with NAFTA affecting multiple agricultural sectors within Colorado. However, the political uncertainty surrounding the status of trade agreements could pose problems for the industry in 2018.

Construction—The demand for housing units in 2017 has continued to increase, largely driven by steep increases in net in-migration. New single-family detached home permits are expected to increase by 9.8% in 2017 and 9.7% in 2018. While multifamily construction is expected to fall slightly in 2017, it is expected to rebound in 2018, to 17,400 permits issued, a 2% increase from 2017. The industry continues to struggle with employment shortages as baby boomers retire and current construction employees move to areas recently hit by natural disasters. Along with growth in both nonresidential and nonbuilding construction, industry employment is still expected to see modest growth, adding 6,900 jobs in 2017 and 2,500 jobs in 2018, totaling 164,500.

Manufacturing—Following a decade of decline, the Manufacturing Sector is expected to grow for the eighth consecutive year in 2018. Nondurable goods continues to be a bright spot in Colorado's manufacturing industry, with projected employment growth of 1.3% in 2017, and 1.2% growth in 2018, to 53,700 workers. Durable goods, representing roughly two-thirds of employment within manufacturing, is expected to see modest growth of 1% in 2018. Most subsectors are anticipated to post modest employment increases, except printing and related products, paper products, machinery manufacturing, and metal manufacturing. The greater use of robotics and automation is increasing the productivity in the Manufacturing Sector but at the cost of declining employment growth.

ANNUAL EMPLOYMENT CHANGE IN NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT SECTORS 2008–2018 (In Thousands)

Sector	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017[b]	2018[c]
Natural Resources and Mining	3.3	-4.3	0.2	3.5	2.4	0.3	3.5	-3.4	-7.0	1.3	1.1
Construction	-6.0	-30.5	-16.2	-2.6	3.3	11.7	14.7	6.6	6.3	6.9	2.5
Manufacturing	-2.9	-14.3	-3.8	3.9	2.8	1.9	3.8	4.4	1.5	1.5	1.6
Trade, Transportation, and Utilities	0.1	-25.5	-6.2	4.1	8.0	10.5	12.7	13.3	8.6	6.9	8.7
Information	0.4	-2.1	-2.7	-0.6	-1.6	0.0	0.5	0.4	1.0	0.4	0.3
Financial Activities	-3.9	-7.6	-3.7	-0.4	2.8	4.3	2.9	5.1	4.6	4.0	2.0
Professional and Business Services	4.0	-21.9	-1.0	10.7	15.4	15.7	13.9	11.9	6.9	9.9	10.0
Education and Health Services	10.1	6.7	7.5	9.0	8.9	4.1	12.2	15.3	12.5	8.3	8.4
Leisure and Hospitality	2.5	-10.5	0.6	8.4	8.3	9.7	11.0	12.4	10.5	7.5	6.2
Other Services	1.9	-1.1	-1.3	1.3	2.3	1.7	3.0	2.3	2.2	1.1	1.7
Government	9.4	6.4	3.3	-0.9	1.9	8.9	4.8	8.6	10.2	8.5	4.6
Total[d]	19.0	-104.7	-23.3	36.3	54.4	68.9	83.0	77.0	57.3	56.3	47.1

[a]Revised. [b]Estimated. [c]Forecast.

[d]Due to rounding, the sum of the individual sectors may not equal the total.

Sources: Colorado Department of Labor and Employment (CES Data) and Colorado Business Economic Outlook Committees.

Natural Resources and Mining—Compared to the rest of the nation, Colorado ranks 7th in petroleum liquids reserves, 6th in wet natural gas reserves, 13th in coal production, 3th in gold production, and 2nd in molybdenum production. Colorado is also a leading producer of renewable energy, including wind, solar, biomass, and hydroelectric energy sources. Colorado natural gas production value in 2017 was estimated be $5.0 billion, a 15% increase from 2016. The total value of Colorado's Natural Resources and Mining production in 2018 is forecast to increase 6.9%, to almost $14 billion. Industry employment is expected to post an increase of 4.4% in 2018.

Professional and Business Services—Professional and Business Services (PBS) Sector employment growth continues to increase, but at a higher rate. The sector is projected to post employment growth of 2.4% in 2017 and in 2018. One of the main drivers of growth will continue to come from the Professional, Scientific, and Technical Services Sector.

Trade, Transportation, and Utilities—TTU employment is anticipated to increase by 1.9% to total 470,400 jobs in 2018, with retail trade contributing the majority of industry growth. Retail sales forecast for Colorado calls for a 4.6% increase in 2018, despite growing competition from e-commerce. Overall, TTU is expected to add 8,700 jobs next year.

Education and Health Services—Private education and health care services are expected to continue their trend modest growth, adding 8,300 and 8,400 jobs in 2017 and 2018, respectively. The majority of sector employment is made up of health care professionals, representing 88% of industry employment. Demand for health care in the state is expected to be driven primarily by growth and aging in the population and the expansion of health care coverage. Between 2010 and 2017, Colorado's senior population has increased by 41.2% compared to the overall population growth of 11.6%.

Leisure and Hospitality—Tourism-related employment is expected to grow for the ninth consecutive year in 2018. Growth is projected to decline from 2.3% in 2017 to 1.9% in 2018. Colorado posted a record number of visitors in 2016 for the sixth consecutive year, increasing 6% from 2015 to a total of 82.4 million visitors in 2016. Denver recorded one of its best years for conventions, hosting 858 meetings in 2016. Colorado continues to dominate the ski industry, capturing almost one-quarter of total U.S. resort skier visits during the 2016–17 season. Momentum in Colorado's tourism industry is anticipated to continue through 2017 and 2018, with a forecasted employment increases of 7,500 jobs and 6,200 jobs, respectively.

Government—Government employment within Colorado is expected to post a gain of 1.1% in 2018, driven by state and local government. Local government accounts for 60.2% of government employment in the state, the majority of which are teachers or staff in K–12 schools, and is expected to grow by 1.6% in 2018. Local government benefits from higher home values and increased consumer expenditures as revenues come from property taxes and sales and use taxes. State tax revenues in Colorado are capped by TABOR limit, and any excess revenues are refunded to taxpayers, creating very stable employment growth trends.

Financial Activities—The Financial Activities Sector is expected to continue to grow in Colorado in 2018, adding 2,000 jobs to reach total employment of 169,600. The forecasted increase in growth is driven by expectations of a stronger overall economy that provides more job opportunities within banking, insurance, and real estate. Financial Activities employment has recorded positive growth each year since 2012, illustrating a strong recovery from the recession. Residential real estate continues to be one of the nation's strongest performers in 2017, driven partly by millennials beginning to purchase homes.

Information—The industry has been plagued by structural declines in the Publishing subsector, as well as M&A activity that has impacted the Telecom subsector. Nonetheless, the industry posted the strongest pace of growth (1.4%) in 2016 since the tech boom. The Information industry is expected to add 400 jobs in 2017 and grow by 300 jobs in 2018.

National and International

- U.S. output will continue to benefit from increased investment, complementing strong personal consumption.
- U.S. exports will gain from a stronger global economy and a more competitive value of the dollar.
- U.S. GDP growth will likely remain in the 2%–3% range in 2018.
- Inflation will inch closer to the Fed target rate, and the Fed will address policy with at least two rate increases in 2018.

Colorado

- Despite slower growth, Colorado will still be in the top 10 states in 2018.
- Employment growth is projected in each of the 11 industries in both 2017 and 2018.
- Commodity prices will help stabilize the commodity-sensitive industries.
- Population growth will slow modestly from 2017 to 2018; the state will still add an estimated 90,600 people, two-thirds of which will come from net-migration according to the State Demography Office.
- Colorado's aging population and low unemployment rate will constrain job growth in 2018.

Colorado will remain a naturally competitive market in 2018, creating, retaining, and recruiting a highly talented workforce with assets ranging from a desirable quality of life to a diverse and robust economy.

For more information on each industry sector, visit colorado.edu/business/brd. ✤

Around the Region

The western region of the United States is made up of Colorado and its neighboring states of Arizona, Kansas, Montana, Nebraska, New Mexico, Utah, and Wyoming. This section compares economic activity in 2016 and 2017 in these states and their top metropolitan statistical areas (MSAs) as measured by total employment, employment growth, unemployment rate, average annual pay, and GDP.

Wyoming (-0.5%) and New Mexico (-0.1%) were the only states in the region that did not show positive 10-year employment growth. Utah and Colorado have recorded the highest 10-year employment growth rates, 1.6% and 1.3%, respectively. In September 2017, Utah, Colorado, and Nebraska recorded the largest year-over-year employment growth, 2.5%, 1.6%, and 1.5%, respectively. Arizona (1.3%), Montana (1.2%), and New Mexico (1%) followed the leaders, while Kansas (-0.4%) and Wyoming (-1.1%) lost jobs year-over-year. Regarding MSAs, Salt Lake City, Cheyenne, and Lincoln led the region with year-over-year growth of 2.3%, 2.2%, and 2%, respectively, in September 2017. Phoenix-Mesa-Scottsdale, Wichita, Denver-Aurora-Lakewood, Kansas City, and Albuquerque followed with growth of 1.7%, 1.3%, 1.2%, 1.2%, and 0.9%, respectively.

REGIONAL STATES								
September 2017 Total Employees (In Thousands)	2,767.1 Arizona	2,657.6 Colorado	1,479.9 Utah	1,408.8 Kansas	1,034.0 Nebraska	842.6 New Mexico	474.1 Montana	275.5 Wyoming
Employment CAGR September 2007 - September 2017	1.6% Utah	1.3% Colorado	0.7% Nebraska	0.7% Montana	0.3% Arizona	0.2% Kansas	0.0% New Mexico	-0.5% Wyoming
Employment Percentage Change September 2016 - September 2017	2.8% Utah	1.6% Colorado	1.6% Nebraska	1.4% New Mexico	1.3% Arizona	1.2% Montana	-0.5% Kansas	-1.0% Wyoming
September 2017 Unemployment Rate[a]	2.5% Colorado	2.8% Nebraska	3.4% Utah	3.8% Kansas	3.9% Montana	4.0% Wyoming	4.7% Arizona	6.2% New Mexico
2016 Average Annual Pay	$54,664 Colorado	$48,523 Arizona	$45,255 Utah	$44,974 Wyoming	$44,142 Kansas	$43,597 Nebraska	$42,599 New Mexico	$40,716 Montana
2016 GDP (Millions of Current Dollars)	$322,644 Colorado	$305,849 Arizona	$157,671 Utah	$150,576 Kansas	$117,446 Nebraska	$93,594 New Mexico	$46,227 Montana	$38,328 Wyoming
Real GDP Percentage Change 2015- 2016	3.7% Utah	2.6% Arizona	1.1% Colorado	1.1% Montana	0.9% Nebraska	0.2% New Mexico	-0.9% Kansas	-1.8% Wyoming

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

In terms of 2016 GDP growth, Utah led the region with 3% change in real GDP, and Arizona, Colorado, and Nebraska followed close behind with 2.1%, 2%, and 1.2%, respectively. Kansas (0.2%) and Montana (0.2%) lagged behind the rest of the region, recording less than 1% growth. New Mexico (-0.5%) and Wyoming (-3.6%) saw year-over-year declines in GDP.

Salt Lake City led all MSAs in the region with a 3% increase in real GDP, followed closely by Phoenix-Mesa-Scottsdale, growing 2.6%. Denver-Aurora-Lakewood, Albuquerque, Lincoln, and Kansas City all followed with 2.4%, 2%, 1.5%, and 1%, respectively. Cheyenne and Wichita experienced declines of 0.9% and 1.4%, respectively.

In 2016, Colorado's $54,664 average annual earnings exceeded all states in the region, including Arizona, with $48,523. Boulder and Denver-Aurora-Lakewood led Colorado with above-average annual pay levels exceeding $60,000. This far surpasses other MSAs in the region, which fall within the $42,000–$51,000 range.

REGIONAL METROPOLITAN STATISTICAL AREAS

September 2017 Total Employees (In Thousands)	2,032.3 Phoenix-Mesa-Scottsdale	1,457.6 Denver-Aurora-Lakewood	1,086.3 Kansas City	724.8 Salt Lake City	392.5 Albuquerque	301.5 Wichita	191.8 Lincoln	47.2 Cheyenne
Employment CAGR September 2007 - September 2017	1.6% Salt Lake City	1.6% Denver-Aurora-Lakewood	1.0% Lincoln	0.7% Kansas City	0.6% Cheyenne	0.5% Phoenix-Mesa-Scottsdale	-0.1% Albuquerque	-0.2% Wichita
Employment Percentage Change September 2016 - September 2017	2.5% Salt Lake City	2.4% Cheyenne	2.0% Lincoln	1.9% Phoenix-Mesa-Scottsdale	1.2% Denver-Aurora-Lakewood	1.1% Kansas City	0.9% Wichita	0.6% Albuquerque
September 2017 Unemployment Rate[a]	2.2% Denver-Aurora-Lakewood	2.3% Lincoln	3.0% Salt Lake City	3.3% Cheyenne	3.4% Kansas City	4.0% Phoenix-Mesa-Scottsdale	4.0% Wichita	5.8% Albuquerque
2016 Average Annual Pay	$60,436 Denver-Aurora-Lakewood	$51,018 Kansas City	$50,888 Salt Lake City	$50,727 Phoenix-Mesa-Scottsdale	$44,298 Albuquerque	$44,227 Wichita	$44,179 Cheyenne	$42,560 Lincoln
2016 GDP (Millions of Current Dollars)	$230,070 Phoenix-Mesa-Scottsdale	$197,969 Denver-Aurora-Lakewood	$129,163 Kansas City	$84,826 Salt Lake City	$43,250 Albuquerque	$32,022 Wichita	$19,203 Lincoln	$5,485 Cheyenne
Real GDP Percentage Change 2015- 2016	3.0% Salt Lake City	2.6% Phoenix-Mesa-Scottsdale	2.4% Denver-Aurora-Lakewood	2.0% Albuquerque	1.5% Lincoln	1.0% Kansas City	-0.9% Cheyenne	-1.4% Wichita

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Around the State

COLORADO METROPOLITAN STATISTICAL AREAS

September 2017 Total Employees (In Thousands)

1,457.6	284.9	190.9	168.5	103.2	62.3	61.0	275.2
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Pueblo	Grand Junction	Wyoming

Employment CAGR September 2007 - September 2017

2.3%	2.1%	1.6%	1.4%	0.8%	0.6%	-0.4%	-0.5%
Greeley	Fort Collins	Denver-Aurora-Lakewood	Boulder	Colorado Springs	Pueblo	Grand Junction	Wyoming

Employment Percentage Change September 2016 - September 2017

3.9%	3.5%	3.0%	1.4%	1.2%	0.5%	-0.7%	-1.1%
Greeley	Fort Collins	Boulder	Colorado Springs	Denver-Aurora-Lakewood	Pueblo	Grand Junction	Wyoming

September 2017 Unemployment Rate[a]

1.9%	1.9%	2.1%	2.2%	2.7%	3.0%	3.5%	2.5%
Boulder	Fort Collins	Greeley	Denver-Aurora-Lakewood	Colorado Springs	Grand Junction	Pueblo	Colorado

2016 Average Annual Pay

$62,020	$60,436	$47,946	$46,901	$46,258	$40,842	$40,196	$40,716
Boulder	Denver-Aurora-Lakewood	Fort Collins	Colorado Springs	Greeley	Grand Junction	Pueblo	Montana

2016 GDP (Millions of Current Dollars)

$197,969	$31,376	$23,946	$15,923	$11,231	$5,133	$4,858	$37,858
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo	Wyoming

Real GDP Percentage Change 2015- 2016

3.8%	3.5%	2.4%	2.1%	1.6%	-1.9%	-3.5%	-3.6%
Fort Collins	Colorado Springs	Denver-Aurora-Lakewood	Pueblo	Boulder	Greeley	Grand Junction	Wyoming

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Boulder County

Boulder County's dynamic economy is fueled by competitive concentrations of businesses and employees in a diverse mix of industries. A highly educated workforce, visionary entrepreneurs, global industry leaders, a desirable quality of life, and a world-class research university are equally critical to Boulder County's economic vitality. The area has continued to outperform state and national economies in many areas, such as job growth, educational attainment, capital investment, and commercial real estate absorption

Employment and Wages

Boulder County has experienced above-average employment growth and some of the lowest unemployment rates in Colorado over the past several years. Data from the Bureau of Labor Statistics show employment in Boulder County increased 3.6% between September 2016 and 2017, creating an additional 6,600 jobs, compared to a 1.6% increase in Colorado during that period. In September 2017, the Boulder County unemployment rate was 1.9% (not seasonally adjusted) compared to state unemployment of 2.3% and a national rate of 4.1% (not seasonally adjusted). The area's large concentration of jobs in sectors with higher-than-average wages contributes to above-average incomes for area residents. The median household income for Boulder County residents was $74,615 in 2016 compared to $65,685 for Colorado residents, according to data from the U.S. Census Bureau.

Real Estate

Commercial and industrial real estate absorption in Boulder County has produced low vacancy rates and accelerating demand for new construction. As vacancy outpaced new inventory, the office vacancy rate for the region rose over the past year to 11.3% through Q2 2017 from 7.3% the year prior, according to data from Newmark Grubb Knight Frank Research. The industrial/flex vacancy rate in the county fell to 7.6% from 9.1%, and the retail vacancy rate stood at 6.1%.

Residential construction continues to be a strong component of Boulder County's economy, with residential sales and average home values steadily increasing in communities throughout the area. According to the Boulder Area Realtor Association, the number of single-family homes sold in Boulder County through September 2017 was nearly unchanged from 2016 (3,439 homes). The Federal Housing Finance Agency All-Transactions house price index for Boulder County increased 10.8% from midyear 2016 to 2017. During the same period, the house price index for Colorado increased 10.4%.

Financial Services and Venture Capital Investment

Boulder County represents a significant and growing share of the state's financial institution deposits and venture capital investment.

As of June 30, 2017, Boulder County had 33 FDIC-insured financial institutions with 108 offices and $10.1 billion in deposits, representing 7.6% of the state total—an increase in market share from 2016. From midyear 2016 to midyear 2017, deposits in Boulder County institutions rose $837.2 million or 9.1% compared to an increase of 5.8% during the same period for deposits held in Colorado institutions.

The high concentration of advanced technology and entrepreneurial activity in Boulder County continues to fuel continued venture capital investment in early-stage Boulder County companies. According to data from MassInvestor and local VC announcements, $306 million in venture capital funding was received by Boulder County companies in the first two quarters of 2017, representing 64% of the state total.

Leading Industries

The Boulder County economy continues to benefit from high concentrations of companies and employment in key industry clusters, such as aerospace, biotechnology, cleantech, information technology, natural and organic products, outdoor recreation, and tourism. In addition to the presence of well-established Fortune 500 companies, many startup and early-stage companies in these industries are based in Boulder County.

Photo: Nathan Pulley

Aerospace—A number of major aerospace companies operate in Boulder County, including Ball Aerospace, Custom Microwave, DigitalGlobe, Lockheed Martin, Northrop Grumman, Redstone Aerospace, and Sierra Nevada Space Corporation. The University of Colorado Boulder offers internationally recognized aerospace research and education programs and is the #1 public university for NASA research funding. Several federally funded labs in the area conduct research in space, including the Laboratory for Atmospheric and Space Physics (LASP), the National Oceanic and Atmospheric Administration (NOAA), and the University Corporation for Atmospheric Research (UCAR).

Biotechnology—Boulder County is a well-established location for companies in the pharmaceuticals and medical devices industries. Major employers include Array BioPharma, AstraZeneca, Avista Pharma, ChromaDex, CordenPharma, Huvepharma, Medtronic, Mountainside Medical, and GHX. The University of Colorado Boulder has a distinguished record in biotechnology research that attracts major research funding and generates numerous startups. The university is home to the BioFrontiers Institute, a program headed by Nobel laureate Tom Cech, designed to facilitate interdisciplinary research and expand Colorado's leadership in biotechnology.

Cleantech—Renewable energy, energy efficiency, and energy research companies continue to diversify in Boulder County. The industry is well-supported by university programs, such as the University of Colorado Boulder's new Sustainability, Energy and Environment Community (SEEC) and the National Renewable Energy Laboratory (NREL), the federally funded research lab in Golden. Boulder County businesses in the industry include AlsoEnergy, Boulder Wind Power, Envision Energy, GE Oil & Gas, juwi, RGS Energy, Siemens Energy, and Xcel Energy.

Information Technology—Boulder County has a long history as a center of information technology, data storage, software development, and Internet services. Major employers include CA Technologies, Epsilon, Google, HP, IBM, West Safety Services Division, Microsoft, NetApp, Qualcomm, Seagate, Twitter, and Uber among hundreds of other established and early-stage companies. Boulder was ranked first in the nation for its concentration of high-tech startups by the Ewing Marion Kauffman Foundation. The area is home to many accelerators and mentorship programs such as Boomtown, Galvanize, MergeLane, and TechStars. Boulder County also offers makerspaces like BLDG 61, the Boulder Library makerspace, and TinkerMill, the largest makerspace/hackerspace in Colorado. Longmont ranked as one of the "Fastest Internet Speeds in the Nation" by *PC Magazine* in 2017.

Natural and Organic Products—Many leaders in the natural and organic products industry cluster got their start in Boulder, and the area remains an international hub of the industry. Area companies include Aurora Organic Dairy, Bhakti Chai, Boulder Brands, Boulder Organic!, Celestial Seasonings, Chocolove, Fresca Foods, Hain Celestial Seasonings, Haystack Mountain Goat Dairy, and Justin's Nut Butter. Naturally Boulder, a Boulder-based industry association, supports these and hundreds of other natural products companies through networking, educational sessions for early-stage companies, and other programming.

Outdoor Products and Recreation—Widely recognized as a center for the outdoor recreation industry, Boulder is home to the Outdoor Industry Association and the International Mountain Bicycling Association. Beginning in 2018, two major outdoor industry trade shows, the Outdoor Retailer + Snow Show and the Outdoor Retailer Summer Market, will relocate to Denver. Boulder County

continued on page 126

Around the State

continued from page 125

has a high concentration of manufacturers, distributors, retailers, marketing and media companies, and other service providers focused on the industry. Local companies include Active Interest Media, Brunton, Dynafit, Exxel Outdoors, Fjällräven, HEAD, K2 Sports, La Sportiva, Newton Running, Pearl Izumi, Salewa, Sea to Summit, Spyder Active Sports, and Thule.

Tourism—The Boulder County area is a popular destination that receives national media attention for its recreational and cultural amenities, and impressive array of shopping and dining choices. Boulder was recently recognized by *National Geographic* (Happiest City in the U.S. and one of America's Top Adventure Towns), *Bon Appetit* (America's Foodiest Town), *Outdoor* magazine (#1 Sports Town), and *Bicycling* magazine (one of the Best Bike Cities). Longmont was recognized by Livability (#23 of 100 Best Places to Live) and Westword (#3 Most Family-Friendly Communities in Colorado).

The business and economic outlook is very positive for Boulder County. The region's robust economy built on diverse high-tech and lifestyle industries, the University of Colorado Boulder flagship campus, a highly educated workforce, thriving entrepreneurial culture, and highly desirable quality of life inspires optimism heading into 2018. ✤

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Kit Carson County

A continuing drop in commodity prices for products produced by farmers has the economy of Kit Carson County and most of Eastern Colorado in a downward spiral. This is a trend that has been ongoing for the past several years.

The financial condition of farmers continues to be fairly stable but somewhat weaker than a year ago. Commodity prices have been falling since 2014. Yields have been above average the past three years, which has enabled the farmers to keep their fiscal house above water. The year 2017 saw a continuing drop in commodity prices, which has made their task considerably more difficult.

Yields in 2017 are, once again, above average. Without exceptional yields, farmers would be operating at a loss. The area has received above average precipitation, resulting in the higher yields.

According to several financial institutions, the balance sheet for farmers will continue to be marginal. Some of their clients are selling machinery and even small portions of their farmland to assist in paying down debt.

Agriculture continues to rely on adequate moisture and good commodity prices. In 2014, commodity prices were off dramatically, with corn down a minimum of 50% and wheat down 20%. The following year, prices were off an additional 5%–10%. Market prices were down an additional 30% in 2016. Although prices in 2017 have somewhat stabilized, they still remain below margins needed to pay off debt and living expenses.

One banker commented that with the above average yields, the farmers can, hopefully, make enough profit to retire some debt; however, they have very little remaining for living expenses.

Cattle numbers are higher when compared to 2016. With increasing numbers, however, the market has showed a drop in the in the first half of 2017.

As farmers are in a financial bind, machinery dealers have seen a large decline in sales throughout 2016 and continuing into 2017.

At this point in time, farmland values have leveled off and have not seen a dramatic down trend since 2016.

For the fifth consecutive year, dryland wheat that has been planted has more than enough moisture to establish a very strong winter wheat crop to be harvested in summer 2018.

Commercial and residential real estate prices have remained static to good over the past 16 years.

The average weekly wage in Kit Carson County was $651 in the first quarter of 2017. The average annual pay in the county for the 12 months ending in Q1 totaled $35,167, which was 37% ($20,532) below the state average of $55,699, based on data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW).

The civilian labor force in Kit Carson County is 4,411. The number employed is 4,348, resulting in only 63 unemployed. The Kit Carson County unemployment rate in September of 2017 was 1.4%, much lower than the state and national rate.

Farm and sole proprietor employment represents significant employment in the county, accounting for approximately 33.5% or total employment not in the nonfarm wage and salary tally.

The county's population in 2000 was estimated at 7,975. The State Demography Office projects 2017 population at 7,723, a decrease of 3.1%, which is far below the state growth of 30.3% over the same period.

The most common minimum education requirement on job openings advertised online in the county in October 2017 was a high school diploma or equivalent.

Most of the job openings available in Burlington and Kit Carson County offer a low wage scale between $8 and $10 an hour. Jobs at fast food and sit-in restaurants and at stores are where the vast majority of employment opportunities exist. There are also job openings for truck drivers, welders, and mechanics, which offer considerably higher wages.

Tourism continues to be an important part of the Burlington economy. For the second consecutive year, the Colorado Welcome Center had near-record visitor

numbers. However, the city's lodging tax is down as hotels and motel cut rates to increase business.

Burlington has 545 guest rooms to accommodate the tourist traffic.

As is always the case in agriculture areas, Mother Nature is the driving force, coupled with good commodity prices.

Contributor: *Rol Hudler, City of Burlington*

La Plata County

The La Plata County economy is highly seasonal and is related to the tourism's impact on the local economy and construction. Although significant winter tourism is associated with winter sports, most La Plata County tourism occurs during the summer. This summer concentration of tourism causes a third quarter seasonal upswing in economic indicators such as retail sales and employment each year.

The presence of Fort Lewis College, Walmart, Vantiv (which acquired Mercury Payment Systems), the Southern Ute Tribe, the Mercy Medical Center, and natural gas and oil extraction in La Plata County provides some stability to the local economy, particularly in labor markets. They have helped to steadily reduce employment volatility over the past 20 years. Declines in natural resources will continue to be a challenge for regional county governments for some time to come. Particularly hard hit has been San Juan County, New Mexico, and its largest town, Farmington, which has an economy closely tied to energy—in particular natural gas. In addition, the impact of the student population has deteriorated since 2002 when the student body peaked at 4,347 students—2017 undergraduate enrollment is down a further 7% from the previous year.

Over the past 10 years or so, there has been a push to attract new and dynamic private companies, "growth companies," to regions, which has attracted higher skilled jobs to the area, including Ska Brewery, Vantiv, Tailwind Nutrition, Serious Texas BBQ, and Think Network Technologies. Two local business assistance programs, the SouthWest Colorado Accelerator Program for Entrepreneurs (SCAPE) and the Southwest Colorado Small Business Development Center, provide advice and training for new small businesses. The Region 9 Economic Development District offers advice, loans to small businesses, and data analysis to the region's government and businesses.

Employment and Unemployment—The La Plata County unemployment rate continued to decline in 2017 (1.9% in September 2017 versus 2.3% in September 2016, not seasonally adjusted), and remains below the state unemployment rate. Through September 2017, the La Plata County labor force averaged 31,531, or about 2.5% higher than same 9 months in 2016; the labor force remains about 1.8% below its peak in 2008.

In terms of types of private employment, the sector with the largest number of workers in 2016 was Transportation and Utilities, accounting for almost 22% of total employees, followed by Leisure and Hospitality, with 20%. Health and Education represents about 17.3%, up from 16.4% in 2014. Overall, services account for 59% of employment. Construction remains at roughly 12.5%.

Natural Resource employment fell 0.3%, to 3.1%, from 2014 to 2016, and Manufacturing is about 3.5% of overall private employment. Energy jobs have been negatively impacted by prices of both oil and natural gas. This is an issue that extends beyond La Plata into the region as a whole, in particular San Juan County in New Mexico, which has seen a decline in both overall employment and population over the past two to three years.

Federal, state, and local government income as a share of total private and public county income has remained nearly constant, at 20%, between 2015 and 2016. The local share of Government employment has compensated for slight declines in federal employment.

Income—Per capita income in La Plata County has improved over the last few years, both absolutely and relative to Colorado per capita personal income. According to the Bureau of Labor Statistics, average annual pay in 2016 was $44,745, a decline of 0.2% from 2015. Average personal income has been growing an average of 1.5% since 2010 in La Plata County—the highest of the Region 9 counties. La Plata County's total wages grew 2.9% year-on-year in 2016. Relative to the rest of the state, La Plata per capita personal income was almost 82% of the state average and 70% of that for Denver County.

In 2016, with respect to countywide private employee shares, services account for about 56.1% of total income in La Plata County, down from 56.3% in 2015. The largest industry share for private firms was for Health and Education, accounting for about 19.5% of total county income, similar to its 17% share of employment. Leisure and Hospitality income is less than 9% of total income despite having 20% share of total employees—a clear sign of low service wages in the region.

Given the fall in energy prices, it is not surprising that Natural Resource income as a share of county employment fell 17% between 2014 and 2016. Income from Finance, which includes Real Estate Services, fell from 12.1% to 10.9% of total income over the same period. Meanwhile, Construction's share has increased 1% from 2014.

The reduction in oil and natural gas prices and production is partially responsible for the decline in Natural Resource income. Between 2015 and 2016 La Plata was producing 24.5% and 4.5% less oil and gas, respectively. While this has not had a large effect on jobs in the sector, as discussed above, it has negatively impacted sector incomes.

continued on page 128

Around the State

continued from page 127

The share of total Government income as a share of total, private plus public, income has fallen about 1.5 percentage points to 23.1% of total income from 2014 to 2016.

Tourism—Though the economy has become diversified, tourism continues to play a large role in La Plata County, particularly in the numbers of employees. The Durango-Silverton Train had about 15% more passengers in 2017 than in 2016 through October, and Mesa Verde visits increased 5% over the same period. Although Mesa Verde National Park is in Montezuma County, many tourists who visit the park stay in La Plata County during their time in the area.

Real Estate, Banking, and Business—Like many Colorado resort communities, La Plata County's economy is closely tied to real estate. Using the third quarter as representative of the overall housing market, the median inflation adjusted (2010Q1=100) home price in La Plata County Combined (which includes residences in the whole county) was about $359,000 in Q3 2017, 9% higher than the same time in 2016. Since 2011, the year real estate in La Plata began to recover, the number of houses sold has risen an average of 20.1% per year, and the number of days on the market has fallen an average of 8.5% per year. Regarding bank deposits at the four local and regional banks, between 2009 and 2011, bank assets, defined as net loans and leases, experienced negative growth, then in 2012 and 2013 liabilities recorded strong growth. Currently, bank liabilities are about 14% higher than in 2007 but assets are about 4% higher, which signals the continued slow growth of loans and leases in the region, even as deposits and income rise.

Challenge and Recent Trends—La Plata County is facing several challenges. First, as before, wages continue to be low for low-skilled workers. The de facto Durango market wage for entry level jobs is between $11 and $12 per hour, about $2 more than the Colorado state-mandated minimum wage. However, according to the MIT Living Wage Calculator, the per adult living wage for a family of four living in La Plata is $16.75 per hour, and likely more in Durango. In 2015, pre-tax median household income in the county was just under $61,000, the minimum requirements for a family of four before taxes is about $59,000 in La Plata. In 2015, about 9.5% of people in La Plata were classified as impoverished, a marked improvement since 2012 when the poverty rate was about 12.5%. Closely related to this is the lack, both in quantity and quality, of early childhood care in the county, putting further strain on lower income families.

A second challenge is transportation. Approximately 5,000 people commute to Durango every day, straining local infrastructure. Average commute time in the county is about 21 minutes per day, 5% higher than five years ago.

Another concern is declining county tax revenues. Between 2016 and 2017, property tax revenues declined 18%. Of that, mineral property taxes fell from 44% to 30% of total property tax revenue. Mineral extraction tax revenue fell 69% between 2015 and 2017, and capital expenditures fell 48% in 2017.

Anecdotally, the spirits of most local business continue to be high. Demand for construction and in real estate will slowly provide a foundation for relatively good growth. Persistent levels of underemployment are also anticipated—more than 41% of La Plata County adults over age 25 have a BA degree or higher compared to 37.5% for the state. ✜

***Contributor:** Robert Sonora, Fort Lewis College*

Mesa County

Mesa County sits at the confluence of the Colorado and Gunnison Rivers on the Western Slope of the Rocky Mountains. The majestic Colorado National Monument, Bookcliffs, and Grand Mesa cocoon the area, creating a comfortable, temperate basin, often referred to as Colorado's Grand Valley. Most residents live in Grand Junction, the largest city between Denver and Salt Lake City, Utah, and at an equidistance between the two. Grand Junction is the county seat, which also encompasses the City of Fruita and the smaller, picturesque towns of Palisade, Collbran, DeBeque, Gateway, Mack, and Mesa.

Population, Employment, and Wages—As of July 1, 2016, the Mesa County population was 150,731. The county population grew significantly last year, adding as many people in 2016 as it had in 2010–2015 combined. At 1.1% growth, the county is beginning to catch up with the state, which grew 1.7% in the same time frame.

This is in stark contrast to the five prior years, when Mesa County grew by 1.3% while the state's population grew by 8% and the total U.S. population grew 4.1%.

Year-to-year total nonfarm employment was nearly flat between September 2016 and September 2017, slipping 0.3%. The unemployment rate (not seasonally adjusted) in Mesa County decreased from 4.6% in September 2016 to 3% in September 2017. This is higher than Colorado's unemployment rate of 2.5% (not seasonally adjusted) but significantly lower than the nation's rate of 4.1%. The Mesa County Workforce Center recorded 2,516 new job orders in Q3 2017, which is almost a 70% increase from Q3 2016.

The total civilian labor force (not seasonally adjusted) for Mesa County in September 2017 was 73,286, of which 71,086 were employed and 2,200 were unemployed. The average annual wage in Mesa County for the 12 months ending in Q1 2017 increased 1.6% from the previous year, to $41,568.

Real Estate— A total of 4,053 transactions totaling $971 million were reported in Mesa County through the first eight months of 2017. Compared to the same period in 2016, transactions are up 15.2%, and the dollar volume is up 20.3%.

Regional Hub—Mesa County is establishing a reputation as a leader in Colorado's outdoor recreation industry and continues to be a regional hub for health care, energy, and tourism. The county's health care industry serves a population of approximately 500,000 in western Colorado and eastern Utah.

Health Care—The level of medical and health services in Mesa County is uncommon in the variety of services offered to a community of its size. St. Mary's Hospital is the largest hospital in the Grand Valley and the only Level II trauma center in western Colorado and eastern Utah. Mind Springs Health provides mental wellness, behavioral change, and substance abuse treatment to patients within 11 counties, and its West Springs Hospital is the only psychiatric hospital between Denver and Salt Lake City.

The regional health care industry serves as a commercial and medical center for citizens in this region and as a medical referral center for neighboring towns such as Moab in Utah and Montrose, Delta, Rifle, Eagle, Aspen, Glenwood Springs, Craig, Meeker, Rangely, Gunnison, Ouray, and Telluride in Colorado.

Education—Colorado Mesa University (CMU) ranks in the top five largest employers in the region, with 1,006 full- and part-time employees as of November 2017. The total yearly net wages for CMU was $30.2 million in FY2015–16, and its expenditures for goods and services in Western Colorado totaled $42.1 million. CMU's estimated economic impact FY2015–16 increased year-over-year by 7.2%, to $447.5 million.

Mesa County School District 51 currently employs 2,715 teachers, administrators, and support staff, an increase of 4.4% since 2016.

Retail—Retail sales in Mesa County increased by 3.3% from September 2016 to September 2017. The Mesa County sales and use tax revenues increased by 6.7% year-over-year, with the county collecting $24.7 million in September 2017, compared to $23.1 million in September 2016.

Airport—The Grand Junction Regional Airport (GJT) is classified by the Federal Aviation Administration as a Class I airport. GJT is the premiere facility serving western Colorado and eastern Utah. In addition to both private and public passengers, FedEx operates out of the facility. GJT reported 179,979 passenger enplanements as of September 2017, a 4.6% increase from September 2016.

Leading Industries—Originally steeped in energy and agriculture, the Mesa County economy has diversified significantly in the last 25 years.

Medical and Health Care—Health Care and Social Assistance make up 17% of Mesa County's total employment. As of September 2017, Mesa County had 10,319 jobs in the Health Care and Social Assistance industry, and this number is expected to increase 3.3% in 2018. In August 2017, St. Mary's Hospital and Family Health West joined forces on a $4.5 million expansion of Colorado Canyons Hospital in Fruita. The expansion will add nine rooms and other facilities to accommodate transitional patients.

Aviation and Aerospace— A total of 515 people in the county are employed in aviation and aerospace parts and manufacturing, a number that is expected to increase by 1.5% in 2018. In 2017, global corporation Jabil acquired Grand Junction-based Lewis Engineering, combining two leaders in aerospace manufacturing. Wren Industries, another local aerospace parts manufacturer, became the first Mesa County company to join the esteemed list of approved suppliers to Lockheed Martin with a contract to manufacture components for NASA's Orion project. Twin Otter International, Armstrong Consultants, and West Star Aviation, Inc. round out the list of leading employers in the local aviation and aerospace industry.

Outdoor Recreation—The outdoor recreation industry is attracted to Mesa County because of the natural environment for product testing and the wide array of outdoor recreation options that are attractive to this workforce. In 2017, Mesa County has over 2,000 outdoor industry jobs, and these businesses currently contribute more than $300 million. In 2017, the City of Grand Junction approved a $30 million business and recreational development along the Colorado River that will include a business park focused on outdoor recreation. Local business Bonsai Design will be the first tenant in the new business park. Other businesses currently based in Mesa County include DT Swiss, Loki, Innovative Textiles, Mountain Racing Products, Savvy Cycles, Leitner-Poma of America, Vintage Overland, and Wiggy's Inc., as well as Powderhorn Mountain Resort. The area is home to more than 14 bike shops, 5 ski shops, and 2 mountaineering/climbing shops.

Energy—The energy industry makes up 2.6% of Mesa County's total employment, with 1,553 jobs recorded in the industry in 2017. The industry, which saw a dramatic decrease in employment of 44% in 2010–2016, expects another decrease of 6% in 2018. However, in 2017 Mesa County participated in a Western Colorado energy delegation to Washington, D.C. to talk about the potential in the Piceance Basin, and the area has seen an uptick in activity and interest since that trip. Halliburton, a top employer in the area, has added jobs in the last year. Other major employers include Chevron and Exxon Mobil.

continued on page 130

Around the State

continued from page 129

Photo: Grand Junction Economic Parnership

IT and Professional Services—The Professional, Scientific, and Technical Services industry includes employment in IT solutions, data storage, web design and marketing, and web-based services. It employs 2,067 people in Mesa County and makes up 3.5% of the county's total employment. Local companies include Networks Unlimited; ProStar Geocorp, Inc.; KAART Group; STARTEK; Cranium 360; Ryan Sawyer Marketing; EWS Group; and ProVelocity. In October 2017, STARTEK expanded its operations in Grand Junction with a new service category and upward of 200 new jobs.

Agriculture—In 2015, the Agriculture Sector accounted for $35 million of GDP in the Grand Junction Metropolitan Statistical Area (MSA), according to data from the Bureau of Economic Analysis. Beef (cattle and calves) is the largest agricultural export for Mesa County. Livestock sales make up 51% of the market value of agricultural products sold in the county.

Tourism—In 2016, Mesa County reported $1.4 million in local lodging tax collections, which is a 3.4% increase from 2015. Mesa County is home to Colorado National Monument, which attracts almost 400,000 visitors annually. Visitation was down 33% from 2015.

The Town of Palisade is a sought-after destination with its rich history of Palisade peaches. The town is also the home of Colorado Wine Country. Palisade boasts 17 wineries and 22 orchards, and hosts many festivals, including the Bluegrass and Roosts Festival, the Lavender Festival, the Palisade Peach Festival, and the Colorado Mountain Winefest. In 2017, Palisade opened the Cameo Shooting Complex and Palisade Basecamp, an RV campground. The town is currently working on a downhill single-track trail, the Palisade Plunge, with plans to open in 2018.

Fruita, Grand Junction, and Palisade attract visitors from all over the world who come to ride world-class single-track mountain bike trails. These trails have spawned the Grand Junction Off-Road, an endurance mountain bike event that has gained global attention, drawing racers from around the world. In 2017, hosted the USA Cycling Para-Cycling Road National Championships and the USA Cycling Collegiate National Road Championships for the first time. Other cycling races within Mesa County include the Maverick Classic, Icon LASIK Tour of the Moon, Tour of the Valley, Rumble at 18 Road, Palisade Brews and Cruise Festival, and the popular Fruita Fat Tire Festival.

Powderhorn Mountain Resort is located on the northern edge of the Grand Mesa with an average of over 250 inches of snow each season. A new downhill mountain bike trail system was developed in early 2016, allowing the resort to operate year-round, generating new jobs and increasing adventure-seeking visitors.

In spring 2018, Fruita will open a cable wakeboarding park. It is the first of its kind in Colorado and one of only a handful such parks in the country. All of these efforts add to the tourism opportunities in Mesa County.

Rural Jump-Start Mesa County—In 2016, the State of Colorado started the Rural Jump-Start tax credit program that is a joint effort between the State of Colorado, counties, municipalities, public colleges, and businesses to help spur job growth and the economies of Colorado's rural regions. It offers a tax holiday to businesses in exchange for bringing new jobs into the Jump-Start Zones. Mesa County was the first county to be accepted as a Rural Jump-Start Zone, which, in turn, has assisted in the startup of eight new companies that are expected to create over 600 new jobs by 2020, adding an estimated $25 million in new, annual salaries.

Summary—The business and economic outlook is trending positive for Mesa County. The declining unemployment rate, growing diversification of industries, and a strong real estate market position Mesa County well for continued growth in 2018. ✤

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Northern Colorado

Summary—Innovation, education, and opportunity define the Northern Colorado region. This combination of Weld and Larimer counties is perfectly located between the western Rocky Mountains and eastern Great Plains. The region also neighbors the Colorado-Wyoming border and the busy Metro Denver area. According to the U.S. Census Bureau, the Greeley Metropolitan Statistical Area (MSA) ranked as the 4th-fastest growing area in the nation in 2016, and the Fort Collins MSA was the 55th-fastest growing area. The region emphasizes technological innovation and entrepreneurship while maintaining its diverse and educated population. Prominent universities and community colleges attract companies searching for the next generation of leaders. A well-educated workforce and diverse employment base make Northern Colorado a premium area for business and industry growth. Northern Colorado's top industry clusters include agriculture, energy, and manufacturing. The region also features rich cultural and recreational opportunities. Both Larimer and Weld counties are experiencing high growth in many areas, including population, education, and employment.

Population—Northern Colorado's population has steadily grown to just under 635,000 over the past two years, and has a median age of 35. Fort Collins and Greeley are the area's two largest cities, with a combined population of 268,197. The region's communities are home to a diverse population. According to the Census Bureau, the estimated increase in population in Weld and Larimer counties was roughly 2.6% at the end of 2016. Most of the growth has been attributed to net migration.

Education—Northern Colorado is home to Colorado State University in Fort Collins and the University of Northern Colorado in Greeley. The region also features two community colleges: Aims Community College and Front Range Community College. Both community colleges provide a variety of programs that support the region's labor pool. Higher education has helped transform Northern Colorado's students into a highly productive and innovative workforce. Weld County is further supporting education and the employment pipeline by providing workforce stipends to every graduating high school senior.

Employment/Labor—Based on information provided by the Colorado Department of Labor and Employment, the leading industries in Northern Colorado have remained consistent. The top five industries by employment are government, manufacturing, health care, agriculture, and food services. In 2017, the unemployment rate in Northern Colorado dipped to 2.1%. The 2015 unemployment rate was 3.6%. Energy job loss in 2016 was absorbed through a diversification of industries in the county; this absorption allowed the unemployment rate to remain low throughout the region, which has created stability and job growth.

Northern Colorado's per capita personal income has increased from $40,109 in 2013 to $42,723 in 2014 and $44,151 in 2015 (newest available data). A large percentage of oil production in Colorado is concentrated in Weld County, and the area became the largest producer of natural gas in the state in 2015. Additional contraction and an increase in capital investment are anticipated to provide incremental growth and stabilization to the industry. With natural gas prices remaining at historic lows, it is expected that the majority of growth in this sector will be focused on oil field operations.

Weld County continues to take a leading role in agriculture production exports in the state for beef, sugar beets, grain, cattle, and dairy. Commodity prices remain low but expansion continues through food processing companies, such as Leprino and JBS Swift, which have spurred additional investment into the agriculture supply chain.

With highly educated workforce and growing primary industries, both Weld and Larimer counties are more attractive than ever. ✤

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Pueblo

Economic indicators for Pueblo County showed impressive improvement in 2017. The countywide unemployment rate was 3.5% in September, down from 4.3% one year earlier. While this still represents a higher rate than other major Front Range cities, the year is averaging the lowest unemployment rate since 2000.

Government (18%), health services (17%), and retail (12%) continue to be the three-largest sources of jobs in the local economy. However, Pueblo has a heritage of manufacturing and metal fabrication, with those segments providing many of the primary jobs that support other employment in the community.

New and Existing Industry Clusters—Pueblo has seen significant success in attracting new, high-tech industries during 2017. Three sectors of the economy have been identified as promising clusters for economic growth, and progress has been made in each. The first sector is aerospace development and manufacturing. Pueblo

continued on page 132

Around the State

continued from page 131

enjoys a long history in aerospace. Current companies operating in Pueblo include United Launch Alliance, United Technology Aerospace Systems, and L3 Doss Aviation.

A second potential cluster is the emerging hemp industry. Hemp is a nonhallucinogenic strain of the cannabis family and has thousands of commercial applications for nutraceuticals, cosmetics, clothing, fiber, and medical products. Pueblo is working with numerous hemp companies to manufacture products in the nutraceutical/pharmaceutical, construction, automotive, and paper industries, to name a few.

The third identified cluster is rail industries. Much of this is driven by three unique facilities in Pueblo County. EVRAZ Steel, the descendent of the historic CFI Company, is the largest producer of rail in North America. Also, the Transportation Technology Center is acknowledged as one of the premier engineering, testing, and training facilities in the world. Finally, Rocla Concrete Tie established a large facility in Pueblo several years ago, providing pre-stressed concrete railroad ties throughout the nation. Other existing companies produce a diverse portfolio of rail components, accessories, and cars. Pueblo is also home to six rail industrial parks with more than 50 miles of rail. Pueblo's rail industrial parks have capacity to handle unit trains, as well as companies that desire raw materials or shipping of finished goods.

Energy and the HARP Project—In addition to these existing and developing clusters, other projects are in place. Renewable energy developer Community Energy Solar installed the largest solar panel facility east of the Rocky Mountains. The power from this facility, which is located next to the Comanche Generating Station, goes to Xcel Energy. The project uses 450,000 solar panels to generate enough power for 31,000 homes according to the developer. Pueblo is under consideration for other solar energy applications due to its favorable climate and abundant sunshine. Pueblo is also home to Vestas Wind Towers. Pueblo's facility is the largest wind tower manufacturing facility in the world.

A driving force for much of the development in the downtown area is the expansion of the Historic Arkansas Riverwalk Project, also known as HARP. A loan from the city's economic development fund jumpstarted work on an ambitious complex that will include an expanded convention center with a multiuse arena for the Professional Bull Rider's University bull-riding school. Future phases will result in expansion of the Riverwalk, an amateur athletics swimming complex, and potential indoor/outdoor water park. In addition to the tourist and convention visitors, the HARP project is expected to attract professional offices to locate in the city center area. ✤

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Southern Colorado

Employment—The unemployment rate in El Paso County stood at 2.3% on a nonseasonally adjusted basis at the end of September 2017. This compares to an unemployment rate of 3.3% in September 2016. The labor force increased from 318,485 to 328,666 from September 2016 to September 2017, a change of 10,181. Over the same period, employment increased from 307,932 to 319,878 for a change of 11,946. These are all positive developments. Not only has the number of unemployed been steadily decreasing, more individuals are entering or reentering the workforce. This increases the productivity of the region, increases the living standard and quality of life for individuals and families, and reduces transfer payments.

The UCCS Economic Forum calculates the number of new jobs needed per year in order to match population growth in the working-age cohorts. For this calculation the Quarterly Census of Employment and Wages data is used, which excludes the sole proprietors who are counted in the labor force and employment numbers above. For 2017, the target number of new jobs is 5,400. El Paso County has been performing well in this metric since 2013. New jobs totaled approximately 5,000 in 2013 and 5,000 new jobs the following year. By 2016, there were more than 7,700 new jobs in El Paso County and 7,083 new jobs from Q1 2016 to Q1 2017.

Specific Sectors—Seventeen of the 21 Quarterly Census of Employment and Wages (QCEW) industry sectors in El Paso County saw job gains in 2016. The most significant gains were in Health Care and Social Assistance, Accommodation and Food Services, Retail Trade, Construction, Educational Services, Other Service, and Finance and Insurance. Health Care and Social Assistance, combined with Accommodation and Food Services, represented 45.7% of total job gains in the county. Job losses occurred in four sectors, with the most notable losses in Information and Manufacturing.

QCEW average annual pay across all categories increased in El Paso County's, from $46,595 in 2015 to $47,170 in 2016. This 1.2% wage increase is similar to the national average (1.3%). Average annual pay in Colorado increased 0.9%; however, the average wage in El Paso County remains low compared to Colorado as a whole and is 13.7% below the 2016 state average of $54,664.

Average annual wages increased in 16 sectors in El Paso County. Average wage growth was strong in Management of Companies and Enterprises (up $17,836, to $143,364); Utilities (up $4,732, to $88,036); Agriculture, Forestry, Fishing and Hunting (up $2,288, to $29,900); Finance and Insurance (up $2,080, to $64,584); and Construction (up $2,080, to $51,220). Average wages declined most

significantly in Mining (down $3,016, to $66,040) and Information (down $936, to $74,100).

Per Capita Personal Income—Nominal per capita personal income in 2015 in El Paso County is 14% below the Colorado average and 9% below the U.S. average. Per capita personal income increased 2.4%, to $43,385, in 2015 over the 2014 level of $42,360.

Residential Real Estate—The residential real estate market in the Pikes Peak region remained very strong in the past year. From October 2016 through September 2017, a total of 3,512 single-family permits were issued in the region. This is an increase of 46 permits (1.3%) issued compared to the number issued from October 2015 through September 2016. The UCCS Economic Forum expects approximately 3,500 permits to be issued in the Pikes Peak region in 2017. The forum has estimated that for the population size and the demographic composition of the county, approximately 4,500 permits for dwelling units (both single-family homes and multifamily units) is appropriate. Through September 2017, permits for 27 projects and 533 units were pulled. By the end of 2017, 650 multifamily permits are expected to be pulled and another 760 units are forecast for 2018. As of Q2 2017, average monthly rents for apartments were $1,101 per month in the Colorado Springs Metropolitan Statistical Area (MSA).

Home sales in the Pikes Peak region remain strong and price increases continue to outpace the nation. The average sales price of a home is expected to increase to $311,965 in the Pikes Peak region in 2017, a 9% gain over 2016. The median price of a single-family home is anticipated to rise to $280,425 in 2017 compared to $256,100 in 2016. Sales are expected to reach 16,200 homes in 2017 and 17,010 homes in 2018.

Foreclosures decreased 12.4% in 2016, to 1,287. This is the seventh-consecutive year foreclosures declined in El Paso County. Through September 2017, foreclosures totaled 802 compared to 992 in September 2016. The UCCS Economic Forum projects a total of 1,116 foreclosures in 2017 and 1,100 foreclosures in 2018.

Commercial Real Estate—Average commercial office vacancy rates dropped to 11.8% in 2016 compared to 12.4% in 2015. Through September 2017, the vacancy rate decreased to 11.1%. At the same time, average triple net lease rates decreased from $17.15 per square foot in 2015 to $16.66 per square foot in 2016. They decreased further to $15.42 per square foot through September 2017.

The average industrial vacancy rate increased to 7.7% in 2016 from 6.8% in 2015. Through September 2017, the rate increased to 8.4%. Average rents rose from $5.65 per square foot in 2015 to $6.03 per square foot in 2016. This rate increased again, to $7.20 per square foot, through September 2017.

Average retail vacancy rates stayed fairly flat, at 6.1% in 2015 and 6.2% in 2016. Rates then increased to 6.6% through September 2017. Average rents increased $0.93 per square foot, from $11.31 in 2015 to $12.24 in 2016. They climbed to $12.37 per square foot through September 2017.

Average medical office vacancy increased from 10.4% in 2015 to 11% in 2016. Through September 2017, they had decreased to 10%. Average rents rose in this property type, from $16.95 in 2015 to $19.38 in 2016. Through September 2017, they had edged down slightly, to $18.69. The UCCS Economic Forum uses primarily the CoStar Group and Olive Real Estate Group to compile this commercial real estate information.

Sales and Use Tax—The City of Colorado Springs benefits from strong, growing taxable retail sales because more than 50% of the city's budget dollars come from these collections. City sales and use tax collections increased 13.4%, or $13.4 million, to $162.1 million in 2016. Sales and use tax collections are expected to increase 8.8% in 2017 and another 3.5% the following year in nominal terms. However, adjusting sales taxes for both consumer price inflation and population increases, the real value of sales and use tax collections will increase by just 4.5% in 2017 and decrease by 0.3% in 2018.

Colorado Springs voters approved a measure at the end of 2015 to increase sales and use tax rates by 6.2 cents on every $10.00 to fund five years of road improvements estimated at approximately $250 million. Ballot initiatives on November 7, 2017, yielded somewhat historic outcomes for Colorado Springs. All ballot initiatives passed. Voters approved storm water fees in Colorado Springs, allowed El Paso County to keep money over the Taxpayer's Bill of Rights cap, and gave Colorado Springs School District 11 the incremental funding it has been seeking for many years. Voters also allowed funding for the I-25 gap to be added to the project lists for the Pikes Peak Rural Transportation Authority.

Education—The higher educational attainment of a region's population is important because well-trained individuals are necessary for business growth, and therefore, overall economic growth. In 2017, Colorado started testing all high school juniors using the SAT instead of the American College Test (ACT) because this college entrance exam more closely aligns with Colorado Academic Standards and provides free test preparation services for all students. The average score of juniors in 5 of El Paso County's 15 school districts was higher than that of all Colorado juniors (1014). In Colorado a downward bias is created in SAT results because all high school juniors are required to take the SAT, not only those who are college bound. Students in other grades, including seniors, are not included in the Colorado composite SAT results.

El Paso County's high school graduation rate improved to 81.7% in 2013. Part of the decline in 2014 and 2015

continued on page 134

Around the State

continued from page 133

was due to the addition of a group of students in online schools who take longer than four years to graduate. These students are not counted in these graduation rates. In 2016, Colorado's graduation rate of 78.9% was higher than the overall rate for El Paso County, 76.6%; however, 9 out of 15 school districts had a higher rate than the state.

In 2016, 34.6% of the City of Colorado Springs' population ages 25 and older had some college or an associate's degree, which is higher than the state (29.6%) and the United States (29%). In addition, 40.3% of this population had attained a bachelor's degree or higher, which is comparable to the state (39.8%) and significantly higher than the nation (31.2%), according to U.S. Census Bureau data on educational attainment.

Where Is the Economy Heading?

Locally, the Colorado Spring economy is on solid ground and has tremendous potential to continue on its positive trajectory. Traditionally, the city has lagged behind the Denver-Boulder region and has often underperformed the nation. That is no longer true. Most economic metrics confirm that Colorado Springs began to emerge from the Great Recession in 2014. That was the year that the local unemployment rate began to fall below the national rate, the gross metropolitan product (GMP) began its steep upward climb, the number of job postings began to meet the number of available workers, home prices recovered to pre-recessionary levels, and tourism began to take off. In addition, for both 2013 and 2014, El Paso County met the number of new jobs necessary to match population growth (or 5,400 new jobs). That number was exceeded in 2015 and 2016. People are reentering the workforce, and in 2017, they began to experience a much-needed increase in wages.

The first eight months of 2017 indicated that Colorado Springs will outperform the nation once again in 2017 in terms of employment, GMP growth, and wage increases. Barring a nationwide downturn, the region has momentum. The state of Colorado and El Paso County both have a median age that is approximately four years younger than the United States. Coupled with the high educational attainment levels, the state and region have something that is increasing scarce: a qualified workforce. The key will be providing ample opportunities for postsecondary education and training to meet the robust business growth occurring across various sectors.

In addition to a lower median age and higher educational attainment level, the Pikes Peak region also has a population growth rate approximately double the national rate. There have healthy gains in both the natural rate of growth and net in-migration, and a large proportion of the people moving to Colorado are well educated. The population growth rate is another advantage that bodes well for long-term economic growth. Colorado Springs has also been experiencing growth across various sectors in the past 11 years, raising the requirement for a skilled workforce. The diversity of sectors also makes the area much less vulnerable to downturns that hit specific sectors especially hard, such as the military. The economic diversity is also key to sustainable growth over the time horizon. Colorado Springs has had effective government that acknowledges the growth, the opportunities, and the requirements of that growth, such as funding infrastructure and bolstering services.

With all these baseline strengths, Pikes Peak region is well positioned in 2017 and 2018 to solidify itself as not only a premiere living destination, but also a smart choice for business growth and new investment. ✤

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continued on page 138

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continued from page 137

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continued on page 140

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continued from page 139

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