Sonoma County Complex Fires: Housing and Fiscal Impact Report

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Executive Summary

This study comprehensively evaluates the impact of the 2017 Sonoma Complex Fires on the Sonoma County economy, specifically examining the impact of those fires on individual industries, the housing situation, and local tax revenues. The findings are placed in the broader context of long run trends in the economy and their associated County housing requirements.

- Even before the fires occurred, Sonoma County faced a housing market characterized by rising home prices and rents, declining vacancy rates, and insufficient new supply of units.
- Based on projections that are tied to recent and expected trends in the local, state, and national economy, the County needs an additional 8,143 housing units between 2016 and 2020 to keep pace with anticipated employment growth.
- Approximately 5,300 homes were lost in the fires, equivalent to 2.5% of the County housing stock. In addition, data from the U.S. Census Bureau American Community Survey ("ACS") show that there were 12,631 overcrowded housing units in Sonoma County in 2016.
- In total, when accounting for employment growth, fire losses, and overcrowding, the County needs an additional 26,000 housing units by 2020, which is equivalent to 6,500 units per year. By comparison, the County permitted 730 units in 2016 and 609 in the first three quarters of 2017.
- In reviewing the economic vital signs of several communities before and after a natural disaster, evidence shows that local and regional economies are remarkably resilient in the face of disasters. The aggregate impact of the fires tends to be muted, as County-level indicators such as employment, personal income, property values, taxable sales, and property values show little or no departure from past trends in years following a natural disaster.
- Similarly, tax revenues typically show no abrupt changes, mainly because spending related to recovery efforts and overall economic momentum generally keep these sources of revenues on track in the years following a natural disaster.
- To the extent that disruptions do occur, their incidence is mainly targeted at the residents and businesses that suffered property and other losses as result of the disasters. These members of the community may be geographically displaced for a period of time, yet the economic activity in which they are involved (earning wages, generating business sales) frequently resumes more quickly.
- To be sure, these observations are not intended to diminish the significance of the fires in Sonoma county. Rather, and somewhat assuring, natural disasters appear to have a limited impact on the County economy in the short run, with presumably limited or no negative impacts on its long run health.
- Finally, looking past the immediate concerns of the fires and turning to the linkage between housing and the overall economy, chronic underbuilding of housing in the past has constrained the long-run growth potential of the Sonoma County economy. To the extent that continues, future economic growth in the County will likewise be constrained, as will future job and income growth, along with future revenues to local government.

Introduction

Sonoma County is home to over 500,000 residents and an economic base with 20,000 establishments employing over 250,000 wage and salary workers. With an unemployment rate of just under 3%, the labor market is effectively at full employment. As such, growth potential of the local economy has become severely constrained by little or no growth in the county labor force, partly because of the high cost of housing.

The recent fires displaced many residents, but many of those same residents were also employed locally, so the disruptions to households that have been affected by the fires have spilled over to employers and the local economic activity they generate. As for the county's housing situation, the recent fires intensified an already challenging housing shortage with estimated loss of approximately 5,300 homes.

The purpose of this study is to comprehensively evaluate the impact of the fires on the local economy in general. It will also examine the impact of the fires on individual industries, the housing situation, and local tax revenues. In the first section of this report, a forecast of County resident employment and housing is presented through the year 2020. This forecast is based on Beacon's overall outlook for the national, state, and regional economies, and it estimates how much housing the County will need to accommodate future job growth.

The second section of this report will focus on the County economy, with particular emphasis on the state of the local housing market. Finally, the impact of natural disasters on regional economies will be examined using cases studies from past wildfires in California, as well as fires and tornadoes in other states.

Projected Housing Needs

The loss of housing stock as a result of the recent fires must be viewed against the larger backdrop of housing trends in Sonoma County. Beacon Economics developed projections of county employment through 2020, which it then used to estimate the corresponding amount of housing needed in conjunction with that employment trajectory. It should be noted that there are additional housing needs beyond what is estimated by this forecast, in order to replace the nearly 5,300 homes lost to the fires.

To produce the forecast, Beacon Economics first obtained a time series sample of household employment by industry for Sonoma County that includes both wage and salary workers and self-employed individuals, based upon data from the U.S. Census Bureau American Community Survey ("ACS"). Beacon Economics used payroll employment data from the Bureau of Labor Statistics' Current Employment Survey ("CES"), which contains a longer history, as the foundation for projections of household employment through the year 2020. Employment forecasts were developed for each industry in the region as well as a total employment forecast over all of the County's major industries.

Housing needs assessments were driven by the forecasts of employment in Sonoma County, along with forecasts of key national, state, and regional economic and financial indicators. The base period for the assessment was 2016, the most recent year for which data are available from the ACS. Forecasts were developed through the year 2020. Projected housing needs were based on profiles of household and housing characteristics across the County's industries.

Current Sonoma County Employment and Housing Profiles

Household employment and housing in Sonoma County is most heavily concentrated in the Education and Health Care Services industry, making up 21% of resident employment. Much of this employment is in Health Care Services, which is true of the industry elsewhere in the state. The industry also accounted for roughly the same share (22.6%) of occupied housing by industry in 2016. The Professional and Business Services industry is second in size with 12.0% of employment and 12.6% of housing. The prominence of the Wine and Tourism industry within the local economy shows up in a number of industries. For instance, there are high concentrations of employment and housing within the Leisure and Hospitality and Retail industries. Moreover, Manufacturing makes up a notable share of employment and housing, with nearly 40% of this sector's employment in the Beverage Manufacturing subsector.

Employment, Housing, and GMP, by Industry, 2016

Industry	Percent of Industry Total		
	Employment	Housing	GMP
Natural Resources and Mining	2.2	2.0	2.2
Construction	6.3	7.3	7.2
Manufacturing	10.0	10.3	14.8
Wholesale trade	3.2	3.8	5.7
Retail trade	11.8	9.4	8.0
Logistics and Utilities	3.7	3.2	2.6
Information	2.2	2.8	3.7
Financial Activities	6.0	7.4	18.6
Professional and Business	12.0	12.6	9.3
Education and Health	21.0	22.6	9.9
Leisure and Hospitality	11.7	8.4	4.7
Other Services	5.4	5.1	3.0
Government	4.3	5.2	10.4

Source: American Community Survey,
U.S. Bureau of Economic Analysis

Gross Metropolitan Product ("GMP"), a measure of economic output, offers another perspective on the composition of the local economy. Output in Sonoma County is most heavily concentrated in the Financial Activities industry, making up 18.6% of GMP, followed by Manufacturing at 14.8% of GMP. With much of the County's Manufacturing employment coming from Beverage Manufacturing, much of Manufacturing's output is derived from the County's wine industry. Despite only accounting for 4.3% of employment in the region, Government ranked second in size in terms of GMP, accounting for 10.4% of the region's total output in 2016.

In Sonoma County, 76.2% of occupied housing units in 2016 were single-family dwellings, so the housing stock in the County is tilted heavily toward single-family properties. This distribution has changed little in recent years, with single-family housing's share of total units falling within the 74-76% range every year since 2005. Recent construction data suggests this trend is unlikely to change over the next three years. The number of new single-family units permitted for construction have outpaced the number of multifamily units over the last three years.

The majority of housing in the County is also owner-occupied, at 61.5% in 2016, well above the statewide average of 53.6%. Much like the County's share of single-family housing, its owner-occupied share of total housing has remained in a stable range, between 59-64%, since 2005.

Housing by Units and Tenure, 2016

Housing Type	Level	% of Total
Total Occupied Housing	187,504	
Single-Family	142,863	76.2
Multi-Family	33,924	18.1
Mobile home and other	10,717	5.7
Owner occupied	115,356	61.5
Renter occupied	72,148	38.5

Source: American Community Survey

Sonoma County Employment and Housing Forecast

As shown in the following table, projecting employment by industry was the first step in estimating Sonoma County's housing needs. Beacon Economics then established a relationship between employment and number of housing units by industry. Once Beacon established the total incremental housing need for each industry, those units were allocated to a mix of housing types and tenure based on recent historical patterns in the County.

Employment and Housing Needs, 2016 to 2020

Industry	Civilian Employment			Workforce Housing Units		
	2016	2020	Change	2016	2020	Change
Total Employment / Workforce Housing	254,696	267,927	13,231	158,553	166,696	8,143
Natural Resources and Mining	5,661	5,380	-281	3,347	3,181	-166
Construction	16,148	18,625	2,477	9,066	10,457	1,391
Manufacturing	25,482	25,072	-410	13,630	13,410	-219
Wholesale trade	8,215	8,682	467	5,059	5,347	287
Retail trade	30,121	30,810	689	19,107	19,543	437
Logistics and Utilities	9,487	10,256	769	7,551	8,163	612
Information	5,722	5,789	67	4,072	4,119	48
Financial Activities	15,405	14,534	-871	10,587	9,988	-599
Professional and Business	30,651	32,289	1,638	20,045	21,117	1,071
Education and Health	53,503	58,796	5,293	32,977	36,240	3,263
Leisure and Hospitality	29,714	32,204	2,490	17,144	18,580	1,437
Other Services	13,638	14,302	664	8,692	9,115	423
Government	10,949	11,189	240	7,275	7,435	160

Source: Beacon Economics, American Community Survey

Between 2016 and 2020, household employment is projected to grow by 13,231 or 5.2%. The growth in housing units needed to accommodate projected household employment growth over the period is slightly lower, at 5.1%, which translates to 8,143 new housing units needed—just over 2,000 units per year over the four-year horizon. Importantly, projected growth in household employment will not occur without more housing. As a result, if development growth is held up or limited, then job growth will also be limited. The sectors that would be most impacted by the housing shortage would also be those projected to grow the most in the coming years. For example, Education and Health and Leisure and Hospitality are projected to account for over half the job creation through 2020, and according to the ACS sectors over 90% of these County jobs in these sectors are filled by residents of Sonoma County.

The number of new housing units needed per industry of employed resident varies from a high of 3,263 units for Education and Health Care Services workers, to a low of 48 units for Information workers. For Leisure and Hospitality workers specifically, an additional 1,437 housing units will be needed. Based on declining employment trends for a small number of industries in recent years, we expect a decline in housing needed for workers in the Natural Resources and Mining, Manufacturing, and Financial Activities industries.

Once Beacon produced housing projections, we disaggregated the results by units in structures and tenure using housing profiles that Beacon constructed from the ACS Public Use Microdata Sample files. This data source allows for a granular analysis of housing statistics in the region. The following table shows the distribution of housing needs between single-family and multi-family housing, as well as by owner- and renter-occupied housing. Based on this employment growth projected through 2020, the County will need 6,204 single-family units and 1,473 multi-family units through the year 2020, assuming historical distributions remain intact. Of the total 8,143 new housing units needed, 5,010 would be owner-occupied and 3,133 would be renter-occupied.

Housing by Units and Tenure, 2016 to 2020

Housing Type	2016	2020	Change
Total Workforce Housing	158,553	166,696	8,143
Single-Family	120,804	127,009	6,204
Multi-Family	28,686	30,159	1,473
Mobile home and other	9,062	9,528	466
Owner occupied	97,544	102,554	5,010
Renter occupied	61,008	64,142	3,133

Source: American Community Survey

Sonoma County Housing Statistics by Industry, 2016

Industry	Percent of Total Workforce Housing				Median Home Value	Median Rent
	Single Family	Multi Family	Owner Occupied	Renter Occupied		
Natural Resources and Mining	2.0	2.2	1.9	2.2	620,000	1,400
Construction	7.3	7.2	6.9	7.9	500,000	1,400
Manufacturing	10.4	9.5	10.7	9.6	527,000	1,600
Wholesale trade	3.5	5.1	3.3	4.4	500,000	1,700
Retail trade	8.7	11.0	7.9	11.5	500,000	1,500
Logistics and Utilities	3.0	1.2	4.7	1.1	450,000	1,100
Information	2.8	3.5	2.7	3.0	600,000	1,400
Financial Activities	7.7	6.3	8.8	5.4	600,000	1,400
Professional and Business	12.7	13.1	13.3	11.5	615,000	1,500
Education and Health	23.3	21.8	23.0	22.1	550,000	1,400
Leisure and Hospitality	7.5	13.6	5.7	12.3	450,000	1,300
Other Services	5.2	2.9	5.3	4.7	515,000	1,500
Government	6.0	2.7	5.7	4.5	500,000	1,600

Source: American Community Survey

Adding in the nearly 5,300 homes in Sonoma County lost to the fires, the number of housing units that are needed rises to 13,443, or 3,360 units per year. Furthermore, as described below, 6.1% of the County's housing units may be characterized as overcrowded—that is, having more than one occupant per room in a given housing unit. This corresponds to an additional 12,631 housing units that would be needed to alleviate overcrowding. In all, a total of 26,074 units would be required to accommodate employment growth, replacement of fire-related losses, and overcrowded housing between 2016 and 2020, which amounts to just over 6,500 units per year.[1]

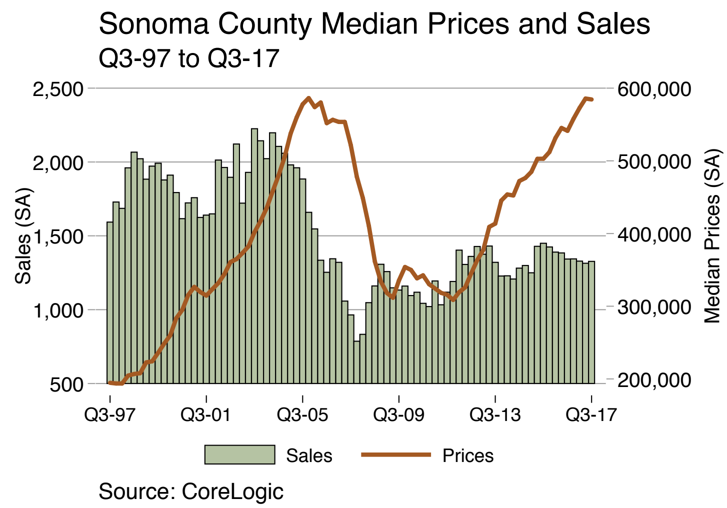
The projected need for additional housing in Sonoma County is several times larger than the amount of new housing that has actually been built in recent years. In fact, over the 5-year period from 2013 through 2017, the County averaged 716 permitted units per year. If this average level of construction is maintained from 2018 through 2020, the County will see nearly 3,754 new units constructed, well below the figures cited above. Rising home prices and rents in recent years have clearly signaled a need for additional housing units, but the supply response has consistently fallen short. Connecting the dots from underbuilding to economic growth, to the extent the County builds insufficient numbers of housing units, it is also limiting the job and overall growth of the local economy.

[1] Yet another area of concern is vacation housing. Recent ACS data show that 4.3% of housing units in Sonoma County are vacation properties. To the extent that Sonoma County becomes increasingly attractive as a place of second homes and rental homes, total housing needs must account for this segment of the housing market.

Economic Impact

Priced Out of the Market

Affordability in the County has become an increasingly sensitive issue in recent years as home prices have risen faster than the historical average, pricing many potential homeowners out of the market. As of the third quarter of 2017, the median price for an existing home in Sonoma County was $584,400 on a seasonally adjusted basis, an 8.0% increase over the same time period a year prior. By contrast, the historical year-over-year average growth since 1988 has been 5.2%. Price growth has outpaced this historical average every quarter since the third quarter of 2012.



Furthermore, house price growth has outpaced the growth in wages paid by the County's employers, exacerbating problems of housing affordability in the County. While the price of an existing home nearly doubled from 2011-2017, wages in the County increased by around 12% over the period.

While home prices are approaching their pre-recession peak levels, this does not mean the local real estate market is experiencing a price bubble. Rather, market fundamentals have been the driving factors. Supply is low and demand is high, a recipe for above average home price growth.

Going one step further, the region simply does not have enough housing supply to accommodate the demand for housing in the County, and current market supply is extremely tight. Sales of existing homes during the first three quarters of 2017 were down 3.6% from the first three quarters of 2016, following a 1.7% decrease for all of 2016. As of October 2017, the supply of homes on the market in the County stood at 2.8 months, according to the California Association of Realtors ("CAR"), meaning that inventories would be exhausted in 2.8 months at the current pace of sales. This was considerably lower than the long-run average of 6.7 months.

Another way to observe the mismatch between housing supply and demand in the County is through the ratio of housing units per job. In 2005, there were 0.87 housing units per job in the County, compared to 0.82 units per job in 2016. In other words, the community is creating jobs at a faster rate than new housing is being created.

Strong price growth has priced many people out of the market, including current residents of the County. In the third quarter of last year, CAR reported that just 25% of households in Sonoma County could afford the median priced home, down from 27% a year earlier. At the individual household level, the median household income in the county was $66,833, according to the 2016 ACS, while the average annual housing payment was $30,636, meaning that 45.8% of the average household's annual income would be tied up with mortgage payments and property taxes. Housing is commonly considered to be affordable if it makes up less than 30% of a household's income. By this standard, housing in the community is considered to be "unaffordable" for the average resident, so residents have less disposable income for other goods and services such as health care, child care, food, and education.

Sonoma County Housing Affordability, 2016

Location	Dec-2016 Median Home Price	Median Household Income	Annual Housing Payment	Housing as % of Income
County Total	527,500	66,833	30,636	45.8
Cloverdale	475,000	64,144	27,587	43.0
Cotati	432,000	64,754	25,090	38.7
Healdsburg	852,500	69,709	49,512	71.0
Petaluma	636,000	80,907	36,938	45.7
Rohnert Park	515,000	60,333	29,910	49.6
Santa Rosa	475,000	62,705	27,587	44.0
Sebastopol	650,100	58,036	37,757	65.1
Sonoma City	775,000	62,705	45,011	71.8
Windsor	537,500	86,192	31,217	36.2

Source: American Community Survey

For housing to be considered affordable in the community, with an annual home cost of roughly 30% of annual income, a household in Sonoma County would need an income of over $100,000. Based on the 2016 income distribution of residents in the County, only 35% of households in the County would meet that threshold. The situation is further complicated by the steep down payment requirements associated with the County's current high home prices.

Sonoma County Income Distribution, 2016

Income Group	2016 % of Households
Less than $10,000	3.9
$10,000 to $14,999	3.7
$15,000 to $24,999	6.5
$25,000 to $34,999	7.4
$35,000 to $49,999	10.8
$50,000 to $74,999	18.3
$75,000 to $99,999	14.3
$100,000 to $149,999	17.5
$150,000 to $199,999	8.9
$200,000 or more	8.6

Source: American Community Survey

It should be noted, however, that the market clearly has not priced everyone out of buying a home in the County, despite rising prices. While home sales have been declining, there are still transactions throughout the county every quarter. A consequence of this type of market, however, is that generally only high-income households are able to afford homes, which drives up property values and exacerbates affordability issues.

The question arises as to whether certain industries have difficulty filling positions because of the high cost of housing in Sonoma County. However, the share of inter-county commuting is limited. At present, 10% of the jobs in Sonoma County are filled by nonresidents who commute from outside the County, although a few industries have higher percentages of nonresident commuters. In the same vein, a relatively modest share (16.4%) and number of Sonoma County residents hold jobs elsewhere in the larger region. Despite a median home price that is high by most standards, it lower than that of its adjacent Bay Area neighbors, which at least partly explains relatively low levels of inter-county commuting.

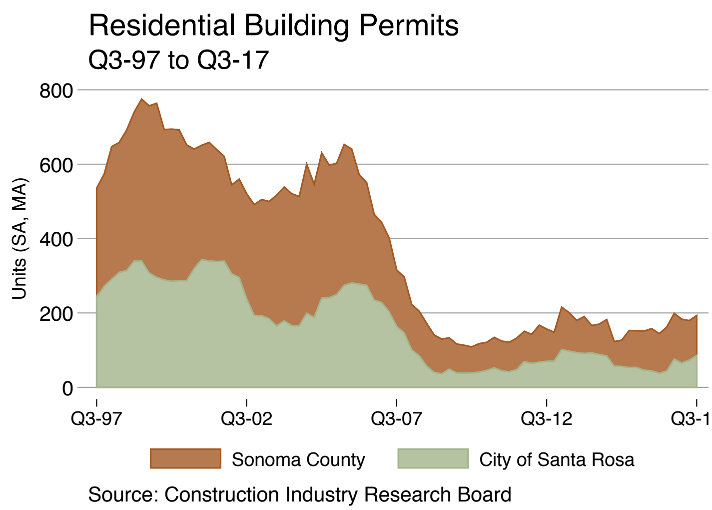
Sonoma County Income Distribution, 2016

Industry	% of Sonoma County Jobs Held by Nonresidents	% of Sonoma County Residents with Jobs Outside Sonoma County
Accommodation and Food	3.1	10.4
Administrative Support	5.3	14.2
Arts and Entertainment	3.1	11.5
Construction	24.6	31.3
Education	7.3	15.3
Finance and Insurance	15.3	23.8
Government	11.9	30.6
Health	10.2	12.0
Information	3.6	23.6
Management	14.4	10.8
Natural Resources	23.3	9.1
Other Services	7.1	11.9
Professional, Scientific, and Technical	8.5	20.4
Real Estate	4.4	15.1
Retail Trade	10.2	17.2
Transport and Warehousing	20.1	29.6
Utilities	6.9	22.2
Wholesale Trade	4.6	10.3
Total	10.2	16.4

Source: American Community Survey

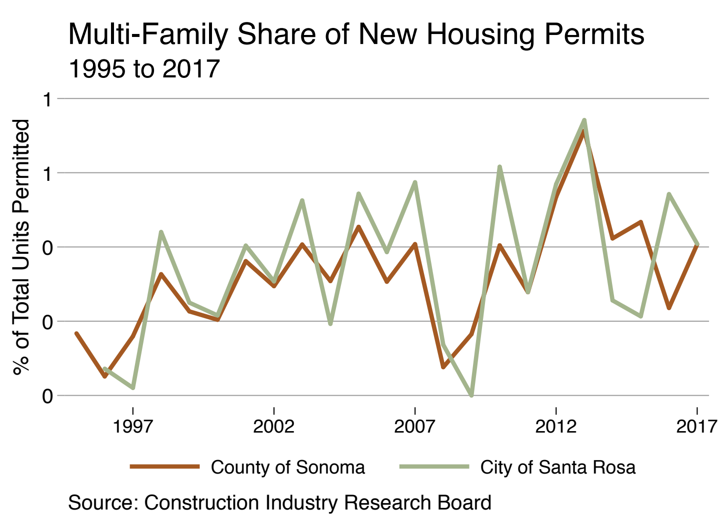
Housing Needs vs. Available Supply in the County and City of Santa Rosa

As described in the section above, Sonoma County will require an estimated 8,143 additional housing units by 2020 to keep pace with its anticipated job growth of 13,231 over this period. In other words, the County will require 2,000 new units per year to keep up with job growth. Recently, the number of new housing units in the County has been well below this pace. In 2015, 441 building permits were issued in the County, compared to 730 in 2016 and 609 in the first three quarters of 2017. In short, the County must see its housing production approximately triple in volume to meet the estimated housing required to accommodate its anticipated job growth. This challenge is exacerbated by the loss of nearly 5,300 homes to the recent fires.



The City of Santa Rosa, which accounted for over 35% of the County's population in January 2017, has more acute housing needs than the rest of the County, according to several metrics. This is due to the City's role as the County's primary job center. While the City accounts for around 35% of the County's jobs, according to estimates by the U.S. Census Bureau, in 2015 61.4% of the City's payroll jobs were filled by workers living outside of the City.

In 2016, the vacancy rate for all housing units was 8.7% in Sonoma County overall, but 4.7% in the City of Santa Rosa. Based on recent construction statistics, it is clear that Santa Rosa is the primary focus of developers in the region. During the first three quarters of 2017, the City of Santa Rosa made up nearly 40% of new residential units permitted for construction in the County. As in the past, the majority of new residential units permitted for construction are for single-family structures, though the mix of new structures is shifting towards denser multi-family housing, a promising sign as the City seeks to address housing affordability. That said, the number of new residential units permitted for construction during the first three quarters of 2017 is equivalent to just 0.4% of the 2016 housing stock, meaning that increases in the supply of housing are relatively slight relative to the overall stock of housing in the community. This pace of construction also lags behind population growth. From January 2016 to January 2017, the California Department of Finance estimated that the City of Santa Rosa population increased by 1,061 people. In 2016, there were 225 residential units permitted for construction, which works out to nearly one housing unit for every five persons added to the population. This is markedly higher than the average household size, and it highlights the need for an increased rate of new residential construction to combat overcrowd-



ing and rising home prices and rents. Additionally, over the period 2007-2014, the City met only 39% of its Regional Housing Need Allocation (RHNA) target, compared to a countywide average of 41%.[2]

During the first three quarters of 2017, there were 240 new residential units permitted for construction, of which 98, or 40.8%, were for multi-family structures. This is a big shift from the current distribution of the City's housing stock, in which 23.8% of structures contain more than one housing unit. The County overall has a slightly lower share of multi-family structures in its housing stock, at 19.4% as of 2016. The share of new multi-family housing units permitted has generally trended higher over the years, and has been above 20

Occupied Housing Units by Type and Industry, 2016

Industry	County Total		Santa Rosa	
	Single-Family	Multi-Family	Single-Family	Multi-Family
Total All Industries	141,766	34,065	46,313	14,463
Natural Resources and Mining	2,181	552	346	0
Construction	8,107	1,763	2,674	436
Manufacturing	11,580	2,336	5,151	1,279
Wholesale trade	3,917	1,247	1,999	713
Retail trade	9,675	2,708	3,451	1,072
Logistics and Utilities	3,330	286	1,263	150
Information	3,062	870	678	473
Financial Activities	8,533	1,559	2,913	854
Professional and Business	14,107	3,240	5,196	1,150
Education and Health	25,916	5,384	9,130	2,636
Leisure and Hospitality	8,294	3,343	2,666	1,229
Other Services	5,751	710	1,632	357
Government	6,618	659	1,589	152
Unemployed or Not In Labor Force	30,695	9,407	7,626	3,960

Source: American Community Survey

Distribution of Housing Shortage

When assessing the extent of a housing shortage, several metrics can be employed, but triangulating across a variety of indicators can be useful. For instance, vacancy rates can be a good indicator of tight supply, but vacancy rates do not measure if the number of persons per household is increasing. Other indicators help to clarify whether there is truly a shortage of housing.

Sonoma County overall had a residential vacancy rate of 8.7% in 2016, which is slightly higher than the statewide rate of 7.9%. Much of this difference between the County and state vacancy rates is due to a very high vacancy rate of 16.8% for the sum of unincorporated portions of the County. Of the incorporated cities in the County, only the City of Sonoma (9.4%) had a higher vacancy rate than the County average. The lowest vacancy rates among the incorporated areas of the County belong to Petaluma and the Town of Windsor, each of which had a vacancy rate of 3.6%.

When comparing the number of new residential permits issued per new person, Windsor has a high ratio at 102, mostly because there were virtually no units permitted in the town in 2016, even though the population was grow-

[2] https://www.abag.ca.gov/files/RHNAProgress2007_2014_082815.pdf.

ing. The lowest ratio is 0.9 in Rohnert Park, meaning that there was 1 unit permitted per 0.9 new person, a healthy pace of construction.

Overall, the City of Santa Rosa stands out across most housing shortage metrics. The vacancy rate of 4.7% is not the lowest in Sonoma County, but it is considerably lower than the county and state average. The City of Santa Rosa has the second-highest share of overcrowded units in the County, at 8.5%, which easily translates into the highest absolute number of overcrowded units (5,717) in the County. The ratio of permits to new population of 4.7 is also higher than the average household size, meaning that construction is not keeping up with population growth and will likely lead to lower vacancy rates and more overcrowded units.

Sonoma County Housing Shortage Metrics, 2016

Location	Total Housing Units	Vacancy Rate	Permits to New Population Ratio	Overcrowded % of Total Units
County Total	207,058	8.7	3.4	6.1
Unincorporated	69,823	16.8	24.2	5.3
Santa Rosa	67,526	4.7	4.7	8.5
Petaluma	22,931	3.6	1.9	3.7
Rohnert Park	16,496	3.7	0.9	6.0
Windsor	9,630	3.6	102.0	5.5
Sonoma City	5,571	9.4	1.1	0.5
Healdsburg	5,075	5.9	1.8	4.3
Sebastopol	3,637	5.3	1.5	1.7
Cloverdale	3,331	5.0	14.0	9.7
Cotati	3,038	4.8	2.8	6.3

Source: American Community Survey, Construction Industry Research Board, Department of Finance

Note: 5-year estimates used

Residents Employed in Construction Industry

Once rebuilding in the County begins in earnest, it is reassuring that one of the largest bases of construction workers in the County is in close proximity to where the fires were most destructive. The Santa Rosa Fire Chief estimated that more than 2,000 homes were lost in the Santa Rosa communities of Coffey Park, Fountain grove, and surrounding areas. [3] With such a large number of homes lost to the fires located in Santa Rosa, it is fortunate that nearly 30% of households in the County with a householder in the construction industry live in the City of Santa Rosa.

While it may be the case that some homes of construction workers may have been destroyed in the fire, given the high concentration of fire damage and construction industry residency in the City of Santa Rosa, the same would not be true for the City of Petaluma, which has the second highest concentration (12.7%) of households with a head of household in the Construction industry. The City of Rohnert park (9.3%) and the Town of Windsor (6.2%) have the third and fourth largest percentages of households with a head of household in the Construction industry, respectively.

[3] The Press Democrat. (2017, November 3). Retrieved January 26, 2001, from http://www.pressdemocrat.com/news/7597510-181/new-data-show-sonoma-county

Construction Employment by Residence, 2016

Location	Employment	% of County
Sonoma County	18,788	
Santa Rosa	5,455	29.0
Petaluma	2,389	12.7
Rohnert Park	1,738	9.3
Windsor	1,167	6.2
Larkfield-Wikiup	439	2.3
Sonoma	395	2.1
Healdsburg	317	1.7
Sebastopol	279	1.5
Roseland	271	1.4
Cotati	263	1.4

Source: American Community Survey

From a payroll employment perspective, over the past several years, the Construction industry has hired back many workers that were let go during the economic recession, but the industry has yet to return to the peak employment levels of the housing boom last decade. As of December 2017, payroll Construction employment stood at 13,800 on a seasonally adjusted basis, which was about 1,200 jobs shy of the previous peak. The nation in general is experiencing a shortage of construction workers, which can be a drag on economic growth as new supply of housing and commercial properties necessary for higher levels of economic activity do not meet demand. In the United States, there were 347,000 Construction industry hires in December 2017, according to the Bureau of Labor Statistics, but there were still 210,000 openings for the industry. If this trend is taking place locally, as well, reconstruction efforts in Sonoma County could take longer than anticipated.

Displacement effects of the fires for local residents and the industries in which they work

Because the fires occurred so recently, detailed data on which residents and industries were affected by the fires are lacking. In the short term, business establishments have been left idle by the fires, suppressing industry output. Likewise, as residents were displaced from their communities, the purchase of certain locally serving services may have declined. However, there is evidence that the economies of communities affected by natural disasters are remarkably resilient, and the impact of temporary fire-related decreases in population and employment on overall employment trends is minimal. For each county affected by a fire listed below, job growth after a fire is broadly consistent with the job growth in the state within which the county is located.

Percent Change in Total Industry Employment Surrounding Fire Events

Fire	Effected Counties	Date	Region	Average Annualized Growth		
				Prior 2 Years	1 Year After	2 Years After
Jones	Shasta	October, 1999	County	3.4	2.2	3.0
Jones	Shasta	October, 1999	State	3.7	2.8	0.7
Cedar	San Diego	October, 2003	County	1.6	1.7	1.5
Cedar	San Diego	October, 2003	State	0.0	1.3	1.9
Witch	San Diego	October, 2007	County	1.0	-1.7	-3.3
Witch	San Diego	October, 2007	State	0.9	-2.6	-4.1
Complex	Bastrop (Texas)	September, 2011	County	-0.2	0.7	3.9
Complex	Bastrop (Texas)	September, 2011	State	2.0	2.8	3.3
Valley	Sonoma/Napa/Lake	September, 2015	Sonoma	1.7	1.9	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Napa	2.0	-0.3	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Lake	0.3	4.3	N/A
Valley	Sonoma/Napa/Lake	September, 2015	State	1.9	2.4	N/A
			County Average	1.4	1.3	1.3
			State Average	1.9	2.3	2.0

Source: Beacon Economics, U.S. Bureau of Labor Statistics

In the short-term, the displacement of residents may lead to either a shortage of a labor for industries or an increase in commuting to the County's jobs. To the extent that labor shortages arise, this might lead to short-term increases in wages.

We can get a sense of which industries have been affected by Sonoma County fires by looking at the profile of those parts of the County where the destruction was the greatest and draw inferences about which industries might be disproportionately affected by the fires. As mentioned in the previous section, a very large portion of the destruction from the fires was concentrated in communities within the City of Santa Rosa. According to the ACS, 23.1% of the City's residents were employed in the Education and Health Care Services industry in 2016, the largest concentration of resident employment in the City. Large percentages of residents were also employed in the Profession and Business Services (12.5%), Manufacturing (12.3%), and Retail (12.0%) industries.

City of Santa Rosa Employment by Industry, 2016

Industry	Employment	% of Total
Total All Industries	88,975	
Natural Resources and Mining	1,011	1.1
Construction	3,629	4.1
Manufacturing	10,966	12.3
Wholesale trade	3,429	3.9
Retail trade	10,675	12.0
Logistics and Utilities	3,815	4.3
Information	1,582	1.8
Financial Activities	6,161	6.9
Professional and Business	11,083	12.5
Education and Health	20,556	23.1
Leisure and Hospitality	8,537	9.6
Other Services	4,448	5.0
Government	3,083	3.5

Source: American Community Survey

From an occupational perspective, the type of jobs most likely to be impacted are office-based. Management, business, science, and arts occupations make up 36.5% of resident employment in the City, and 25.9% are employed in sales and office occupations.

City of Santa Rosa Employment by Occupation, 2016

Occupation	Employment	% of Total
Total All Occupations	88,975	
Management, business, science, and arts	32,515	36.5
Service	18,832	21.2
Sales and office	23,068	25.9
NR, construction, and maintenance	6,222	7.0
Production and transportation	8,338	9.4

Source: American Community Survey

Fiscal Impact

Short Run Impact on Local Government Revenues

Estimating the impact that fires and similar natural disasters have on local economies can be challenging, due to various confounding factors. Intuitively, the destruction of property and displacement of the local labor supply suggests that there would be a decline in economic activity, as businesses may not be able to provide goods and services, thereby putting downward pressure on overall growth. However, emergency management, insurance payouts, and rebuilding can also stimulate the economy with a boost in spending on local building materials and other goods and services, such as food and lodging for first responders and subsequent construction workers. This additional spending can raise tax revenues.

With respect to the shortage of labor from displaced workers, it is important to consider the place of residence for payroll employees in a given area. In the City of Santa Rosa, for example, 61.4% of payroll jobs in 2015 were filled by people employed but living outside of the City, according to the U.S. Census Bureau. The City of Santa Rosa is a major job center in Sonoma County, and positions vacated by displaced residents may be filled rather quickly, given that there is already a large supply of labor outside of the City. Granted, the labor market is already at full employment and may take some time for job-seekers and employers to find each other. As mentioned previously, vacancy rates in the unincorporated parts of the County are quite high, so there is also opportunity for migration to the County should there be employment opportunities.

A prime example of the difficulties in assessing impact to local revenues is the Cedar Fire of 2003. The Cedar Fire burned through a large portion of San Diego County and, according to CalFire, was the second-largest and third-most destructive fire in California history. The Cedar Fire burned 273,246 acres, destroyed 2,820 structures, and resulted in 15 deaths. As one of the most severe fires in the state's history, and recent enough that a variety of economic data sources could be brought to bear in the analysis, the Cedar Fire is a good starting point.

While the Cedar Fire had an immeasurable impact on those directly affected, there is little evidence that the Cedar Fire had a significantly negative economic impact on San Diego County, from a countywide macroeconomic perspective. The Cedar Fire took place in October of 2003, and economic indicators, if nothing else, showed steady growth, in line with neighboring counties, in the quarters immediately following the fire. Taxable sales in San Diego County actually increased by 10.9% and 10.0% year over year in the first two quarters of 2004, up from 6.2% growth in the fourth quarter of 2003 when the fire was taking place. Before rushing to attribute this stronger growth to any spending related to emergency management and rebuilding efforts, it is important to note that a similar acceleration was seen in Los Angeles and Orange Counties, as well, suggesting macroeconomic conditions in the broader region played a role.

The impact on the San Diego County real estate market also did not suggest a negative impact from the fire. The median price for a single-family home in the County was more than 20% higher in the quarters during and immediately after the Cedar Fire. Logically, prices can move higher in the face of a low supply, due to destroyed homes in the fire, except that home sales were also growing by double digits over the same time period. Like the spending data, the real estate market data in Los Angeles and Orange County showed robust growth, as well.

An examination of other fires also does not suggest that fires have a negative impact on assessed valuation. For example, in 2003, the year of the Cedar Fire, assessed valuation in San Diego grew by 10.0%, compared to 7.9% in the state overall. This trend also continued in the years following the Cedar Fire, with assessed valuation growing by

11.0% one year after the fire and 13.7% two years after the fire, compared to 9.0% and 11.5% in the state over the same time period. Results were similar for the Valley Fire, which affected the northern parts of Sonoma and Napa Counties. During the two years preceding the Valley Fire, assessed valuation in Napa County grew by 5.2% and by 5.5% in Sonoma County, which are both in line with statewide gains (5.4%). During the year of the fire, assessed valuation in Napa County grew by 6.6% and by 7.0% in Sonoma County, slightly outpacing statewide gains (6.1%). During the year after the fire, assessed valuation in Napa County grew by 7.1% and by 5.9% in Sonoma County, outpacing statewide gains (5.1%).

The lack of an impact on assessed valuation may seem unintuitive, but a significant portion of a home's value is driven by its land value, not the structure that is built on it. As a result, even when a home is destroyed there is still a significant amount of assessed valuation assigned to the property.

Percent Change in Assessed Valuation Surrounding Fire Events

Fire	Effected Counties	date	Region	Average Annualized Growth: Prior 2 Years	Year of Fire	1 Year After	2 Years After
Cedar	San Diego	October, 2003	County	N/A	10.0	11.0	13.7
Cedar	San Diego	October, 2003	State	N/A	7.9	9.0	11.5
Witch	San Diego	October, 2007	County	12.8	9.9	4.5	-2.6
Witch	San Diego	October, 2007	State	12.1	9.9	4.6	-2.3
Valley	Sonoma/Napa/Lake	September, 2015	Sonoma	5.5	7.0	5.9	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Napa	5.2	6.6	7.1	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Lake	-0.5	1.1	-1.2	N/A
Valley	Sonoma/Napa/Lake	September, 2015	State	5.4	6.1	5.1	N/A
			Average County	5.7	6.9	5.4	5.6
			Average State	8.7	8.0	4.9	-2.3

Source: California State Controller's Office

This is not to say that there is no impact from a devastating natural disaster such as the Cedar Fire, but these effects can be obfuscated by broader macroeconomic conditions. One example is the Witch Fire in San Diego County, which was the fifth-most destructive fire in the state's history. Unlike the Cedar Fire, taxable sales in the County declined by 1.5% to 2.0% year over year during and immediately after the fire. However, like the Cedar Fire, neighboring counties also exhibited declining spending levels over the same time period. When considering macroeconomic conditions, this makes perfect sense. The Witch Fire took place in October of 2007, just when the state began its slide into the Great Recession.

An economy the size of San Diego County is not necessarily comparable to Sonoma County, but even an examination of municipalities within the County at the time of the Cedar Fire does not reveal a notable impact on aggregate economic statistics. The City of El Cajon, for example, exhibited a similar trend with spending as the County overall. After growing by a moderate 5.0% year over year in the fourth quarter of 2003 during the Cedar Fire, taxable sales growth in the City of El Cajon rose to 11.7% and 9.3% in the following quarters. Taxable sales in the City of San Diego followed a similar trend, but to a lesser degree, growing by 4.6% during the fire and 7.7% and 7.0% afterward.

An examination of smaller economies produces similar results. The Jones Fire in Shasta County took place in October 1999, and it was rated by CalFire as the 9th most destructive fire in California. The Shasta County economy is considerably smaller than the Sonoma County economy, but there was no evidence of a negative economic impact due to the Jones Fire. Taxable sales in Shasta County grew by double digits year over year during and after the fire, with similar trends in neighboring Tehama, Trinity, and Lassen Counties.

Percent Change in Taxable Sales Surrounding Fire Events

Fire	County	Date	Year-over-year % Change: Preceding 3 Quarters	Year-over-year % Change: Subsequent 3 Quarters	Concurrent State growth: Preceding 3 Quarters	Concurrent State growth: Subsequent 3 Quarters
Jones	Shasta	October, 1999	11.6	11.5	8.6	13.2
Cedar	San Diego	October, 2003	5.7	8.8	3.6	8.6
Day	Ventura	September, 2006	5.8	2.5	6.7	2.0
Zaca	Santa Barbara	July, 2007	5.4	-2.6	2.0	-2.4
Witch	San Diego	October, 2007	-0.6	-2.3	0.8	-2.9
Valley	Sonoma	September, 2015	2.8	3.9	2.2	4.7

Source: CalFire, California Board of Equalization

Percent Change in Personal Income Surrounding Fire Events

Fire	Effected Counties	Date	Region	Average Annualized Growth: Prior 2 Years	Average Annualized Growth: 1 Year After	Average Annualized Growth: 2 Years After
Jones	Shasta	October, 1999	County	4.7	4.2	6.1
Jones	Shasta	October, 1999	State	6.4	6.6	10.2
Cedar	San Diego	October, 2003	County	6.4	5.9	9.1
Cedar	San Diego	October, 2003	State	6.7	5.1	7.5
Witch	San Diego	October, 2007	County	6.9	2.7	2.6
Witch	San Diego	October, 2007	State	6.8	3.9	2.1
Complex	Bastrop (Texas)	September, 2011	County	4.8	3.3	3.6
Complex	Bastrop (Texas)	September, 2011	State	2.4	9.5	7.5
Valley	Sonoma/Napa/Lake	September, 2015	Sonoma	4.3	8.2	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Napa	6.8	8.3	N/A
Valley	Sonoma/Napa/Lake	September, 2015	Lake	3.5	7.1	N/A
Valley	Sonoma/Napa/Lake	September, 2015	State	3.9	7.4	N/A
			County Average	5.4	5.7	5.4
			State Average	5.2	6.5	6.8

Source: U.S. Bureau of Economic Analysis

An examination of personal income growth in regions affected by fires and other natural disasters also does not demonstrate a negative economic impact due to those fires. Personal income in San Diego County grew 9.1% during the year following the Cedar Fire, outpacing 7.5% growth statewide. Similarly, in the year following the Witch Fire, personal income in San Diego County grew by 2.6%, outpacing the state overall. The story is the same in smaller counties, as well. For example, the Valley Fire in the northern parts of Sonoma and Napa Counties in 2015 had little impact on personal income growth, with Sonoma County (4.3%) and Napa County (5.0%) both outpacing the state overall (3.7%).

While we do not anticipate a negative impact from the fires, a lack of home construction would have a fiscal impact. With a lack of new construction in the region, job growth will be limited and impact locally serving sectors like Education and Health and Leisure and hospitality. Using past real tax revenue for Sonoma County and comparing its relationship to employment growth, shows that for a 1.0% increase in household employment there is a corresponding 1.3% increase in total tax revenue for the County. As a result, if construction activity is limited in the coming years there would be a negative impact on local revenues. This situation is not unique to Sonoma County however, many parts of the state are beginning to face slowdowns in growth because a lack of housing and current prices pushing lower income residents out of the area.

The Bay Area economy has been booming these last few years, and has been the primary engine of growth for the both the state and Sonoma County. The unemployment rate in the County stood at 2.9% in December 2017, on a seasonally adjusted basis. Aside from a slight uptick from November, that was the lowest unemployment rate in the County since December of 1999. With the local and regional economy in good shape, the aggregate impact of the Sonoma Complex Fires may be muted, as spending related to recovery efforts and overall economic momentum can keep tax revenues coming in for local municipalities. This is because effective emergency management, insurance payouts, and rebuilding are helping drive additional growth in the region. To be sure, these observations are not intended to diminish the significance of the fires, but rather to point out that their impact is not easily apparent in economic indicators that typically detail the health of the County economy.

Long Run Impact on Property Taxes

In the long run, property taxes revenues, particularly in California, can actually get a boost from a destructive natural disaster like a fire. This is due to the effect that Proposition 13 has on how property assessments, and subsequent property taxes, can grow from year to year.

For a typical property in California, a property's assessed value can grow by 2% or by the annual growth in the California Consumer Price Index, whichever is lower. When a property changes ownership, then the property can be reassessed at the sales price, which in most cases is considerably higher. Reassessments are one of the major sources of property tax growth beyond Proposition 13 restrictions for most municipalities.

In the aftermath of a fire, parcels are sold and structures are rebuilt, triggering reassessments of those parcels. Even if the property does not change ownership for another 10 to 20 years, the assessed value, and subsequent property tax, may be higher than it was before the fire for some if not many affected properties.

Home price growth over 10- to 20-year time frames will be impacted by broader macroeconomic conditions for the most part. Growth rates may change periodically but can be expected to return to historical trends over time. So, while long-run growth may not change substantively for property taxes, an event like a fire can cause an upward shift in revenues, resulting in municipalities bringing in more dollars over the long run.

Conclusion

Like many areas in California, Sonoma County is facing a shortage of housing at a time of strong demand that is driven by a booming regional economy. The Sonoma Complex Fires, which destroyed over 5,000 homes, exacerbate the affordability problems of County residents and have lent new urgency to the issue. Communities will be dealing with the aftermath for some time to come.

In this report, Beacon produced an employment-driven forecast of the County's incremental housing needs through 2020, which showed that the County needs to build roughly 2,400 new units each year to keep up with projected labor demand. This number of new housing units does not take into account replacement of the homes lost in the fires, nor does it account for overcrowding. When these issues are factored in, housing needs grow to 6,500 units per year, or 26,000 units from 2016 through 2020. In recent history, housing permits have never exceeded 1,000 units annually.

The cumulative effect of underbuilding exacerbates an already challenging housing affordability situation. The affordability issue in the County is real, and many people are being priced out of the market. Average household income is not sufficient to service mortgage payments of homes sold at the median home price. Granted, there are some high-income households who are able to afford homes because there are transactions taking place each month, but this only pushes property prices higher. To keep home price growth in check, the housing supply must increase, a straightforward conclusion drawn from market dynamics and basic economics. If demand is high and you want to limit rising prices, you have to increase supply.

From a fiscal perspective, natural disasters are not always the financial disaster they appear to be. Relief and rebuilding efforts often trigger spending that is above and beyond what would have ordinarily taken place. An examination of some of the most destructive fires in the state's history shows that, in the aggregate, the fires did not cause a notable negative impact on economic indicators that are the basis for local government revenues, like taxable sales and sales tax. From a long-run perspective, municipalities in California in particular can benefit from higher property tax revenues, as natural disasters often trigger reassessments from change of ownership and rebuilding, allowing the properties to be assessed at market value and not restricted by growth limitations imposed by Proposition 13.

Finally, from the perspective of the overall economy, it is important to recognize that chronic underbuilding of housing in the past has constrained the long-run growth potential of the Sonoma County economy. To the extent that continues, future economic growth in the County will likewise be constrained, as will future job and income growth, along with future revenues to local government.

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