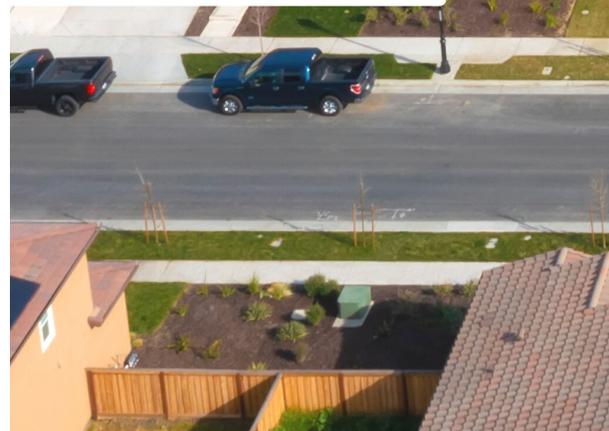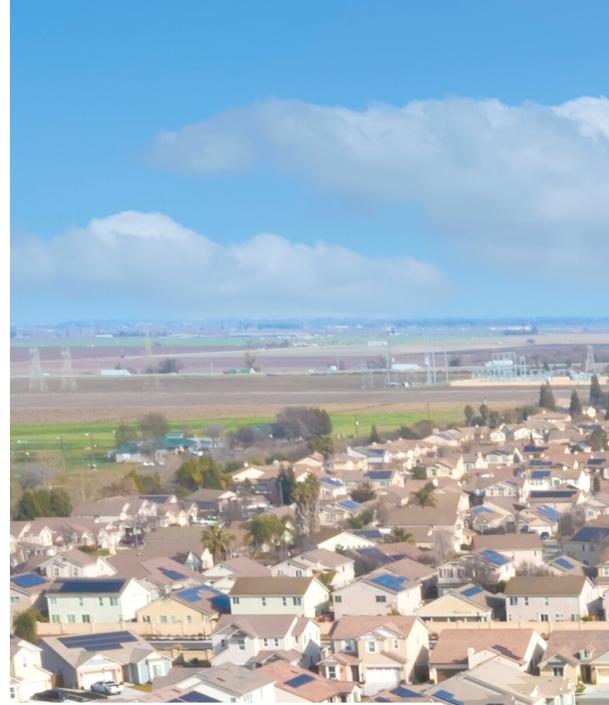# APPENDIX Q

Population, Household and Employment Projections

San Joaquin County Demographic and Employment Forecast

September 10, 2020

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Prepared for:

SJCOG

SAN JOAQUIN COUNCIL OF GOVERNMENTS

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Purpose

San Joaquin Council of Governments (SJCOG) requires a long-range demographic and employment forecast to support the development of its Regional Transportation Plan (RTP), Sustainable Communities Strategy (SCS), and Regional Housing Needs Assessment (RHNA). SJCOG updates these forecasts at approximately five year intervals with the most recent update occurring in 2016. Cities and other agencies within the County also use the forecast to inform their own local planning efforts such as general plans and municipal service reviews. The forecast focuses on three areas: population, households, and employment. Population forecasts are broken down by age, race and ethnicity, and this detailed population forecast is used to generate the household projection.

At the county level, the detailed population and employment forecasts are generated using REMI, a widely used regional modeling software model which captures the complex interdependence of demographic and economic factors. The county level forecast is then allocated to sub-county areas based on historical data and trends with adjustments to account for current conditions and expected development in current plans for sub-county areas. This report is divided into two primary sections that follow the process. The first section focuses on the county-level forecasts generated with the REMI model. The second section details the results for sub-county areas, and explains the process and adjustments used to allocate the county level forecast to local areas.

Section 1: County Forecast

The economic and demographic forecasts were created using REMI (Regional Economic Models, Inc.). The REMI model is a state-of-the-art econometric regional forecasting model. One of the strongest features of the REMI model is its integrated dynamic feedback between economic and dynamic variables. For this forecasting exercise, the key feedback relationship is between local employment conditions and the migration of households in and out of the region. The REMI model is used by many metropolitan planning organizations for this purpose, most notably the Bay Area's Metropolitan Transportation Commission and Association of Bay Area Governments (MTC-ABAG), so using the REMI model aligns SJCOG's forecasting approach with other agencies in the region.

The REMI model uses historical data, from several government source to estimate economic and demographic forecast predictions at national and regional levels. The model first makes projections at the national level and subsequently uses the national results to produce regional forecasts. REMI PI+ provides a default forecast, based on the current national and regional data available to conduct robust and dynamic regression estimators. While, the estimations procedure uses econometrics and is well-based in economic theory, some changes were made to incorporate up-to-date data and to adjust some of the data based on "local knowledge" in an attempt to capture current and future changes not reflected in the historical data.

The forecast presented in this report utilizes REMI PI+ 2.4.1 which was released in May 2020. It is a 22 region, 70-industry model of the U.S. and California economy in which San Joaquin County is defined as a unique region in California. The historical data is current through 2018, the latest year for which Bureau of Economic Analysis personal income and other key economic data is available, and the forecast period runs from 2019 to 2060. The REMI model allows for users to update and benchmark the model for known values of 2019 and 2020 data, and to customize the forecast to include known future events and user judgement about local conditions.

The rest of this section is organized as follows. First, we review the results of the baseline REMI forecast to establish the model's initial predictions. Next, we detail a list of updates and adjustments we made to the model to more accurately project San Joaquin County demographic and employment profile into the future. The next parts present and discusses the results of the updated population forecast, and then uses the population forecast to generate a projection of households and housing needs to accommodate the household growth. The last part of this section presents the updated employment by industry forecast for the County.

1.1 - REMI Baseline Forecast

The REMI model is delivered with an initial forecast for San Joaquin County based on the models analysis of historical data through 2018 and an assumed long-range U.S. macroeconomic forecast. This is sometimes referred to as the "out of the box" or default REMI forecast, but we use the term REMI baseline forecast in this report. Examining the results of the baseline forecast gives a point of comparison for adjustments and allows us to understand some of the important drivers in the REMI model for San Joaquin County before we add updated data and the impact of some significant projects and plans expected in the near future.

As shown in Figure 1, the baseline forecast for San Joaquin County in the REMI model shows employment growth continues at the strong pace of the past decade for another year or two, before abruptly shifting to a virtual standstill after 2022. Employment stays flat for nearly a decade before resuming modest growth in the mid 2030s in the baseline forecast. Why is the REMI baseline forecast so pessimistic about San Joaquin County growth and projecting such a dramatic downward shift? Is it likely to be true? What does it tell us about the San Joaquin County economy?

The REMI model's pessimistic prediction stems from San Joaquin County's heavy dependence on industries that are not expected to experience significant employment growth at the national level, including agriculture, transportation and warehousing, and public education, with relatively low concentrations in technology and high skilled technical and business services. This is a standard top-down regional forecasting approach where local industry sectors are assumed to simply grow proportional to expected national trends. In the REMI model, migration of households in and out of counties is highly sensitive to local job opportunities. Thus, over time, the model also predicts flat employment growth in San Joaquin will also lead to a reduction of these economic migrants to San Joaquin County, resulting in slower population growth and employment growth in local-serving service sectors.

Figure 1 - REMI Baseline Employment Forecast for San Joaquin County
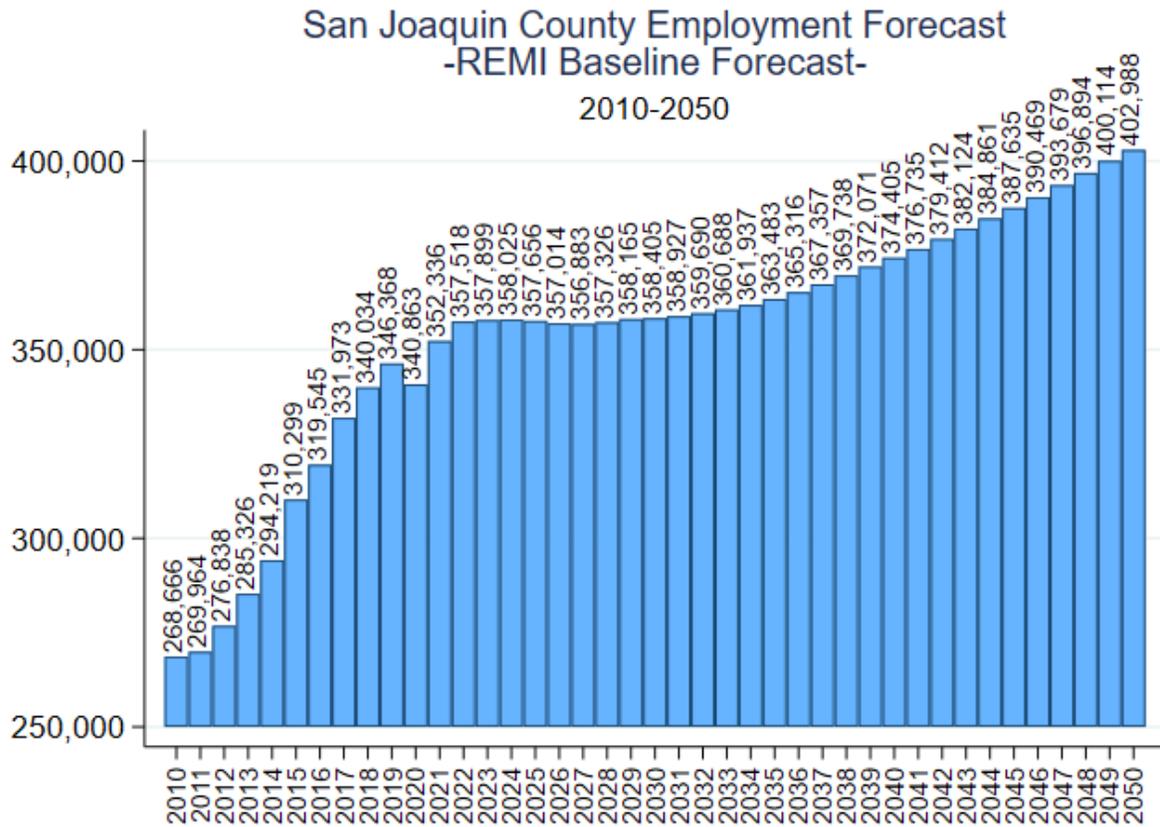
Figure 2 shows the REMI baseline population forecast for San Joaquin County, and to provide perspective it also shows the latest population forecast from the California Department of Finance (DOF). In contrast to the sharply reduced in-migration projected by the REMI baseline model in response to stagnant job prospects, the DOF projection assumes steady in-migration to San Joaquin County following the pattern seen in recent years.

While we believe, San Joaquin County is highly likely to experience stronger growth than projected in the REMI baseline model, it is important to consider why the REMI baseline is pessimistic about San Joaquin County's growth prospects and not just assume growth will automatically continue as it has in the past. In the next section, we describe a series of adjustments that we have made to REMI model based on more current data, local experience, and knowledge of upcoming development plans.

Figure 2- Initial Population Forecast Comparison

San Joaquin County Population Forecast Comparison
2019-2060
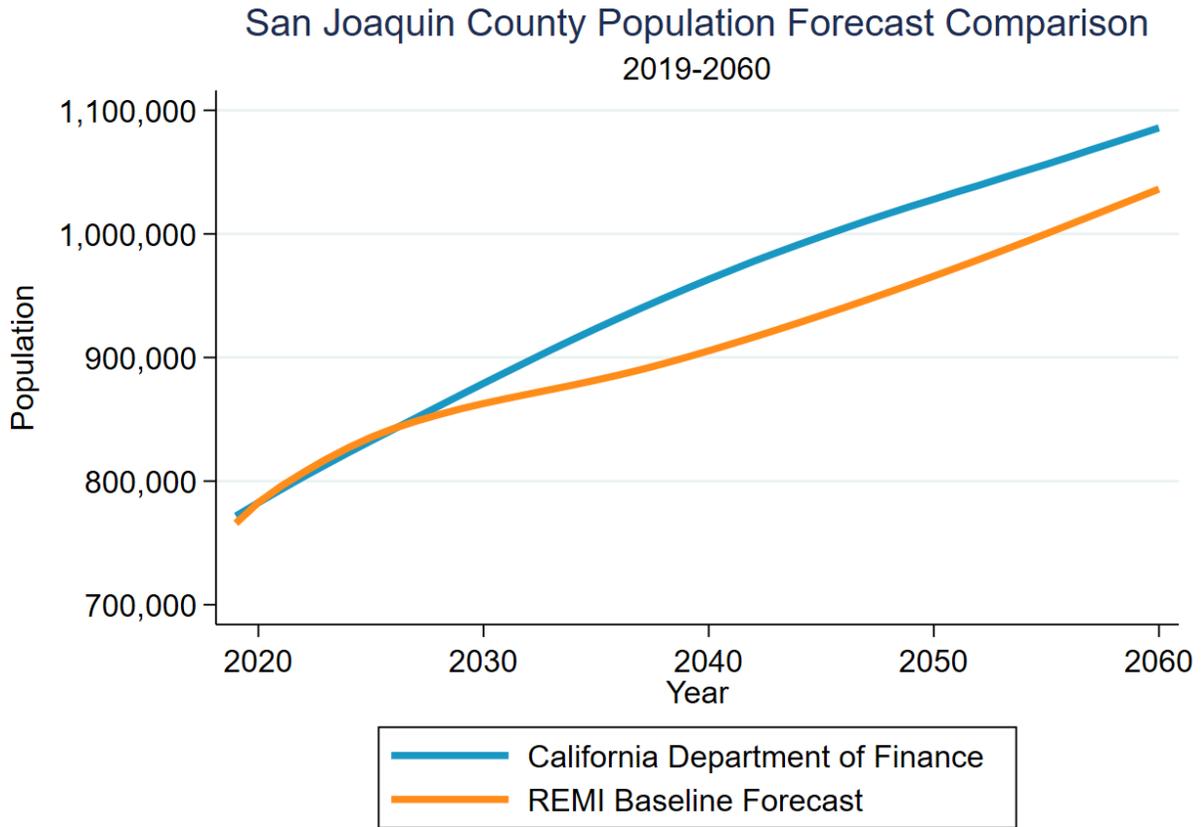
1.2 - Updates and Adjustments to the REMI Baseline Model

This section describes a series of updates and adjustments made to the REMI baseline model. These fall into four general categories: Covid-19 adjustments to the macroeconomic forecast, updating 2019 employment data to match recent data releases, local employment forecast to account for the pandemic induced recession that began in March 2020, and adjustments to account for several large projects under development in San Joaquin County.

Macroeconomic forecast update
REMI regional forecasts are based on a national control forecast from Research Seminar in Quantitative Economics (RSQE) at the University of Michigan. The U.S. economic forecast has changed significantly since this winter due to the COVID-19 recession. To control for this, we replaced the U.S. Control forecast with the April 2020 forecast from RSQE which incorporates a recession with an approximately 5% decline to real GDP in 2020 and a 2-year recovery period. This adjustment to the regional model, results in a short-term loss in jobs in San Joaquin County. The loss of jobs in San Joaquin County as a result to the macroeconomic update is less than the

national average, and is attributable to the county's relatively small travel and tourism sector, which has been the hardest hit industry in the recession.

2019 Employment Data Update
The REMI PI+ uses employment data from the Bureau of Economic Analysis (BEA up to 2018, the most current release. An update to the employment data was conducted by using the Quarterly Census of Employment and Wages (QCEW) data from the Bureau of Labor Statistics for 2019. There is an important difference between the two datasets to note: the employment estimates provided by the BEA include employee payrolls and the estimates by the BLS also include self-employment. The difference in measurement definitions means that employment levels cannot be use and therefore the growth rates are used in years 2018 to 2019 from the BLS data and applied to the data in the REMI PI+. This data shows that San Joaquin County employment growth in 2019 was significantly higher than projected in the REMI baseline model with the largest increase in the transportation and warehousing sector which continues the explosive growth seen in the County since Amazon opened its first fulfillment center in the County in 2019.

Additional recession adjustment to 2020 San Joaquin County employment.
Including the macroeconomic recession scenario described above results in San Joaquin County employment decreasing by about 6,000 jobs, approximately 2% for 2020. Recent data suggests a significantly larger decline in San Joaquin County. California EDD estimates payroll jobs in San Joaquin County in May 2020 were about 13% below their May 2019 level. The annual decrease will be substantially less than 13% because the first two months of the year recorded employment increases and some employment recovery is expected in the remaining months of 2020. On an annual basis we expect 2020 employment to be about 6% below 2019 values, and thus we made an additional downward adjustment of 10,000 jobs following the industry pattern for job loss shown for San Joaquin County in the April 2020 California EDD estimates. The biggest additional downward adjustments were in restaurants and retail jobs. We assumed a two-year recovery period with 75% of the additional lost jobs restored in 2021 and the rest by 2022. This downward adjustment in 2020 employment in San Joaquin County will impact the population forecast by dampening the very large amount of in-migration the REMI model projects for San Joaquin County at the beginning of the forecast period.

Warehousing and Logistics Growth
Since Amazon opened its first giant fulfillment center in San Joaquin County in late 2014, the explosive growth of warehousing jobs has been a transformative force in the San Joaquin County economy. E-commerce has probably changed San Joaquin County employment picture more than any other area in the United States, directly accounting for at least half of the County's job growth in the past 5 years. Warehousing and storage employment has quadrupled in five years, growing from 5,600 in 2014 to 20,600 by 2019. Courier and messenger employment grew from 900 to 4,700 over the same period, and trucking also added 3,000 more jobs over the past five years. While Amazon is the biggest player, many other companies have also been expanding distribution and fulfillment operations in San Joaquin County.

What will the future bring? Warehousing and storage is actually not predicted to be a high growth sector nationally, and many of the jobs are at high risk of automation in the future. Despite rapid growth, e-commerce is still less than 20% of total consumer spending so there is still substantial room for additional growth in the industry and the Covid-19 pandemic appears to be accelerating the shift to on-line shopping. So far, San Joaquin County's explosive growth shows no signs of slowing. At the beginning of 2020, Amazon had three large fulfillment centers operating in San Joaquin County and was scheduled to open two more by the end of 2020, adding thousands of additional jobs. Warehousing and logistics employment is declining in the Bay Area as much of that activity seems to be relocating to San Joaquin County where costs and congestion are both lower.

As a result of the flat macro forecast for logistics employment, the baseline REMI model actually predicts no additional growth in warehousing employment in San Joaquin County after a period of explosive growth. This prediction is far too pessimistic for the local economy, especially given the large fulfillment centers that are already on track to open in the near future. Thus, we have added an additional 10,000 warehousing jobs and 2,000 courier jobs to the REMI forecast over ten years between 2020 and 2030. While this is a large manual adjustment, it is less than 60% of the jobs that have been added in the past five years and thus can be seen as a conservative adjustment over the next decade. Because these fulfillment centers are primarily serving the Bay Area and other non-local markets, we add it to the REMI model as an exogenous change.

VA Hospital in French Camp

Besides the logistics sector, the largest current project in San Joaquin County that will have large future employment impacts is the new VA clinic under construction in French Camp near San Joaquin General Hospital. When it opens in 2023, it is projected that the VA will move approximately 900 federal healthcare jobs from Livermore to San Joaquin County. Since these are good paying jobs funded by federal dollars, not local, the employment impact is significant and is included in the updated REMI model as new exogenous demand. Half the jobs are added in 2023, the projected opening year, with the rest added in 2024, the projected first full year of operation.

Great Wolf Lodge

As discussed earlier, San Joaquin County has a relatively small tourism economy. However, the new Great Wolf Lodge in Manteca will provide a significant boost to this sector when it opens the largest hotel and entertainment complex in the County this fall. Great Wolf Lodge will include 500 guest rooms, a 95,000 square foot water park and a variety of other family entertainment activities adjacent to the Big League Dreams complex that already draws many visitors. The resort is expected to create 500 new jobs and attract new visitors to the County so it is modeled as new exogenous demand fully phased in by 2021.

Slow Initial Pace of Economic Migration

The recent level of strong job growth and the employment adjustments above push the projection of economic migration in current years, 2019-21, to unrealistically high levels. The model predicts a surge in economic migration followed by very flat, and occasionally negative

economic migration in the late 2020s and 2030s. Given recent history and the slow pace of new development in California, we reduced economic migration by 2,000 annually during this three-year period then phased out the reduction over time through 2029. Even with this reduction, in-migration remains slightly higher than in recent years. And because a driver of migration in the REMI model is local job opportunities relative to the population, reducing economic migration in the short-run does not eliminate the migration but pushes it out further into the future. Thus, slowing migration to more realistic levels today smooths out the path of migration over time – reducing it in the current years but increasing it in the future when migration was unusually low as shown previously in Figure 2.

1.3 - Updated Population Forecast

Figure 3 shows the updated population forecast compared to the REMI baseline forecast and the California Department of Finance (DOF) forecast for San Joaquin County released in 2020. The updated population forecast is slightly lower than the REMI baseline in the near term, but over time tracks closer to the DOF forecast than the REMI baseline. As discussed in the previous section, the slight reduction in near-term population growth is due to our adjustment to smooth the path of economic migration over multiple years. In the long-run, the adjustments we have made that increase employment growth in San Joaquin County result in sustained in-migration that is only slightly below the levels seen in recent years.

Figure 3- San Joaquin County Population Forecast Comparison – California Department of Finance, REMI Adjusted & Default Model
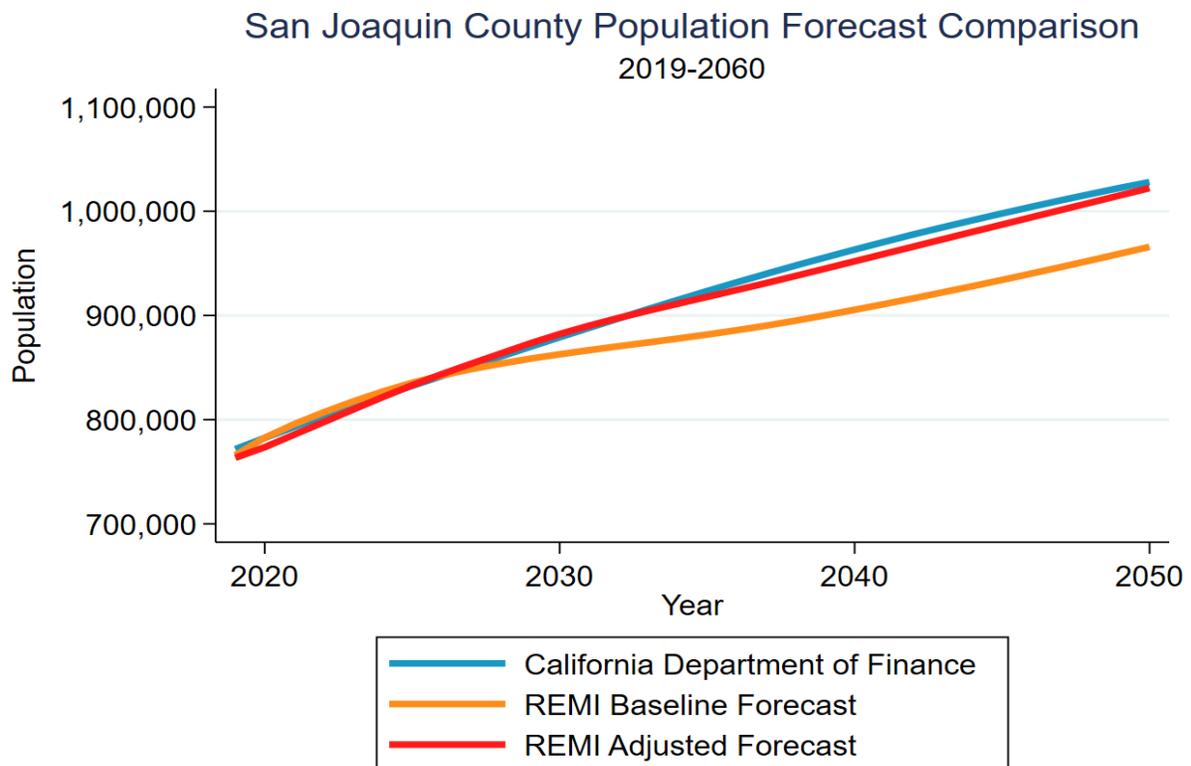
Table 1 shows the detailed total of San Joaquin County population in the updated forecast for each year through 2050. The forecast shows 2021 to 2024 as the peak years for San Joaquin County population growth with total county population growth of about 12,000 per year, around 1.5% annually. This is a slight increase over the 1.4% population growth experienced from 2015 to 2019. After 2024, population growth is forecast to slowly decline to 0.7% annually by 2034 where it will remain for the rest of the forecast. San Joaquin County's population is projected to exceed 1 million in 2047.

Table 1 - San Joaquin County Population, Updated Forecast.

San Joaquin County Population Forecast			
Year	Total Population	Annual Change	Annual % Change
2011	694,388	7,232	1.1%
2012	699,782	5,394	0.8%
2013	702,387	2,605	0.4%
2014	711,771	9,384	1.3%
2015	721,929	10,158	1.4%
2016	732,185	10,256	1.4%
2017	742,516	10,331	1.4%
2018	752,660	10,144	1.4%
2019	763,422	10,762	1.4%
2020	773,581	10,159	1.3%
2021	785,644	12,063	1.6%
2022	797,677	12,034	1.5%
2023	809,757	12,079	1.5%
2024	821,684	11,927	1.5%
2025	833,053	11,369	1.4%
2026	843,687	10,634	1.3%
2027	853,709	10,022	1.2%
2028	863,472	9,763	1.1%
2029	873,246	9,773	1.1%
2030	882,163	8,917	1.0%
2031	890,212	8,050	0.9%
2032	897,626	7,413	0.8%
2033	904,569	6,944	0.8%
2034	911,251	6,681	0.7%
2035	917,811	6,560	0.7%
2036	924,389	6,579	0.7%

2037	931,041	6,652	0.7%
2038	937,934	6,893	0.7%
2039	944,926	6,993	0.7%
2040	951,985	7,059	0.7%
2041	959,068	7,082	0.7%
2042	966,123	7,055	0.7%
2043	973,190	7,067	0.7%
2044	980,231	7,041	0.7%
2045	987,241	7,010	0.7%
2046	994,257	7,015	0.7%
2047	1,001,259	7,003	0.7%
2048	1,008,254	6,994	0.7%
2049	1,015,246	6,993	0.7%
2050	1,022,228	6,982	0.7%

Tables 2 and 3 break down the updated population forecast by race, ethnicity and age. Table 2 illustrates that the Hispanic population exceeds half of total San Joaquin County population by 2045, and is projected to grow faster than any other racial or ethnic group from about 330,000 in 2020 to 530,000 by 2050. The White Non-Hispanic population is projected to peak in 2028 at around 240,000 and slowly decline to about 220,000 in 2050. The Black Non-Hispanic population is projected to grow slowly from 55,000 in 2020 to 67,000 in 2050, while the Other Non-Hispanic[1] category will grow from about 155,000 in 2020 to nearly 205,000 in 2050.

Table 3 shows how San Joaquin County's population will grow older over time. The 65+ age range roughly doubles between 2020 and 2050, from 103,000 in 2020 to 202,000 in 2050. Within this group, the 85+ age group more than triples from about 12,000 in 2020 to 39,000 in 2050. whereas the under 25 population shows low growth. In contrast, the population under 5 years of age will grow from 53,000 today, peak near 61,000 in 2034 and remain close to this level through 2050. Most age groups under 40 follow a similar pattern of peaking and flattening out in the 2030s, whereas most age groups over 40 years have growing numbers throughout the forecast period.

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[1] The REMI model has only 4 groups for race and ethnicity. The Other category is primarily Asian but includes all non-Hispanic individuals who are not identified as White or Black.

Table 2- San Joaquin County Population Forecast - Race Breakdown

Population by Race					
Year	White-NonHispanic	Other-NonHispanic	Hispanic	Black-NonHispanic	All Races
2015	241,638	135,918	293,804	50,569	721,929
2020	235,041	154,545	329,289	54,707	773,581
2025	239,775	167,196	367,918	58,165	833,053
2030	239,891	177,277	404,168	60,827	882,163
2035	235,351	184,372	435,617	62,472	917,811
2040	230,139	191,132	466,803	63,911	951,985
2045	225,376	197,898	498,606	65,361	987,241
2050	221,091	204,084	530,261	66,793	1,022,228
2055	217,490	209,759	562,112	68,282	1,057,643
2060	214,748	215,066	594,388	69,900	1,094,102

Table 3- San Joaquin County Population Forecast – Age Breakdown

Population by Age					
Year	All Ages	Ages 0-14	Ages 15-24	Ages 25-64	Ages 65+
2015	721,929	165,722	106,814	363,170	86,223
2020	773,581	169,220	110,812	390,109	103,440
2025	833,053	170,410	120,744	417,336	124,564
2030	882,163	174,126	120,579	441,921	145,537
2035	917,811	179,314	114,656	461,565	162,276
2040	951,985	183,334	114,215	478,730	175,706
2045	987,241	185,315	119,485	494,068	188,373
2050	1,022,228	185,851	124,611	510,086	201,681
2055	1,057,643	186,978	127,812	527,186	215,666
2060	1,094,102	190,349	128,822	542,136	232,796

1.4 – Updated Household Forecast And Projected Housing Needs

The Household forecast uses the population projections from the Adjusted REMI Model to calculate the number of householders in San Joaquin County. It is important to note that there is a distinction between a household and householder, though their numerical values are equivalent. The term householder refers to the person, or one of the people, in whose name the home is owned, being bought, or rented. Whereas a household consists all the people who occupy a housing unit as their usual place of residence. Following standard practice, we forecast the number of households by projecting the number of householders.

The number of householders is estimated using the U.S. Census Bureau's American Community Survey, 5-Year Estimates, to obtain the householders demographic characteristics: race, age cohorts, and sex. Using this data, we calculate the probability that an individual of a particular sex, race and age are likely to be a householder and the corresponding probabilities are applied to the demographic population estimates in the updated population forecast described in the previous section. We estimate the householder probabilities using the average of the two most recent years available in the ACS 5-year data which include survey results from 2013 to 2018. The 5-year ACS data was used over the 1-year estimates as the sample size of the 1-year ACS is too small to generate reliable probabilities when broken down into detailed groups by race and age. More historical data was available as well, but it was important to use the most recent data available to capture recent trends as household formation has declined in the past decade, especially for the 25-34 year age group.

Figure 4 shows the household forecast for San Joaquin County. Overall, households grow at a similar rate as population with slight differences as the demographic composition of the population changes over time. The County is estimated to have about 233,000 households in 2020, and grow to over 300,000 households by the mid-2040s. The most rapid growth in households occurs over the next decade as over 32,000 new households are projected between 2020 and 2030.

The household forecast is closely related to San Joaquin County's total housing need, defined as the number of housing units required to house the County's projected households. A decade ago, in the aftermath of the housing bubble induced construction boom and the midst of the foreclosure crisis, San Joaquin County had an excess supply of housing units and historically high housing vacancy rates. After a decade of relatively low housing production and continued population growth, those excess housing units have been absorbed by the market. This is illustrated by Figure 5 which shows the vacancy rate for San Joaquin County housing units in Census data from 2010 to 2018. Housing unit vacancy peaked at 9% in 2011, but has declined in subsequent years as the growth in new households has exceed construction of new housing units. In 2018, the vacancy rate was down to 5.6% and are likely near 5% today as this general trend has continued.

Figure 4 - San Joaquin County Householder Forecast – CBPR Model

San Joaquin County Householder Forecast
CBPR Forecast
2019-2060
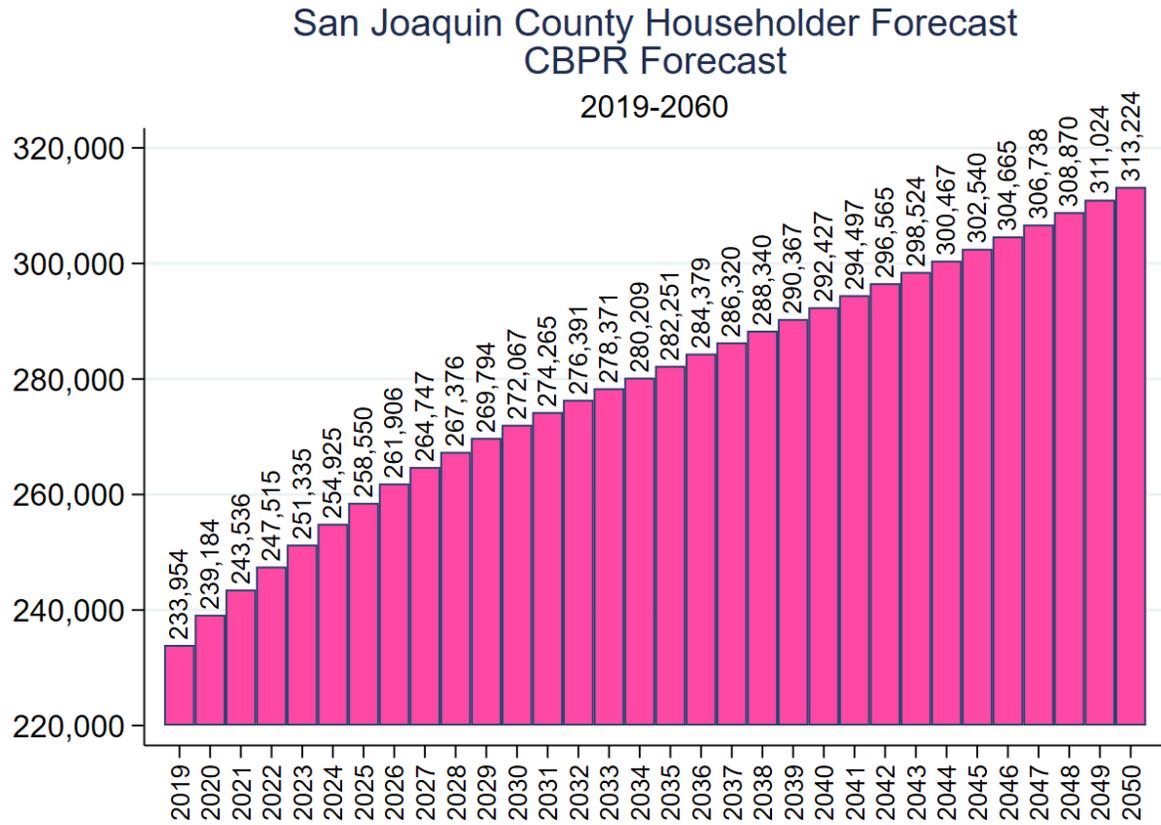
Figure 5 - San Joaquin County Housing Vacancy Rate

Census Housing Vacancy Rate Estimates
1 Year ACS Estimates for San Joaquin County
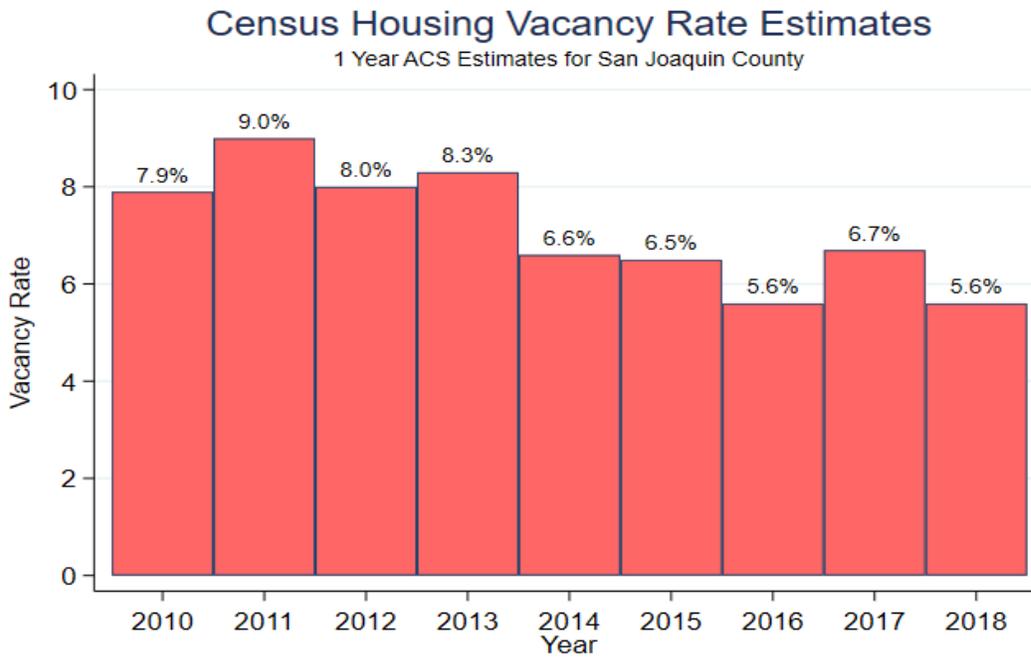
The need for future housing production in the County can be derived from the household forecast. Planners often use a 5% vacancy rate as a rule of thumb for the amount of vacancy that a typical housing market without many second homes requires to accommodate turnover and renovation of existing units. Tourist areas and some urban centers will often have higher vacancy rates, because they are popular locations for second homes that have only occasional use. That is not the case for San Joaquin County, so we estimate future housing needs at the level of new units required to accommodate projected households and maintain a 5% market vacancy rate. As described in the previous paragraph, San Joaquin County is currently near a 5% vacancy rate. Thus, our estimate of future housing need does not account for any excess housing that the market needs to absorb, or any catch-up production if the market is currently in shortage. We simply add a 5% margin to the number of projected new households in each year to estimate the annual housing need at the County level.

Figures 6 shows the estimated annual housing need for San Joaquin County, and Figure 7 shows the cumulative amount of housing units needed from 2021 forward to 2050. Housing needs are greatest in the immediate future with over 4,000 units needed in 2021, 2022, and 2023. The annual housing need declines to about 2,300 units by 2031, and remains in a range between 2,000 and 2,300 units through the rest of the forecast to 2050. The cumulative housing need forecast provides another useful perspective. As shown in Figure 7, we estimate San Joaquin County needs about 35,000 units over the next decade. Recent housing production trends suggest that San Joaquin County is unlikely to produce 4,000 units needed at the beginning of the forecast. The forecast of cumulative needs provides a way to track if San Joaquin County is keeping up with its goals over time.

Figure 6 – Annual Housing Needs Forecast

San Joaquin County
Annual Housing Needs Forecast
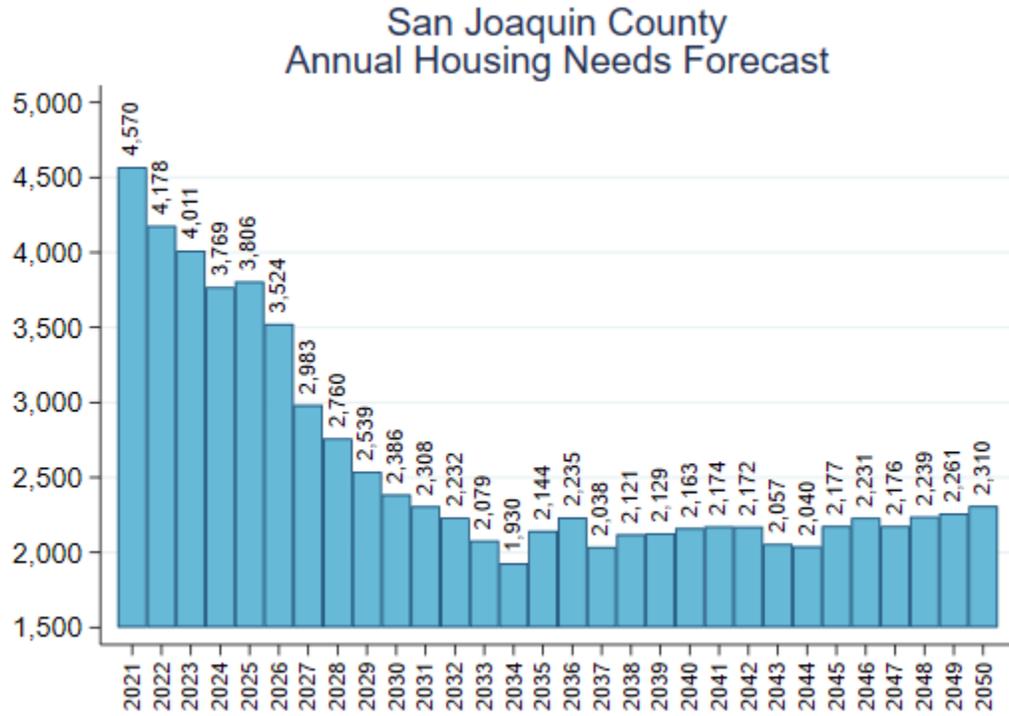
Figure 7 – Cumulative Housing Needs Forecast

San Joaquin County
Cumulative Housing Needs Forecast
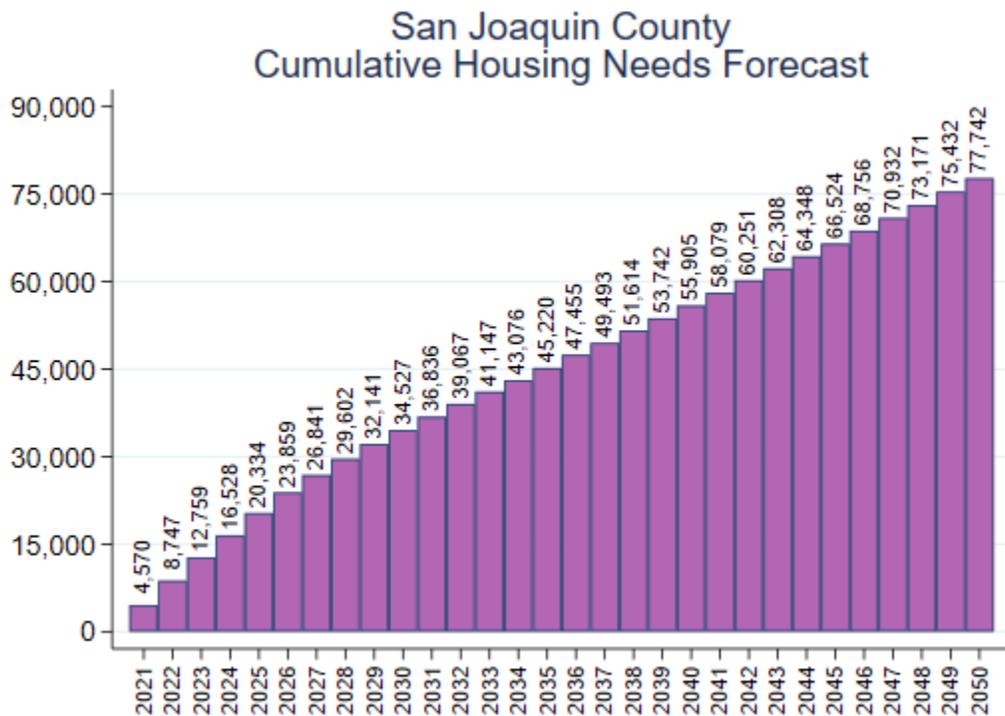
1.5 – Updated Employment Forecast

In this section, we shift from the population and household forecast to the adjusted employment forecast. As described in section 1.2, the REMI model was calibrated to current economic data in San Joaquin County and we also adjusted the employment forecast to account for several large new projects expected to bring additional growth in the near future. Figure 8 shows compares the updated forecast to the baseline employment forecast. The most notable changes in the updated forecasts are the dip in 2020 due to the Covid-19 recession, and steady employment growth through the 2020s compared to the flat forecast in the baseline model. While the updated forecast has substantially higher employment growth than the REMI baseline, it is important to note that the updated employment growth rate is still modest by historical standards, less than 1% annual growth in every year after 2022 in thirty year forecast.

Figure 8 – San Joaquin County Employment Forecast Comparison – REMI Baseline Model and REMI Updated Model
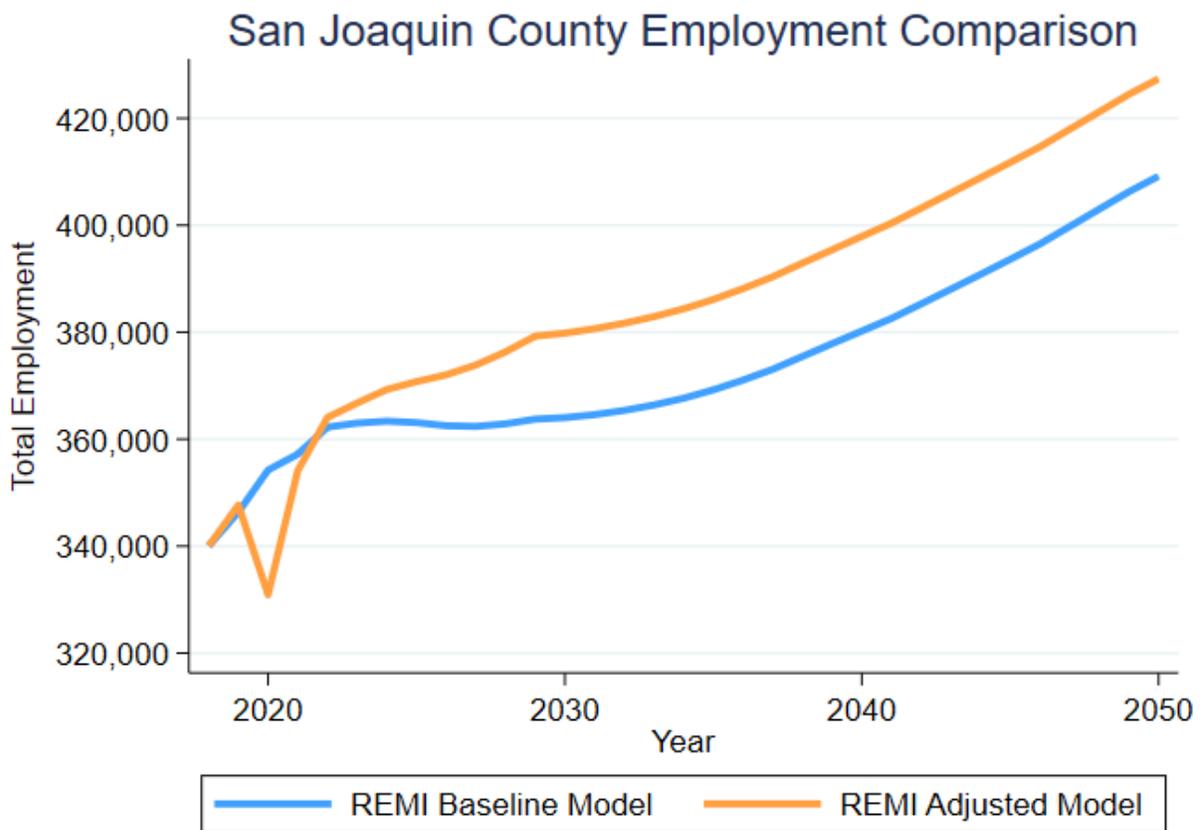
Figure 9 shows the annual level of projected total employment in the forecast. As discussed in section 1.2, it is important to note that this forecast uses the Bureau of Economic Analysis (BEA) definition of employment that includes both self-employment and payroll jobs. As a result of this more expansive definition of employment, the number of jobs in our projection is higher than the payroll jobs data from the Bureau of Labor Statistics (BLS) and California Employment Development Department (EDD). The level of employment decreases from nearly 348,000 in 2019 to 331,000 in 2020 due to the Covid-19 recession and is projected to recover in about two years. Jobs grow steadily over the decade to 380,000 by 2030. After a brief slowdown in the 2030s, the pace of employment growth is forecast to pick up again and reach 400,000 by 2041 and employment will exceed 425,000 by 2050.

Figure 9 - San Joaquin County Updated Employment Forecast
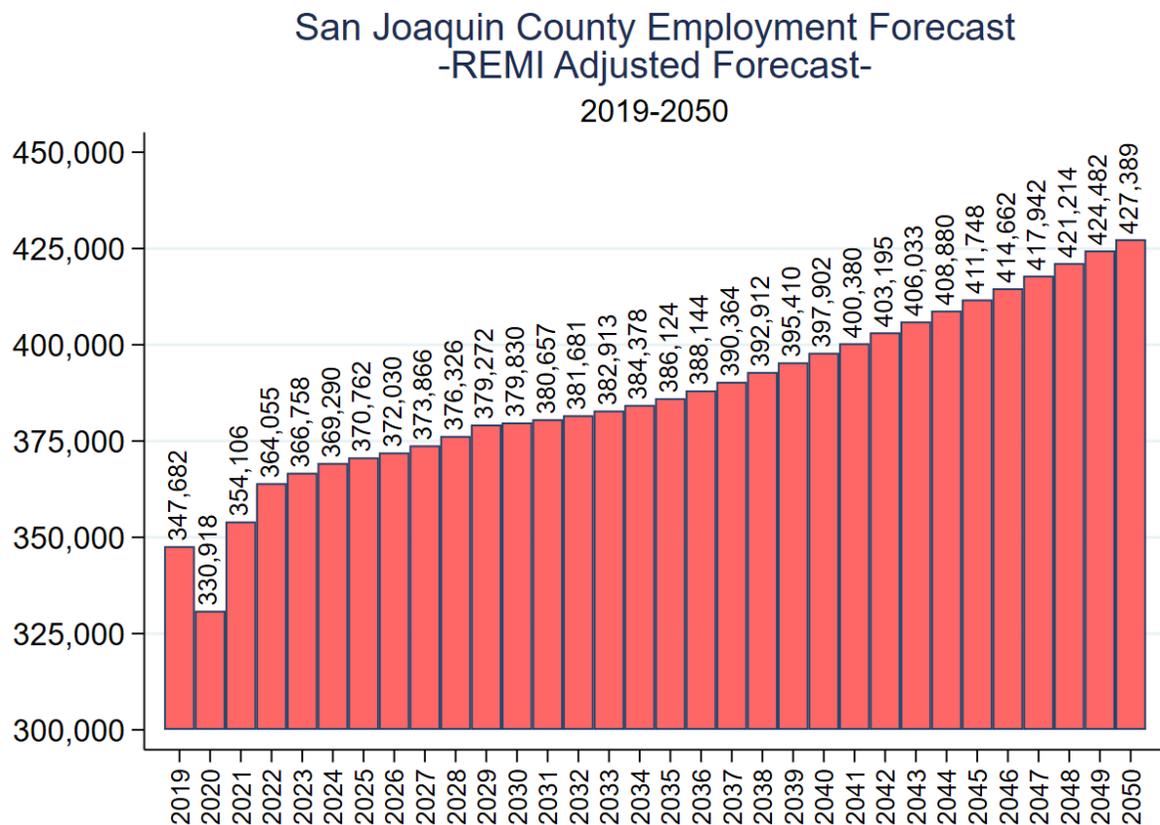
Table 4 shows the employment forecast by industry. Recent growth is highlighted by Transportation and Warehousing, which explodes from 26,000 to 44,000 jobs between 2015 and 2020 due to the e-commerce boom led by Amazon. This sector is projected to grow further to 57,000 jobs by 2030 with very slow growth thereafter. Healthcare is another industry with significant employment growth in the forecast, adding about 20,000 jobs over the next 25 years.

Most other industries are projecting very modest growth, including Manufacturing and Construction which are forecast to increase employment by about 2,000 jobs, 10%, in each sector over the next 25 years.

Table 4 – Adjusted Forecast: Employment by Industry 2015-2050

	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	19,218	18,864	18,516	19,201	20,121	21,047	22,043	23,138
Construction	14,722	18,691	19,346	19,289	19,413	20,164	20,887	21,555
Financial Activities	23,180	23,839	25,904	26,603	27,488	28,648	29,903	31,284
Government	41,654	45,385	48,094	49,362	49,789	50,084	50,451	50,850
Healthcare and Education	42,404	41,113	49,649	52,189	54,873	57,847	61,091	64,758
Information	2,504	1,984	1,950	1,671	1,447	1,296	1,184	1,100
Leisure and Hospitality	23,738	21,415	29,626	30,136	30,399	30,674	31,000	31,403
Manufacturing	19,779	20,868	21,019	20,801	21,076	21,954	22,943	24,014
Other Services	17,622	17,370	19,920	19,852	19,887	20,114	20,375	20,717
Professional and Business Services	31,716	32,332	36,043	36,856	37,684	39,091	40,678	42,443
Retail Trade	32,141	30,602	33,016	32,355	32,616	33,487	34,967	36,849
Transportation, Warehousing, Utilities	27,598	45,434	54,011	58,274	58,297	60,264	62,730	65,492
Wholesale	14,023	13,020	13,669	13,241	13,035	13,231	13,496	13,784
All Industries	310,299	330,917	370,763	379,830	386,125	397,901	411,748	427,387

Section 2: Local Area Forecast

The next stage of the analysis is to break down the County level forecasts of population, households and employment into local areas such as cities. The REMI model used in Section 1 only generates forecasts at the county level, and thus we develop our own methodology for breaking down the forecasted growth by local areas using trend data and statistical methods followed by some adjustments made after reviewing various local sources such as planning documents, and feedback from city officials and local stakeholders.

As shown in the analysis that follows, there is a strong trend towards faster growth in the south county areas including Tracy, Manteca, Lathrop and Mountain House. At first the rapid growth was mostly housing as these areas developed into popular commuter bedroom communities for Bay Area commuters. However, in recent years, these areas have also seen a surge of employment growth and are now receiving the majority of new residential and non-residential investment in San Joaquin County despite still being smaller overall than the Stockton-Lodi area that occupies the central and northern areas of San Joaquin County. These recent market trends are expected to continue as will be shown in the local forecasts later in this section.

In order to make the local forecasts, we first have to establish our geographical definitions of local areas. The next sub-section explains the two definitions we use in the forecast. This is followed by data that provides a more detailed description of recent geographical trends in the County's growth, and presents some recent building permits data as a leading indicator that these recent trends are expected to continue. This is followed by section 2.3 which lays out the local population forecast methodology and results, and section 2.4 which does the same for the local household forecast. Finally, section 2.5 presents a local forecast of total employment. Because of the number of tables required to show detailed employment by industry results for local areas, these detailed tables of results are included as an Appendix.

2.1 - Geography

We use two distinct geographical classifications for local area forecasts. The first classification is the city forecast, which breaks the county forecast down into the seven incorporated cities, the Mountain House Census Designated Place (CDP), and the unincorporated area not including Mountain House. Mountain House is included as a city because it is a fast growing urbanized area within the County that has taken initial steps towards incorporation and thus could become a city within the range of this forecast. Thus, the "unincorporated" area of San Joaquin County in our forecast excludes Mountain House. This geographical classification is illustrated in Figure 11.

Figure 10 – San Joaquin County Geographic Regions – Incorporated Cities and Mountain House
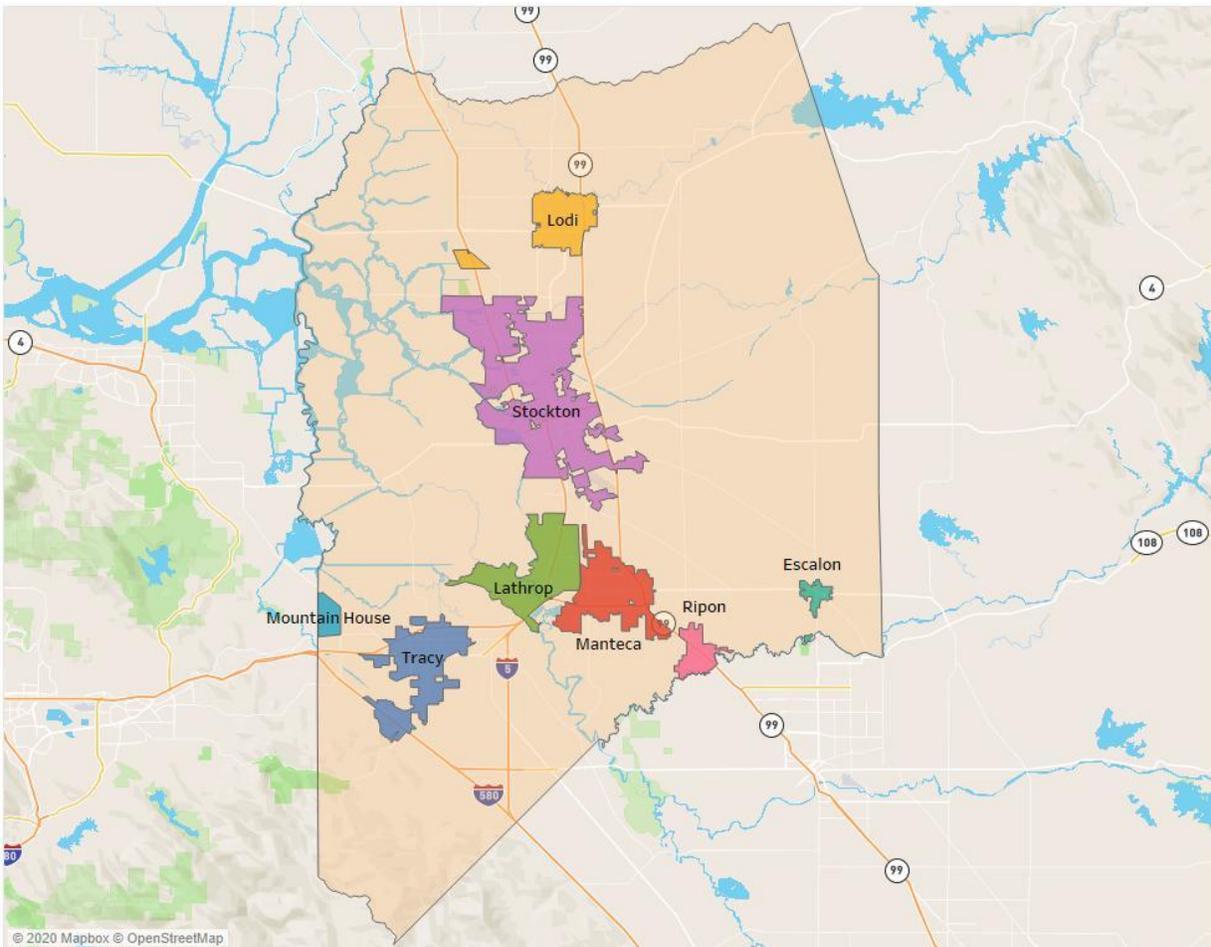
An issue with this classification is that there is a significant population and economic activity widely scattered across the unincorporated areas of the County. We considered several ways to subdivide the unincorporated area and maintain a single classification scheme, but all of the options had data challenges. For example, we could provide forecasts for all of the CDPs, the approach we used in a 2016 forecast. The problem is that many of the CDPs in San Joaquin County are too small to have adequate, reliable data and it still leaves a large scattered area of the County that are outside cities and CDPs. A second approach would be to use Census County Subdivisions to break down the unincorporated area into regions of the County. Unfortunately, this approach is not viable because the County Subdivision boundaries cross the city boundaries such that many of the incorporated cities span multiple County Subdivisions and there is no reliable way to identify just the data in the unincorporated County Subdivision. Most importantly, the Cities of Lathrop and Stockton both span multiple County Subdivisions.

Thus, we decided to use a second classification for local area forecasts by the Census County Subdivisions. This gives a local area forecast by regions of the County, and also provides a

information for unincorporated areas of the County that are adjacent to and deeply integrated with a neighboring city. For example, the Stockton CCD includes the City itself as well as several unincorporated pockets within and around the City. The Tracy CCD includes Mountain House, part of Lathrop, and several large employment centers that are outside the city limits. The Lockeford, Linden-Farmington, and Escalon CCDs break the rural, agricultural east side of the County into 3 zones from north to south. Figure 12 shows all of the San Joaquin CCDs and illustrates how this forecast by county regions complements the city forecast.

Figure 11 - San Joaquin County Geographic Regions – County Subdivision
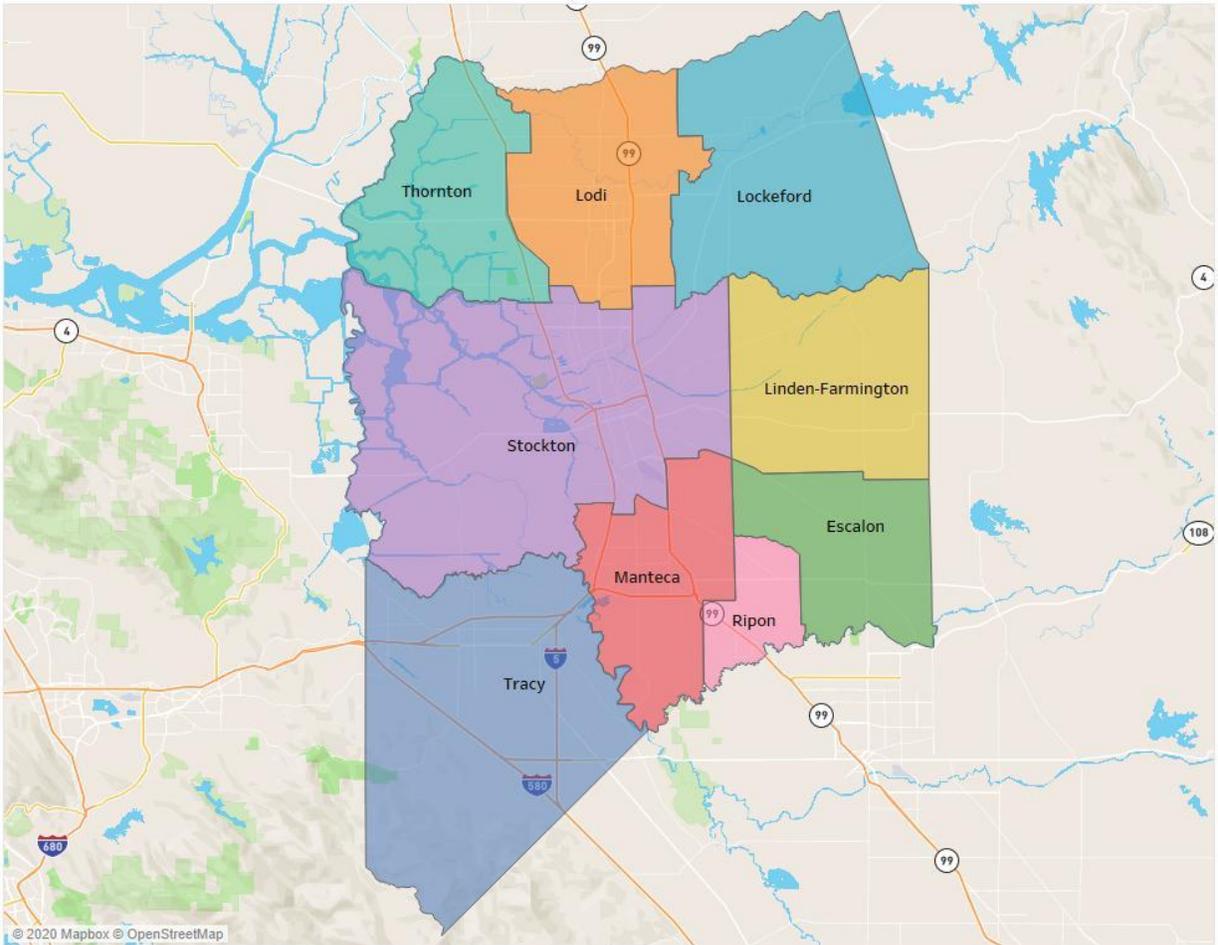
2.2 – Recent Local Growth Trends

Stockton is the largest city in San Joaquin County by far with a population exceeding 300,000 while no other city in the County exceeds 100,000. The Stockton CCD, the county subdivision which includes most of the city and the immediately surrounding area, accounted for 50% of San Joaquin County's total population in 2010. The south county area, which is made up of the Tracy, Manteca, and Ripon CCD was about 30% of the County's total population in 2010. However, these areas are the fastest growing areas in San Joaquin County, driven by its proximity to the Bay Area.

Table 3 shows the U.S. Census Bureau's estimates of population growth for San Joaquin County cities between 2010 and 2019. All the south county cities have grown at a faster rate than the County as a whole during this decade, with Lathrop experiencing the fastest percentage growth at 38.4%. Stockton's population growth of 6.8% over nine years is less than the County average, but its absolute growth of nearly 20,000 new residents is still the most of any City in the County. Collectively, population growth in the for the south county cities of Tracy, Lathrop, and Manteca exceeded that of the central and north cities of Stockton and Lodi by 7,000 individuals and the south county cities grew 20% over this period, almost three times as fast as the 7% growth rate of Stockton and Lodi.

Table 5 San Joaquin County City Population Growth 2010-2019

San Joaquin County - City Population				
2010 - 2019				
	2010	**2019**	**Change**	**Growth Rate**
Escalon city	7,135	7,574	439	6.20%
Lathrop city	17,695	24,483	6,788	38.40%
Lodi city	62,253	67,586	5,333	8.60%
Manteca city	67,733	83,028	15,295	22.60%
Ripon city	14,453	16,386	1,933	13.40%
Stockton city	292,888	312,697	19,809	6.80%
Tracy city	83,620	94,740	11,120	13.30%
Unincorporated	141,350	155,654	14,304	10.10%
San Joaquin County	**687,127**	**762,148**	**75,021**	**10.90%**

Historically, the south county cities proximity to the Bay Area has primarily driven residential growth. However, the rapid e-commerce driven growth of fulfillment centers in San Joaquin County has also centered on the southern cities with close proximity to Bay Area consumer markets. The available data from the Census Bureau that allows to identify the location of jobs within the County is only available through 2017. Table 5 shows the distribution of jobs in San Joaquin County by County subdivisions (CCDs) between 2012 and 2017. The Tracy area led job

growth in absolute in percentage terms as Amazon and others opened large fulfillment centers in the area. All the south county cities grew jobs by at least 30% over these 5 years, whereas the County increased jobs by 21%, and the Stockton area experienced just over 10% job growth in five years.

Table 6 - San Joaquin County Subdivision Population Growth 2010-2017

San Joaquin County - County Subdivision Employment				
2010 - 2017				
	2010	**2017**	**Change**	**Growth Rate**
Escalon CCD	4,307	4,870	563	13.07%
Linden - Farmington CCD	3,315	3,612	297	8.96%
Lockeford CCD	3,719	4,180	461	12.40%
Lodi CCD	37,720	45,029	7,309	19.38%
Manteca CCD	31,715	39,792	8,077	25.47%
Ripon CCD	6,268	7,665	1,397	22.29%
Stockton CCD	141,971	174,906	32,935	23.20%
Thornton CCD	4,100	4,773	673	16.41%
Tracy CCD	35,556	47,152	11,596	32.61%
San Joaquin County	**268,671**	**331,979**	**63,308**	**23.56%**

While the employment data above only goes to 2017, other data indicates that the trend of job growth being centered in the south County has continued. For example, Table 6 shows large commercial and industrial building permits in San Joaquin County in the past 18 months, a good signal indicator for future job growth. The city of Tracy alone has accounted for the majority of large commercial and industrial permits, and the cities of Tracy and Manteca account for all six of the extremely large new commercial/industrial permits valued at more than $50 million. Because of these strong geographical growth trends favoring the south County, the methods we use for the local area population and employment forecasts in the following sections heavily weights these recent growth trends in making future projections. As shown in the sections that follow, the recent trend of faster growth in the south county extends through our thirty year forecast period.

Table 7- Large Commercial and Industrial Building Permits in San Joaquin County, January 2019-June 2020.

Large Non-residential Building Permits January 2019 - June 2020		
City	**>$5 million**	**>$50 million**
Escalon	0	0
Lathrop	2	0
Lodi	4	0
Manteca	4	1
Ripon	0	0
Unincorporated Area	0	0
Stockton	0	0
Tracy	12	5
Total County	**22**	**6**
Source: Construction Industry Research Board		

2.3 – Local Area Population Forecasts

In this section, the County level population forecast from section 1.3 are distributed to the two local area geographies used in this report. The methodology used for both definitions of local areas are the same, but the source data differ slightly. In the first step, we use regression analysis to generate a statistical baseline forecast for each area using data since 2010 as we expect recent trends in the geographical distribution of growth in San Joaquin County to continue in the future. In the second step, we review growth capacities for each area as defined in the jurisdictions most recent municipal service review, and review the forecasts from the first stage for consistency with current planning assumptions. We also review the forecasts for each defined geographies for consistency, and consider recent market trends and stakeholder feedback from the preliminary forecasts.

Local area population data for the regression analysis was compiled as follows. For cities, we use the annual population forecast for cities from 2010 to 2019 as described in the previous section. For the CCDs (county subdivisions) and the Mountain House CDP, data is only available from the Census Bureau's American Community Survey (ACS) 5-year data. The most recent 5-year ACS data is from 2019, covering the years 2015 to 2019, and thus we treat the 5-year average population estimate over these years as an annual estimate for 2017. We follow the same process with 5-year ACS data to create an annual time series of population estimates for 2010 to 2017 for the CCDs and Mountain House.

Prior to the regression analysis, the annual population estimate for each of the local areas was converted to a share of the total County population for each year. A simple linear time trend regression of the population share as a function of the years was estimated, and then used to forecast the share of County population for each area through 2050. The projected population share for each year was multiplied by the County level population forecast in section 1.3 to generate the population forecast for each area.

In the final step, we made adjustments to the initial forecasts based on the review of planning information, market trends, consistency checks, and stakeholder feedback as described above. The main adjustment was to move some projected population growth from Manteca to Lathrop and Tracy. While we judged that the models overall population growth projected in the south County was corrected, the forecast was too weighted towards Manteca because of rapid growth in this area during the first half of the 2010s when major new developments in Lathrop and Tracy were in very early stages these cities will likely account for a larger share of population growth through 2030. A few additional minor adjustments were made to ensure consistency between the city and CCD forecasts.

The results of the local area population forecast for cities is summarized in Table 8. The trend of faster growth in south County cities is evident. Lathrop is projected to have the fastest growth rate of San Joaquin County cities at 184% growth by 2050 as the massive River Islands development is built out over decades, and is followed by Mountain House with projected 154% growth by 2050. Tracy and Manteca are both projected to grow by about 50% by 2050, with each adding about 45,000 new residents over thirty years and surpassing 100,000 in population within the next decade. Stockton is projected to grow by 16% through 2030, about half the growth rate of the County as a whole. However, Stockton will still lead the County in absolute population growth with over 50,000 new residents over 30 years. Lodi is projected to grow 21% over thirty years, exceeding 80,000 population by 2045.

Table 8 – San Joaquin County Population Forecast – City Breakdown

	2015	2020	2025	2030	2035	2040	2045	2050
Escalon city	7,470	7,740	8,158	8,452	8,599	8,718	8,831	8,927
Lathrop city	20,277	25,453	33,203	40,955	48,472	56,164	64,142	72,347
Lodi city	64,234	68,076	72,277	75,445	77,357	79,058	80,763	82,359
Manteca city	75,052	84,504	92,810	100,537	107,115	113,904	121,234	128,929
Ripon city	15,178	16,544	17,994	19,244	20,219	21,176	22,172	23,176
Stockton city	304,406	318,257	335,798	348,258	354,700	359,991	365,114	369,554
Tracy city	86,912	95,262	104,938	113,446	120,361	127,165	134,179	141,232
Mountain House CDP	15,010	19,804	24,381	29,223	34,029	39,153	44,707	50,628
Unincorporated	133,390	137,942	143,494	146,602	146,959	146,656	146,099	145,076
County Total	**721,929**	**773,581**	**833,053**	**882,163**	**917,811**	**951,985**	**987,241**	**1,022,228**

Table 9 shows the population forecast for County subdivisions. The trend towards faster growth in the south County is also evident here. The Tracy subdivision, which includes Mountain

House and a part of Lathrop in addition to the city of Tracy, is projected to add more than 100,000 new residents by 2050. In contrast, the north-central CCDs of Lodi, Stockton and Thornton are all projected to grow slower than the County as a whole. The rural east County areas of Linden-Farmington and Lockeford will remain rural but are projected to grow at a slightly faster rate than the County as a whole with Linden-Farmington reaching 10,000 in total population by 2050.

Table 9 – San Joaquin County Population Forecast – County Subdivision Breakdown

Year	2015	2020	2025	2030	2035	2040	2045	2050
Escalon CCD	13,697	13,865	14,902	15,636	16,062	16,383	16,633	16,794
Linden-Farmington CCD	6,230	6,767	7,353	7,912	8,391	8,900	9,468	10,080
Lockeford CCD	11,533	12,413	13,337	14,211	14,898	15,548	16,267	17,021
Lodi CCD	85,025	89,204	94,375	98,152	100,260	102,065	103,846	105,456
Manteca CCD	106,493	121,975	132,058	141,780	150,110	159,071	169,182	180,164
Ripon CCD	17,394	18,438	20,381	22,041	23,359	24,617	25,870	27,089
Stockton CCD	354,346	369,069	388,525	401,802	407,931	412,533	416,718	419,906
Thornton CCD	14,197	14,795	15,609	16,187	16,484	16,729	16,965	17,169
Tracy CCD	115,238	126,799	146,224	164,185	180,091	195,900	212,044	228,293
County Total	**724,153**	**773,581**	**833,053**	**882,163**	**917,811**	**951,985**	**987,241**	**1,022,228**

2.4 – Local Area Household Forecasts

The household forecast for local areas was generated with a similar methodology as the population forecast. Data on the number of households in each area was compiled from the ACS 5-year data for 2010 to 2017. For each area, we calculated the share of total County households. A simple linear time trend regression of the household share as a function of the years was estimated for each area, and then used to forecast the share of County households in each area through 2050. Then, the projected household share for each year and area was multiplied by the County level household forecast in section 1.4 to generate the household forecast for each area.

In the final step, we made adjustments to the initial forecasts based on the review of planning information, market trends, a consistency checks on household size trends by area and between cities and associated CCDs, and stakeholder feedback. Just as with the population forecast, the main adjustment was to move some projected household growth from Manteca to Lathrop and Tracy due to large new developments that should result in Lathrop and Tracy capturing a higher share of the County's future population growth.

Table 10 shows the results of the household forecast for cities. Over the next decade, the County is projected to add more than 32,000 households, with slightly more than 25% of that total in Stockton. Tracy, Lathrop, and Manteca are all projected to add about 5,000 households over the

decade with about another 3,000 in Mountain House. These four rapidly growing south County areas will account for more than half of the total, which taken together is over half of the County's total growth over the next decade.

Table 10 – San Joaquin County Householder Forecast – City Breakdown

Year	2015	2020	2025	2030	2035	2040	2045
Escalon city	2,561	2,664	2,823	2,912	2,962	3,006	3,046
Lathrop city	5,397	6,937	9,291	11,561	13,794	16,098	18,459
Lodi city	22,177	23,543	25,113	26,085	26,712	27,313	27,881
Manteca city	23,126	26,055	28,708	30,899	32,829	34,871	37,027
Ripon city	5,003	5,450	5,943	6,311	6,608	6,909	7,212
Stockton city	92,273	96,474	102,073	105,132	106,722	108,140	109,358
Tracy city	25,069	27,535	30,476	32,779	34,722	36,686	38,658
Mountain House CDP	4,124	5,572	6,966	8,378	9,806	11,343	12,990
Unincorporated	43,333	44,914	46,954	47,752	47,829	47,780	47,596
County Total	**223,062**	**239,143**	**258,347**	**271,810**	**281,984**	**292,147**	**302,229**

Table 11 illustrates the same geographical pattern for household growth by County subdivisions. The rate of household growth is faster within the south county CCDs, whereas household growth in the north-central CCDs of Lodi, Thornton, and Stockton is lower than County average rate of growth. The rural east county subdivisions of Linden-Farmington and Lockeford are also projected to add several hundred new households over the next decade. Specifically, the Tracy CCD which includes the city of Tracy, Mountain House and part of Lathrop will add 11,000 households over the next decade, more than one-third the total growth projected in the County. The Stockton CCD will add nearly 10,000 new households over a decade, followed by the Manteca CCD at nearly 6,000 new households. The Ripon CCD is forecast to add about 1,200 new households by 2030.

Table 11 - San Joaquin County Householder Forecast – County Subdivision Breakdown

Year	2015	2020	2025	2030	2035	2040	2045
Escalon CCD	4,567	4,659	5,024	5,241	5,374	5,483	5,563
Linden-Farmington CCD	1,965	2,142	2,334	2,494	2,637	2,792	2,961
Lockeford CCD	4,028	4,346	4,686	4,957	5,178	5,393	5,624
Lodi CCD	28,959	30,545	32,474	33,616	34,304	34,948	35,542
Manteca CCD	31,553	36,367	39,506	42,162	44,539	47,179	50,099
Ripon CCD	5,958	6,343	7,016	7,523	7,936	8,340	8,733
Stockton CCD	109,075	114,013	120,403	123,711	125,237	126,501	127,471
Thornton CCD	4,209	4,398	4,650	4,787	4,857	4,919	4,971
Tracy CCD	32,747	36,251	42,163	47,238	51,855	56,517	61,189
County Total	**223,062**	**239,143**	**258,347**	**271,810**	**281,984**	**292,147**	**302,229**

2.4 – Employment Forecast for Local Areas

Making employment projections for local areas is more complex than population and household forecasts as the location and number of jobs changes more rapidly and erratically than households and population. The industry detail of employment data add an additional complexity. Finally, the definition of employment can change between data sources and detailed location data for jobs is difficult to find and can be unreliable. Thus, our methodology for generating local area employment forecasts differs somewhat from the population and household methodology. However, we still follow the general framework of creating a baseline employment forecast for local areas with a statistical model, and then making adjustments in the second phase based on market trends, evaluations of consistency across geographies and other variables, and stakeholder feedback. The biggest difference in methodology is in the first stage of the analysis that allocates the County level employment forecast across local areas using a statistical model based on recent trends.

Data for local regions was obtained from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) which has employment by industry for both of our definitions of local areas for the years 2002 to 2017. We used the 2017 LODES data to establish starting values for employment by industry for each of the local areas, and then projected the values forward as described in the paragraph below and the equation that follows it. The LODES data is sourced from payroll tax filings for employers and thus uses payroll jobs, sometimes called W-2 jobs, as the definition of employment. In contrast, the REMI model used for our County employment forecasts uses a BEA definition of employment which includes self-employment. Thus, we used the LODES data in the form of employment shares by industry, estimating the industry employment share for each local area with LODES data and then multiplying this share by the County level forecast to get an estimate of employment for each industry and location in 2017.

To project employment growth forward, the LODES data is used to calculate each local area's share of the County's employment growth in each industry for a specific historical period. For our forecast, we used growth over the most recent 5-year period in the data, 2012-17, to establish the industry growth share for each of the sub-regions. For each year of the forecast period, 2018 to 2050, we calculate the industry employment growth at the County level. The County level growth is then multiplied by the 2012-17 share of growth for that industry in the local area, and added to the industry employment level for the local area in the previous year. The calculation is then repeated for each subsequent year up to 2050. The equation below illustrates the process.

$$Ei,j,t = Ei,j,t-1 + \left((\sum_{i=0}^{I} Ei,j,t+1 - \sum_{i=0}^{I} Ei,j,t) \right) * Si,j,\bar{t} + (Ri,j,t * Ii,j,\bar{t}) + ei,j,t$$

Where

Ei,t = Employment in region (i) for industry (j) at time (t)

Ei,t-1 = Employment in region (i) for industry (j) at time (t-1)

$\sum_{i=0}^{I} Ei,j,t$ = Sum of employment for each region(i) in industry(j) at time (t) *

*Note that the sum of all regions is equal to the county level employment

$S_{i},\bar{t}$ = Restricted historical average of each region (i) and industry (j) growth share

Ri,j,t = Remainder Term equal to the difference in estimates from the Adjusted REMI forecast

$Ii,j,\bar{t}$ = Industry Average in a particular regions for years $2010 - 2017$

ei,j,t = Error Term

In summary, this method establishes a starting value for employment by industry and area, and then allocates the industry employment growth for future years in the County forecast according to each local areas' share of local industry growth between 2012 and 2017. The detailed results from this model were then reviewed against expected market trends and consistency across multiple features to determine any adjustments. For example, in a small number of cases where a local area had very few jobs in an industry at the start of the forecast, this methodology can produce a negative employment forecast in future years. Thus, we restricted the model to have a zero lower bound for each local industry.

Another consistency check was to examine the relationship between employment and population forecasts by looking at employment to population ratios. This analysis found employment growing substantially faster than population in the unincorporated areas of the County, following an established pattern in the 2012-17 period. In contrast, employment growth was substantially less than population growth in some fast growing cities. While this is not impossible, the divergence was greater than we expected and. Thus, in the city forecast, we reallocated employment growth from the unincorporated areas towards the cities of Lathrop and Manteca and the Mountain House CDP. We reallocated about 600 jobs from the unincorporated area to these three areas in 2021, and additional jobs in each subsequent year so that by the year 2050, nearly 18,000 jobs were moved from unincorporated areas to these three locations. Forecasted employment growth in other cities, such as Tracy and Stockton, tracked better with population growth and our market expectations – thus we did not make any adjustments in these locations. For the CDPs, a number of small adjustments were made to individual industry forecasts to ensure consistency with the forecasts for associated cities.

Table 12 displays the total level of employment for each city, Mountain House, and the total of remaining unincorporated areas in the County. Breaking this down by industry for each local area takes a large number of tables, and thus we report these detailed results in the Appendix. Like the

population and household forecasts, employment grows most quickly in the south county areas. Employment growth in Tracy, Manteca, and Lathrop is projected between 40% and 60% between 2020 and 2050, significantly faster than the 30% growth expected in the County as a whole. Stockton is projected to add jobs at nearly the County rate, while Lodi and the Unincorporated area are projected to have the lowest percentage growth. Mountain House has fewer than 400 jobs today, and thus has the highest projected growth rate, increasing to about 2,500 jobs by 2050. Despite the most rapid percentage growth in employment, Mountain House is projected to retain its commuter orientation and still have the lowest employment to population ratio in the County throughout the forecast period.

Table 12 - San Joaquin County Employment Forecast – City Breakdown

	2015	2020	2025	2030	2035	2040	2045	2050
Escalon city	2,321	2,335	2,597	2,616	2,650	2,731	2,829	2,936
Lathrop city	7,786	8,881	10,783	11,350	11,636	12,479	13,388	14,325
Lodi city	31,294	32,211	34,690	34,979	35,542	36,409	37,399	38,512
Manteca city	21,280	21,103	24,077	24,266	25,139	26,273	27,604	29,099
Mountain House	368	383	788	1,349	1,803	2,035	2,286	2,567
Ripon city	4,860	5,224	5,740	5,804	5,895	6,060	6,257	6,483
Stockton city	149,802	157,422	175,080	179,253	182,471	187,520	193,373	200,024
Tracy city	27,757	31,698	39,227	41,254	41,790	43,533	45,648	48,029
Unincorporated	64,830	71,662	77,783	78,969	79,207	80,862	82,963	85,421
San Joaquin County	**310,298**	**330,919**	**370,765**	**379,840**	**386,133**	**397,902**	**411,747**	**427,396**

As shown in Table 13, all of the county subdivisions are projected to add jobs over the next thirty years. The Tracy CCD is expected to grow jobs at the fastest pace, 45% over the next 30 years compared to 29% for the County overall. The Stockton CCD accounts for over half, 53%, of current employment within the County and is projected to account for slightly less than half of the 96,000 jobs projected in the County through 2050. Linden-Farmington CCD is projected to have the lowest employment growth, both in terms of absolute numbers and percentage growth, adding fewer than 700 jobs and less than 20% growth through 2050. The Appendix includes a detailed table of the projected employment by industry for each of the CCDs.

Table 13 - San Joaquin County Employment Forecast – County Subdivision Breakdown

	2015	2020	2025	2030	2035	2040	2045	2050
Escalon CCD	4,710	5,030	5,354	5,446	5,579	5,822	6,086	6,374
Linden - Farmington CCD	3,579	3,564	3,681	3,743	3,832	3,953	4,090	4,234
Lockeford CCD	4,072	4,245	4,332	4,485	4,700	4,978	5,314	5,686
Lodi CCD	42,657	43,548	47,503	48,293	49,096	50,342	51,816	53,511
Manteca CCD	36,907	39,764	45,101	45,538	45,643	46,667	48,030	49,675
Ripon CCD	7,174	7,397	8,032	8,235	8,532	8,845	9,196	9,588
Stockton CCD	164,289	173,695	192,901	197,596	201,294	207,071	213,626	220,926
Thornton CCD	4,550	4,375	5,119	5,177	5,282	5,458	5,697	5,980
Tracy CCD	42,364	49,302	58,737	61,325	62,165	64,775	67,902	71,410
San Joaquin County	**310,302**	**330,920**	**370,760**	**379,838**	**386,123**	**397,911**	**411,757**	**427,384**

Appendix: Local Area Employment By Industry Tables

Table 14- City Level Employment by Industry – Escalon

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	98	101	99	101	97	92	86	80	73
Construction	95	113	181	196	195	198	216	233	249
Financial Activities	163	166	173	218	236	257	285	315	349
Government	520	571	615	636	646	649	651	654	657
Healthcare and Education	121	149	160	139	132	124	115	105	94
Information	6	6	5	5	4	4	4	4	4
Leisure and Hospitality	132	157	98	233	243	247	252	259	266
Manufacturing	378	393	415	418	414	420	438	458	480
Other Services	93	112	118	112	112	112	112	111	111
Professional and Business Services	125	147	151	179	188	195	206	219	233
Retail Trade	278	302	273	309	299	303	316	339	367
Transportation, Warehousing, Utilities	39	58	5	6	7	7	7	8	8
Wholesale	39	46	42	45	43	42	43	44	45

Table 15 - City Level Employment by Industry – Lathrop

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	36	37	37	39	37	33	29	27	21
Construction	773	941	1,324	1,455	1,495	1,532	1,673	1,808	1,935
Financial Activities	189	192	142	256	296	347	417	488	567
Government	312	342	383	444	480	494	515	537	560
Healthcare and Education	158	189	164	238	254	264	280	296	316
Information	2	2	0	0	0	0	0	0	0
Leisure and Hospitality	331	394	395	486	503	513	531	550	568
Manufacturing	1408	1,464	1,514	1,571	1,619	1,642	1,700	1,755	1,806
Other Services	260	313	236	514	523	534	576	621	673
Professional and Business Services	876	1,050	1,094	1,414	1,510	1,586	1,735	1,896	2,063
Retail Trade	407	441	353	470	459	479	533	611	705
Transportation, Warehousing, Utilities	1007	1,548	2,511	3,047	3,357	3,410	3,630	3,872	4,116
Wholesale	735	873	728	849	817	802	860	927	995

Table 16 - City Level Employment by Industry – Lodi

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1099	1,138	1,118	1,116	1,120	1,126	1,133	1,139	1,146
Construction	1478	1,788	2,366	2,470	2,461	2,481	2,602	2,719	2,827
Financial Activities	4439	4,600	4,810	5,020	5,102	5,198	5,329	5,470	5,626
Government	3303	3,632	3,905	4,030	4,088	4,108	4,121	4,138	4,156
Healthcare and Education	3828	4,676	4,550	5,418	5,694	5,993	6,324	6,685	7,090
Information	275	262	202	198	164	137	120	106	96
Leisure and Hospitality	2271	2,709	2,453	3,401	3,453	3,479	3,508	3,542	3,585
Manufacturing	2288	2,379	2,507	2,524	2,499	2,530	2,630	2,743	2,865
Other Services	1488	1,790	1,848	1,860	1,860	1,860	1,861	1,862	1,864
Professional and Business Services	2375	2,778	2,882	3,020	3,074	3,142	3,243	3,356	3,482
Retail Trade	3775	4,095	3,967	4,209	4,143	4,169	4,257	4,406	4,595
Transportation, Warehousing, Utilities	612	916	1,090	898	804	806	764	711	652
Wholesale	448	531	513	526	517	513	517	522	528

Table 17 - City Level Employment by Industry – Manteca

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	370	383	376	369	392	426	460	498	537
Construction	1079	1,312	1,700	1,781	1,783	1,823	1,923	2,020	2,111
Financial Activities	1512	1,543	1,504	1,769	1,847	1,975	2,128	2,288	2,463
Government	2428	2,670	2,869	2,983	3,036	3,096	3,147	3,202	3,257
Healthcare and Education	2629	3,200	3,137	3,844	4,095	4,418	4,766	5,139	5,546
Information	353	337	278	276	248	228	216	207	201
Leisure and Hospitality	2170	2,595	2,299	3,284	3,362	3,444	3,524	3,609	3,702
Manufacturing	473	492	512	518	518	528	543	559	575
Other Services	1059	1,275	1,243	1,480	1,480	1,505	1,546	1,590	1,640
Professional and Business Services	1462	1,736	1,751	1,890	1,902	1,937	1,997	2,064	2,135
Retail Trade	3478	3,773	3,247	3,897	3,746	3,876	4,158	4,594	5,133
Transportation, Warehousing, Utilities	803	1,216	1,475	1,244	1,128	1,150	1,114	1,063	1,007
Wholesale	630	748	712	742	729	733	751	771	792

Table 18 - City Level Employment by Industry – Mountain House

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	3	3	3	4	6	7	7	7	8
Construction	4	5	7	20	39	54	63	73	82
Financial Activities	28	28	23	50	78	102	117	135	152
Government	133	146	164	231	297	346	371	399	429
Healthcare and Education	61	74	71	127	188	242	272	305	342
Information	0	0	0	1	3	4	4	5	6
Leisure and Hospitality	8	9	12	43	92	132	152	173	198
Manufacturing	13	13	14	30	55	75	86	97	110
Other Services	23	28	33	35	58	76	84	91	101
Professional and Business Services	39	46	44	67	101	127	138	149	164
Retail Trade	3	4	4	52	110	157	181	206	235
Transportation, Warehousing, Utilities	7	11	8	116	293	438	510	587	673
Wholesale	1	1	0	12	29	43	50	59	67

Table 19 - City Level Employment by Industry – Ripon

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	136	141	138	133	143	156	169	184	200
Construction	504	613	732	746	745	748	764	779	793
Financial Activities	219	223	238	245	249	252	257	262	268
Government	536	589	618	604	597	595	593	592	589
Healthcare and Education	431	522	511	592	611	630	650	673	699
Information	1	1	1	1	1	1	1	2	2
Leisure and Hospitality	551	661	609	821	826	829	832	837	845
Manufacturing	351	365	395	402	392	404	442	485	532
Other Services	186	223	218	257	256	257	260	264	269
Professional and Business Services	233	270	286	352	383	413	450	488	531
Retail Trade	408	442	387	453	435	442	466	506	558
Transportation, Warehousing, Utilities	360	547	809	862	888	887	898	911	927
Wholesale	222	263	282	272	278	281	278	274	270

Table 20 - City Level Employment by Industry – Stockton

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	2,681	2,776	2,724	2,645	2,801	3,009	3,219	3,445	3,694
Construction	3,407	4,143	5,125	5,266	5,256	5,285	5,447	5,603	5,746
Financial Activities	12,005	12,337	12,427	13,360	13,599	13,952	14,397	14,864	15,385
Government	22,153	24,353	26,620	28,394	29,223	29,502	29,695	29,935	30,196
Healthcare and Education	23,408	28,410	27,492	33,278	34,944	36,681	38,604	40,706	43,095
Information	1,456	1,388	1,131	1,115	985	879	809	756	717
Leisure and Hospitality	8,988	10,737	10,606	12,695	12,811	12,868	12,933	13,009	13,103
Manufacturing	6,441	6,696	7,024	7,060	7,008	7,074	7,286	7,525	7,783
Other Services	7,646	9,201	9,171	10,201	10,174	10,188	10,279	10,384	10,523
Professional and Business Services	15,822	18,779	19,105	21,742	22,279	22,811	23,739	24,790	25,963
Retail Trade	14,855	16,115	15,791	16,574	16,360	16,444	16,728	17,209	17,821
Transportation, Warehousing, Utilities	6,374	9,580	15,176	17,546	18,724	18,744	19,297	19,990	20,763
Wholesale	4,456	5,287	5,030	5,204	5,089	5,034	5,087	5,157	5,235

Table 21 - City Level Employment by Industry – Tracy

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	112	116	113	113	114	117	119	122	124
Construction	894	1,083	1,440	1,505	1,500	1,513	1,587	1,659	1,725
Financial Activities	1600	1,636	1,783	1,814	1,840	1,862	1,896	1,935	1,977
Government	3336	3,667	4,002	4,256	4,374	4,414	4,441	4,476	4,513
Healthcare and Education	2377	2,898	2,663	3,673	3,989	4,332	4,711	5,124	5,587
Information	204	194	153	150	127	109	97	88	81
Leisure and Hospitality	2350	2,804	2,055	3,865	3,993	4,062	4,130	4,208	4,305
Manufacturing	1561	1,623	1,749	1,774	1,737	1,784	1,933	2,102	2,284
Other Services	1181	1,420	1,347	1,709	1,700	1,705	1,737	1,774	1,823
Professional and Business Services	2135	2,527	2,585	2,768	2,820	2,877	2,964	3,062	3,170
Retail Trade	3871	4,200	4,081	4,318	4,253	4,278	4,364	4,510	4,695
Transportation, Warehousing, Utilities	2678	4,112	8,594	11,940	13,603	13,599	14,353	15,302	16,367
Wholesale	1245	1,477	1,133	1,342	1,204	1,138	1,201	1,286	1,378

Table 22 - County Subdivision Employment by Industry - Escalon

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,486	1,538	1,510	1,482	1,537	1,611	1,687	1,767	1,856
Construction	329	386	565	604	601	608	653	695	734
Financial Activities	166	169	166	221	238	260	288	319	353
Government	492	541	609	643	659	664	668	672	677
Healthcare and Education	153	187	170	203	190	178	168	161	157
Information	11	10	12	12	14	15	16	16	17
Leisure and Hospitality	171	204	195	262	263	264	264	266	267
Manufacturing	656	682	736	747	731	751	815	888	966
Other Services	130	156	154	177	177	177	179	181	185
Professional and Business Services	213	248	252	256	266	275	284	292	301
Retail Trade	273	296	294	328	331	337	346	357	370
Transportation, Warehousing, Utilities	82	122	203	250	273	275	288	304	321
Wholesale	145	171	164	169	166	164	166	168	170

Table 23 - County Subdivision Employment by Industry – Linden-Farmington

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,820	1,885	1,850	1,828	1,872	1,930	1,988	2,051	2,120
Construction	77	86	112	118	117	118	125	131	136
Financial Activities	77	79	72	85	90	97	104	114	125
Government	233	256	260	282	292	296	298	301	304
Healthcare and Education	57	67	55	105	121	139	159	180	203
Information	0	0	0	0	0	0	0	0	0
Leisure and Hospitality	57	68	57	83	84	84	84	85	86
Manufacturing	244	254	267	269	266	270	280	291	303
Other Services	46	55	60	53	53	53	53	52	51
Professional and Business Services	90	106	117	114	114	117	125	136	146
Retail Trade	115	125	131	129	129	129	128	127	125
Transportation, Warehousing, Utilities	28	39	58	68	73	74	77	81	84
Wholesale	471	559	525	547	532	525	532	541	551

Table 24 - County Subdivision Employment by Industry - Lockeford

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,903	1,971	1,933	1,856	2,007	2,211	2,417	2,637	2,880
Construction	246	300	397	415	414	417	437	456	474
Financial Activities	159	164	214	158	146	126	107	112	117
Government	126	138	147	150	151	151	151	151	152
Healthcare and Education	124	151	150	172	180	188	197	207	218
Information	1	1	0	0	0	0	0	0	0
Leisure and Hospitality	264	316	326	369	368	366	366	366	366
Manufacturing	213	221	238	241	236	243	263	285	309
Other Services	100	121	120	134	133	134	135	136	138
Professional and Business Services	226	261	270	301	311	318	331	346	360
Retail Trade	202	219	160	223	206	212	235	274	323
Transportation, Warehousing, Utilities	70	108	176	206	221	220	227	235	244
Wholesale	85	101	114	107	112	114	112	109	105

Table 25 - County Subdivision Employment by Industry - Lodi

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	4,054	4,197	4,120	4,039	4,197	4,410	4,624	4,854	5,106
Construction	2,012	2,437	2,891	2,945	2,939	2,949	3,010	3,069	3,125
Financial Activities	5,484	5,677	5,867	6,264	6,406	6,581	6,811	7,052	7,318
Government	4,047	4,449	4,845	5,129	5,262	5,307	5,338	5,376	5,418
Healthcare and Education	3,942	4,809	4,571	5,649	5,911	6,196	6,524	6,891	7,315
Information	318	303	240	240	196	154	128	109	96
Leisure and Hospitality	3,010	3,596	3,080	4,628	4,721	4,769	4,818	4,877	4,952
Manufacturing	3,444	3,581	3,757	3,776	3,748	3,783	3,897	4,025	4,163
Other Services	1,868	2,248	2,283	2,410	2,407	2,409	2,420	2,433	2,450
Professional and Business Services	3,355	3,954	3,711	3,621	3,691	3,757	3,823	3,895	3,973
Retail Trade	4,010	4,350	4,115	4,438	4,332	4,360	4,477	4,683	4,948
Transportation, Warehousing, Utilities	1,471	2,220	3,296	3,551	3,697	3,648	3,687	3,750	3,826
Wholesale	705	836	772	813	786	773	785	802	821

Table 26 - County Subdivision Employment by Industry – Manteca

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,051	1,088	1,068	1,039	1,096	1,172	1,248	1,330	1,421
Construction	1,921	2,341	3,196	3,327	3,284	3,285	3,441	3,588	3,723
Financial Activities	2,069	2,112	2,105	2,483	2,605	2,763	2,969	3,187	3,430
Government	4,471	4,915	5,317	5,552	5,662	5,699	5,725	5,757	5,792
Healthcare and Education	3,420	4,157	4,331	4,598	4,783	4,987	5,204	5,428	5,662
Information	483	461	341	361	299	243	217	204	201
Leisure and Hospitality	2,837	3,392	2,860	4,429	4,507	4,544	4,588	4,639	4,706
Manufacturing	2,280	2,371	2,502	2,520	2,494	2,527	2,634	2,755	2,885
Other Services	1,508	1,815	1,610	2,400	2,379	2,390	2,461	2,542	2,648
Professional and Business Services	2,918	3,479	3,558	4,041	4,094	4,135	4,250	4,402	4,592
Retail Trade	4,491	4,871	4,373	4,992	4,822	4,889	5,112	5,492	5,975
Transportation, Warehousing, Utilities	2,465	3,769	6,378	7,218	7,383	6,884	6,688	6,569	6,497
Wholesale	1,801	2,136	2,125	2,141	2,130	2,125	2,130	2,137	2,143

Table 27 - County Subdivision Employment by Industry - Ripon

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,043	1,080	1,059	1,024	1,094	1,188	1,282	1,384	1,495
Construction	683	831	786	780	812	835	822	812	805
Financial Activities	228	234	219	291	313	342	381	421	465
Government	571	628	682	719	736	741	745	750	756
Healthcare and Education	436	528	519	601	624	645	671	697	728
Information	1	1	2	2	2	2	2	2	2
Leisure and Hospitality	564	675	590	866	877	881	888	896	906
Manufacturing	907	943	1,008	1,020	1,003	1,024	1,093	1,171	1,256
Other Services	266	320	322	351	350	350	353	356	360
Professional and Business Services	328	381	398	465	499	533	569	612	657
Retail Trade	486	527	481	541	524	531	552	589	636
Transportation, Warehousing, Utilities	370	569	828	894	907	958	992	1,022	1,049
Wholesale	385	457	503	478	494	502	495	484	473

Table 28 –County Subdivision Employment by Industry - Stockton

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	5,160	5,343	5,247	5,213	5,279	5,369	5,460	5,557	5,664
Construction	5,241	6,377	8,219	8,527	8,504	8,565	8,919	9,258	9,572
Financial Activities	11,887	12,171	12,450	13,522	13,864	14,310	14,889	15,496	16,169
Government	23,159	25,459	27,751	29,433	30,220	30,484	30,667	30,895	31,144
Healthcare and Education	24,045	29,196	28,184	34,095	35,741	37,441	39,328	41,395	43,753
Information	1,544	1,471	1,167	1,128	1,020	906	824	756	702
Leisure and Hospitality	9,680	11,566	11,067	13,857	14,063	14,176	14,284	14,409	14,565
Manufacturing	7,732	8,038	8,439	8,485	8,419	8,502	8,771	9,072	9,398
Other Services	8,736	10,511	10,537	11,539	11,513	11,527	11,616	11,719	11,853
Professional and Business Services	16,002	19,044	19,630	22,162	22,640	23,144	24,023	25,009	26,061
Retail Trade	14,923	16,188	15,932	16,658	16,466	16,548	16,814	17,261	17,829
Transportation, Warehousing, Utilities	7,819	11,755	18,235	21,220	22,954	23,481	24,567	25,797	27,113
Wholesale	6,043	7,170	6,837	7,062	6,913	6,841	6,909	7,002	7,103

Table 29 - County Subdivision Employment by Industry - Thornton

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	369	382	376	390	363	326	289	250	206
Construction	156	189	258	270	269	272	287	301	313
Financial Activities	814	829	887	859	850	839	824	807	789
Government	368	405	450	496	518	525	530	536	543
Healthcare and Education	209	255	163	475	578	690	814	950	1,101
Information	4	4	3	3	3	3	3	3	2
Leisure and Hospitality	506	605	502	733	773	798	818	839	864
Manufacturing	144	149	154	154	154	153	152	150	148
Other Services	416	501	517	521	521	521	522	522	523
Professional and Business Services	92	105	95	59	43	28	22	22	21
Retail Trade	941	1,020	840	1,042	987	1,008	1,081	1,205	1,363
Transportation, Warehousing, Utilities	48	67	81	74	71	71	69	67	65
Wholesale	33	39	49	43	47	48	47	45	42

Table 30 - County Subdivision Employment by Industry - Tracy

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Agriculture	1,675	1,734	1,701	1,645	1,755	1,903	2,052	2,212	2,388
Construction	1,526	1,778	2,266	2,360	2,348	2,364	2,471	2,574	2,671
Financial Activities	1,708	1,745	1,859	2,021	2,091	2,170	2,277	2,392	2,519
Government	4,425	4,864	5,323	5,691	5,863	5,921	5,961	6,011	6,065
Healthcare and Education	2,507	3,054	2,970	3,747	4,064	4,409	4,784	5,185	5,621
Information	265	253	219	205	140	125	110	95	80
Leisure and Hospitality	2,778	3,315	2,738	4,398	4,480	4,520	4,566	4,621	4,693
Manufacturing	3,405	3,540	3,768	3,807	3,751	3,822	4,051	4,307	4,585
Other Services	1,575	1,895	1,769	2,333	2,318	2,326	2,376	2,434	2,510
Professional and Business Services	3,521	4,139	4,302	5,027	5,201	5,377	5,661	5,979	6,330
Retail Trade	4,188	4,544	4,276	4,665	4,559	4,600	4,741	4,979	5,283
Transportation, Warehousing, Utilities	5,831	8,949	16,178	20,530	22,694	22,687	23,670	24,905	26,290
Wholesale	2,152	2,554	1,933	2,308	2,061	1,941	2,055	2,208	2,375