Kern Council of Governments 2015–2050 Growth Forecast Update

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FINAL | August 7, 2015

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EXECUTIVE SUMMARY

As the federally designated Metropolitan Planning Organization and the state-designated Regional Transportation Planning Agency for Kern County, Kern COG is responsible for a variety of plans—most notably the Regional Transportation Plan and the Sustainable Communities Strategy—with long-term horizons. To better fulfill its responsibilities, Kern COG regularly updates its long-range forecasts. In 2012, it reviewed and reaffirmed its 2005 forecasts. This document is a comprehensive update to the 2005 forecasts.

This is a good time to reevaluate growth trends. From the early 2000s to 2006, California, like the nation as a whole, experienced a housing boom. From 2006 to about 2012, the housing market crashed, and the economy suffered through a major recession, which is well represented in 2010 Census data. The economy began growing again in 2010, and by 2013 the housing market was once again growing. Thus, there are now some positive data points on which to base forecasts, a situation that has not been present for several years.

This report provides forecasts for four primary elements that directly influence growth, development, resource use, and public finance:

+ Number of households
+ Population
+ Housing units
+ Jobs

The report also provides forecasts, derived from the four primary forecasts, for seven demographic characteristics:

+ Age distribution
+ Housing units by type
+ Average household size
+ Age of head of household
+ Household income
+ Household type
+ Race and ethnicity

Primary Forecasts

For the number of households, population, and housing units, 2015 represents the latest estimates from the CA Department of Finance. In the following forecast summaries, 2000 and 2010 represent Census data, 2015 is the most recent estimate, and 2035 and 2050 are forecasts. For total employment, 2014 is the most recent estimate from the CA Employment Development Department.

Number of Households

A household is a group of people living together in a single housing unit. A household may be one family, an extended family, more than one family, or unrelated individuals.

Table 1 summarizes the forecast for the number of households in Kern County. From 2015 to 2035 and from 2015 to 2050, the County would add more households per year than it did from 2000 to 2010. However, because the number of households in 2015 is higher than the number in 2000, the annual rate of growth would be slightly lower, 1.9 percent compared to 2.0 percent.

Table 1: Number of Households Forecast Summary, Kern County

2000	209,000
2010	255,000
2015	263,000
2035	385,000
2050	512,000
2000 to 2010	
Increase	46,000
Annual growth rate	2.0%
2015 to 2035	
Increase	122,000
Annual growth rate	1.9%
2015 to 2050	
Increase	249,000
Annual growth rate	1.9%

Source: PlaceWorks, 2015.

Population

Population is the total number of people residing in Kern County. Total population is divided into household population (those living in households) and group quarters population (those living in institutional settings, primarily correctional facilities, college dormitories, and nursing homes). The forecast projects the population in correctional facilities separately, at the statewide population growth rate, which is lower than the overall population growth rate in Kern County.

Table 2 summarizes the forecasts for total population and household population for Kern County. Kern County's population increased, on average, by about 17,800 people per year from 2000 to 2010. The forecast indicates that the population growth would average about 21,400 people per year from 2015 to 2035 and about 21,900 people per year over the entire forecast time frame from 2015 to 2050.

Table 2: Population Forecast Summary, Kern County

	Total Population	Household Population
2000	662,000	632,000
2010	840,000	803,000
2015	874,000	842,000
2035	1,302,000	1,261,000
2050	1,641,000	1,593,000
2000 to 2010		
Increase	178,000	171,000
Annual growth rate	2.4%	2.4%
2015 to 2035		
Increase	428,000	419,000
Annual growth rate	2.0%	2.0%
2015 to 2050		
Increase	767,000	751,000
Annual growth rate	1.8%	1.8%

Source: PlaceWorks, 2015.

Group Quarters Population

Because the forecast model projects the growth of the population in correctional facilities at the statewide population growth rate, the household population growth rate is slightly higher than the overall population growth rate. Even though the difference is less than a tenth of a percentage point, it affects the forecast. Group quarters would decline slightly as a percentage of the total population, from 3.7 percent in 2015 to 3.2 percent in 2035 and 2.9 percent in 2050.

Average Household Size

Kern County has had a trend of increasing average household size, growing from 3.03 in 2000 to 3.15 in 2010 and 3.20 in 2015. The forecasts indicate that the rate of increase in average household size will slow, such that the average household size in 2035 would be 3.27. The forecasts also indicate that the average household size would then decline, down to 3.11 in 2050.

Number of Housing Units

A housing unit can be a single-family detached house, an individual unit in a multifamily apartment or condo building, or a mobile home. Housing units can be occupied by a household or vacant. The housing unit forecast refers to all housing units, whether occupied or vacant.

Table 3, on the opposite page, summarizes the forecast for the total number of housing units in Kern County. The forecast indicates that the average number of housing units constructed each year will increase, but the rate of growth will decline slightly.

Vacancy Rate

The vacancy rate is the percentage of housing units that are or are projected to be unoccupied. The vacancy rate in Kern County has been somewhat high relative to the state: 9.89 percent in 2000 versus 5.83 statewide; 10.5 percent in 2010 versus 8.1 percent statewide; and 10.2 percent in 2015 versus 7.8 percent statewide. However, Kern County's vacancy rate is not uncharacteristically high compared to other growing areas, for example 14.2 percent in Riverside County and 12.5 percent in San Bernardino County in 2015.

The forecasts indicate that the rate of growth in housing units, 1.83 percent from 2015 to 2050,

will be slightly lower than the rate of growth in the number of households, 1.92 percent. The result is a decrease in the forecast vacancy rate, down to 8.6 percent in 2035 and 7.4 percent in 2050.

Table 3: Number of Housing Units Forecast Summary, Kern County

2000	232,000
2010	284,000
2015	293,000
2035	421,000
2050	552,000
2000 to 2010	
Increase	53,000
Annual growth rate	2.0%
2015 to 2035	
Increase	128,000
Annual growth rate	1.8%
2015 to 2050	
Increase	259,000
Annual growth rate	1.8%

Source: PlaceWorks, 2015.

Employment

Employment is the total number of jobs, both full-time and part-time. Employment is counted at the place where an individual works, not where they live. Thus, the employment data represents jobs in Kern County, regardless of whether the employee lives in the county or commutes to the county from somewhere else.

From 2000 to 2014, Kern County experienced an average employment growth of 5,200 jobs per year. Unlike the other primary forecasts discussed above, 2010 does not make a good comparison year because it represents a recession-influenced low. The forecast indicates that total employment would increase by 5,500 jobs per year from 2014 to 2035, and 6,200 jobs per year from 2014 to 2050.

Table 4: Total Employment Forecast Summary, Kern County

2000	244,000
2010	274,000
2014	318,000
2035	433,000
2050	540,000
2000 to 2010	
Increase	30,000
Annual growth rate	1.2%
2014 to 2035	
Increase	115,000
Annual growth rate	1.5%
2014 to 2050	
Increase	222,000
Annual growth rate	1.5%

Source: PlaceWorks, 2015.

Jobs per Household

In 2000, there were about 1.17 jobs per household in Kern County. In 2010, that had decreased to 1.08, reflecting the recessionary impact on the number of jobs. The estimates for 2014 indicate that the ratio has increased to 1.22, reflecting the particularly strong recovery in employment that Kern County has experienced.

Going forward, however, the retirement of the baby boom generation is expected to result in long-term decreases in the labor force participation rate (the percentage of the working age population that is employed or seeking work). And it is not just the retirement of the baby boom generation that will affect this rate. For example, female participation in the labor force, which increased from about 33 percent in 1950, reached a peak in 2000, and since then has slowly but steadily declined. As of June 2015, the female participation rate was 56.7 percent. A lower labor force participation rate equates to fewer workers per household.

The forecast indicates that Kern County will experience a slight reduction in the number of jobs per household, declining to 1.13 in 2035 and 1.06 in 2050. This decline, however, is generally in

proportion to the decline in labor force participation expected nationally.

Comparison to Other Forecasts

To provide some context for understanding the forecasts, it can be helpful to compare them to forecasts from other sources. The following sections provide comparisons for the total population forecast and for the total employment forecast.

Population Forecast Comparisons

The sources for the comparison population forecasts are:

+ CA Department of Finance total population

projections (Table P1) 2013

+ Kern COG forecast adopted July 2005 (with 1.8 percent modification)

+ PlaceWorks forecast 2015 (this report)

+ CA Department of Finance total population projections (Table P1) 2014

+ Caltrans 2014 economic forecast

Figure 1 shows the five forecasts. This report's forecast indicates a 2050 population that is lower than the 2013 DOF projection and the currently adopted Kern COG forecast. It is higher than the 2014 projections from the DOF and Caltrans. The difference between the most recent DOF population projection and this report's forecast is 1.8

Figure 1: Population Forecast Comparison, Kern County, Historic Trend 1950 to 2015 and Forecasts 2020 to 2050
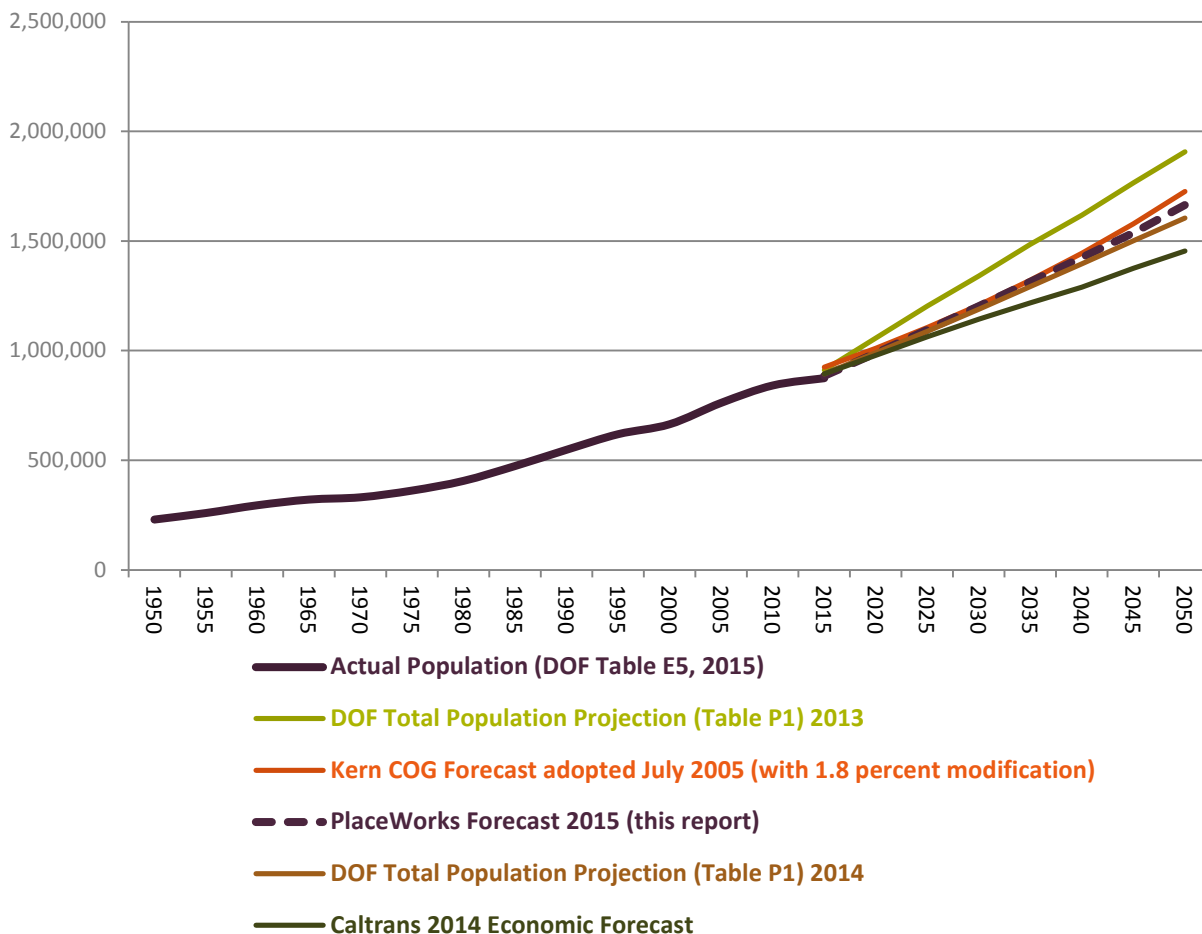
Source: PlaceWorks, 2015, with data from CA Department of Finance and Caltrans.
Note: Actual population data represents estimates for January 1; forecast data represent projections for July 1.

percent, within the 3.0 percent requirement for the Regional Housing Needs Allocation process.

There are several differences among the various forecasts that lead to the differing results. For example, the DOF projections reflect the State's forecast for statewide population, which is then allocated to each county. The Caltrans forecast is derived from an econometric model focused on employment, from which population projections are derived. This report's forecast model combines population and demographic trend projections, a cohort-component model for population by age group, and an employment model.

Employment Forecast Comparison
The sources for the comparison are:

+ PlaceWorks forecast 2015 (this report)
+ Caltrans 2014 economic forecast
+ Kern COG forecast adopted July 2005
+ CA Employment Development Department 2015 projection (2012 to 2022)

The CA Employment Development Department (EDD) projection was prepared in 2015, but it is based on 2012 data. Over the 10-year projection horizon, EDD is projecting employment growth at an annual rate of 1.5 percent. The comparison chart extends this growth rate through 2050, even though EDD has not established a projection past 2022.

This report's forecast represents a reduction in total employment in 2050 relative to the current Kern COG adopted forecast. In 2040, this report's forecast is 1.9 percent higher than the extended EDD forecast and 8.6 percent higher than the Caltrans 2014 economic forecast.

Figure 2: Employment Forecast Comparisons, Kern County, Historic Trend 1990 to 2010 and Forecasts 2015 to 2050
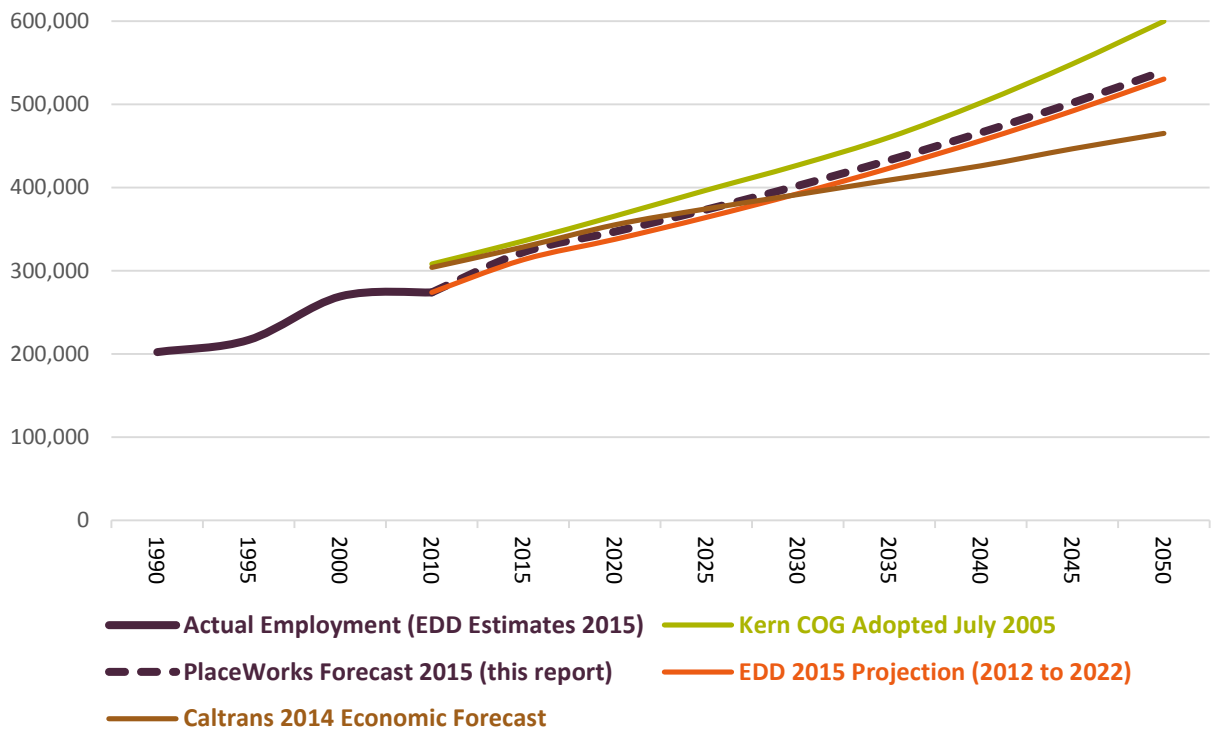
Source: PlaceWorks, 2015, using data from Kern COG, CA EDD, and Caltrans.
Note: EDD Projection data for 2025 to 2050 represent an extrapolation of the growth rate trend projected for 2012 to 2022.

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INTRODUCTION

Purpose

This report presents long-range, countywide socioeconomic forecasts for Kern County for 2015 to 2050. The Kern Council of Governments will use these forecasts to support the next updates of the Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS). In addition, Kern COG's member agencies may also use the forecasts to support local planning and transportation modeling.

Forecast Model

The forecast model is an updated version of the model that PlaceWorks (as The Planning Center|DC&E) prepared in conjunction with Arthur C. Nelson, PhD, FAICP, the former Presidential Professor of City & Metropolitan Planning at the University of Utah, for the "San Joaquin Valley Demographic Forecasts, 2010 to 2050." The San Joaquin Valley project, completed in 2012, provided forecasts for the entire valley and each of the eight counties.

In addition to updating the baseline data, the 2015 forecast model has been refined from the 2012 model to include a more robust employment forecast and to factor employment growth into the forecasts for population, housing, and the number of households.

Organization

Introduction
The remaining sections of the Introduction discuss some demographic and economic factors that will influence the socioeconomic trends covered by this report.

Methodology
The Methodology chapter provides a technical description of the methodology and data sources used in the forecast model.

Primary Forecasts
Four socioeconomic trends provide the foundation for the forecasts:

+ Households
+ Population
+ Housing
+ Employment

Several different trends and measures have been analyzed and evaluated to develop the forecasts for these four factors. The Primary Forecasts chapter discusses the development of these models and summarizes the resulting forecasts.

Other Demographic Forecasts
The forecasts for other demographic characteristics are all derived from the primary forecasts. These characteristics include:

+ Age distribution
+ Average household size
+ Household income
+ Household type
+ Race/ethnicity

The Other Demographic Forecasts chapter discusses issues surrounding these characteristics and summarizes the results of the forecasts.

Appendix
The appendix provides a brief explanation of some of the terminology used in the report and provides detailed results of the forecast model.

Home Ownership Trend

One key demographic measure that is heading to a new normal, or perhaps returning to an old normal, is the home ownership rate.

The Long-Term Trend
As shown in Figure 3, the portion of households owning their homes in the United States in-

creased from the 1940 Census through the 2010 Census. In contrast, the home ownership rate in California peaked in 1960, declined to 1970, and increased slightly through 2010.

Numerous public policies and social trends fueled the increase in home ownership. Most notable among these, however, were federal intervention in the mortgage market and rising incomes. The federal government established several agencies[1] to transform the conventional pattern of housing finance from five-year interest loans with balloon principal payments to what is now thought of as traditional amortizing mortgages. These federal agencies created a secondary market for mortgages. The agencies bought mortgages from banks, allowing these banks to go out and issue new mortgages. This secondary market for mortgages transformed how housing was built, bought, and sold in the United States. It also determined the types, location, and sizes of housing that could get financing and, consequently were built over the last 70 years. These agencies funneled vast new sums of money into the housing market, allowing the nation to go from a majority of renter households in 1940 to a majority of owner households in 1950.

At the same time, economic expansion beginning in the post–World War II era resulted in decades of rising real wages for American workers. In the 1950s, household investment in housing accounted for 5.03 percent of the national gross domestic product, the highest of any ten-year postwar period.

Figure 3: Home Ownership Rate from the Decennial Censuses, U.S. and California, 1900 to 2010
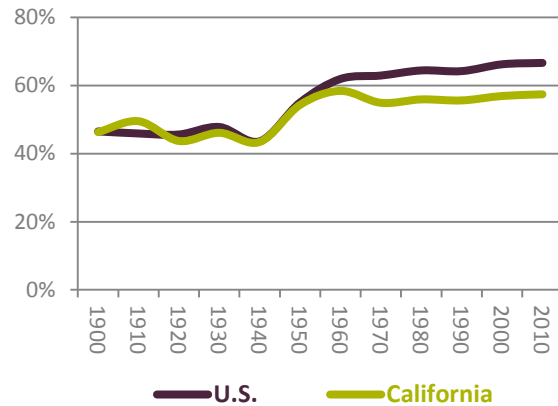
Source: PlaceWorks, 2015, using data from the U.S. Census Bureau decennial censuses.

The More Recent Trend

Figure 4 shows the rate of home ownership on an annual basis. Nationally, the generally increasing rate of ownership stagnated in the later 1980s, increased steadily starting in 1995, and peaked in 2005. It has declined ever since, reaching a rate of 64.5 percent in 2014. In California, the rate of homeownership generally increased from 1984 to a peak of 60.2 percent in 2006. It has continued to decline since then, reaching 54.2 percent in 2014.

Over the 31-year period from 1984 to 2014, California's home ownership rate averaged 9.9 percentage points lower than the nation's, 56 versus 66 percent.

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[1] Federal Housing Administration (FHA), 1934; the Federal National Mortgage Association (Fannie Mae), 1938; and later the Government National Mortgage Association (Ginnie Mae), 1968; and the Federal Home Loan Mortgage Corporation (Freddie Mac), 1970.

Figure 4: Home Ownership Rate by Year, U.S. and California, 1984 to 2014
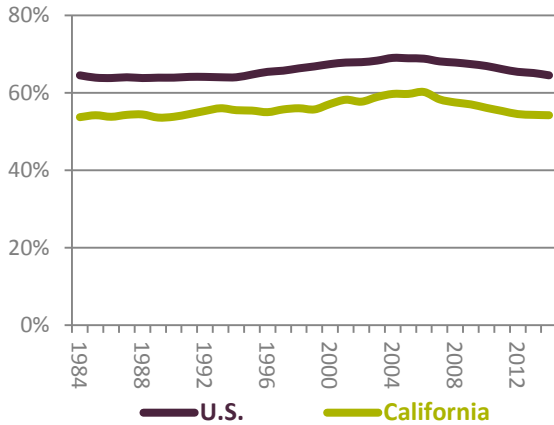
Source: PlaceWorks, 2015, using data from the Federal Reserve Bank of St. Louis.

The Trend Going Forward

In the short term, stagnating real wages and salaries, increased student loan debt, a return to traditional minimum down payments and debt-to-income limits will continue to put downward pressure on the ownership rate in the U.S. and California. This means that, nationally, the housing market will continue to support above-average levels of multifamily housing construction.

Over the mid to long term—10 to 20 years—changes in the home ownership rate will likely be driven by more conventional factors, including trends in real wages and salaries, economic growth, unemployment and labor force participation rates, and interest rates, as well as by individual housing preferences.

Demographics

In the 20 years following World War II (1945 through 1964) the fertility rate increased substantially, creating the baby boom generation. Starting in 1965, a few years after the introduction of the birth control pill, the fertility rate declined dramatically and has remained about the same ever since. As the oldest of the baby boom generation began moving out of their parents' houses, the average household size began a long steady decline, from 3.36 persons per household in 1961 to 2.54 in 2013 and 2014. During this same time frame, families (married couples and single parents) as a portion of total households has steadily declined, from 91.9 percent in 1948 to 66.0 percent in 2014. Figure 5 shows these national household characteristics.

Figure 5: Household Characteristics, United States, 1949 to 2014
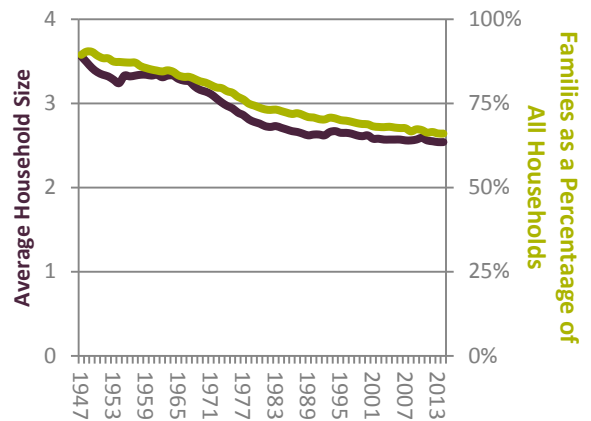
Source: The Planning Center|DC&E, 2011, using data from the US Census Bureau.

As the baby boom generation continues to transition—from families with children to empty nesters and from employment to retirement—some portion will desire to sell their current family-sized houses and relocate to smaller housing units. There are substantially fewer households in the baby bust generation (those born from 1965 through 1973). When previous generations retired and relocated, larger generations followed them, ready to move into family-sized housing. With this coming generation change, however, there will be fewer households to buy housing from the baby boomers.

The key to the housing market becomes the echo boom generation, the children primarily of the baby boomers, born after 1973. Current survey research suggests that this generation, however, will have a higher preference for more urban housing and less of a preference for the traditional large-lot, single-family detached house. More importantly, though, lingering unemploy-

ment and lack of job growth coupled with changes in housing finance have forced the echo boom generation to put off forming new households and purchasing their first houses.

If there is insufficient demand to purchase housing that baby boomers desire to sell, the market result would be some combination of downward pressure on housing values, reduced selling, renting out existing housing that cannot be sold, and decreased housing production.

The long-term impact is uncertain. The survey research suggests that the housing preferences of the echo boom generation will drive changes in housing and development patterns. However, a precept of economics is to look at what people do, not what they say. No one can say with certainty whether the echo boom generation, once they form families and have children of their own, will or will not emulate their parents' preference for traditional large-lot single-family detached houses.

Multigenerational Family Housing

Multigenerational family housing is a demographic and housing trend that will influence future housing demand. Multigenerational family housing is defined as a family household with at least two adult generations or a grandparent and at least one other generation.

Research by the Pew Research Center found that this extended family living arrangement, which was common throughout our nation's history, began to fall out of favor after World War II. [2] In 1940, about a quarter of the population, 39 million Americans, lived in extended family household. By 1980, only 12 percent lived in such households. Since 1980, the portion of the population living in multigenerational family households has steadily increased, reaching 49 million people, or 16.1 percent of the population, in 2008.

This increase includes all major demographic groups; however, immigration from Latin American and Asia has driven a large portion of the increase. These immigrants, like those in earlier immigration waves, are more likely to live in extended family households than are native-born Americans.

All age groups are more likely now than they were in 1980 to live in multigenerational family housing, but the greatest percentage increase has been among young adults. In 1980, 11 percent of those aged 25 to 34 lived in extended families; by 2008, the number had risen to 20 percent. The increase in median age at first marriage has been a primary driver of this long-term trend among young adults. However, in recent years the recession has added to the movement of young adults back home. In 2009, 37 percent of 19 to 29 year olds were unemployed. A Pew survey that year found that one in eight of those aged 22 to 29 had moved back in with their parents as a result of the recession.

Among those aged 65 and older, the portion living in extended family households increased from 17 percent in 1980 to 20 percent in 2008. Among this older generation, women are much more likely than men to live in an extended family, due in large part to women being more likely to outlive their spouses than men are. Among the 25 to 35 year olds, though, men are much more likely to be the ones living in multigenerational family households.

Because younger adults are more likely to rent than to own their residence, the trend of an increasing portion of young adults living in multigenerational family housing should counterbalance, although not reverse, the trend of increasing rentership and decreasing ownership. At the same time, the increasing movement of older Americans into extended family housing should decrease the total number of homeowners and put more housing on the market. Whether there are sufficient numbers of households in the baby bust and echo boom generations to absorb that

[2] See Paul Taylor et al., "The Return of the Multi-generational Family Household" Washington DC: Pew Research Center, March 2010.

housing will determine the degree to which the ownership rate increases or decreases.

Migration

The demographic analysis conducted for the 2012 San Joaquin Valley demographic forecasts found that migration was the primary factor driving differences in the development patterns among the eight counties. Who migrated to and from each county, their household characteristics, race and ethnicity, and the income their skills and education could command explained differences in the past and will drive the differences in the future.

Using five years of survey data from 2008 to 2012, the U.S. Census Bureau estimated the outbound and inbound migration of each county. For outbound migration, the Census Bureau estimated that 81.3 percent of Kern County's residents did not move; 14.3 percent moved within the county; 2.9 percent moved elsewhere in California; and 1.4 percent moved to a different state. Kern County's migration was very similar to the rates statewide: 2.9 percent of California residents moved to a different county in the state, and 1.5 percent moved to a different state. One should note that these rates represent five years of migration, not the rate in a single year.

For inbound migration, the five-year data indicate that 3.9 percent of Kern County's population moved from a different county in California, higher that the 2.9 percent rate statewide. The data also indicate that 1.2 percent of the population migrated from a different state, about the same as the 1.3 percent rate statewide. Finally, about 0.4 percent of the county population migrated from a foreign country, slightly more than half the statewide rate of 0.7 percent. Once again, these data represent five years of migration, not an annual rate.

Conversations with technical staff at the CA Department of Finance indicate that their population projections reflect, in part, the continuing trend of Kern County as a destination for intrastate migration.

Of all the migrants to Kern County from elsewhere in the state, 63.3 percent relocated from southern California (the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura). Although this is the majority of in-migrants, these counties account for 58.0 percent of the state's population. Thus, their share of in-migration to Kern County is only somewhat larger than their share of population.

In contrast, 18.0 percent migrated from other counties in the San Joaquin Valley (from the counties of Fresno, Madera, Merced, San Joaquin, Stanislaus, and Tulare). However, these counties account for only 8.6 percent of the state's population (excluding Kern County). Thus Kern County is an important migration destination for the San Joaquin Valley.

Housing Type

The trends in housing tenure, demographics and the millennials, multigenerational family housing, and migration will all affect the trend in housing type, namely single-family detached housing versus all forms of attached and multifamily housing. For the purposes of this discussion, single-family housing refers only to single-family detached housing, and multifamily housing refers to attached single-family housing (such as townhouses, duplexes, triplexes, etc.) and stacked flats (such as apartments and condos).

As shown in Figure 6, from 1968 through 1986, 36.2 percent of the housing units privately constructed in the U.S were multifamily housing. In 1986, however, the number of multifamily housing units constructed began an eight-year decline. And in 1992, the number of single-family housing units constructed began a 16-year increase that culminated with the beginning of the housing crisis in 2006. From 1986 through 2006, multifamily housing accounted for 20.5 percent of all housing units privately constructed in the U.S.

Since the end of the recession (in mid-2009) through 2014, multifamily housing has accounted for 27.6 percent of the total number of housing units. And from 2010 to 2014, the number of

multifamily housing units constructed has increased 11.2 percent per year, compared to 4.5 percent per year for single-family housing.
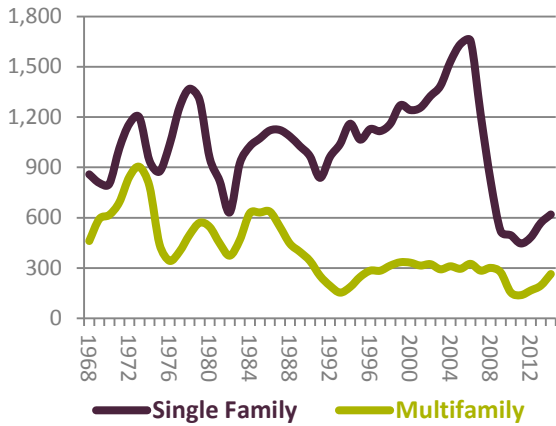
Source: PlaceWorks, 2015, using data from the U.S. Census Bureau.

This national trend of increasing multifamily housing share of total housing construction has parallels in California and Kern County. Before the crash in the housing market, multifamily housing accounted for less than 10 percent of the total housing constructed. Since 2009, multifamily housing accounted for 27.8 percent of the total housing constructed. And even over the last three years, when the single-family housing market came back to life, multifamily housing still accounted for 17.1 percent of housing construction.

Over the short term, the trend in multifamily housing will likely continue, driven by the flows of capital available for housing development, growth in household formation among millennials (many of whom are not yet in a position to purchase a home), and weak growth in real household incomes.

Over the mid and long term however, the degree to which multifamily housing maintains a relatively large share of housing construction will be determined in large part on who is migrating to Kern County and the types of housing they desire and can afford, and by the housing preferences of millennials as they age into first-time homebuyers. These are truly unknowns. Thus, the current forecast is based on the current trend—the increasingly larger share of housing constructed as multifamily housing. A future update to these forecasts, however, might find a shift in this trend.

Primary Forecasts

Four socioeconomic measures form the primary forecasts:

1. Number of households

2. Total population

3. Total number of housing units

4. Employment by major economic sector

The primary forecasts are based on several different projections and the authors' professional judgment. The remaining demographic forecasts are derived from the primary forecasts. This chapter describes the methodology and data sources for individual projections.

Generally, for each demographic trend, the least-squares method determines a line that best fits the trend data. That line is projected to the year 2050, and the projection is the straight line that connects the last datum to the 2050 trend datum. The description for each projection explains if the projection employs a different methodology.

Three measures evaluate the adequacy of each projection: relative standard error (the standard error of the regression divided by the mean value of the observed data), F-test, and t-test. The regression analysis also generates a coefficient of determination (herein identified as R^2), which indicates how closely the observed or actual data follow a linear growth pattern over time. The R^2 value is between 0 and 1, with a value of 1 indicating an exact linear growth. The appendix provides the detailed results, and the following sections of this chapter summarize the relevant statistics.

Household Trend

The household trend projection uses the DOF estimates for the total number of households for each year from 1990 through 2015. The regression analysis of the observed data produces an R^2 value of 0.979 and a relative standard error of 1.8 percent.

The household forecast incorporates five projections: the total number of households trend; the total housing units projection combined with the vacancy rate projection; the housing construction by housing type trend, combined with the vacancy rate projection; the employment trend projection combined with the jobs per household ratio projection; and the cohort-component population projection combined with the average household size projection.

Total Population Trend

The total population trend uses the DOF estimates for total population for each year from 1990 to 2015. The regression analysis of the observed data produces an R^2 value of 0.983 and a relative standard error of 2.0 percent.

Because the population in correctional facilities makes up a large percentage of the total group quarters population, 85.3 percent, the model generates a projection for the household population and the group quarters population using estimates from DOF for 1990 through 2015. The model then assumes that the portion of the group quarters population in correctional facilities will increase at the projected population growth rate for California. The model projects the state's population growth using a least-squares line generated from the DOF estimated population for 1990 through 2015. It assumes that the non–correctional facilities group quarters population will increase at the rate determined by the least-squares line for the total group population estimates from 1990 to 2015. The projected household population and the projected group quarters population are summed to generate the population trend projection for future population.

The regression analysis of the household population data produces an R^2 value of 0.982 and a relative standard error of 2.1 percent. The regression of the actual group quarters population data produces an R^2 value of 0.684 and a relative standard error of 12.6 percent. The regression analysis of the adjusted group quarters data (group quarters population less the estimated correctional facilities population) produces an R^2 value of 0.290 and relative standard error of 20.5 percent. The lower R^2 values and higher standard errors in the group quarters and adjusted group quarters data reflect the fact that the data exhibit a large, single-year increase when a correction facility opens and that the most reliable correctional facility population data are provided in the decennial censuses.

The total population forecast incorporates three projections: the total population projection; the household trend projection combined with the average household size projection; and the cohort-component model population projection.

Total Housing Units Trend

The total housing units trend projection uses the DOF estimates of the total number of housing units from 1990 through 2015. The regression analysis of the observed data produces an R^2 value of 0.981 and a relative standard error of 1.8 percent.

The forecast for the total number of housing units also incorporates projections based on the number of housing units per household combined with the cohort-component model projection of household (see discussion on page 9) and the jobs-to-housing units ratio combined with the employment trend projection. The regression analysis of the housing units per household trend produces an R^2 value of 0.803 and a relative standard error of 0.2 percent. The regression analysis of the observed data produces an R^2 value of 0.981 and a relative standard error of 1.8 percent.

The forecast for total housing units also incorporates projections based on the number of housing

units constructed by type (single-family detached, multifamily 2 to 5 units in structure, etc.). The model uses data from the DOF and estimates for Kern County provided by the U.S. Census Bureau for the period 1995 to 2014. The number of units constructed each year goes up and down rather than following a generally linear course.[3] The regression analyses for each type of housing produce low R^2 values (0.156 or lower) and high relative standard errors (50.8 percent and higher). Each regression also fails the t-test, one of the measures of whether or not the observed data reflect a linear trend over time. Rather than discarding this dataset altogether, however, the model uses the trend projection for number of housing units constructed, based on a sum of the trends across housing types, but minimizes the impact of the variability of the data by combining it with the other projections described in the previous paragraph.

Residential Vacancy Rate

The residential vacancy rate projection uses the DOF estimates of the vacancy rate from 1990 through 2015. The regression analysis of the observed data produces an R^2 value of 0.979 and a relative standard error of 1.8 percent.

The vacancy rate projection indicates increasing vacancy rates through 2050. The increase in vacancy rates preceding, during, and after the recession largely causes the projection to trend upwards. Increasing vacancy rates, however, are unsustainable: at some point the market will reduce the number of units constructed to keep pace with demand. Therefore, the forecast model assumes that, by 2018, the long-term vacancy rates will return to the average rate for the period from 1990 through 2011 and will maintain the long-term average rate through 2050.

Employment Trends

The employment trends forecast is based on the at-place employment by sector data from the CA

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[3] A variety of factors—general economic conditions, mortgage rates, demographic shifts, changing preferences, etc.—influence the number of units constructed each year.

Employment Development Department. The model separately analyzes the past trend in employment in each sector using six different curve-fitting models. Based on the mean average percent error for each curve fitting model and the author's experience in economic development, the most appropriate projection is used for each sector. The total employment forecast is the sum of the employment forecast in each sector.

The employment forecast is factored into each of the other primary forecasts. For population, the employment forecast is paired with a projection of the jobs per household to generate a projection of the total number of households. For population, the employment forecast is paired with a projection of the jobs per household population and combined with the household population trend to generate the projected household population. For housing, the employment forecast is paired with a projection of the jobs to housing units ratio and combined with the total housing units trend to generate the total housing units forecast.

Cohort-Component Model
A standard cohort-component model was developed using data from the 2000 and 2010 Census for age by gender in five-year age groups (cohorts). The model uses fertility data from the CA Department of Public Health's births statistical data tables for each county from 2005 through 2009. The model calculates five-year survival rates for each age cohort using data from the California Abridged Life Tables, 2004. The survival rate data are not broken down by county. Finally, the model applies the survival and number-of-births data to the 2000 and 2010 Census data to estimate the migrations rate by gender and age cohort. The model also adjusts the migration rate data for the 5-to-9 and 10-to-14 age cohorts based on school enrollment data.

The cohort-component model provides projections that are used in the household forecast, the total population forecast, and the total housing units forecast.

Other Demographic Forecasts
The forecast model provides forecasts for five other demographic characteristics derived from the primary forecasts:

+ Age distribution
+ Average household size
+ Household income
+ Household type
+ Race/ethnicity

As described below, the forecasts generally follow the same methodologies used for the primary forecasts.

Age Distribution
The age distribution forecast provides projections of the number of residents in key age groups needed for traffic modeling and other planning purposes. The age groups are: under 5; 5 to 13; 14 to 17; 18 to 24; 25 to 54; 55 to 64; 65 to 74; and 75 and older.

The results of the cohort-component model are fitted to the final population forecast in order to generate the projected age distribution in five-year groupings. The five-year age groups are then combined for the larger age groupings needed for the forecasts. For forecast age groups that split the five-year age groups (e.g., 14 to 17) the split ages are estimated based on their average share of the five-year age group in 1990, 2000, and 2010. The projections are converted to percentage, and the percentage for each age group is then multiplied by the population forecast.

Housing Units by Type
To generate the forecast of number of housing units by type, the model uses the projection of housing units constructed by housing type to project each housing type's percentage share of new housing units constructed. The model then applies these percentages to the annual increase in the forecast of the number of housing units constructed.

Average Household Size Trend

The average household size trend projection model uses data from the 1990, 2000, and 2010 Censuses. The model also adjusts the average household size based on race and ethnicity, using Census data from 2000 and 2010. The projections use the following race classifications: White alone; Black or African American alone; American Indian and Alaska Native alone; Asian alone; Native Hawaiian and Other Pacific Islander alone; Some other race alone; and Two or more races. The model provides a separate adjustment with the following ethnic categories: Hispanic; and White alone, non-Hispanic. Although the Census Bureau currently provides race and ethnicity data as a single dataset, the historical census data on which the forecast is based used one data set for race categories and a second set for ethnicity.

The regression analysis of the average household size data produces an R^2 value of 0.952 and a relative standard error of 0.6 percent.

Because the Census Bureau has changed how it collects and reports race and ethnicity data, the race/ethnicity adjustment to average household size uses only data from the 2000 and 2010 Censuses. The model uses the two data points for each race and ethnic classification to project the population and number of households for each forecast year. These projections are then adjusted on a percentage basis to reflect the population and households forecasts. The total population and total households are summed across race and ethnic categories and divided to provide the race/ethnic-adjusted average households size in each forecast year. To calculate the average household size by housing type, the model applies the percentage change between the basic average household size projection and the race/ethnic-adjusted average household size to the basic average household size by housing type.

Finally, the average household sizes by housing unit type are adjusted proportionately to reflect the overall average household size derived from the household forecast and the household population forecast.

Age of Head of Household

The age of head of household trend projection model uses Census data from 1990, 2000, and 2010 for the number of household heads in 10-year age cohorts from age 15 through 75 and above. The data are converted to a percentage representing each age cohort's share of the total number of household heads. The model then uses a least-squares line to project the proportionate shares forward. The resulting projections are then adjusted such that each cohort's five-year change in share of households represents the average of the change from the initial projection and the change in the total population in that age cohort resulting from the cohort-component model. This adjustment is made so that the final projections reflect the changing age structure expected through 2050 and not just the past trend in age of head of household. However, the full weight of the cohort-component model is not warranted because that model represents total population and not just household heads.

The final percentage projections are then applied to the household forecast to determine the projected number of household heads by age group. While the initial data and all of the projections are in 10-year age cohorts, the summary tables include only the age categories needed for traffic modeling and planning purposes.

Household Income Trends

There are two projections models for household income, one for the distribution of households among income categories and the other for the median household income, adjusted for inflation. The two models use data from 1990 and 2000 Censuses and data from the 2010 American Community Survey five-year estimates. The median household income data has been adjusted for inflation using the U.S. Bureau of Labor Statistics' CPI Inflation Calculator.

The distribution of households among income categories are adjusted for race and ethnicity, using Census data from 2000 and 2010. The final projections are an average of the number of

households projected by the unadjusted model and the number of households projected by the race- and ethnicity-adjusted model.

The regression analysis of the real median household income data produces an R^2 value of 0.114 and a relative standard error of 4.2 percent. The relatively low R^2 value results from having only three data points of existing median household income for the basis of the regression analysis.

Household Type Trend

The household type trend projection model uses Census data from 1990, 2000, and 2010. The model projects the number of households in four categories: Family households with children under age 18; Family households without children under age 18; Single person households; and All other nonfamily households. The original census data represent the total number of households in each type. The model converts the number of households into each category's share of the total number of households.

For each category, the model uses a least-squares line to project the percentage of households for each forecast year. These projections are then multiplied by the household forecast to yield the number of households in each category.

Race and Ethnicity Trend

The race and ethnicity trend projection model uses Census data from 2000, and American Community Survey data from 2010 for the population in the following race and ethnicity categories: White alone, non-Hispanic; Hispanic, all races; Black or African American alone, non-Hispanic; American Indian and Alaska Native alone, non-Hispanic; Asian alone, non-Hispanic; Native Hawaiian and Other Pacific Islander alone, non-Hispanic; and Some other race alone or in combination, non-Hispanic.

The projection model uses a least-squares line for each category to project the future population. For each forecast year, the projected population is converted into each category's share of the population. Those percentage shares are then

multiplied by the population forecast to yield the final forecast of population by race and ethnicity.

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The four primary forecasts are number of households, population, housing units, and employment. The other forecasts are derived from the primary forecasts. This chapter summarizes and discusses the primary forecasts, and the next chapter covers forecasts for the remaining demographic characteristics.

Household Forecast

A household is one or more people who occupy a housing unit. And a house, apartment or other group of rooms, or a single room is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure.

Because housing tends to be the single largest expenditure for most households, the household often is the basic unit of analysis in economic research. The household is also an important unit of analysis in planning research because households make choices on where to live, and housing often has the longest lifetime of real estate development products.

The household forecast is based on an assessment of five separate projection models:

1. Household Trend. This projection is based on the total number of households from 1990 through 2015.
2. Total Housing Units Trend. This projection is based on the total number of housing units and the projected vacancy rate.
3. Housing Construction Trend. This projection is based on the total number of housing units constructed and the projected vacancy rate.
4. Employment Trend. This projection is based on the total number of jobs and the projected jobs-housing ratio.
5. Cohort-Component Projection. This projection is based on the total population projected by a cohort-component model and the projected average household size.

Table 5 shows the household projection generated by each of these five models for Kern County, and Figure 7 compares them graphically.

Table 5: Comparison of Five Household Projection Models and Forecast, Kern County, 2015 to 2050

Year	Household Forecast	Household Trend Projection	Total Housing Units Trend Projection	Housing Construction Trend Projection	Employment Trend Projection	Cohort-Component Projection
2015	**255,000**	263,000	263,000	263,000	263,000	263,000
2020	**263,000**	281,000	285,000	275,000	287,000	294,000
2025	**289,000**	300,000	312,000	288,000	310,000	344,000
2030	**318,000**	318,000	343,000	304,000	334,000	400,000
2035	**350,000**	337,000	377,000	323,000	358,000	461,000
2040	**385,000**	355,000	414,000	344,000	382,000	526,000
2045	**423,000**	373,000	454,000	367,000	405,000	595,000
2050	**465,000**	392,000	498,000	393,000	429,000	671,000
Increase 2015 to 2050:	**249,000**	129,000	235,000	130,000	166,000	408,000
Annual Growth Rate:	**1.92%**	1.1%	1.8%	1.2%	1.4%	2.7%
Weight in Forecast Model:		10.0%	25.0%	10.0%	25.0%	30.0%

Source: PlaceWorks, 2015

Figure 7: Comparison of Household Projections and Forecast, Kern County, Trend 1990 to 2015 and Projections and Forecast 2015 to 2050
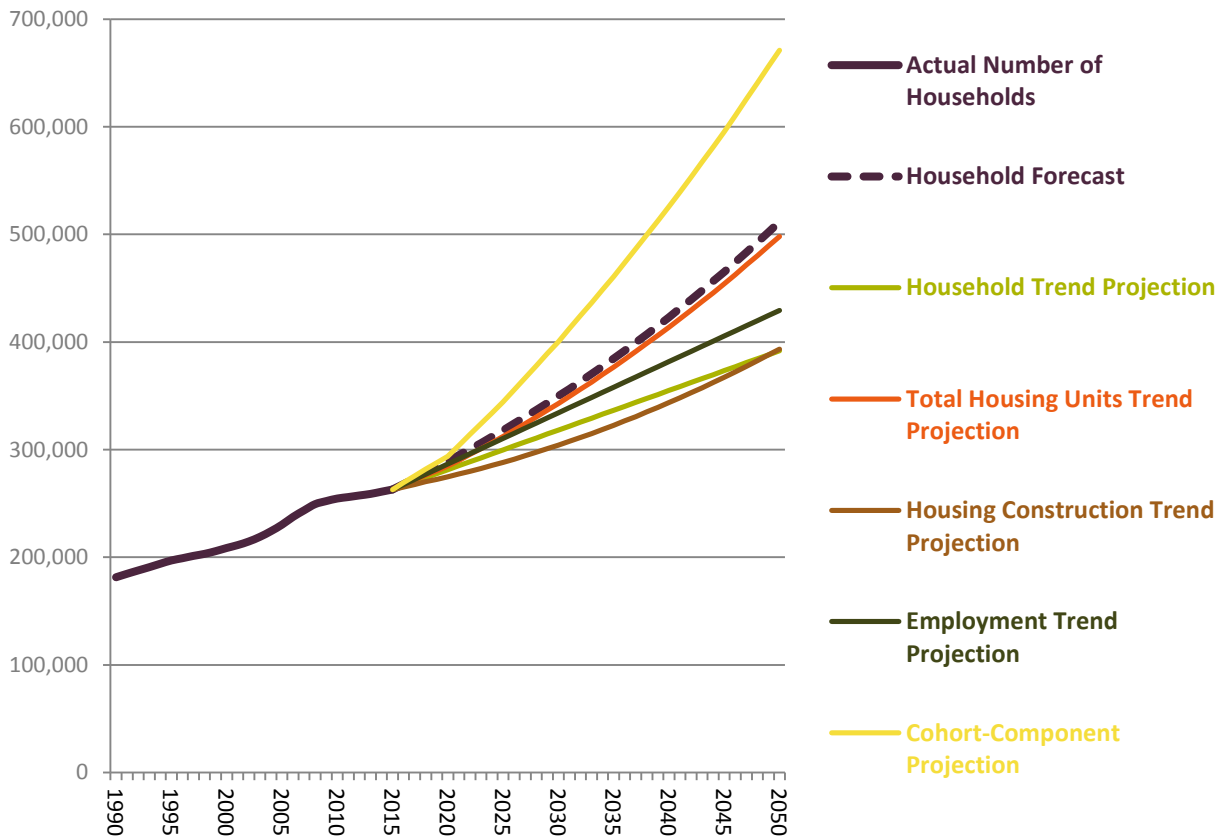
Source: PlaceWorks, 2015.

Population Forecast

Population refers to the total number of people living in a geographic area. For demographic purposes, population is often divided into two categories: household population and group quarters population. Household population includes all people living in housing units. Group quarters population includes people living in institutional facilities—such as correctional institutions, college dormitories, and assisted living facilities.

The population forecasts cover the total population. As discussed in the Methodology chapter, however, the group quarters population has been adjusted to reflect the incarcerated component of group quarters population. Nevertheless, the forecasts for population reflect the total popula-

tion, both household and group quarters. As discussed in the Methodology chapter, the trend in household population and group quarters population are projected forward in order to divide the population forecast into the two categories.

The population forecast is derived from three projection models:

1. Population Trend. This projection is based on the total population from 1990 through 2015.

2. Household Forecast. This projection is based on the household forecast and the projected average household size.

3. Cohort-Component Model. This projection is based on the total population projected by a cohort-component model.

Table 6 provides the population forecast for 2015 to 2050, in five-year increments. It also provides the population projections for the three trends that make up the population forecast model. Figure 8 compares the projections and forecast graphically. Table 7 provides the forecast for total population, household population, and group quarters population.

Household population constituted 97.2 percent of the total population in 1990 and 95.6 percent in 2010. The forecast indicates that the County's household population would increase to 97.1 percent of total population in 2050, about where it was in 1990. The forecast model's explicit assumption that the population in correctional facilities would grow at the statewide population growth rate implicitly assumes that new correctional facilities most likely would not be constructed in Kern County and existing facilities would expand capacity as population grows.

Table 6: Comparison of Three Population Projections and Forecast, Kern County, 2015 to 2050

Year	Population Forecast	Population Trend Projection	Household Forecast Projection	Cohort-Component Projection
2015	**874,000**	874,000	874,000	874,000
2020	**978,000**	962,000	995,000	1,027,000
2025	**1,084,000**	1,048,000	1,117,000	1,204,000
2030	**1,192,000**	1,135,000	1,238,000	1,399,000
2035	**1,302,000**	1,222,000	1,359,000	1,611,000
2040	**1,413,000**	1,309,000	1,480,000	1,837,000
2045	**1,526,000**	1,396,000	1,601,000	2,080,000
2050	**1,641,000**	1,483,000	1,723,000	2,345,000
Increase 2015 to 2050:	**767,000**	608,000	848,000	1,471,000
Annual Growth Rate:	**1.8%**	1.5%	2.0%	2.9%
Weight in Forecast Model:		60.0%	30.0%	10.0%

Source: PlaceWorks, 2015.

Table 7: Household and Group Quarters Population Forecasts, Kern County, 2015 to 2050

| Year	Population Forecast	Household Population Forecast	Group Quarters Population Forecast
2015	**874,000**	842,000	32,000
2020	**978,000**	943,000	35,000
2025	**1,084,000**	1,047,000	37,000
2030	**1,192,000**	1,153,000	39,000
2035	**1,302,000**	1,261,000	41,000
2040	**1,413,000**	1,370,000	43,000
2045	**1,526,000**	1,480,000	46,000
2050	**1,641,000**	1,593,000	48,000
Increase 2015 to 2050:	**767,000**	751,000	15,000
Annual Growth Rate:	**1.8%**	1.8%	1.1%

Source: PlaceWorks, 2015.

Figure 8: Comparison of Population Projections and Forecast, Kern County, Trend 1990 to 2015 and Projections and Forecast 2015 to 2050
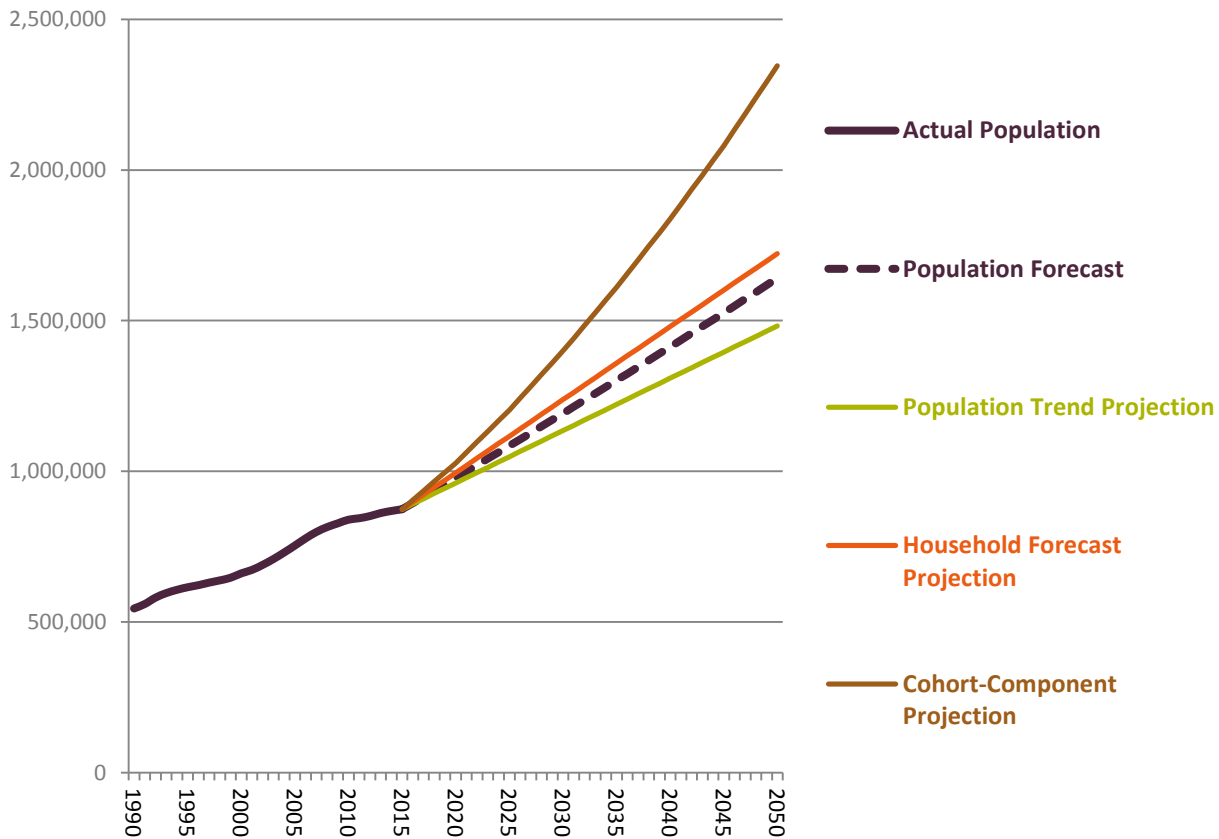
Source: PlaceWorks, 2015.

Total Housing Units Forecast

The total housing units forecast includes occupied and vacant housing units. It is perhaps the most challenging dataset to analyze because the number of housing units constructed varies considerably from one year to the next and because the vacancy rate also rises and falls as market conditions change.

Over the long term, the number of housing units is also a challenge to forecast. Changing family structures, changes in housing product types, housing preferences changing with age, and planning initiatives to promote more sustainable development patterns will all influence the rates and types of housing construction.

Nevertheless, good planning requires a good educated forecast of where current trends are

heading. It also requires monitoring those trends over time to understand how trends are changing.

As described in the Methodology chapter, the forecast for housing units uses a forecast for the total number of housing units based on the trend in the number of housing units and the employment forecast paired with a projection of the jobs-to-housing units ratio. Separate projections based on number of units constructed are used to allocate the projected total number of housing units by type of housing.

Table 8 summarizes the forecast for the total number of housing units and the number of units by type. The forecast model indicates that the region's housing stock would increase by about

1.2 percent per year, but multifamily housing would grow faster, 2.3 percent per year, than single-family housing, 0.9 percent per year.

Table 8: Total Housing Units Forecast, Kern County, 2015 to 2050

2015	293,000
2020	321,000
2025	351,000
2030	384,000
2035	421,000
2040	461,000
2045	505,000
2050	552,000
Increase 2015 to 2050:	260,000
Annual Growth Rate:	1.8%

Source: PlaceWorks, 2015.

Employment Forecast

As discussed in the Methodology chapter, the total employment forecast is a sum of the forecast for each of the 20 major economic sectors. Table 9 provides the total employment forecast. To facilitate a comprehensible presentation of the data and forecasts, this report categorizes each of the individual sectors into a major group of sectors.

Table 9: Total Employment Forecast, Kern County, 2015 to 2050

2015	322,000
2020	347,000
2025	374,000
2030	402,000
2035	433,000
2040	466,000
2045	502,000
2050	540,000
Increase 2015 to 2050:	218,000
Annual Growth Rate:	1.5%

Source: PlaceWorks, 2015.

Base Goods–Producing Sectors

This group of sectors produces goods, many of which are exported out of the region, bringing new dollars into the regional economy. Specifically, this group includes: farm, forestry, and fishing; mining, logging, and oil and gas exploration and extraction; construction; and manufacturing. Ta-

ble 10 provides the employment forecasts for these sectors.

The forecast shows a lower level of growth in the farming over the next 35 years than in the previous 24 years. This reflects the potential impact of water supply constraints (it is not yet clear how this issue will be resolved in the near term) and the potential conversion of farmland to other uses: habitat, solar, water recharge and urban development.

The forecast shows an increase in the mining, logging, and oil and gas exploration and extraction sector. Employment in this sector is almost exclusively in oil and gas. The forecast growth in this sector reflects an eventual increase in oil prices. It is not currently clear, however, when such an increase might happen. At the time this report was prepared, the business press was suggesting that current oil prices may continue to 2020. When the analysis was conducted a few months earlier, the business press was suggesting a return to higher prices in about a year. Thus, employment in this sector could vary, but the impact on the overall number of jobs forecast would be minimal.

Table 10: Employment Trends and Forecasts in Base Goods–Producing Sectors, Kern County, 1990 to 2050

	Farming	Mining, Logging, and Oil and Gas Exploration and Extraction	Construction	Manufacturing
1990	29,500	11,900	12,000	9,800
2014	60,700	13,100	18,200	14,800
Change 1990 to 2014	31,200	1,200	6,200	5,000
Annual Rate of Change	3.2%	0.4%	1.8%	1.8%
2015	61,300	13,200	18,500	15,000
2020	64,600	13,600	20,200	16,300
2025	68,100	14,000	22,000	17,600
2030	71,800	14,400	24,000	19,100
2035	75,700	14,900	26,200	20,700
2040	79,700	15,400	28,600	22,400
2045	84,000	15,800	31,200	24,300
2050	88,600	16,300	34,100	26,300
Change 2015 to 2050	27,200	3,100	15,500	11,300
Annual Rate of Change	1.1%	0.6%	1.8%	1.6%

Source: PlaceWorks, 2015.

Base Services–Producing Sectors

This group of sectors provides services, many of which support businesses outside of the region, bringing new dollars into the regional economy. Specifically, this group of sectors includes: wholesale trade; transportation and warehousing, and utilities; and administration and support, and waste management and remediation services.

Table 11 provides the historical employment data and the forecasts for this group of economic sectors.

For the transportation and warehousing and utilities sector, the forecast indicates a high per year job growth although a lower rate of growth going forward than the sector exhibited in the previous 24 years. In part, this reflects the County's potential for growth in renewable energy production, which is included under utilities.

Table 11: Employment Trends and Forecasts in Base Services–Producing Sectors, Kern County, 1990 to 2050

	Wholesale Trade	Transportation and Warehousing, and Utilities	Administration and Support, and Waste Management and Remediation Services
1990	6,300	5,500	7,000
2014	9,400	9,800	11,800
Change 1990 to 2014	3,100	4,300	4,800
Annual Rate of Change	1.8%	2.5%	2.3%
2015	9,500	10,000	12,000
2020	10,200	11,100	13,300
2025	10,900	12,400	14,800
2030	11,700	13,800	16,300
2035	12,500	15,400	18,100
2040	13,300	17,100	20,000
2045	14,300	19,000	22,200
2050	15,300	21,200	24,500
Change 2015 to 2050	5,700	11,200	12,500
Annual Rate of Change	1.4%	2.2%	2.1%

Source: PlaceWorks, 2015.

Knowledge-Based Services

This group includes sectors in which many of the jobs require higher education degrees. Most of the businesses in these sectors operate in offices. And, these sectors include a mix of base services–producing firms and local-serving firms. Specifically, this category includes: information; finance and insurance; professional, scientific and technical services; and management of companies and enterprises. Table 12 provides the historical employment data and the forecasts for these sectors.

Table 12: Employment Trends and Forecasts in Knowledge-Based Sectors, Kern County, 1990 to 2050

	Information	Finance and Insurance	Professional, Scientific and Technical Services	Management of Companies and Enterprises
1990	3,400	5,100	6,900	3,000
2014	2,400	5,500	10,900	3,000
Change 1990 to 2014	-1,000	400	4,000	0
Annual Rate of Change	-1.5%	0.3%	2.0%	0.0%
2015	2,400	5,500	11,100	3,100
2020	2,500	5,700	12,300	3,300
2025	2,600	5,900	13,600	3,600
2030	2,700	6,100	15,000	3,900
2035	2,800	6,300	16,500	4,300
2040	3,000	6,600	18,300	4,700
2045	3,100	6,800	20,200	5,100
2050	3,200	7,000	22,300	5,500
Change 2015 to 2050	800	1,500	11,200	2,500
Annual Rate of Change	0.8%	0.7%	2.0%	1.7%

Source: PlaceWorks, 2015.

Education and Medical Services

This group includes only two sectors: education; and health care and social services. In economic analyses, these two sectors are often separated from other local-serving sectors because firms in these sectors are usually held accountable to state and federal standards that govern many aspects of how they may operate and grow. The revenue for firms in these sectors also flows, in part, from outside of the region. The sectors are local serving—they serve residents in the neighborhoods, communities, and regions in which they are located—but growth and expansion is usually highly regulated from outside of the region. Table 13 provides the historical employment data and the forecasts for these sectors.

Table 13: Employment Trends and Forecasts in Education and Medical Services Sectors, Kern County, 1990 to 2050

	Educational Services	Health Care & Social Assistance
1990	18,400	12,300
2014	32,700	31,200
Change 1990 to 2014	14,300	18,900
Annual Rate of Change	2.5%	4.1%
2015	33,100	31,900
2020	35,000	35,800
2025	37,100	40,100
2030	39,300	45,000
2035	41,600	50,400
2040	44,100	56,500
2045	46,700	63,300
2050	49,500	71,000
Change 2015 to 2050	16,400	39,100
Annual Rate of Change	1.2%	2.3%

Source: PlaceWorks, 2015.

Local-Serving Sectors

The sectors in this group primarily serve residents and businesses in nearby neighborhoods and local communities in the region. In contrast to the base goods–producing and base services–producing sectors, firms in the local-serving sectors tend to recirculate dollars already existing in the regional economy. Specifically, this group includes: real estate, and rental and leasing; arts, entertainment, and recreation; accommodation and food services; other services; and government. Table 14 provides the historical employment data and the forecasts for these sectors.

Table 14: Employment Trends and Forecasts in Local-Serving Sectors, Kern County, 1990 to 2050

	Real Estate & Rental & Leasing	Arts, Entertainment & Recreation	Accommodation & Food Services	Other Services	Government
1990	1,600	1,400	11,700	5,100	26,900
2014	3,200	2,500	21,600	7,900	31,600
Change 1990 to 2014	1,600	1,100	9,900	2,800	4,700
Annual Rate of Change	3.1%	2.6%	2.7%	1.9%	0.7%
2015	3,200	2,500	22,000	8,000	32,000
2020	3,500	2,800	23,800	8,400	33,900
2025	3,800	3,000	25,800	8,900	35,900
2030	4,100	3,200	28,000	9,400	38,000
2035	4,400	3,500	30,400	10,000	40,200
2040	4,700	3,800	33,000	10,600	42,600
2045	5,100	4,100	35,800	11,200	45,100
2050	5,400	4,500	38,800	11,800	47,800
Change 2015 to 2050	2,200	1,900	16,900	3,800	15,800
Annual Rate of Change	1.5%	1.6%	1.6%	1.1%	1.2%

Source: PlaceWorks, 2015.

Total Employment Forecast

The forecast for total employment is the sum of the forecasts for each individual economic sector. Under the forecast, total employment in Kern County would grow by about 1.2 percent per year, adding about 170,000 jobs from 2015 to 2050.

Figure 9 shows the total employment in Kern County from 1990 to 2015, and the forecast for employment from 2015 to 2050.

Figure 9: Total Employment and Employment Forecast, Kern County, 1990 to 2050
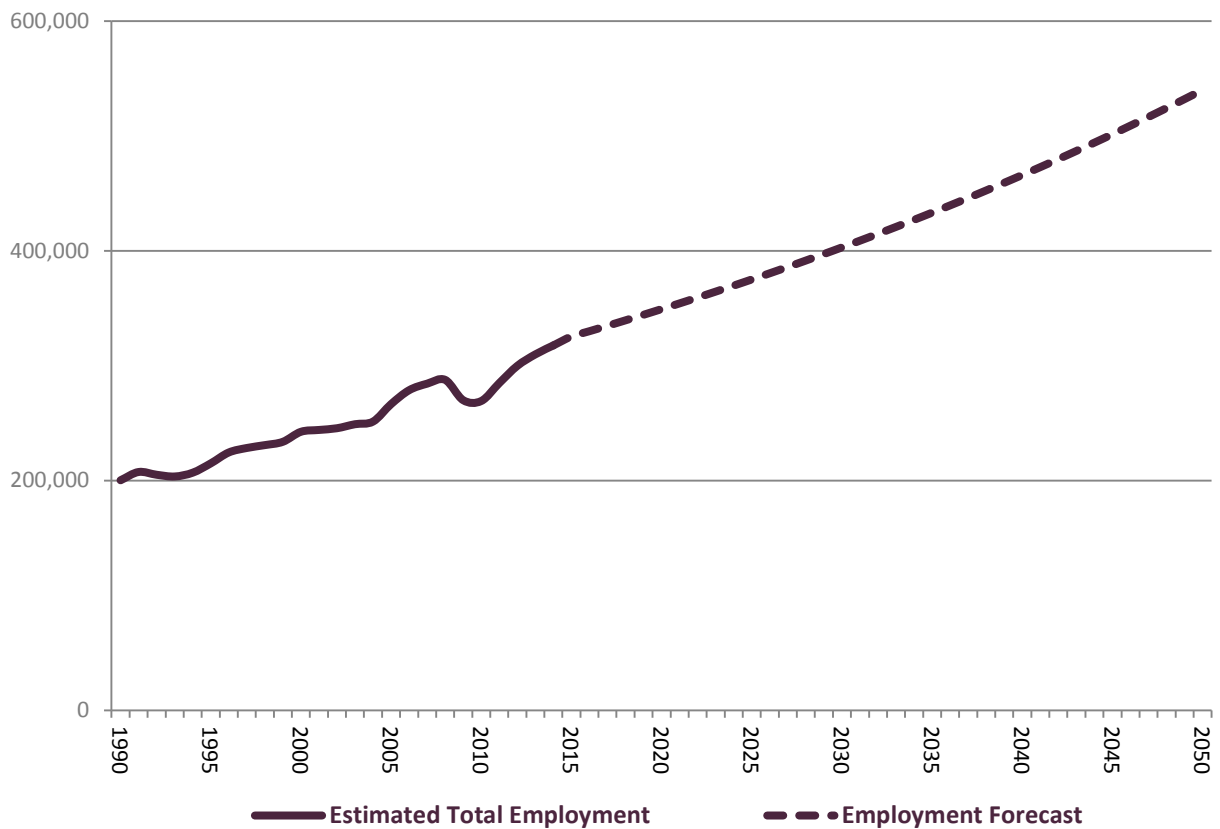
Source: PlaceWorks, 2015.

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The remaining demographic forecasts are all derived from the primary forecasts. The demographics summarized in this chapter include:

+ Age distribution
+ Average household size
+ Household income
+ Household type
+ Race/ethnicity

Because these forecasts do not employ multiple projections, the summaries in this chapter are shorter and more concise.

Age Distribution

The forecast for age distribution uses the cohort component model to project the population in five-year age cohorts by gender, for every five-year period to 2050. The model uses standard five-year age cohorts (e.g., under 5, 5 to 9, 10 to 14, etc.). However, traffic models and other planning efforts requires age categories that more closely reflect the ages for attending the different levels of schools and participating in the labor force. The forecast uses 1-year age increment data from the Census Bureau to divide the five-year age cohorts into the age categories needed for the traffic model. Table 15 provides the age distribution forecast.

Figure 10 shows the age distribution across Kern County as of the 2010 Census and the age distribution forecast for 2050. The age distribution in 2010 differs from many other areas, which have a very pronounced bulge in the 45 to 65 age groups, representing the baby boom generation, followed by a noticeable dip in the 30 to 45 age group, representing the baby bust or Generation X, and then another noticeable bulge in the 10 to 30 age group, represent the millennials. In contrast, Kern County has only a slight uptick in the 45 to 50 cohort. The remainder of the 2010 age distribution is representative of a young region with households with kids.

The age bump in the 15 to 19 cohort in 2010 would become, with migration, the very large bulge in the 50 to 54 cohort in 2050. As this and the adjacent cohorts age over time, they would have impacts on housing, public services, and the economy, similar to the effects nationally of the baby boom generation.

Figure 10: Age Distribution, Kern County, 2010 and 2050
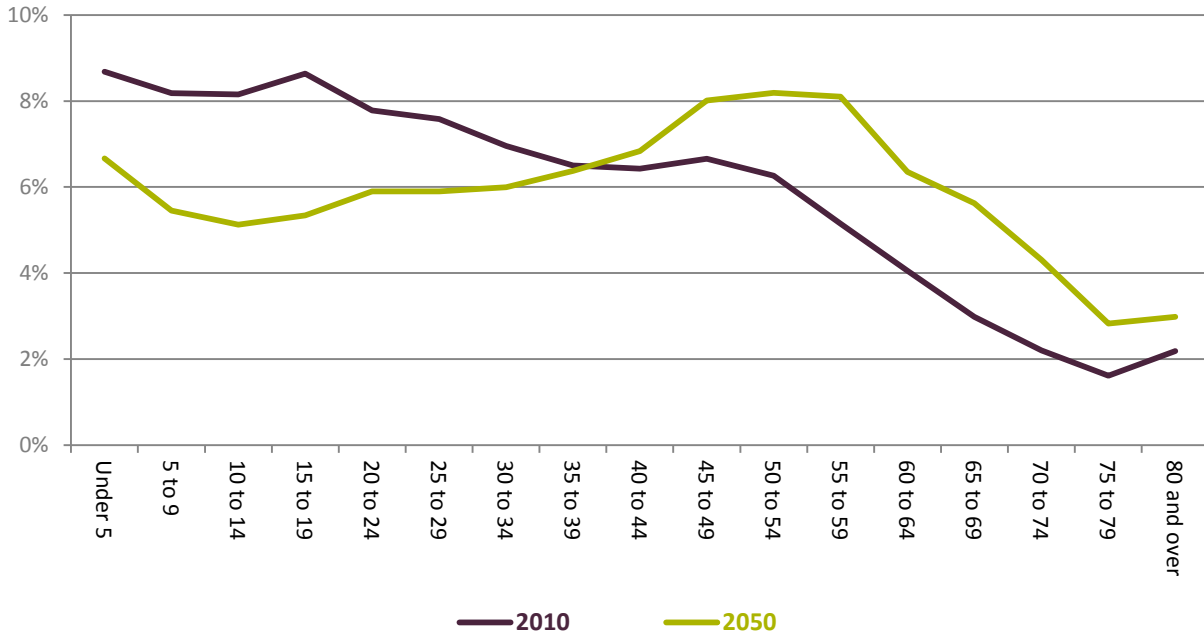
Source: PlaceWorks, 2015; data for 2010 are from the U.S. Census Bureau and data for 2050 are forecasts by PlaceWorks.

Table 15: Age Distribution Forecast, Kern County, Actual Data 2010 and Forecast 2015 to 2050

Total Population at Age:	Under 5	5 to 13	14 to 17	18 to 24	25 to 54	55 to 64	65 to 74	75 and over
2010	72,900	123,300	57,900	93,800	339,000	77,300	43,500	31,900
2015	72,500	110,600	53,800	102,700	363,000	88,500	51,900	31,400
2020	82,200	111,000	52,500	102,700	427,000	100,400	65,900	36,200
2025	89,600	121,800	50,100	99,500	493,000	106,200	80,300	44,500
2030	93,600	134,500	53,800	95,100	553,000	117,100	90,400	55,200
2035	95,200	143,500	60,200	102,700	593,000	143,700	95,800	67,500
2040	97,100	148,300	65,300	115,200	625,000	178,100	106,500	77,400
2045	101,900	151,600	68,400	125,200	660,000	203,000	131,700	84,800
2050	109,300	157,300	69,900	130,900	678,000	237,000	163,000	95,400
Change 2015 to 2050	36,800	46,700	16,100	28,200	315,000	148,500	111,100	64,000
Annual Rate of Change	1.2%	1.0%	0.8%	0.7%	1.8%	2.9%	3.3%	3.2%

Source: PlaceWorks, 2015; data for 2010 are from the U.S. Census Bureau and all other data are forecasts by PlaceWorks.

Housing Units by Type

The forecast model divides the total number of housing units forecast into housing units by type based on projections of the numbers of units constructed, as described in the methodology section. The housing types covered by the forecast are:

+ Single-family housing, which includes only single-family detached houses

+ Multifamily housing, which includes single-family attached housing, such as townhouses and duplexes, and stacked flats, such as apartments and condos

+ Other housing, which includes mobile homes

There are actually two forecasts for housing units by type. The first is business as usual, which represents the expected housing mix if past trends in construction continue in the future. The second is the incentives and survey adjustments, which represents the expected mix of housing given the potential impact of planning and development incentives through the Sustainable Communities Strategies and potential changes in construction trends given survey research the suggest changing preferences and needs in types of housing. Table 16 provides the forecast for housing units by type under the business as usual scenario and Table 17 the forecast under the incentives and survey adjustments scenario.

Table 16: Housing Units by Type Forecast under the Business as Usual Scenario, Kern County, 2015 to 2050

	Single Family		Multifamily		Other	
	Number	Share of Total	Number	Share of Total	Number	Share of Total
2015	208,000	71.1%	61,000	21.0%	23,000	7.9%
2020	232,000	72.2%	65,000	20.4%	24,000	7.3%
2025	256,000	73.1%	70,000	19.9%	25,000	7.0%
2030	283,000	73.7%	75,000	19.5%	26,000	6.8%
2035	312,000	74.2%	81,000	19.2%	28,000	6.6%
2040	344,000	74.6%	87,000	18.8%	30,000	6.5%
2045	378,000	75.0%	94,000	18.5%	33,000	6.5%
2050	416,000	75.2%	101,000	18.3%	36,000	6.5%
Change 2015 to 2050	207,000	79.9%	40,000	15.2%	13,000	4.9%
Annual Rate of Change	2.0%		1.4%		1.3%	

Source: PlaceWorks, 2015.

Table 17: Housing Units by Type Forecast under the Incentives and Survey Adjustments Scenario, Kern County, 2015 to 2050

	Single Family		Multifamily		Other	
	Number	Share of Total	Number	Share of Total	Number	Share of Total
2015	208,000	71.1%	61,000	21.0%	23,000	7.9%
2020	226,000	70.7%	69,000	21.6%	25,000	7.6%
2025	246,000	70.2%	78,000	22.3%	26,000	7.4%
2030	268,000	69.7%	88,000	22.9%	28,000	7.2%
2035	291,000	69.2%	99,000	23.6%	30,000	7.0%
2040	317,000	68.8%	112,000	24.3%	32,000	6.8%
2045	345,000	68.3%	126,000	25.0%	34,000	6.7%
2050	375,000	67.8%	142,000	25.7%	36,000	6.5%
Change 2015 to 2050	166,000	64.1%	81,000	31.0%	13,000	4.9%
Annual Rate of Change	1.7%		2.4%		1.3%	

Source: PlaceWorks, 2015.

Average Household Size

The forecast model for average household size evaluated three different projections. The first used a least squares line fitted to the DOF-estimated average household size from 1990 to 2010. The second used the average household size from the 1990, 2000, and 2010 Censuses, and the average household size by units in structure from the 1990 and 2000 Censuses and the 2010 American Community Survey. The third model used average household size by race and ethnicity data from the 2000 and 2010 Censuses to adjust the projection based on census household size data.

The DOF data indicates that the average household size in Kern County in 2015 was 3.2 persons per household. The projection based on the DOF data suggests a 2050 household size of 3.59 persons per household. The projection based just on data from the 1990, 2000, and 2010 censuses indicates a 2050 household size of 3.42. When the census data is adjusted to account for the average household size by race and ethnicity categories and projected population growth by race and ethnicity, the projection trend indicates an average household size of 3.57 persons per household.

However, these projections of an increasing household size are based on past trends and do not reflect other factors that suggest declining average household size. First, national birth rates, which have been remarkably steady since the latter half of the 1970s, have declined since the onset of the last recession. These rates could come back up to the long-term level, but as of yet that has not happened. Statewide, the total number of births each year decreased 12.6 percent from 2007 to 2013, and DOF only projects a 2.0 percent increase over the next ten years, still lower than any point in the last 15 years.

Secondly, the forecast age distribution (see Figure 10 on page 26) indicates that the County's population will be older with a substantially smaller portion of the population under the age

of 35 and, especially, significantly lower percentages in the school age ranges.

Finally, the population and household forecasts, which are based on a variety of factors, not just a single projection based on past trends, indicates that the average household size will decline.

In light of these factors, the forecast model uses the projection of average household size by type of housing unit and then adjusts these downward to reflect the overall decline in average household size projected by the population and household forecasts. Table 18 provides the forecast for the average household size by type of housing unit. The forecast indicates that the average size would continue to increase through 2030 and then begin to decline.

Table 18: Average Household Size by Housing Unit Type, Kern County, 2015 to 2050

	Total	Single-Family	Multi-family	Other Units
2015	3.20	3.36	2.77	2.59
2020	3.26	3.42	2.83	2.62
2025	3.29	3.44	2.87	2.64
2030	3.30	3.44	2.89	2.63
2035	3.28	3.41	2.88	2.61
2040	3.24	3.37	2.85	2.57
2045	3.18	3.30	2.82	2.52
2050	3.11	3.23	2.77	2.46

Source: PlaceWorks, 2015.

Household Income

The household income forecast covers two distinct demographic characteristics, the distribution of households among nine income groups and the median household income. The model converts the nine income categories under which data is currently reported by the Census Bureau into the five categories required for the traffic modeling and other planning purposes, and adjusts the forecasts to account for differing income distributions and differing population growth rates among race and ethnic classifications.

For the distribution of households across income categories, the data are not adjusted for inflation.

The categories remain the same, and over time, one should expect inflationary effects to gradually move households into higher income categories. The median household income data has been adjusted for inflation, using the U.S. Bureau of Labor Statistics CPI Inflation calculator, and the values are expressed in 2015 dollars.

Figure 11 shows the change in the distribution of households among the various income categories from 2015 to 2050. Table 19 provides the data on the distribution as well as the change in median household income.

The forecast indicates that the percentage of households earning less than $40,000 per year will decline from 2015 to 2050. The share of households earning between $40,000 and $60,000 will also decrease, but at a lower rate. The percentage of households earning more than $60,000 per year will increase from 2015 to 2050.

Even with this change in the distribution of households, the median household income, when adjusted for inflation into 2015 dollars, is forecast to decline 0.1 percent per year from 2015 to 2050. It is important to remember that the median household income data is adjusted for inflation, but the income categories are not. If the inflation rate averages 2.0 percent from 2015 to 2050 (less than the average 2.4 percent rate from 1990 to 2015), the $60,000 to $99,000 income range would be a range of $30,000 to $49,500 in 2015 dollars. Thus, the forecast model indicates that households will move into higher income categories, but the earning power of the median household will actually decrease slightly. On a positive note, the decreasing average household size means that the minor decline in median household income would still represent an increase in real per capita income.

Figure 11: Distribution of Households by Income Category, Kern County, 2015 to 2050
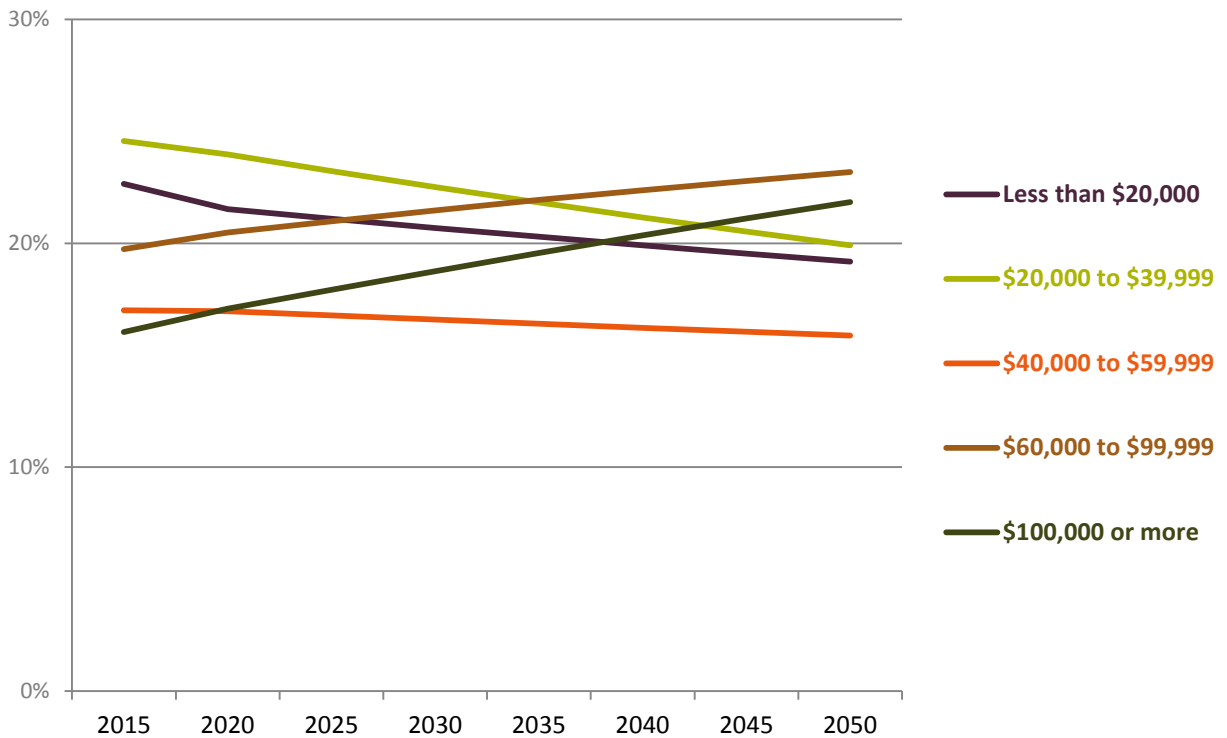
Source: PlaceWorks, 2015, with data from the 2000 Census, and 2010 ACS.

Table 19: Household Distribution by Income by Category Forecast and Real Median Household Income Forecast, Kern County, 2015 to 2050

	Less than $20,000	$20,000–$39,999	$40,000–$59,999	$60,000–$99,999	$100,000 or more	Real* Median Household Income
2015	59,600	64,600	44,700	51,900	42,200	$50,900
2015	59,600	64,600	44,700	51,900	42,200	$50,900
2020	62,200	69,300	49,100	59,200	49,400	$50,700
2025	67,100	73,900	53,300	66,700	57,000	$50,500
2030	72,300	78,700	58,000	75,100	65,600	$50,300
2035	78,000	83,900	63,100	84,400	75,300	$50,100
2040	84,200	89,500	68,600	94,600	86,100	$49,800
2050	98,200	101,800	81,300	118,600	111,800	$49,400
Change:	38,600	37,200	36,600	66,700	69,600	-1,500
Annual Rate of Change:	1.4%	1.3%	1.7%	2.4%	2.8%	-0.1%

Source: PlaceWorks, 2015.

* Note: The median household income has been adjusted for inflation into 2015 dollars.

Age of Head of Household

The head of household is self-identified in Census Bureau surveys and censuses. This measure is sometimes used as a proxy for the stage of life (family-forming, middle age, empty nester, etc.) the household is in generally. With the aging of the County's population indicated in the age distribution forecast, one would expect a similar pattern in the age of head of household forecast.

As shown in Table 20, this is what the forecast indicates a gradual aging of the heads of household. From 2015 to 2050, the percentage of household head age 65 and older would increase from 18.8 percent to 22.7 percent. At the same time, the share of household heads age 25 to 64 would decrease from 75.2 percent to 72.9 percent. There would be a smaller decline in the share of household heads age 18 to 25, decreasing from 5.9 percent to 4.4 percent.

Table 20: Age of Head of Household Forecast, Kern County, 2015 to 2050

Number of Household Heads at Age:	15 to 24 years	25 to 64 years	65 to 74 years	75 years and over
2015	15,600	197,800	27,600	21,900
2020	15,800	217,900	31,200	24,300
2025	15,800	239,100	35,000	28,200
2030	16,100	262,900	37,800	33,000
2035	17,500	288,700	39,900	38,600
2040	19,300	316,200	43,500	44,100
2045	21,100	344,100	50,500	49,600
2050	22,800	372,900	59,100	56,900
Change 2015 to 2050	7,200	175,000	31,500	35,000
Annual Rate of Change	1.1%	1.8%	2.2%	2.8%
Percent of Total				
2015	5.9%	75.2%	10.5%	8.3%
2020	5.5%	75.3%	10.8%	8.4%
2025	5.0%	75.2%	11.0%	8.9%
2030	4.6%	75.2%	10.8%	9.4%
2035	4.5%	75.0%	10.4%	10.0%
2040	4.6%	74.7%	10.3%	10.4%
2045	4.5%	74.0%	10.9%	10.7%
2050	4.4%	72.9%	11.6%	11.1%

Source: PlaceWorks, 2015.

Household Type

The household type forecast provides projections for four types of households:

+ Family households with related children under the age of 18
+ Family households without children under the age of 18
+ Single-person households
+ All other nonfamily households

These terms are more fully defined in the appendix. However, it is important to note that a family household includes single-parent households and may include one or more unrelated individuals. In addition, family households with or without children under the age of 18 may include children over the age of 18.

Table 21 provides the forecast for the number of households by type of household and each household type's percentage share of the total number of households.

The forecast indicates that family households with children would have the largest total increase in households but the lowest rate of growth (along with other non-family households). This household type would experience a decline in its share of the total number of households in Kern County. Family households without children under the age of 18 would add almost as many households as those with children, but its rate of growth would be higher. This is consistent with the changing age structure expected in Kern County from 2015 to 2050.

Table 21: Household Type Forecast, Kern County, 2015 to 2050

	Family Households with Children under Age 18	Family Households without Children under Age 18	Single-Person Households	All Other Nonfamily Households
2015	105,800	92,000	50,400	14,800
2020	115,700	101,500	55,000	17,100
2025	126,500	111,900	60,000	19,600
2030	138,400	123,400	65,500	22,500
2035	151,300	136,200	71,400	25,800
2040	165,500	150,200	77,900	29,500
2045	181,000	165,700	84,900	33,700
2050	197,900	182,700	92,600	38,400
Change 2015 to 2050	92,200	90,800	42,200	23,600
Annual Rate of Change	1.8%	2.0%	1.8%	2.8%
Percent of Total				
2015	40.2%	35.0%	19.2%	5.6%
2020	40.0%	35.1%	19.0%	5.9%
2025	39.8%	35.2%	18.9%	6.2%
2030	39.6%	35.3%	18.7%	6.4%
2035	39.3%	35.4%	18.6%	6.7%
2040	39.1%	35.5%	18.4%	7.0%
2045	38.9%	35.6%	18.3%	7.2%
2050	38.7%	35.7%	18.1%	7.5%

Source: PlaceWorks, 2015, using data from the U.S. Census Bureau.

Race and Ethnicity

Forecasting race and ethnicity is challenging because the Census Bureau continues to revise the standard categories to reflect changing awareness of and definitions. Even with these challenges, certain trends are clear from the Census Data.

From 1990 to 2010, the County's Hispanic population increased by 239,000, growing at an annual rate of 4.8 percent per year. During the same period, the white non-Hispanic population decreased by 19,000, declining at an annual rate of 0.3 percent per year. The forecast assumes that these trends continue going forward, however, it also assumes that both trends to level off somewhat.

Table 22 presents the forecast for the total population by race and ethnicity and each categories percentage share of total population. The forecast indicates that the white, non-Hispanic portion of the population would decline at an aver-

age rate of 0.1 percent per year, but with overall population growth, this would result in a net decrease of 10,500 people. Non-Hispanic whites would decrease from 34.4 percent of the total population in 2015 to 17.7 percent in 2050.

The growth rate of the Hispanic population would decline over the 35 year period to an annual rate of 2.5 percent per year. The Hispanic population would grow by 589,500, increasing from 48 percent of the population in 2015 to 62 percent in 2050.

With the exception of a slight decline in the non-Hispanic American Indian and Alaskan native population, the other race and ethnic groups would experience population growth.

Table 22: Forecast of Population by Race and Ethnicity, Kern County, 2015 to 2050

	White Alone, Non-Hispanic	Hispanic, All Races	Black or African American Alone, Non-Hispanic	American Indian and Alaska Native Alone, Non-Hispanic	Asian Alone, Non-Hispanic	Native Hawaiian and Other Pacific Islander Alone, Non-Hispanic	Some Other Race Alone or in Combination, Non-Hispanic
2015	300,900	428,500	49,300	5,500	41,900	1,200	46,800
2020	302,000	502,000	56,500	5,500	53,300	1,400	57,200
2025	301,700	579,900	63,500	5,500	64,400	1,700	67,400
2030	300,200	661,800	70,200	5,500	75,100	1,900	77,200
2035	298,000	747,300	76,700	5,500	85,600	2,200	86,700
2040	295,400	835,200	82,900	5,400	95,800	2,400	96,000
2045	292,700	925,600	89,000	5,400	105,700	2,600	105,000
2050	290,300	1,018,000	95,000	5,400	115,600	2,800	114,000
Change 2015 to 2050	-10,500	589,500	45,700	-100	73,600	1,600	67,200
Annual Rate of Change	-0.1%	2.5%	1.9%	-0.1%	2.9%	2.5%	2.6%
Percent of Total							
2015	34.4%	49.0%	5.6%	0.6%	4.8%	0.1%	5.4%
2020	30.9%	51.3%	5.8%	0.6%	5.4%	0.1%	5.9%
2025	27.8%	53.5%	5.9%	0.5%	5.9%	0.2%	6.2%
2030	25.2%	55.5%	5.9%	0.5%	6.3%	0.2%	6.5%
2035	22.9%	57.4%	5.9%	0.4%	6.6%	0.2%	6.7%
2040	20.9%	59.1%	5.9%	0.4%	6.8%	0.2%	6.8%
2045	19.2%	60.7%	5.8%	0.4%	6.9%	0.2%	6.9%
2050	17.7%	62.0%	5.8%	0.3%	7.0%	0.2%	6.9%

Source: PlaceWorks, 2015.

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APPENDIX

The appendix provides definitions of terminology used in the report, followed by tables providing the data and analysis referenced in the report.

Terminology

Household

The Census Bureau defines a household as all the people who occupy a single housing unit. A household includes the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit, or a group of unrelated people sharing a housing unit such as partners or roomers, is also counted as a household. The count of households excludes group quarters. There are two major categories of households, "family" and "nonfamily".

Family Household

The Census Bureau defines a family as a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family. A family household is defined as a household maintained by a householder who is in a family (as defined above), and includes any unrelated people (unrelated subfamily members and/or secondary individuals) who may be residing there. The number of family households is equal to the number of families. The count of family household members differs from the count of family members, however, in that the family household members include all people living in the household, whereas family members include only the householder and his/her relatives.

Nonfamily Household

The Census Bureau defines a nonfamily household as householder living alone (a one-person household) or where the householder shares the home exclusively with people to whom he/she is not related.

Housing Unit

The Census Bureau defines a housing unit as a house, an apartment or other group of rooms, or a single room, when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is direct access from the outside or through a common hall.

Projection and Forecast

Although these two terms are often used interchangeably, there is a difference between the two. A projection most often refers to the extension of a particular trend into the future. For a particular demographic characteristic, there might be several datasets and several trends that describe or influence the characteristic. Thus there could be several projections for the characteristic, and these projections may vary greatly. On the other hand, there is usually a single forecast. The forecast represents an analysis of different projections, application of assumptions, and the professional judgment of the demographer or statistician preparing the forecast.

Table A-1: Households, Population, Household Population, Housing Units, and Employment, Kern County, Historic Data 1990 to 2015 (2014 for Employment) and Forecasts 2016 (2015 for Employment) to 2050

	Total Number of Households	Total Population	Total Household Population	Total Number of Housing Units	Total Number of Jobs
1990	181,480	544,981	529,833	198,636	202,300
1991	184,718	559,776	544,347	202,412	209,800
1992	187,799	581,031	560,054	206,114	207,300
1993	190,815	596,025	574,929	209,838	205,800
1994	194,028	606,886	582,301	213,679	208,700
1995	197,090	615,564	590,928	217,346	217,000
1996	199,148	622,389	597,351	219,949	226,300
1997	201,332	630,818	604,845	222,694	230,300
1998	203,190	638,250	610,863	225,219	233,000
1999	205,720	647,021	617,056	228,165	235,700
2000	208,655	661,653	631,683	231,567	244,100
2001	211,366	673,028	642,071	234,059	245,700
2002	214,695	689,788	657,783	237,650	247,400
2003	218,957	709,124	676,507	242,231	251,100
2004	224,234	730,875	698,538	247,918	253,600
2005	230,280	753,863	721,057	254,415	269,200
2006	237,490	777,664	741,281	262,932	281,500
2007	243,599	798,784	760,781	270,620	287,300
2008	249,386	815,023	776,731	276,607	291,200
2009	252,216	827,475	789,261	279,769	273,700
2010	254,610	839,631	802,874	284,367	274,000
2011	255,981	844,480	808,466	285,714	284,800
2012	257,463	851,643	819,641	287,169	299,700
2013	258,883	861,646	830,798	288,624	310,000
2014	260,945	868,610	837,067	290,706	317,500
2015	262,965	874,264	841,965	292,774	322,317
2016	268,014	895,286	862,129	298,134	327,105
2017	273,160	916,042	882,466	303,592	331,963
2018	278,405	936,798	902,805	309,150	336,894
2019	283,751	957,555	923,146	314,810	341,898
2020	289,199	978,311	943,490	320,574	346,976
2021	294,752	999,526	964,278	326,443	352,130
2022	300,411	1,020,741	985,069	332,419	357,360
2023	306,179	1,041,956	1,005,861	338,505	362,668
2024	312,058	1,063,171	1,026,656	344,702	368,054
2025	318,050	1,084,386	1,047,452	351,013	373,521
2026	324,157	1,105,992	1,068,628	357,440	379,069
2027	330,381	1,127,598	1,089,807	363,983	384,699
2028	336,725	1,149,205	1,110,987	370,647	390,413
2029	343,190	1,170,811	1,132,169	377,433	396,212
2030	349,779	1,192,417	1,153,352	384,343	402,097
2031	356,496	1,214,339	1,174,843	391,379	408,069
2032	363,341	1,236,262	1,196,336	398,545	414,130
2033	370,317	1,258,184	1,217,830	405,841	420,281
2034	377,427	1,280,106	1,239,326	413,271	426,524
2035	384,674	1,302,028	1,260,823	420,838	432,859

	Total Number of Households	Total Population	Total Household Population	Total Number of Housing Units	Total Number of Jobs
2036	392,060	1,324,251	1,282,613	428,542	439,288
2037	399,588	1,346,473	1,304,404	436,388	445,813
2038	407,261	1,368,696	1,326,196	444,377	452,435
2039	415,080	1,390,918	1,347,990	452,513	459,155
2040	423,050	1,413,141	1,369,785	460,797	465,975
2041	431,173	1,435,696	1,391,904	469,234	472,896
2042	439,452	1,458,252	1,414,024	477,824	479,920
2043	447,890	1,480,807	1,436,146	486,572	487,048
2044	456,490	1,503,362	1,458,269	495,480	494,282
2045	465,255	1,525,918	1,480,393	504,551	501,624
2046	474,188	1,548,915	1,502,946	513,789	509,074
2047	483,293	1,571,911	1,525,501	523,195	516,636
2048	492,572	1,594,908	1,548,057	532,774	524,309
2049	502,030	1,617,905	1,570,614	542,528	532,097
2050	511,669	1,640,902	1,593,172	552,460	540,000

Source: PlaceWorks, 2015. Household, population, household population, and housing units data for 1990 to 2015 from CA Department of Finance and 2016 to 2050 forecasts by PlaceWorks; Employment data for 1990 to 2014 from CA Employment Development Department and 2015 to 2050 forecast by PlaceWorks.

Table A-2: Population by Five-Year Age Group and Gender, Kern County, 2000 and 2010

	Total		Male		Female	
	2000	**2010**	**2000**	**2010**	**2000**	**2010**
TOTAL	661,645	839,631	339,382	433,108	322,263	406,523
Under 5	55,707	72,885	28,545	36,952	27,162	35,933
5 to 9	61,659	68,694	31,676	35,022	29,983	33,672
10 to 14	59,544	68,473	30,396	34,899	29,148	33,574
15 to 19	55,224	72,493	28,814	37,862	26,410	34,631
20 to 24	46,811	65,339	25,607	35,895	21,204	29,444
25 to 29	45,797	63,630	24,846	34,949	20,951	28,681
30 to 34	47,454	58,416	25,654	31,585	21,800	26,831
35 to 39	52,834	54,558	27,988	28,846	24,846	25,712
40 to 44	50,842	53,942	26,619	28,542	24,223	25,400
45 to 49	42,321	55,879	21,888	28,993	20,433	26,886
50 to 54	34,236	52,600	17,236	26,980	17,000	25,620
55 to 59	26,239	43,233	13,033	21,756	13,206	21,477
60 to 64	20,923	34,052	10,173	16,807	10,750	17,245
65 to 69	18,072	25,040	8,544	12,058	9,528	12,982
70 to 74	16,215	18,462	7,303	8,752	8,912	9,710
75 to 79	13,107	13,555	5,636	6,076	7,471	7,479
80 to 84	8,203	9,918	3,293	4,109	4,910	5,809
85 and over	6,457	8,462	2,131	3,025	4,326	5,437

Source: U.S. Census Bureau.

Table A-3: Age Distribution Forecast by Select Age Groups, Kern County, 2015 to 2050

Year	Under 5	5 to 13	14 to 17	18 to 24	25 to 54	55 to 64	65 to 74	75 and over	Total
2015	72,540	110,625	53,815	102,746	362,743	88,466	51,896	31,433	874,264
2020	82,171	110,977	52,499	102,749	427,349	100,436	65,928	36,201	978,311
2025	89,555	121,769	50,058	99,452	492,570	106,228	80,280	44,473	1,084,386
2030	93,638	134,456	53,798	95,119	552,703	117,130	90,378	55,195	1,192,417
2035	95,223	143,471	60,220	102,709	593,386	143,697	95,815	67,508	1,302,028
2040	97,096	148,318	65,345	115,226	625,135	178,075	106,540	77,406	1,413,141
2045	101,908	151,593	68,387	125,161	659,853	202,573	131,659	84,785	1,525,918
2050	109,339	157,295	69,919	130,900	677,898	237,169	163,010	95,372	1,640,902
2015	8.30%	12.65%	6.16%	11.75%	41.49%	10.12%	5.94%	3.60%	100.00%
2020	8.40%	11.34%	5.37%	10.50%	43.68%	10.27%	6.74%	3.70%	100.00%
2025	8.26%	11.23%	4.62%	9.17%	45.42%	9.80%	7.40%	4.10%	100.00%
2030	7.85%	11.28%	4.51%	7.98%	46.35%	9.82%	7.58%	4.63%	100.00%
2035	7.31%	11.02%	4.63%	7.89%	45.57%	11.04%	7.36%	5.18%	100.00%
2040	6.87%	10.50%	4.62%	8.15%	44.24%	12.60%	7.54%	5.48%	100.00%
2045	6.68%	9.93%	4.48%	8.20%	43.24%	13.28%	8.63%	5.56%	100.00%
2050	6.66%	9.59%	4.26%	7.98%	41.31%	14.45%	9.93%	5.81%	100.00%

Source: PlaceWorks, 2015.

Table A-4: Housing Units by Type, Kern County, 1990 to 2015

	Total Housing Units	Single-Family Housing Units	Multifamily Housing Units	Other Housing Units
1990	198,636	134,023	41,539	23,074
1991	202,412	137,381	41,817	23,214
1992	206,114	140,979	41,891	23,244
1993	209,838	144,501	42,038	23,299
1994	213,679	148,049	42,218	23,412
1995	217,346	151,183	42,681	23,482
1996	219,949	153,581	42,937	23,431
1997	222,694	156,152	43,246	23,296
1998	225,219	158,527	43,537	23,155
1999	228,165	161,395	43,683	23,087
2000	231,567	164,744	43,770	23,053
2001	234,059	166,905	43,912	23,242
2002	237,650	170,158	43,957	23,535
2003	242,231	174,095	44,288	23,848
2004	247,918	179,210	44,471	24,237
2005	254,415	184,778	45,017	24,620
2006	262,932	192,167	45,672	25,093
2007	270,620	198,174	46,804	25,642
2008	276,607	202,244	48,171	26,192
2009	279,769	204,124	49,378	26,267
2010	284,367	209,393	52,337	22,637
2011	285,714	210,315	52,661	22,738
2012	287,169	211,094	53,229	22,846
2013	288,624	212,209	53,480	22,935
2014	290,706	213,826	53,862	23,018
2015	292,774	215,607	54,146	23,021

Source: CA Department of Finance.

Table A-5: Housing Units by Type Forecast, Kern County, 2016 to 2050

	Business as Usual Scenario			Incentives and Survey Adjustments Scenario		
	Single-Family Housing Units	Multifamily Housing Units	Other Housing Units	Single-Family Housing Units	Multifamily Housing Units	Other Housing Units
2016	220,130	54,941	23,063	219,172	55,574	23,299
2017	224,655	55,803	23,135	222,795	57,039	23,581
2018	229,193	56,724	23,233	226,479	58,543	23,866
2019	233,752	57,702	23,356	230,223	60,087	24,155
2020	238,339	58,733	23,501	234,029	61,672	24,447
2021	242,961	59,814	23,667	237,898	63,298	24,743
2022	247,623	60,944	23,853	241,832	64,967	25,042
2023	252,329	62,120	24,056	245,830	66,680	25,345
2024	257,083	63,342	24,277	249,894	68,439	25,651
2025	261,891	64,608	24,515	254,026	70,243	25,962
2026	266,754	65,917	24,768	258,225	72,096	26,276
2027	271,677	67,270	25,037	262,495	73,997	26,593
2028	276,662	68,664	25,321	266,834	75,948	26,915
2029	281,713	70,101	25,620	271,246	77,951	27,240
2030	286,831	71,579	25,933	275,730	80,006	27,570
2031	292,020	73,100	26,260	280,289	82,116	27,903
2032	297,283	74,661	26,600	284,923	84,282	28,241
2033	302,621	76,265	26,955	289,634	86,504	28,582
2034	308,038	77,910	27,323	294,422	88,785	28,928
2035	313,535	79,598	27,705	299,290	91,126	29,278
2036	319,115	81,327	28,100	304,238	93,529	29,632
2037	324,779	83,099	28,509	309,268	95,996	29,990
2038	330,532	84,914	28,931	314,381	98,527	30,353
2039	336,374	86,772	29,367	319,579	101,125	30,720
2040	342,307	88,674	29,816	324,862	103,792	31,091
2041	348,335	90,620	30,278	330,233	106,529	31,467
2042	354,460	92,610	30,754	335,693	109,338	31,848
2043	360,682	94,646	31,244	341,243	112,221	32,233
2044	367,006	96,727	31,747	346,884	115,180	32,623
2045	373,433	98,854	32,265	352,619	118,218	33,017
2046	379,965	101,028	32,796	358,449	121,335	33,417
2047	386,605	103,249	33,341	364,376	124,535	33,821
2048	393,355	105,518	33,901	370,400	127,819	34,230
2049	400,217	107,836	34,474	376,524	131,189	34,644
2050	407,193	110,204	35,063	382,749	134,649	35,063

Source: PlaceWorks, 2015.