THE FUTURE OF HOUSING DEMAND IN SAN JOSE:

2008-2040

Prepared for the City of San Jose

By

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Table of Contents

I. Introduction 1

II. Household Growth Rates Forecast 4

A. Forecast by Age Groups 4

B. Forecast of Households by Ethnic Group 6

C. Average Household Size 7

III. Forecast of Housing Requirements 9

A. Projected Growth in Housing Types 11

B. Converting Housing Projections into Land Demand 13

IV. Conclusions 15

V. Appendix A: Household Formation Rates - Background 17

A. What is a Household? 17

B. What is a Household Formation Rate? 17

VI. Appendix B: Projections of Jobs, Population, and Households, prepared by Continuing Study of the California Economy (distributed separately)

List of Tables

Table 1. Distribution of Housing Types by Tenure, 2007 3

Table 2. Forecast Number of Households by Age Group 4

Table 3. Forecast Number of Households by Ethnic Group 6

Table 4. Average Household Size in San Jose (Persons per Household) 8

Table 5. Total Projected Housing Capacity: 2008 - 2040 9

Table 6. Projected New Housing Required: 2008 - 2040 10

Table 7. Assumed Housing Construction Shares and Densities 12

Table 8. Housing Construction by Unit Type 12

Table 9. Land Demand by Unit Type (Acres) 14

Table 10. Household Formation Rates, San Jose 2000 18

List of Figures

Figure 1. Residential Permit History in San Jose: 1990 - 2007 3

Figure 2. Household Growth by Age Group in San Jose 5

Figure 3. Household Growth by Ethnic Group in San Jose 7

Figure 4. Average Household Size in San Jose 8

Figure 5. San Jose Housing Unit Projections, 2008 - 2040 13

Figure 6. Housing Lands Projections by Single-Family and Multi-family: 2008 - 2040 14

Figure 7. Housing Lands Projections by Housing Type: 2008 - 2040 15

I. Introduction

Historically, San Jose has provided housing for much of the surrounding region. This is evidenced by the ratio of jobs in the city to employed residents – a measure of how many residents of San Jose actually work in San Jose vs. having to drive further to jobs outside of the city. In 1990, the ratio of jobs to employed residents was 0.78, or for every 100 residents, 78 had jobs in San Jose. Data from 2000 show that the ratio had achieved almost a 1:1 ratio at 0.96 jobs per employed resident. The significant job reductions of the recent years affected the more current results with a 2006 ratio of 0.89.[1] Overall, however, the last 15 years have seen San Jose achieve an improved balance, increasing employment in the city relative to the number of employed residents. Still, housing demand in San Jose will continue to increase. Indeed, the Center for the Continuing Study of the California Economy (CCSCE) has forecast that the city's population is likely to increase by up to 471,000 residents by the year 2040.[2] This is an increase in population of nearly 50 percent.

The forecasts developed by CCSCE are intended to provide background on where San Jose fits into the national, state and regional trends in job, population and household growth. The projections do not take into account land use or policy considerations. They are intended to provide insights into probable future growth trends and pressures that will face San Jose as a result of likely growth trends in the greater Bay Area region.

This report presents a summary of the current pattern of housing supply and demand in San Jose. This is followed by a discussion of the expected increase in households in San Jose – household growth being the primary determinant of future housing needs. The forecasts of household growth used in this report are from the report "Projections of Jobs, Population and

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[1] Source: LEHD. The U.S. Census Bureau Longitudinal Employer-Household Dynamics website: lehd.did.census.gov/led

[2] See Appendix B: Projections of Jobs, Population and Households for the City of San Jose, by the Center for the Continuing Study of the California Economy, August 2008.

Households" prepared by CCSCE[3]. The findings of this report were presented to the Envision San Jose 2040 Task Force on May 27, 2008.

Next, the report presents a forecast of the anticipated increase in dwelling units necessary to house the future population. The forecast considers five housing types within two broad categories: single-family and multi-family. These housing types reflect structure type and not tenure, i.e., ownership or rental. Single-family is further divided into detached and attached units. Detached dwellings are characterized by one unit per lot. Attached single-family dwellings are perhaps best epitomized by row or townhouses. These units will generally each have a separate entrance. Multi-family units are incorporated into larger buildings, with all units in the building generally sharing a common entrance. The three different types of multi-family units are distinguished from each other only by their density. Density, or the number of dwelling units per acre (du/ac), increases when going from medium density to high density to high rise buildings. This variety of unit types provides sufficient detail to adequately account for differences in the amount of land required to construct housing complexes of differing sizes and densities. For instance, a high-rise apartment/condominium development requires far less land per dwelling unit than a medium density development.

In 2007, approximately 56.4 percent of occupied dwelling units in San Jose were comprised of single-family detached dwellings (Table 1). This is down slightly from the year 2000 when the share of single-family detached was 58.0 percent. This drop is the result of a significant shift in development patterns over the last seven years.

[3] Ibid.

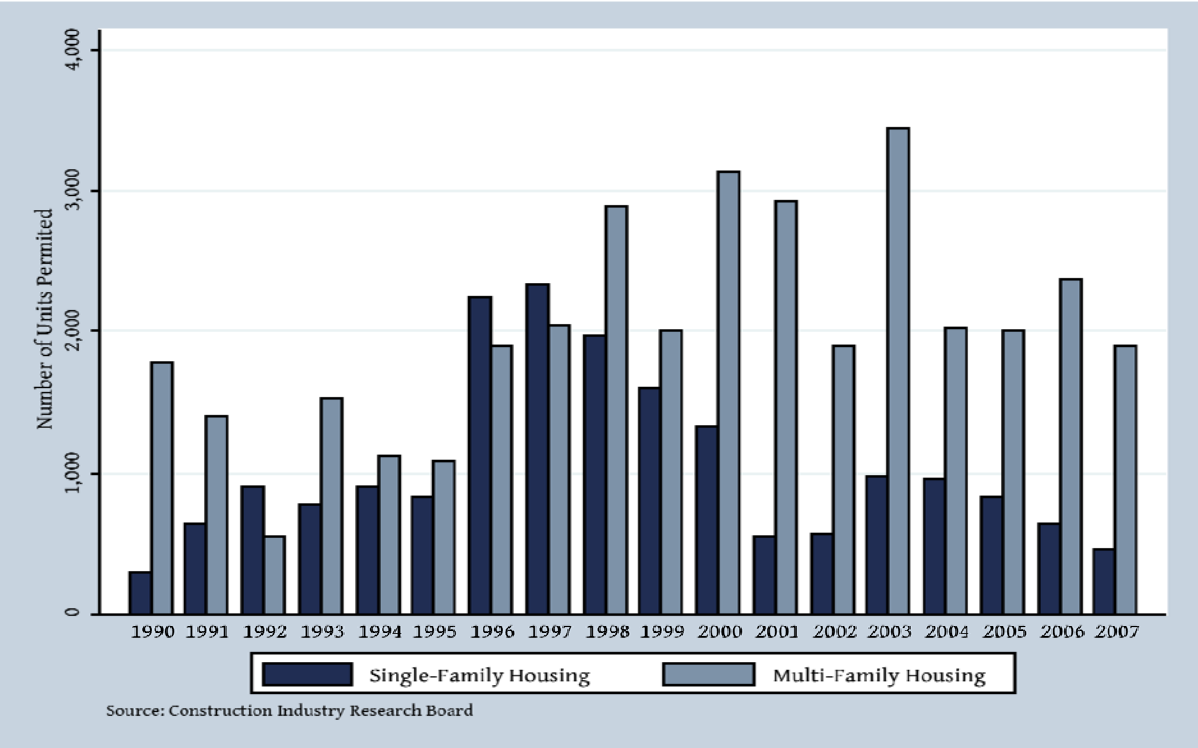
Table 1. Distribution of Housing Types by Tenure, 2007

	Occupied Housing Units		Owner-Occupied		Renter-Occupied	
	Share	Units	Share	Units	Share	Units
1 Unit, Detached	56.4	163,944	77.0	138,392	22.9	25,408
1 Unit, Attached	10.0	29,068	11.7	21,028	7.2	7,988
2-9 Units	12.7	36,916	3.9	7,009	27.0	29,957
10+ Units	17.6	51,160	2.9	5,212	41.5	46,044
Mobile Homes	3.3	9,592	4.5	8,088	1.4	1,553
Total	100.0	290,680	100.0	179,730	100.0	110,950

Source: 2007 American Community Survey

Throughout much of the 1990s, a comparable number of single-family units and multi-family units were constructed (Figure 1). This trend began to shift in the late 1990's and changed significantly in 2000 when roughly twice as many multi-family units were constructed as single-family units. This gap has widened in the years since, with nearly three times more multi-family than single-family units permitted in 2007.

Figure 1. Residential Permit History in San Jose: 1990 - 2007



II. Household Growth Rates Forecast

A household includes all residents living in a dwelling unit. By definition the number of households is equivalent to the number of occupied housing units. Household growth is projected to average approximately 5,000 per year for both the 2000-2020 period and the 2020-2040 period. This level of household growth would require that new housing be built at a substantially higher rate than the annual average (3,229 units) that occurred between 1980 and 2007. The pattern of growth in households across age and ethnic groups will also have an effect on the housing needs in San Jose through 2040. Table 2 presents an initial set of household projections developed by CCSCE (see Appendix B).

A. Forecast by Age Groups

Household growth by age group shows one pattern of growth until 2030 and then a different pattern for the following ten years (Table 2 and Figure 2). Between 2000 and 2030 more than 85 percent of San Jose's household growth is projected to be in the 55-64 and 65+ age groups. This translates into household growth of 129,100 for these age groups out of a total household increase of 148,000 during this 30-year period.

Table 2. Forecast Number of Households by Age Group

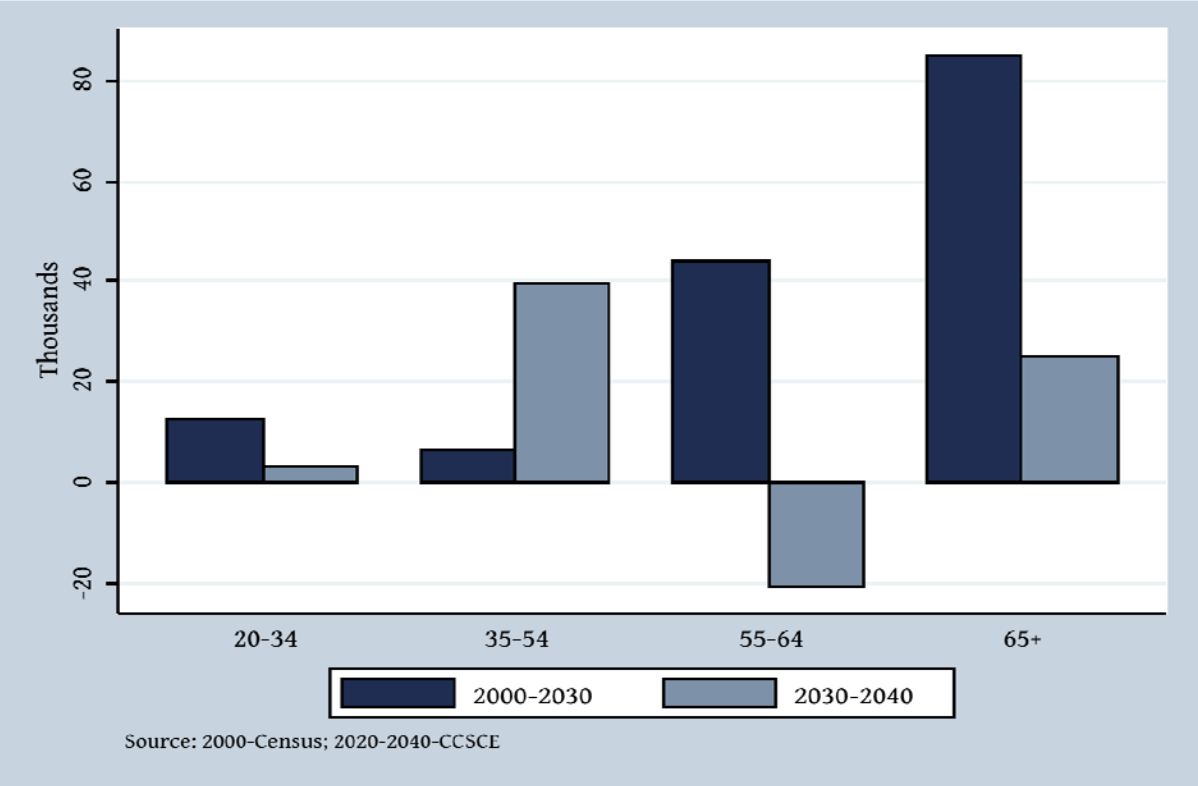
Age	2000	2020	2025	2030	2035	2040
Thousands						
20-34	65.9	67.1	76.1	78.6	81.1	81.7
35-54	135.5	143.6	136.9	141.7	158.3	181.6
55-64	36.4	80.4	84.2	80.6	67.5	59.8
65+	38.6	85.3	103.6	123.4	139.0	148.6
Total	276.4	376.4	400.8	424.3	445.9	471.7
Shares Across Age Groups						
Percentage						
20-34	23.8	17.8	19.0	18.5	18.2	17.3
35-54	49.0	38.2	34.2	33.4	35.5	38.5
55-64	13.2	21.4	21.0	19.0	15.1	12.7
65+	14.0	22.7	25.8	29.1	31.2	31.5

**Note: Shares columns not adding to 100 results from rounding error*
Source: 2000-Census: 2020-2040-CCSCE

On the other hand, virtually no growth (6,300 HH) is projected in the 35-54 age group and slightly more growth (12,600 HH) is expected in the 20-34 age group. Low growth in the 35-54 age group is a result of small projected increases in population within this age group. Low growth for households headed by someone aged 20-34 is the result of projecting forward the current household forming behaviors where multiple residents live together (i.e., roommates) or still live at home. The large growth projected for older households is based on the projected wave of baby-boomers reaching retirement age, together with current cultural patterns where older residents, particularly of Asian and Hispanic descent, live with other family members.

After 2030, when the influence of the baby boomers is less, there is a new wave of population growth and household formation from residents within the 35 to 54 age group. This cohort is composed of the children and grandchildren of current residents and new immigrants.

Figure 2. Household Growth by Age Group in San Jose



B. Forecast of Households by Ethnic Group

The initial set of household projections by ethnic group is shown below in Table 3 and Figure 3. The largest growth is projected for households headed by Hispanic residents followed by Asian households and those in the "Other" group. In further describing these projections, it is reasonable to assume that the growth shown for Non-Hispanic "Other" population and households probably reflects the anticipated growth in multi- race population groups.

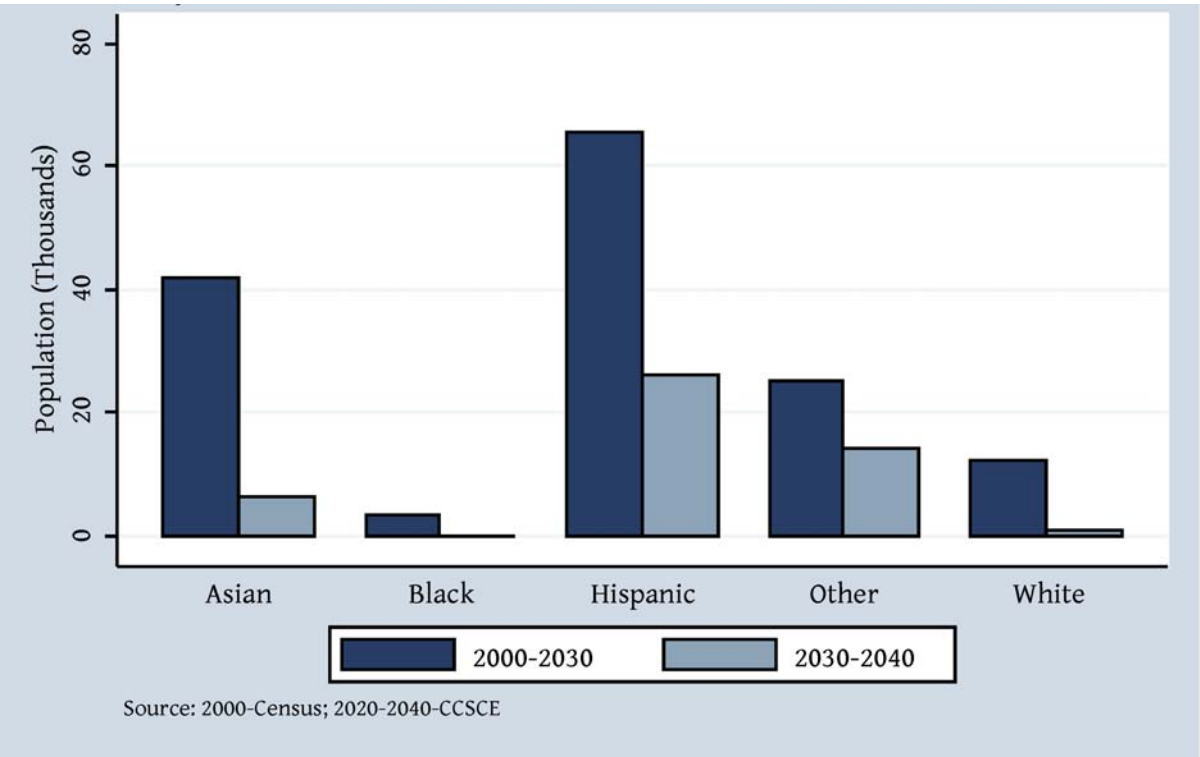
Table 3. Forecast Number of Households by Ethnic Group

Ethnicity	2000	2020	2025	2030	2035	2040
Thousands						
Asian	64.3	96.8	101.7	106.0	108.9	112.2
Black	10.1	13.3	13.4	13.5	13.5	13.4
Hispanic	59.2	102.5	112.6	124.8	136.1	151.0
White	132.6	141.5	144.0	144.7	145.5	145.6
Other	10.2	22.2	29.1	35.4	41.8	49.6
Total	276.4	376.3	400.8	424.4	445.8	471.8
Shares Across Ethnic Groups						
Percentage						
Asian	23.3	25.7	25.4	25.0	24.4	23.8
Black	3.7	3.5	3.3	3.2	3.0	2.8
Hispanic	21.4	27.2	28.1	29.4	30.5	32.0
White	48.0	37.6	35.9	34.1	32.6	30.9
Other	3.7	5.9	7.3	8.3	9.4	10.5

**Note: Shares columns not adding to 100 results from rounding error*

Source: 2000-Census: 2020-2040-CCSCE

Figure 3. Household Growth by Ethnic Group in San Jose



C. Average Household Size

Household size varies due to the various demographic and geographic factors throughout the city. Average household size, measured in persons per household (PPH) is a further determinant of overall growth in housing needs. For a given population, fewer persons living in each dwelling unit results in the need for a larger number of housing units to accommodate the population. The converse is also true: an increase in the average number of persons per household will reduce the need for additional housing units.

San Jose's average household size is projected to decline slightly in future years. Average household size is calculated by dividing the household projections by the population projections. Average household size in San Jose is projected to fall from 3.24 persons per household (PPH) in 2000 to approximately 3.05 PPH between 2020 and 2040.

There are two forces at work that are pointing in opposite directions. First, a large share of projected household growth is in Hispanic and Asian households, which have above-average household sizes. Second, the number of children in these households is projected to decline according to California Department of Finance projections, lowering average household size. These competing trends are reflected in Table 4 and Figure 4.

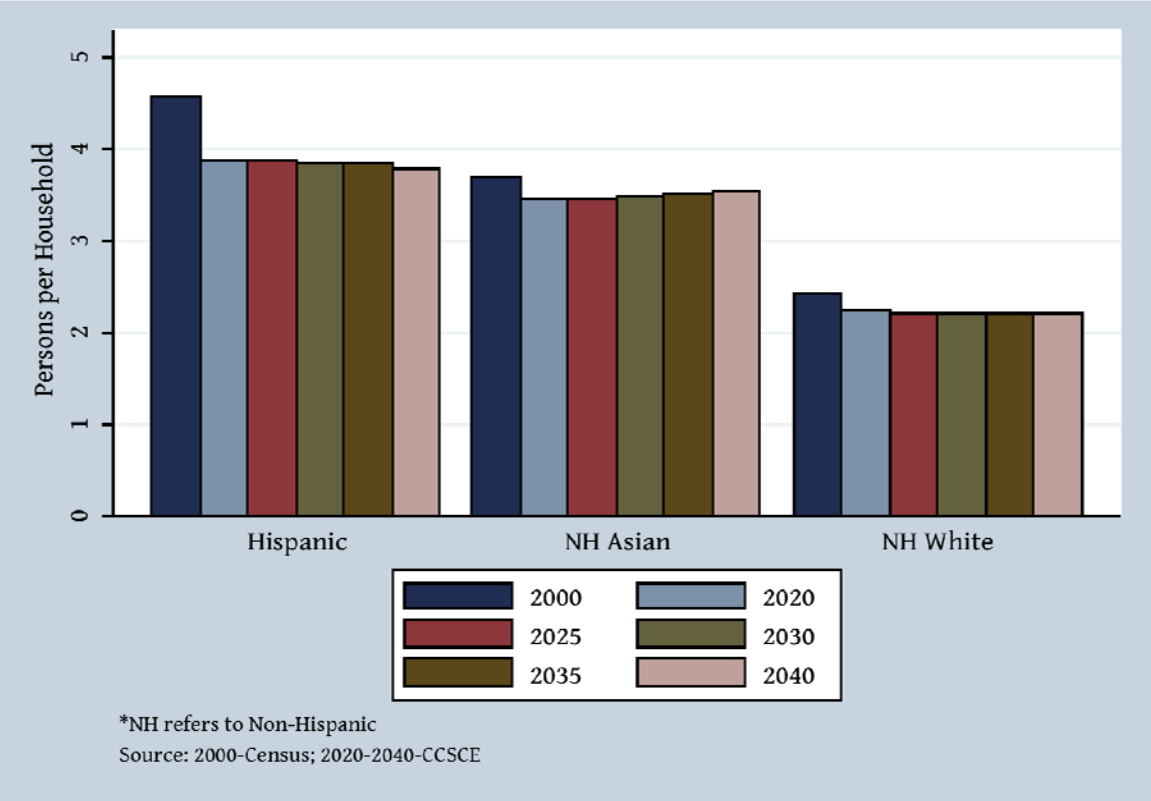
Table 4. Average Household Size in San Jose (Persons per Household)

Ethnicity	2000	2020	2025	2030	2035	2040
Hispanic	4.56	3.89	3.87	3.85	3.84	3.78
NH White	2.43	2.24	2.22	2.21	2.21	2.22
NH Asian	3.71	3.47	3.46	3.48	3.53	3.55
Total HH	3.24	3.05	3.03	3.05	3.06	3.06

**NH refers to Non-Hispanic*

Source: 2000-Census: 2020-2040-CCSCE

Figure 4. Average Household Size in San Jose



III. Forecast of Housing Requirements

The population projections and resulting household formation projections form the building blocks for a forecast of future housing demand through 2040. Overall, population growth for the City of San Jose is forecast to result in an increase in the number of dwelling units by 56 percent, or just under 180,000. This growth comes from two different sources: new households and an appropriate amount of vacant units to form a functional housing market. New households come from population growth and changes in the size of households over time, as described above.

Table 5. Total Projected Housing Capacity: 2008 - 2040

Type	2008	2020	2025	2030	2035	2040
Occupied*	301,892	376,283	400,788	424,383	445,875	471,695
Owned	186,569	232,543	247,687	262,269	275,550	291,507
Rented	115,323	143,740	153,101	162,114	170,324	180,187
Vacant Units**	5,722	11,838	13,018	13,785	14,483	15,322
Vacancy Rate (%)	1.86	3.15	3.15	3.15	3.15	3.15
Undersupply***	4,084	0	0	0	0	0
Total Housing	307,614	388,506	413,807	438,168	460,357	487,016

*Shares of owned and rented assumed constant at 61.8% and 38.2%
**Vacant Units uses 1.86% vacancy rate in 2008, equilibrium rate afterward
***Undersupply is the difference between the vacant units in disequilbrium Vacancy Rate and equilbrium Vacancy Rate
Source: Calculations by Beacon Economics

Vacant housing units are a necessary feature of a smoothly functioning housing market. In principle, a housing market rests in equilibrium when owner- and renter-occupied units exhibit vacancy rates of two and five percent, respectively. This assumption has been used in previous studies for the City of San Jose and is commonly used in analyses of this type. Given San Jose's current make-up of 61.8 percent owned and 38.2 percent rented,[4] an equilibrium vacancy rate would be 3.15 percent. This figure is derived by using the proportion of owned and rented units to produce a weighted average vacancy rate.

[4] The 2007 American Community Survey

According to data from the California Department of Finance, San Jose's total housing stock in 2008 is 307,614 units, of which 5,722, or 1.86 percent, are vacant (Table 5). Currently, a strong demand for housing in San Jose holds the vacancy rate well below the 3.15 percent equilibrium level. For comparison, this is lower than Santa Clara County (2.27 percent), and much lower than California (5.88 percent).[5]

As San Jose's vacancy rate is less than 3.15, the housing market in San Jose has too little housing relative to demand to function efficiently. In other words, there is an undersupply of vacant housing of roughly 4,084 units. In equilibrium, the number of vacant units would be 9,806 units.

Table 5 presents the forecast of the total stock of housing units that will be necessary to accommodate population growth through 2040, incorporating the assumed vacancy rates, and resulting undersupply of housing units over the period. Note that it is assumed that the undersupply of vacant units that currently exists is eliminated in the first 12 years of the forecast and that there is sufficient building to maintain the housing market in equilibrium thereafter.

Table 6. Projected New Housing Required: 2008 - 2040

Factors	Total	2008-2020	2021-2025	2026-2030	2031-2035	2036-2040
New HHs	169,803	74,391	24,505	23,595	21,492	25,820
Vacancy	9,600	6,501	796	766	698	839
Total	179,403	80,892	25,301	24,361	22,190	26,659
Annual	5,606	6,741	5,060	4,872	4,438	5,332

Source: Calculations by Beacon Economics

Between 2008 and 2040, the number of households in San Jose, is projected to increase by 169,803. To accommodate this increase, 179,403 additional housing units would be required. Table 6 presents these projections, including the number of units that must be built in each period to accommodate the growth due to increased numbers of households and vacancies,

[5] According to the California Department of Finance

respectively. The vacancy figure for 2008-2020 is artificially high because it includes today's undersupply.

A. Projected Growth in Housing Types

The next step in developing the housing forecast is to distribute the projected increase in housing presented in Table 6 across housing types. The analysis, summarized in Table 7, utilizes the five different housing types described earlier to represent the range of residential development likely to occur. Single-family detached dwellings are expected to achieve an average density of 12 du/ac. The composition of future single-family detached dwellings is expected to be primarily on small lots and in developments commonly referred to as detached townhomes. These dwellings provide all of the features of a detached unit, but are similar to townhomes built with a small separation distance and independent exterior walls, rather than a common wall between them. Single-family attached dwellings are assumed to be constructed at an average density of 30 du/ac. The density of multiple-family units is assumed to vary from an average of 50 units per acre for medium density construction up to an average of 150 units per acre for the high rise developments.

As noted above, the trend for the last several years has seen multi-family development far outpace single-family. Since 2000, multi-family development has comprised 75% of all residential construction. It is assumed that this trend will continue and increase, with the ratio of single and multi-family unit construction at one to four, or 20 and 80 percent, respectively between 2008 and 2030. Between 2030 and 2040, the proportion of single-family is expected to decline further, with the resulting shift in the ratio to 10 percent single-family and 90 percent multi-family.

Table 7. Assumed Housing Construction Shares and Densities

	Density (Units/Acre)	Share 2008-2030	Share 2031-2040
Single Family		20%	10%
Attached	30.0	*75%*	*75%*
Detached	12.0	*25%*	*25%*
Multi Family		80%	90%
Med-Density Units	50.0	*50%*	*25%*
High-Density Units	75.0	*25%*	*50%*
High Rise Units	150.0	*25%*	*25%*
Total		100%	100%

Source: Developed in consultation with city staff

For the first 22 years of the forecast, it is assumed the shares of the three multi-family categories to be 50, 25, and 25 percent for medium density, high density, and high rise, respectively. As noted above, in the final decade, these shares will shift toward a stronger emphasis on high-density housing. This is presented in the italicized rows and the ``Share'' columns in Table 7. In the single-family unit category, detached housing will account for 25 percent, or 5 percent of total construction (25 percent of 20 percent) between 2008 and 2030, falling to 2.5 percent of total construction (25 percent of 10 percent) between 2031 and 2040. These projections are illustrated in Figure 5.

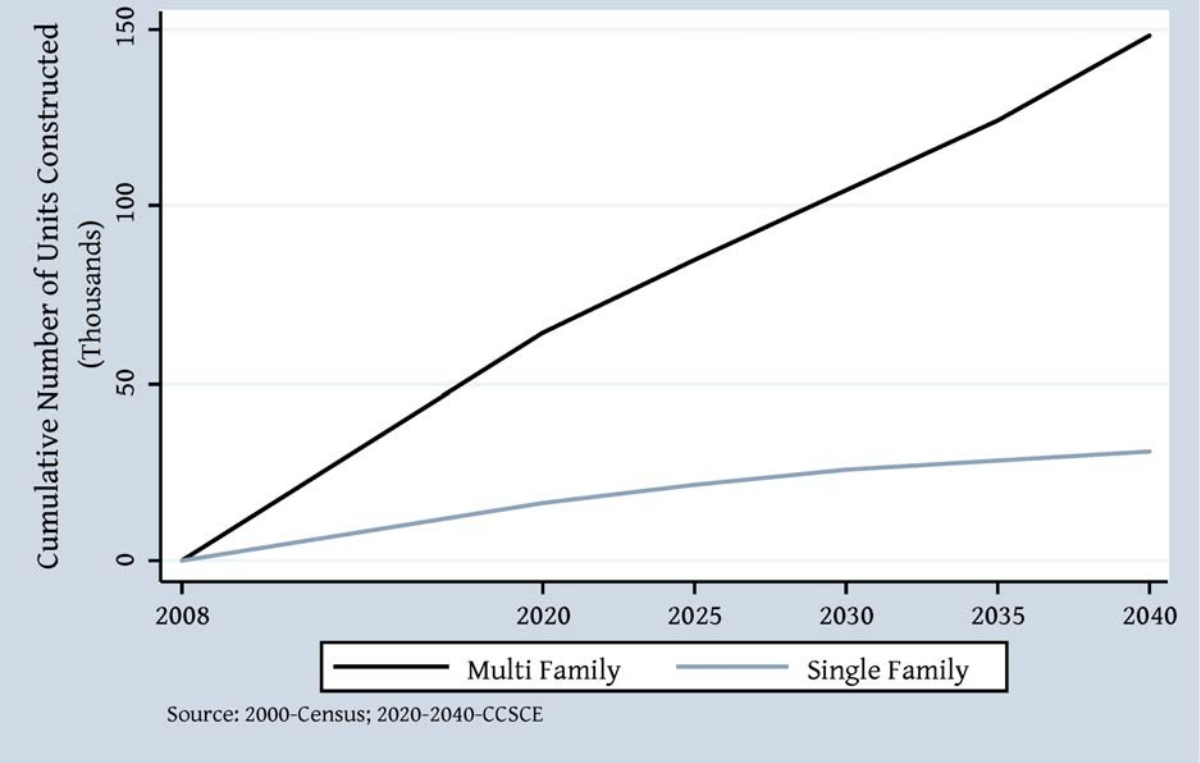
If these assumptions are met, over the next 32 years multi-family development will provide the vast majority of housing, accounting for almost five times the number of single-family units and approximately 83 percent of all new housing (Table 8 and Figure 5).

Table 8. Housing Construction by Unit Type

	Total	Share 2008-2030	2008-2020	2021-2025	2026-2030	Share 2031-2040	2031-2035	2036-2040
Single Family	30,996	20%	16,178	5,060	4,872	10%	2,219	2,666
Attached	23,247	*75%*	*12,134*	*3,795*	*3,654*	*75%*	*1,664*	*1,999*
Detached	7,749	*25%*	*4,045*	*1,265*	*1,218*	*25%*	*555*	*666*
Multi Family	148,407	80%	64,714	20,241	19,489	90%	19,971	23,993
Med-Density Units	63,213	*50%*	*32,357*	*10,120*	*9,744*	*25%*	*4,993*	*5,998*
High-Density Units	48,093	*25%*	*16,178*	*5,060*	*4,872*	*50%*	*9,985*	*11,997*
High Rise Units	37,102	*25%*	*16,178*	*5,060*	*4,872*	*25%*	*4,993*	*5,998*
Total	179,403		80,892	25,301	24,361		22,190	26,659

Source: Calculations by Beacon Economics

Figure 5. San Jose Housing Unit Projections, 2008 – 2040



B. Converting Housing Projections into Land Demand

The final element of the housing forecast is to estimate how much land will be required to accommodate projected housing growth. This calculation, presented in Table 9 draws directly upon the projection of the future amounts of the various housing types and densities displayed in Table 8. The land area figures in Table 9 are derived by dividing the number of projected units from Table 8 by the appropriate density factor, yielding sums of acreage required by each housing type over the forecast period.

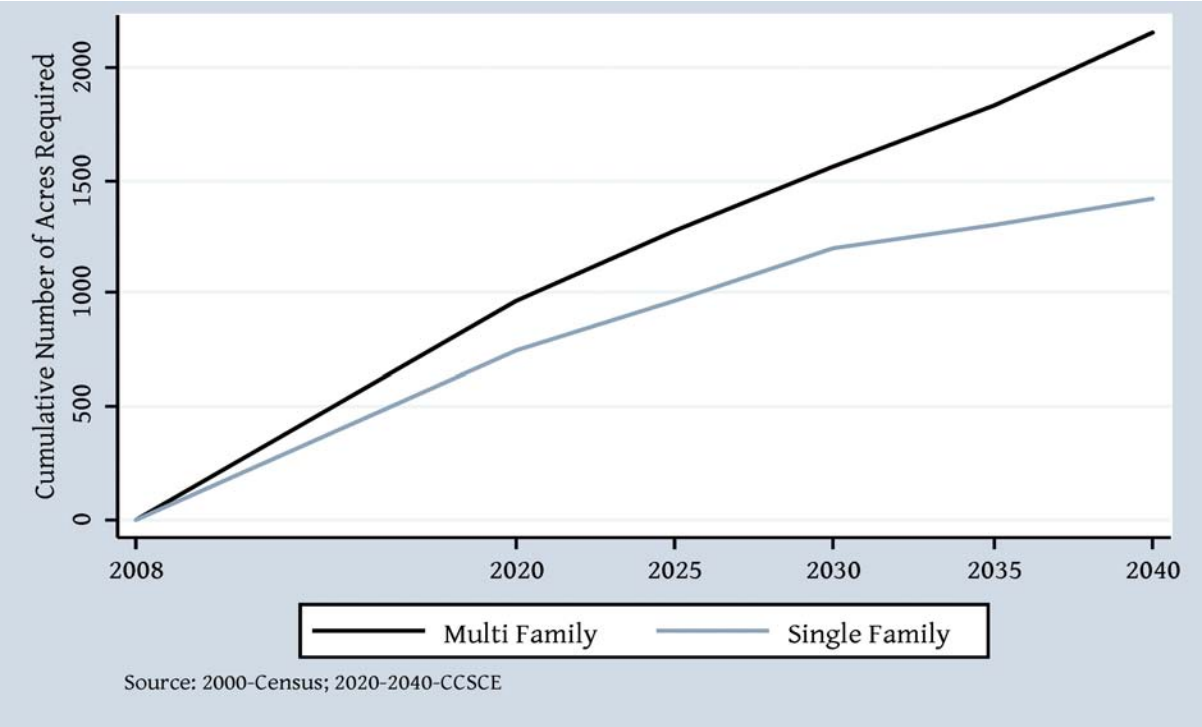
Table 9. Land Demand by Unit Type (Acres)

	Density (Units/Acre)	Total	2008-2020	2021-2025	2026-2030	2031-2035	2036-2040
Single Family		1,421	742	232	223	102	122
Attached	30.0	775	404	127	122	55	67
Detached	12.0	646	337	105	102	46	56
Multi Family		2,153	971	304	292	266	320
Med-Density Units	50.0	1,264	647	202	195	100	120
High-Density Units	75.0	641	216	67	65	133	160
High Rise Units	150.0	247	108	34	32	33	40
Total		3,573	1,712	536	516	368	442

Source: Calculations by Beacon Economics

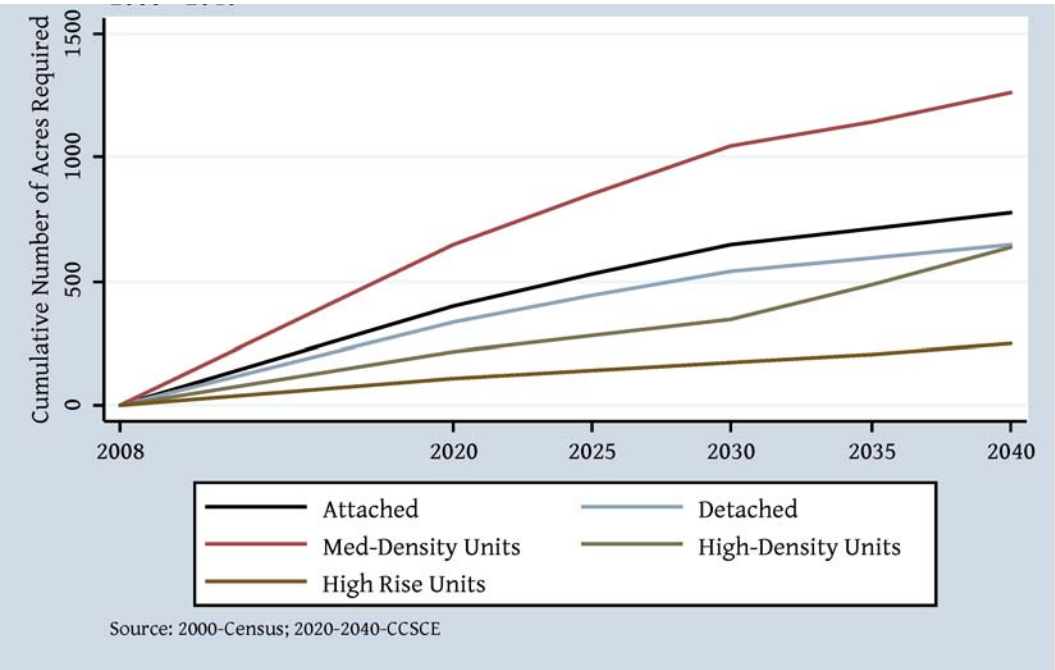
A total of approximately 3,573 acres would be required to accommodate the approximately 180,000 new dwelling units forecast. The results demonstrate that single-family units will account for 39 percent of total acreage (1,421 acres), despite comprising only approximately 17 percent of unit growth projected over the forecast period. By contrast, multi-family development will require approximately 2,153 acres or 61 percent of the future

Figure 6. Housing Lands Projections by Single-Family and Multi-Family, 2008 – 2040



residential land requirements while achieving 83 percent of the units built. Figure 6 illustrates the respective shares of land required by single and multi-family development. As is clear from Figure 7, by virtue of their relatively low density and large contribution to units, medium-density is the type requiring the largest amount of land. Again, because of their large numbers relative to detached, single-family attached units require the second largest numbers of acres.

Figure 7. Housing Lands Projections By Housing Type , 2008 – 2040



IV. Conclusions

To provide housing to meet the projections of increased population by 2040, San Jose would need to provide housing for an additional 170,000 households. This document provides a description of how much and what types of housing would be required and an estimate of the amount of land required to provide this housing. The estimate is that approximately 3,500 acres of land would be required, based on the assumptions for housing types and densities incorporated in this report. Variations of these base assumptions could result in alternative

estimates of future projected land demand. The information contained in this report is intended to be used by the City and the Envision San Jose 2040 Task Force in conjunction with information on employment land projections and other key data in the development of proposed land use plans for the future of San Jose in 2040.

V. Appendix A: Household Formation Rates - Background

A. What is a Household?

A household includes all residents living in a dwelling unit. By definition the number of households is equivalent to the number of occupied housing units.

Two families can live in one housing unit and they are counted as one household. Relatives such as uncles or grandparents can live in a housing unit with the primary family and the entire group is counted as one household.

This definition of a household means that projecting household growth directly helps in projecting the number of housing units needed to serve the projected population growth.

B. What is a Household Formation Rate?

A household formation rate tells us how many adults are in the average household. Or, put another way, household formation rates tell us how adults (people 20 years and older) combine to form households. If there are two adults in the average household, for example a husband and wife or two roommates, then the household formation rate for that age and ethnic group is 50%. For every 1000 people in that age/ethnic group, 500 households will be formed or 50% of the total adult population in that age/ethnic group.

Household formation rates reflect behavioral choices and, as shown below, vary widely by age and ethnic group, reflecting cultural differences as well as age-related differences such as some residents living alone when their spouse dies or there is a divorce.

The table below shows household formation rates for San Jose tabulated from the 2000 Census. The table makes understanding household formation rates easier. Population groups are the same as in the projection analysis – Hispanic, Non Hispanic (NH) White, Black, Asian, and Other.

Table 10. Household Formation Rates, San Jose 2000

Age	Total	Hispanic	NH White	NH Black	NH Asian	NH Other
20-34	29%	24%	37%	33%	26%	36%
35-54	51%	46%	55%	56%	47%	59%
55-64	54%	47%	60%	63%	43%	61%
65+	52%	49%	62%	57%	32%	56%
Total	44%	36%	52%	49%	37%	50%

*NH refers to Non-Hispanic
Source: 2000 Census

The household formation rate for San Jose in 2000 was 44% for all residents 20 years of age and older. That means that for every 1000 residents 20 and over, there were 440 households reported in the 2000 Census.

Generally the lowest household formation rates were found in the 20-34 age group where some residents lived with their parents or with several roommates. The average household formation rate for this age group was 29%, which means that for every 1000 residents in this age group, San Jose had 290 households headed by someone aged 20 to 34 in 2000.

Generally the highest household formation rates were found among residents aged 65 and above, except, as discussed below for Asian residents. The table shows that the household formation for Non Hispanic White residents aged 65 and above was 62% meaning that for every 1000 residents in this age/ethnic group, San Jose had 620 households headed by someone in this age/ethnic group.

The household formation rates for Hispanic and Asian residents aged 55 and above were lower than similar rates for Non Hispanic White and Black residents, probably reflecting a cultural tradition of having older generations live with their children and grandchildren.