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JOBS HOUSING NEXUS ANALYSIS
CITY OF SAN FRANCISCO

PREPARED FOR:

OFFICE OF AFFORDABLE HOUSING PRODUCTION PROGRAM (OAHPP)
CITY AND COUNTY OF SAN FRANCISCO

PREPARED BY:

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EXECUTIVE SUMMARY

This report is an economic nexus analysis which establishes the relationships among construction of new buildings, employees, households and affordable housing demand. The report has been prepared for the San Francisco Planning Department's Office Affordable Housing Production Program (OAHPP) for the purposes of updating and possibly expanding the program. The report is a "nexus" analysis to meet the legal requirements for linking new construction of workspace buildings with an obligation for affordable housing.

The analysis of historic construction and employment and housing production in San Francisco demonstrates the relationships among buildings, employees and housing demand. Analysis of housing affordability conditions and projections of employment and housing production confirms that affordable housing will not be produced in sufficient supply to meet the demand generated by new worker households.

The nexus analysis concludes with coefficients expressing the number of housing units by affordability level that are linked to each square foot of building area, by building type. When these housing demand coefficients are multiplied by the affordability gap for each income category, the total housing nexus cost is determined, as follows:

Total Housing Nexus Cost (Per Sq.Ft. Building Area)

	Very Low Income	Low Income	Moderate Income	Total
Office	$12.19	$7.86	$2.62	$22.67
R&D	7.43	5.89	1.78	15.10
Medical	10.29	7.16	2.40	19.85
Cultural/ Institutional	4.26	3.12	0.95	8.33
Retail	11.52	7.60	2.02	21.14
Hotel	9.47	5.96	1.56	16.99

These costs quantify the total linkage between new workspace buildings and the demand for new affordable housing. These total nexus costs represent the legal ceiling for potential fees**: THE TOTAL NEXUS COSTS ARE NOT RECOMMENDED FEE LEVELS**. An appropriate fee range for San Francisco will be explored in the next phase of the work program.

Conservative Aspects of this Analysis

This analysis and report have been prepared for the express and single purpose of supporting an updated jobs housing nexus program for San Francisco. As such, the analysis focuses on the quantifiable linkages among buildings, employees, households, income distribution and housing demand by affordability level. In the preparation of this analysis, there has been a clear intention to use conservative assumptions throughout, even though less conservative relationships might also be supportable.

Following are some of the conservative assumptions of this analysis where less conservative approaches are also viable.

- The demand for new housing resulting from commercial development depends in part on the number of workers drawn to the new development who do not already live in San Francisco. The formula for new housing demand must exclude workers that will commute from outside of San Francisco. The analysis applies the current ratio between workers who live inside and outside San Francisco. This ratio is also the projected relationship used by ABAG — 45% of new workers will live outside San Francisco. This ratio is already a reflection of the high cost of housing in San Francisco. It certainly can be argued that if more housing were available at rents and prices affordable to San Francisco's lower paid workers, then less than 45% would choose to commute from other counties, and the number of workers seeking housing in San Francisco would increase. In fact, there is solid evidence that lower paid workers already commute from outside San Francisco less than the average for all workers citywide. As a result, the analysis understates the additional demand for affordable housing created by new commercial development.

- Assumptions for the income of workers drawn to new development are based on the official HUD income statistics for a three county area inclusive of Marin and San Mateo Counties. The Census indicates that incomes in San Francisco are significantly lower than the three county average. As a result, the gaps between income and affordability of housing are understated.

- Only direct employees are counted in the analysis. However, many indirect employees are drawn to each new workplace. For example, in an office building, indirect employees include janitors, window washers, landscape maintenance, delivery personnel, and a whole range of others. These workers also tend to be at the lower end of the earnings range. Accordingly, the analysis understates the demand for new affordable housing.

- The methodology for adjusting worker income into multiple earner households essentially removes most double income household from the lower income strata (by assuming the multiple incomes place the household in the middle and upper income categories.)

- Employment growth in office and other commercial buildings is discounted to adjust for job losses in the industrial sector. However, ABAG and other planners project no further declines in industrial employment.

- A small two-person household is used as the average size warranting assistance. As a matter of policy, much housing assistance in directed toward larger households. (The cost of assisting larger households is greater than the cost of assisting smaller households.)

Less conservative assumptions would result in higher jobs housing nexus costs. Also, as a result of these and other conservative aspects of the analysis, this report should be used with caution as a source of information or basis for other policy programs.

INTRODUCTION

The following report is an analysis of the relationship between jobs and housing demand in the City of San Francisco, prepared by Keyser Marston Associates, Inc. for the City and County of San Francisco. The report has been prepared pursuant to Ordinance 120-96, which extended the duration of the Office Affordable Housing Production Program, and authorized an expenditure for studies to update and expand the existing program.

Historic Context

In 1985 the City and County of San Francisco adopted Section 313 of the San Francisco City Planning Code which established the Office Affordable Housing Production Program (OAHHP). This program, which is a generic housing linkage or nexus program, linked the development of office buildings to the demand for affordable housing, by requiring developers to either build affordable housing or pay an in-lieu fee. The relationship between office development and housing requirement was analyzed in the 1984 study by Recht Hausrath & Associates, entitled *Summary of the Economic Basis for an Office Housing Production Program.* The program has been in place continually since its adoption. By 1994, 1,462 housing units have been built by developers as part of the program and $28 million has been paid in in-lieu contributions to the program. With the fees, the OAHHP program combined with other government financing resources has produced 4,665 units.

The ordinance was amended in 1990 to make a number of adjustments to the program and to extend the program for four years until August 1994. The March '96 ordinance reenacted the program and called for a new economic study to support a new ordinance for an updated and expanded program. This study provides the basis for a new program as required by the ordinance.

The purpose of the study is to update and reanalyze the economic linkages because the original study is now 13 years old, and to insure that the study meets current legal requirements, including AB 1600, which amended the California Code, and several U.S. and California Supreme Court rulings affecting mitigations and fees imposed on development projects. In addition, a purpose of the study is to explore linkages for an expanded and revised program overall.

Updated and Expanded Program Parameters

The original OAHHP program applied only to office projects of 50,000 square feet or more in the downtown area. The 1990 amendment reduced the threshold size to 25,000 square feet, clarified the target income levels, and made certain other adjustments.

The Planning Department's Request for Proposal for a new study specifies additional building types (or "land use activities") to be added to the analysis for consideration in the expanded program. The building types or land use activities addressed in this analysis include:

- Office
- Retail and Entertainment
- Hotel
- Medical Related
- Cultural and Institutional
- Research and Development (R&D)

The original 1984 study focused on the downtown area. This nexus analysis addresses the jobs housing relationships in the City overall without specific reference to the downtown. Other features of the earlier ordinances are subject to reevaluation as part of this update program as well.

Report Organization

The report is organized into four sections as follows:

- ***Section I*** - presents a summary discussion of the nexus concept, the legal basis, and some of the key issues surrounding nexus analysis for jobs and housing relationships.

- ***Section II*** - is a macro economic evaluation of jobs and housing growth in San Francisco, both historic and projected.

- ***Section III*** - is a micro economic analysis of the jobs and housing relationships associated with individual prototype buildings for the six building types now under consideration. The section concludes with a determination of the number of moderate, low and very low-income households associated with each type of building.

- ***Section IV***- summarizes the affordability gap analysis and the dollar cost of the delivering affordable housing to each type of building. This is the "Total Linkage Cost."

Appendices contain additional information on data sources and assumption used in the analysis.

Data Sources and Qualifications

The analyses in this report have been prepared using the best and most recent data available. Local data, such as the City's Citywide Travel Behavior Study, was utilized wherever possible. Other sources such as the U. S. Census and the State of California Employment Development Department publications were used extensively. While we believe all the sources of data are sufficiently accurate for the purposes of this analysis, we cannot guarantee their accuracy. Keyser Marston Associates, Inc. assumes no liability for information from these other sources.

SECTION I: THE NEXUS CONCEPT AND MAJOR ISSUES

Introduction

This section outlines the nexus concept and some of the key issues surrounding the placement of a burden on non-residential construction to increase the supply of affordable housing in San Francisco. The jobs housing nexus program has been in effect in San Francisco since 1985. This nexus analysis provides the economic justification for continuing the program which requires developers of major office projects to either construct affordable housing or contribute to a fund administered by the Mayor's Office of Housing which assists in the development of affordable housing. In addition, this nexus analysis addresses the following other types of buildings or land use activities:

- Retail
- Entertainment
- Hotel
- Research and Development
- Medical Related
- Cultural and Institutional

The affordable housing program in San Francisco has sought to meet the housing needs of households at the moderate-income level (up to 120% of median income), and all the categories of household income at less than median. Housing in San Francisco is so expensive that even moderate-income households cannot afford the majority of housing available in the City.

The nexus analysis and discussion focuses on the relationships among development, growth, employment, income and demand for housing. The analysis yields a causal connection between new construction of these building types and the need for additional affordable housing, a connection that is quantified both in terms of number of units and in terms of subsidy assistance needs. The connections are related back to the size or square foot area of the newly constructed building.

This analysis and the nexus burden established by the analysis do not address existing housing problems and needs; the analysis only address new demands for affordable housing associated with the construction of new workplaces. The analysis also should not be construed to suggest that development and its relationships are the only cause of housing affordability problems; the causes are many and complex. Finally, this analysis does not make the case that the development community should bear the full cost of addressing affordability problems; this program is but one component of a broad and comprehensive program entailing other locally generated funds as well as funds from the state and federal governments.

The Legal Basis and Context

Since the San Francisco OAHHP Program was enacted in 1985, there have been several U.S. and California Supreme Court cases and State of California statutes affecting what local jurisdictions must demonstrate when imposing impact fees on development projects. The most important U.S. Supreme Court cases affecting fees and mitigation measures are the *Nollan v. California Coastal Commission* and *Dolan v. City of Tigard* (Oregon). In California *Ehrlich v. City of Culver City* is also a significant precedent. The rulings on these cases help clarify what governments must find in the way of the nature of the relationship between the problem to be mitigated and the action contributing to the problem. Following the *Nollan* decision in 1987, the California legislature enacted AB 1600 which requires local agencies proposing to impose a fee on a development project to identify the purpose of the fee, the use of the fee, and to determine that there is a reasonable relationship between the fee's use and the development project on which the fee is imposed. The local agency must also insure that there is a reasonable relationship between the amount of the fee and the cost of mitigating the problem that the fee is addressing. Studies by local governments designed to carry out the intent of the *Nollan* decision and AB 1600 are referred to as "nexus studies." This report is the nexus study for a revised and updated San Francisco OAHHP program.

One court case that involved housing linkage fees was *Commercial Builders of Northern California v. City of Sacramento*. The commercial builders of Sacramento sued the City following the City's adoption of a housing linkage fee. Both the U.S. District Court and the Ninth Circuit Court of Appeals upheld the City of Sacramento and rejected the builders' petition. The U.S. Supreme Court denied a petition to hear the case, letting stand the lower court's opinion. The authors of this nexus study were the authors of the Sacramento study.

I. The Nexus Methodology

This section sets forth the basics of the nexus concept and methodology. As with the existing OAHHP in San Francisco which was supported by an analysis by Recht Hausrath & Associates in a 1984 document entitled *Summary of the Economic Basis for an Office Housing Production Program*, this analysis links new commercial buildings (or other workplaces) with new workers in the City; these workers demand additional housing in the City, a portion of which needs to be affordable to the low and moderate-income levels of the workers.

This report contains a Macro Economic Analysis outlining the past and projected relationships between construction, employment and housing in San Francisco and also a Micro Economic Analysis which demonstrates the linkages associated with a single building. To illustrate the nexus, very simply, we can walk through the major calculations of a building. We begin by assuming a prototypical 100,000 sq.ft. building and then make the calculations as follows:

- We estimate the total number of employees working in the building based on average employment density experience.

- We use occupation and income information for typical job types in the building to calculate how many of those jobs pay at very low, low, and median income levels.

- We know from the Census that most of these lower income employees are members of households where more than one person is employed; we use various factors to calculate the number of low-income households represented.

- We then make a number of adjustments to linked households, most of which are drawn from the Macro Economic Analysis, such as an adjustment for people who work at jobs in new San Francisco buildings but will live outside of the City, and an adjustment to recognize declining sectors of the San Francisco economy in which jobs are lost.

- Finally, we conclude on the numbers of low and moderate-income households associated with the building and divide by 100,000 square feet to arrive at coefficients of housing units per square foot of building area. In the last step, we multiply the number of households per square foot by the costs of delivering moderate and lower income affordable housing units.

The factors and relationships utilized in the analysis reflect long term average conditions. Short-term conditions due to the recession are not an appropriate basis for establishing a fee which is a one time exaction to mitigate a condition over the life of the building. Causation and other issues are discussed below.

The Relationship Between Job Growth and Population Growth

The social issue driving this analysis is growth in new moderate and lower income households. New population growth in most U.S. regions occurs primarily as a result of growth in jobs. Over the long term, the vast majority of growth in the State of California and its sub-regions is job driven. The arrival of new population creates a new "secondary" demand for jobs in retail outlets and services which follow. Growth in the greater Bay Area region is predominantly job driven. Most people coming to the region would not come to the area if they could not expect to find a job. If born in the Bay Area, people would not stay without jobs. This is the long-term pattern. In the short-term, economic cycles and other factors can result in population growth without jobs to support the growth. If an economic region in the U.S. does not maintain job growth, there is an out-migration to regions where job growth is occurring. Many cities in the Midwest are examples.

At the lower income levels, relocation and migration are particularly job driven. No housing is affordable to middle and lower income groups without jobs (or without public assistance).

The Relationship Between Construction and Job Growth

Once it is understood that population growth, especially low income population, is predominantly job driven in the greater Bay Area region, the question arises as to the cause of employment growth itself.

Employment growth does not have "one cause." Many factors underlie the reasons for growth in employment in a given region; these factors are complex, interrelated, and often associated with forces at the national or even international level. The nexus argument does not make the case that the construction of new buildings is solely responsible for growth. However, especially in the Bay Area region, new construction is uniquely important, first, as one of a number of parallel factors contributing to growth, and second, as a unique and essential condition precedent to growth.

As to the first, construction itself encourages growth. When the state economy is growing, the most rapidly growing areas in the state are those where new construction is vigorous as a vital industry. In regions such as the Bay Area where multiple forces of growth exist, the political and regulatory environment often join forces with the development industry to attract growth by providing new work spaces, particularly those of a speculative nature. The development industry frequently serves as a proactive force inducing growth to occur or be attracted to specific geographic areas or jurisdictions.

Second, commercial/industrial buildings bear a special relationship to growth, different from other parallel causes, in that buildings are a *condition precedent* to growth. Job growth does not occur in modern service economies without buildings to house new workers. Unlike other factors that are responsible for growth, buildings play the additional unique role that growth cannot occur without them.

Addressing the Housing Needs of a New Population vs. the Existing Population

The City and County of San Francisco has clearly documented that the housing needs of a substantial portion of the existing moderate and lower income families are not being met. This existing housing shortage, especially at the very low, low, and moderate-income levels, is manifested in numerous ways such as payment of far more than the percentage of income for housing set forth in federal and state guidelines, overcrowding and other factors which are extensively documented by the City's Residence Element of the General Plan and other reports.

This nexus study does not address the housing problems of the existing population. Rather, the study focuses exclusively on documenting and quantifying the housing needs of new households where a member works in a new office building or other type of workplace.

This analysis also assumes that new housing affordable to moderate and lower income households is not being added to the supply in sufficient quantity. If this were not the case and significant numbers of units were being added to the supply to accommodate the same income groups as

addressed by the fee, then an adjustment would be in order. If San Francisco were to be experiencing significant vacancy levels in residential units, particularly units affordable to lower income households, then the need for the units would require reexamination. Even during the recession, however, vacancy levels in residential units have not exceeded 6% in the City overall.

Other Underlying Assumptions

Substitution Factor

It is obvious that any given new building may be occupied partly, or even perhaps totally, by employees relocating from elsewhere in the City. Buildings are often leased entirely to firms relocating from other buildings in the same jurisdiction. However, when a firm relocates to a new building from elsewhere in San Francisco, there is a space in an existing building which is vacated and released to another firm. That building in turn may be filled by some combination of newcomers to the area and existing residents. Somewhere in the chain there are jobs new in San Francisco. Except in the case of demolition of a building, which is addressed in the ordinance, space for employees does not disappear. The net effect is that new buildings bring in new employees, although not necessarily inside of the new buildings themselves.

Indirect Employment and Multipliers

The Macro Economic Nexus Analysis, which examines prototype buildings, addresses direct "inside" employment only. In the case of the office building, for example, direct employment covers the various managerial, professional and clerical people that work in the building; it does not include the janitorial workers, the window washers, the security guards, the delivery services, the landscape maintenance workers, and the many others that are associated with the normal functioning of an office building. These indirect employees tend to be the many service workers at the lower end of the pay scale. No good data sources were located that deal with indirect employees in various type buildings. If one thinks about who the lowest income workers are, one can observe that lower income workers include construction laborers, transportation workers, and a whole host of service workers who do not work in any type of building as regular employees but whose jobs are associated with such structures. In other words, any analysis that ties lower income housing to the number of workers inside buildings will continue to understate the demand. Thus, confining the analysis to the direct employees does not address all the low-income workers associated with each land use (or type of buildings) and significantly understates the impacts.

An informal survey of office buildings suggests that the number of employees at the lower end of the income range would be at least 10% higher with the inclusion of indirect employees.

If the door were open to the indirect employees, one could take the analysis further and deal with the question of multipliers. Multipliers refer to the concept that the income generated by certain types of jobs recycles through the economy resulting in additional jobs. For purposes of producing a conservative nexus amount, this study omits such multiplier effects.

Special Adjustments in the San Francisco Analysis

There are several special adjustments in the analysis to take into account worker households associated with new commercial buildings that do not equate to new housing demand. Adjustments of this nature include the fact that not all worker households will elect to live in San Francisco and will prefer to commute; a recognition that some sectors of the San Francisco economy are declining such that not all workers are net new workers, and changes in labor force participation.

Discount for Increase in Labor Force Participation

The increase in labor force participation, primarily among women, that occurred during the 1960's, 1970's and 1980's was associated with a significant portion of total job growth. As a result, a significant number of new workers already had local housing, thus reducing demand for housing associated with job growth. In the 1990's, however, labor force participation rates have stabilized, and may have even peaked and are now declining slightly. For every person of labor force age that enters the labor force, another leaves. As such, an adjustment for increase in labor force participation is no longer warranted in a nexus analysis.

Discount for Employees that will Live Outside San Francisco

The analysis makes an adjustment for the fact that not all of those who work in San Francisco would elect to live in San Francisco even if housing were affordable. At the current time, approximately 55% of those who work in San Francisco also live there. This percentage decreased significantly in the 1970's decade when the 1970 ratio of 62.6% of workers living in the City dropped to 56% by the end of the decade. During the 1980's decade, however, there was very little change and both the City and the ABAG/MTC planners anticipate this ratio to remain at approximately 55% looking ahead to at least 2010. The Citywide Travel Behavior Study identified a slightly lower level of San Francisco workers who also live in the City, at 50.4% based on its survey.

For purposes of the analysis, 55% of the housing demand associated with the workspace is utilized to identify the development project's housing burden.

At this outset, it should be noted that 45% share of San Francisco workers commute from residences in other counties is already a reflection of the affordability conditions in the City. More workers would live in the City were more affordable housing available. Even a recent San Francisco Examiner poll found that San Francisco, over and above any other Bay Area county, is where more people would live if they could.

Use of 55% is an extremely conservative approach and it is arguable that no discount should be made at all. Subsidized housing opportunities are in short supply; if housing were built for all new moderate and low income employees, 45% would not remain vacant. If such housing were offered with a priority given to households with members employed in the City, most would be taken. This is all that the nexus requires; the statutory and constitutional nexus standard mandates that the

housing units built with the funds contributed by commercial structures are reasonably available, from a regulatory and practical perspective, to the workers in those structures. Most non-resident workers, especially low paid workers, would live closer to their jobs if they had the opportunity to do so, but instead are required to commute long distances primarily for economic reasons. Given this shortage of subsidized units and commute-driven impetus to live close to jobs, this study could reasonably have assumed that a far higher percentage of the units offered would be occupied or occupiable by workers in the structures contributing the fees.

Discount for Declining Industries

In economies where there are long term structural changes occurring due to the decline of one or more industries or sectors, it is appropriate to recognize that all new jobs may not be net new jobs. In some California jurisdictions, there are major changes occurring due to the decline in federal aerospace and defense spending; in others, military base closures are having a major impact. In San Francisco, there has been major long-term economic decline in the industrial land use activity sectors. The Standard Industrial Classification categories most affected are manufacturing activities, transportation, communications and utilities, and wholesale trade. To the layman, the decline is visible in the declining activity of the Port of San Francisco, the exodus of many types of manufacturing, and the large inventory of warehouse type structures that are either vacant or being converted to other types of uses.

An adjustment to recognize declining industries is important in a nexus analysis because new jobs added in office, retail and other type spaces are, to some extent, replacement of jobs lost in these industrial land use categories. If an underlying premise of a jobs housing nexus is labor force mobility — i.e., workers are attracted to areas where jobs are made available, in part through the delivery of work spaces, then it must also be recognized that loss of jobs means workers either leave the area or become employed in another activity. In either case, an adjustment to housing demand is warranted because either the worker leaves San Francisco and makes his/her housing available to others or is re-employed but already has housing.

In San Francisco, the loss of industrial jobs in relation to increase in other types of jobs has at times been substantial. During the 1980's, there was 0.6 to 0.7 of an industrial job lost for every job gained in other industries. Over a 22-year period from 1972 to 1994, the relationship was closer to 0.25 jobs lost for every gain. It is only the future relationship that should be of relevance to a nexus analysis, but of course views of the future vary depending on the source. The Association of Bay Area Governments (ABAG) planning agency forecasts no further decline in industrial employment; other local planners and analysts believe the decline will continue. To be conservative, this analysis incorporates the long-term historic relationship of 0.25 jobs lost for every new one gained in office, retail and other employment.

It is not appropriate for a nexus analysis to take into account other changes associated with the decline in industrial jobs. For example, many workers formerly employed in industrial activities are forced to take new jobs in retail and services where compensation and benefits represent a loss of income from their former work. While this may be a legitimate concern for public policy, responsibility can not be assigned to the development of office and other types of buildings.

Differences in the 1984 and 1997 OAHHP Analyses

The 1984 analysis by Recht Hausrath Associates (RHA) and this Keyser Marston Associates (KMA) analysis employ the same conceptual logic in the linkages from buildings to jobs to housing units and fee amounts. However, the methodological steps to make the linkages have some differences and the factors used to make the adjustments have been updated based on new information. The major difference in methodology is in the approach to income distribution of workers and housing demand. Differences in adjustment factors include the commute relationships, the number of workers per household and the affordability gaps. All in all, however, the similarity in logic and bottom line conclusions are more important than the differences. The RHA analysis concludes that each square foot of office space is linked to the demand for .000386 affordable housing units; the KMA analysis places the linkage at .000517 housing units per square foot. The fee amount difference is largely attributable to the affordability gap difference — or the level of subsidy required to produce a housing unit at each affordability level.

As noted in the Introduction, the earlier analysis examined only office buildings and focused on the downtown. This analysis examines six building types on a citywide basis.

Qualifiers to the Analysis

The analysis presented in this report has been based on readily available information. The 1990 U.S. Census was frequently utilized. The California State Employment Development Department (EDD) and County Business Patterns were principal sources. Local data was taken into account wherever available. The appendix section presents a full documentation of sources and data utilized.

It should be recognized that any analysis of this nature, no matter how in-depth, contains a great many numbers and judgments relating to them. It will always be possible to take issue with a specific number. We do not believe, however, that adjusting one or several individual numbers would fundamentally alter the conclusions of the analysis.

SECTION II. MACRO ECONOMIC JOBS HOUSING ANALYSIS

This section examines the history of building construction, employment growth and affordable housing production in San Francisco in the past and looking ahead. The relationships in San Francisco that underlie the jobs housing linkage are examined in detail and the overall experience with the relationship between construction and employment growth are reviewed to establish the nexus. The history of housing production, and particularly affordable housing production to keep up with the demand generated by new workers is also examined.

This section also contains a projection of jobs and dwelling units as prepared by local planning agencies and the City to reflect the many large scale projects — mainly proposed redevelopment projects and military base conversions — in planning at this time. These projections confirm that affordable housing will not be produced at a pace sufficient to meet the demand generated by employment growth, a condition needing mitigation in the decades ahead. It must be emphasized, however, that the nexus relationships as established in this analysis, are not contingent upon a specific projected level of employment growth being realized. The relationships linking construction, employment, and affordable housing are critical to the nexus, but the specific projected levels of growth are not.

A. EMPLOYMENT HISTORY AND TRENDS

1. Total Employment Growth in San Francisco

Employment data is collected primarily by the State Department of Employment Development (EDD) and also by the U.S. Department of Commerce. The Association of Bay Area Governments (ABAG) utilizes both these sources to develop total figures for the decade and mid-decade and develops projections out approximately 20 years. ABAG is the most widely used database by local planning agencies.

According to ABAG, employment growth in the City of San Francisco during the 1980's decade registered an increase of 14,440 jobs. Total employment, however, declined during the early 1990's with the California recession and it is expected that most of the employment growth in the late 1990's will be needed to return to the 1990 level. ABAG historic information and estimates are:

1980	552,200
1990	566,640
1995	534,610
2000	567,920

The above ABAG estimates are from the ABAG 96 projection series which was prepared in mid 1995. More recent information suggests that when the ABAG 98 series is published in late 1997, that the 1995 figure will be adjusted upward slightly and that the year 2000 figure will also be increased, suggesting a return to the 1990 level of total employment in the late 1990's. Because of the Recession, the historic period, from 1980 to 1990 is useful to examine as a growth period and the period from 1990 to 2000 as a period of recession and recovery.

2. Employment by Growth Sector

Examination of total employment obscures the dynamics and shifts that have occurred within individual sectors of the San Francisco economy. Some industries in San Francisco have been experiencing a long-term decline while others have been expanding, but examination of only totals does not allow an understanding of these changes. In order to examine the individual industries associated with the nexus program, KMA obtained an unpublished annual series of data from ABAG. This series enables an aggregation of employment subcategories by building type. This series, which provides annual data from 1972 to 1994 based on County Business Patterns reporting, has an additional benefit of being more complete than other published surveys. It includes estimates of self-employed, contract employees, and others not covered in the "wage and salary" series. This series is presented in Appendix A.

Of particular interest is a breakdown of the Services industry, which is the largest and most rapidly growing of all the employment "industries" or Standard Industrial Categories (SIC's). Services now represent over 45% of total non-governmental employment and cover a range of professional and business services, which are predominantly office users, medical services, the hotel and lodging sector, an array of personal (beauty and barber, etc.) and repair services which mostly operate out of retail type spaces, plus others of a more miscellaneous nature (like veterinary medical, funeral parlors, etc.).

KMA has reorganized the ABAG data series by building type or "land use activity," using the same reclassifications as the Planning Department uses in its Commerce and Industry reporting, but with the advantage of the more complete data series, as indicated previously.

Office Employment

Office space workers are predominantly comprised of the SIC grouping of Finance Insurance and Real Estate (FIRE) and subsets of the Services grouping — business services, legal services, engineering and management, and some others. In 1972, there were roughly 75,000 employees in the FIRE categories and 51,000 in the Services subsets. By 1994, the services group had grown to over 135,000 employees and the FIRE to 86,000 employees, quite shifting the balance from 60% FIRE 40% Services to 40% FIRE 60% services. This was due to both the rapid growth in some of the service sectors such as legal, which went from 4,428 persons in 1972 to a peak of over 20,000 persons in 1990 and 1991, and business services which roughly doubled, and to some major changes in the FIRE categories. The financial institutions in particular have seen both major growth over the period and some major losses in San Francisco due to mergers

and/or relocations of back office functions to suburban locations. The insurance sector has experienced similar transfers out of the City while other sectors of FIRE have experienced increases such as security and commodity brokers.

In addition to FIRE and the Services subsectors, there is significant office use in San Francisco by the management and administrative functions of companies in other classifications such as manufacturing (e.g., Foremost McKesson, Levi Strauss), retail (e.g., The Gap or Williams Sonoma), and Transportation Communications and Utilities (e.g., PG&E, Southern Pacific). Many of the companies in these industries have relocated functions from San Francisco over the past two decades. On the other hand, industries that have not traditionally been users of office space, such as Wholesale Trade, are now more and more becoming office space users. Unfortunately, there is no reliable data available to segregate the office functions from other functions in any of these categories.

From the major office user categories that can be summarized, office employment grew from 127,000 jobs in the 1972 to a high of 228,000 jobs in 1991. During the 1980's, the growth was from 171,000 to 216,000 jobs.

Retail Employment

Retail trade has represented an expanding employment base in San Francisco over the long term. In 1972 there were approximately 55,000 retail jobs in the City, a level which grew to over 80,000 jobs in the 1989 and 1990 years. Retail, as an industry that is sensitive to recession, experienced jobs losses in the 1990's, as indicated by the 1994 reported level of 73,332 jobs.

Hotel Employment

Employment in hotels and other types of lodging has been growing over the long term in San Francisco. In 1972, there were approximately 10,000 hotel workers, and this level almost doubled at the peak in 1992. The 1990's recession has affected employment levels in hotels less than it has affected other sectors, such that the 1994 figures are only slightly lower than the 1990 levels.

Health Services Employment

Health services has been a major growth industry in San Francisco as it has been on the national level. In 1972 there were a little over 17,000 persons employed in private sector health services in San Francisco. This level more than doubled by the end of the 1980's and employment peaked at a little over 39,000 employees in 1991, and has declined slightly since then. It is noted that these figures do not include government health services employees which accounts for substantial additional employment in San Francisco with San Francisco General Hospital and the U.C. Medical Center.

Industrial Employment

Industrial as a "land use activity" is comprised of manufacturing, wholesale trade, and the activities of most of the transportation, communications and utilities (TCU) categories. As a generality, all of these sectors have been experiencing long term decline for many decades in San Francisco. Manufacturing of both durable and non-durable goods has been leaving the City, the Port has been in decline, and the wholesale and warehousing subsectors have done much transferring out of San Francisco as well.

Total industrial employment was approximately 145,600 jobs in 1972 at the beginning of the time series, and has dropped to 99,400 jobs by 1994, or a decline of 45%. The only significant exception to the decline has been apparel manufacturing which has grown from approximately 8,000 jobs in 1972 to approximately 12,000 jobs in the 1990's. Printing and publishing is another sizable category in San Francisco that has been fairly stable, or flat in employment, over the 23 year period, as opposed to declining. Overall, the industrial land use activity group has been losing 2,100 jobs per year on average over the 22-year period.

Industrial Decline and Total Employment Growth

By examining the growth by major building type or "land use activity," as presented in the historic series data, it is evident that growth in employment in some building types has been offset by losses in other building types. Employment growth in office retail, hotel, and medical land use activities has been partially offset by losses in the industrial land use activity group. To a far lesser extent there have also been job losses in the military component of San Francisco employment.

From a nexus perspective, it is important to recognize these dynamics. Every new office employee, for example, is not a net new employee in that there has been a fraction of a job lost in industrial employment. If it is assumed as an operating premise that labor is mobile and relocates to where new employment is available, then it must also be assumed that when jobs are lost workers migrate out of the City in search of employment elsewhere — or seek reemployment in a new industry. In either case, housing of an industrial worker whose job ends is either made available for replacement employees or, in the case of the industrial worker who gets a new job in an office or retail store, there is no additional housing needed because the worker is already housed.

An analysis of the 22-year time series indicates there were approximately 47,000 industrial jobs lost against gains of 188,000 in all other non-governmental categories. In other words, for every four jobs gained, a job was lost; or for every job gained there was a loss of .25 jobs. During the 1980's decade, the relationship was close to 1.67 or 0.6 of a job was lost for every new job that was gained in the office, retail and other categories under review.

The ABAG 96 published projection series reports similar declines of industrial employment at 29,350 jobs during the 1980 to 1990 period. This series, which has more limited information on

the services industries, suggests that gains in other categories were 43,750 for the same period, for a net gain of 14,440 jobs over the decade. This series would suggest that for every job gained in San Francisco in categories other than industrial, there was 0.67 jobs lost in industrial employment, similar to the other data series.

2. Employment Growth and Building Construction

An underlying premise of the jobs housing nexus and the placing of a burden on the construction of workplaces is that there is a direct relationship between the new workplaces and new employees. In this section some of these historic relationships are examined. The construction of office space in particular is closely monitored both by the real estate brokerage and development community and also by the Planning Department. Construction of other building types or "land use activities" is not similarly monitored and quantified. This examination of the relationship therefore focuses on office construction and office employment growth.

Historic office construction by groupings of several years dating back to 1955 was assembled for review against the growth in office employment. Several real estate brokerage firms active in office space leasing have assembled thorough inventories of San Francisco office buildings that encompass all areas of the City and all types of office space. One firm with a comprehensive database places the total inventory at over 65 million square feet of space, of which nearly 80% has been constructed since 1955. Some databases are focused only on large buildings or the downtown; other databases indicate even higher total inventories but also include retail and wholesale type space such as Showplace Square. The series indicated in Table II-1 closely approximates the addition to the inventory as reported by the Planning Department since 1984 as part of the Downtown Plan Monitoring Program.

Analysis of the total inventory is useful in that the occupancy level throughout the inventory can be taken into account. As large amounts of office space became available through new construction at the end of the 1980's and the Recession curtailed employment growth, vacancy levels grew to the 12% range. With the increase in occupied inventory, we can examine occupied space compared to employment growth and confirm that a clear relationship exists:

1980-1990

Occupied office space	1990	60.9 M SF
Occupied office space	1980	40.0 M SF
Increase in occupied space		20.8 M SF

Office employment	1991	228,000 jobs
Office employment	1980	171,000 jobs
Increase in office employment		57,000 jobs
Relationship of the increases		365 SF/employee

1984-1994

Relationship of the increases	305 SF/employee

The amount of occupied office space per employee is similar to the office employment density identified by surveys. Surveys of occupied buildings generally find office densities in the range of 200 to 400 square feet per employee depending on the type activity. Back office functions and government employees are usually at higher density (or lower square feet per employee) than corporate offices and professional firms. Office density also varies with economic cycles. Firms often reduce employment during a recession but may not move to smaller spaces; they just occupy the same space less densely. The generally accepted average office density in San Francisco is 275 square feet per employees for normal economic times. This is the same density utilized in the 1984 Recht Hausrath analysis.

An employment growth series analyzed against an office space growth series does not produce a perfect parallel relationship because:

- The EDD methodology and classification system for employment is not designed for relating employment to land use activity or building type. A firm is classified by EDD based on its principal product or service. A forest products or oil company with offices in San Francisco is a manufacturing firm, even though all San Francisco employees are office workers. Many real estate and insurance brokers work out of retail spaces. The examples of cross over are endless.

- There are many dynamics of change affecting how firms employ workers and conduct their business. As an example, what may appear to be a decline in one sector can be, in actuality, a shift from regular employees to temporary services and contract arrangements, all of which make the business services sector such a high growth sector.

- Construction of new office buildings is carefully monitored and quantified. Removal of old space through demolition or conversion to other uses is not monitored at all. Thus all office space construction is not net new space in a City such as San Francisco. (A housing nexus ordinance such as the OAHHP ordinance includes an offset provision for demolition of old space which means the fee applies only to net new space.)

- Government employees often account for the occupancy of significant amounts of privately owned office space. There is no database in San Francisco to readily adjust for government occupancy from one time period to another.

Notwithstanding these difficulties, we can still say that the historic nexus between new construction and growth in office employment clearly exists and that there is a quantifiable nexus relationship over a long time frame that evens out business cycles.

B. CHARACTERISTICS OF SAN FRANCISCO EMPLOYEES AND THEIR HOUSEHOLDS

This section examines several key characteristics of employees in San Francisco and their households that are particularly relevant to the jobs affordable housing linkage. These are: the number of workers per household on average, income characteristics, and commute patterns. These characteristics become key factors in the micro economic analysis of the nexus between workspace buildings and affordable housing demand.

1. Workers per Household

The workers per household characteristic provides the link between number of employees and number of households associated with the employees, recognizing that most households today have more than one worker.

The number of workers per household in a given geographic area is a function of household size, labor force participation rate, and employment availability. Historically, labor force participation has been rising since the early 1960's but appears to have leveled off in the 1990's. This has been true in San Francisco and throughout the country. Another long-term national trend that has also occurred in San Francisco is decreasing household size; however, in the 1980's in San Francisco there was an increase, largely a reflection of the immigrant population which is characterized by large families and extended households. Employed persons per household or workers per household has also increased during the 1980's in San Francisco as household size edged up and more household members went to work. According to ABAG, these factors are believed to have peaked in 1990 and are expected to decline slightly. Appendix B provides more detail and discussion of these relationships.

For a nexus analysis, the characteristic of most direct interest is the number of workers per worker household. Worker households are distinguished from total households in that the universe of worker households does not include the elderly or households in which members are retired or do not work for other reasons. Student households and unemployed households on public assistance are excluded from worker households.

In San Francisco in 1990, the number of workers per worker household was 1.56. In 1980 the relationship was 1.50, or slightly lower. ABAG predicts that this relationship will increase to 1.63 by 2010. The number of workers per household in San Francisco is generally lower than in most suburban areas or large regional areas due primarily to the higher than average percentage of single person households.

2. Wages and Salaries of San Francisco Workers and Household Income

The average wage or salary of San Francisco workers and the income of households formed by the 1.56 workers determines the household's ability to afford housing. Both households and housing units are expressed in relation to median income for the metropolitan area.

The San Francisco City Planning Department Commerce and Industry Inventory reports information on gross wages and salaries paid to San Francisco workers, aggregated by land use activity. The Inventory also reports the number of employees associated with the payments, to produce an average per employee as indicated below:

SAN FRANCISCO WAGES BY LAND USE ACTIVITY: 1995

	Office	Retail	Industrial	Hotel	Cultural/ Institut.	Govern.	Other	Total
95' Wages (1)	$8,530	$1,628	$4,873	$418	$3,481	$1,546	$47	$20,431
'95 Employment	167,379	81,878	114,007	18,287	109,546	31,624	1,383	524,104
Ave. Wage	$50,962	$19,883	$42,743	$22,858	$31,777	$48,887	$33,984	$38,983

Note: '95 Wages in current millions of dollars
Source: San Francisco Planning Department, 1996
Commerce and Industry Inventory, tables 3.1.1 and 5.1.1

Note: This series of employment data differs from the more comprehensive series reviewed in the previous section which also includes self employed and others not covered in this series.

When workers in these activities form households, their income, either alone or in combination with other worker produces the household income. In addition, of course, there may be children and/or other household members who are not employed. According to the U.S. Department of Housing and Urban Development (HUD) the median income of a four-person household in San Francisco in 1997 was $64,400. This analysis focuses on three classifications of household income: moderate, low and very low income.

The income limits for single person households, and four person households for San Francisco in 1997 are as follows:

	1 Person	4 Persons
Very low (50%)	$22,550	$32,200
Lower (70%)	$31,450	$44,950
Median (100%)	$45,100	$64,400
Moderate (120%)	$54,100	$77,300

The above income levels are the official levels utilized by HUD and the State for all housing programs for the San Francisco Primary Metropolitan Statistical Area (PMSA). The PMSA is comprised of three counties — San Francisco, Marin, and San Mateo. Of these three counties, San Francisco has the lowest income structure. According to the 1990 Census, the 1989 median income of each county was:

	Median Household Income 1989 Person	Relationship To PMSA
San Francisco	$33,414	81%
Marin	$48,544	117%
San Mateo	$45,437	110%
PMSA (All 3 Counties)	$41,459	100%

In summary, the San Francisco median income is approximately 80% of the PMSA average. As a result, use of the official income level in this analysis overstates the income of San Francisco residents.

3. Commute Relationships and Trends

Section I provided a discussion of the role of the commute adjustment in a nexus analysis. This section provides a brief summary of trends and relationships, which is supported by further detail in Appendix C. The major relationship of interest in a nexus analysis is the share of San Francisco workers who also live in San Francisco. Where San Francisco residents work is not directly relevant; there is only an indirect relevance insofar as the popularity of San Francisco as a place to live drives up the cost of housing and contributes to the shortage of affordable housing.

The two major sources of information on commute relationships are the U.S. Census, which is cross-analyzed for the region by ABAG and the Metropolitan Transportation Commission (MTC) which works with census data. The other source is the 1992 Citywide Travel Behavior Survey (CBTS) which has far more extensive information on mode of transportation by land use activity and other data of interest to transportation planners.

The proportion of San Francisco jobs held by local residents has been declining for decades, but not at an even rate. During the 1970's the drop was dramatic when at the beginning of the decade 62.5% of the jobs were held by people who also lived in the City and at the end of the decade the share had dropped to 56%. Analysis of where most of the new commuters were living by 1980 suggests that the opening of the Transbay BART tube may have been an important factor in facilitating commute from the East Bay counties. During the 1980's, however, the continued decline was very slight, or down to 55%. The 1992 CBTS study placed the relationship closer to 50.2% of workers living in the City for the City overall.

ABAG/MTC believes the 55% relationship will be fairly stable projecting ahead. In the year 2000 ABAG/MTC projects that 54.34% of all workers in San Francisco will live there and in 2010 this relationship will be 55.13%. This analysis uses 55%.

The CBTS and other survey data suggests that commute relationships in the downtown probably differ from the rest of the City, or the City as a whole. (See Appendix C.) These surveys indicate that there is a higher probability that downtown, or C-3 District, workers will live outside San Francisco than workers elsewhere in the City. This indication also parallels other indications that office workers are more likely to live outside the City than workers in retail, service and hotel activities. All of these findings point to the high probability that less than 55% of the higher paid office workers live in the City while more than 55% of retail, hotel and workers in other land use activities live in the City. In summary, use of the 55% commute adjustment is another conservative aspect of this analysis because more lower paid workers probably would work in the City were affordable housing available.

C. HOUSING PRODUCTION AND CONDITIONS

At the beginning of this section, growth in employment was examined and it was determined from the ABAG 96 published series that there were 14,440 jobs gained over the decade. The unpublished more detailed series by land use activity indicated a substantially higher level of new employment. This section examines growth in housing units in San Francisco to meet the demand of new worker households. This section also provides a summary of some of the characteristics of the housing market that affect the ability of worker families to find housing in San Francisco. Appendix D provides additional documentation and data series in support of this summarized information.

1. Housing Production

Annual dwelling unit construction in San Francisco from 1976 through 1995 tells us that approximately 26,600 units were completed over the 20-year period. After adjusting for units demolished, the annual net gain each year averaged 1,158 units. Compared to other jurisdictions, production in the City is fairly stable and does not vary widely from year to year. The high year was 1989 when 2,345 new units were added and the low year was 1993 when only

288 new units were added, but in most years new unit production was far closer to the 1,158 average. The 1980's decade average was 1,312 units per year.

The 1990's Recession has affected residential construction, resulting in an average of only 866 units per year in the 1991 through 1995 years.

As might be expected, the vast majority of units are multi-family (93%) and 67% of the units since 1986 have been in buildings of 20 or more units.

2. Production by Affordability Level

Since the early 1980's there has been a concerted effort on the part of the City to increase the production of housing affordable to moderate and lower income households. The OAHHP program, which has produced both units and fees, funds affordable housing projects. In addition, the Redevelopment Agency has produced a substantial number of new units. Federal and state programs, such the tax credit program, also play important roles. Since 1980, 5,477 units have been built as part of these programs.

The 5,477 affordable units, or those with income restrictions, built in San Francisco since 1980 represent approximately 27% of the total 20,610 units built over the period, with the other 73% "market rate." Of the income restricted affordable units, slightly over 50% have been targeted toward very low-income households, or those at 50% of median income or less. Another 31% have been targeted to low income households, or up to 80% of median income, and the remaining 16% have been targeted to moderate income or up to 120% of median income.

As an annual average since 1980, 365 affordable units have been added each year.

Of the market rate units, it must be clarified that many are built and priced in a manner affordable to moderate-income households. A major share of rental units in particular is within the moderate affordability range, but without income restrictions there is no assurance that they will remain affordable. Very few for sale units, however, are able to built affordable to even moderate income households without public assistance in some form.

3. Housing Conditions

San Francisco repeatedly prevails in national surveys as one of the most expensive housing markets in the county. The San Francisco housing market has long been characterized by very low vacancy rates, usually well under 5%, although in occasional Census years a supply of new unsold units will give the appearance of a higher rate. Any survey that is confined to units generally available for rent or sale (as opposed to vacation home, corporate units, etc.) indicates very low vacancy levels in San Francisco.

Over the past 15 years, rent levels in San Francisco have gone through cycles of moderate increases followed by spurts of rapid increases. During the 1980's decade the Census reported a rise of 130% and a 1990 median rent of $613 per month. Since 1990, however, the rise in rental rates has been steeper, with a 16% increase recorded by the Bay Area Council in the 1990 to 1995 period, and the 1995 average rent for advertised vacant units at $1,075 per month.

Home prices in San Francisco have followed different cycles. The Census recorded a 186% increase over the 1980 to 1990 decade, for a median value of $298,000 in 1990. Another source that tracks price movements annually has recorded decreases in values during the 1990's Recession, but increases in 1994 and 1995 to a median value of $313,000 per unit.

4. Affordability of Housing Supply

As demonstrated in the next section in the Affordability Gap analysis, a median-income household of two persons can afford as much as $1,248 per month in rent for a one bedroom unit, according to government housing affordability standards, or higher than the median rent in San Francisco according to the surveys. This same median-income household, again using government standards, can afford an ownership unit costing up to $171,000 or far less than the median value of San Francisco for sale units. The moderate-income household at 120% of median can afford to spend $205,400 to own a unit, but this is still far short of the $313,000 median priced unit.

The cost of both rental and ownership housing increased at a more rapid rate than income during the 1980's decade. According to the 1980 and 1990 Census, both median rent and median monthly mortgage payment increased by a substantially greater amount than median income over the ten year period.

Housing Cost vs. Income Growth in San Francisco
Department of City Planning

	1980	1990	Increase
Median Mortgage Cost	$394	$1,168	296%
Median Rent	$285	$653	229%
Median Household Income	$15,866	$33,414	211%

Source: 1980 and 1990 U.S. Census

These changes made housing affordability an ever greater problem by the end of the 1980's than it was at the beginning of the decade. Since 1990, we know that the three county PMSA median income has increased from $45,000 to $64,400 in 1997 or by 41%, but all indications are that rents for available units (as opposed to rent controlled units in continued occupancy by the same tenant) have increased by at least the same percentage. With for sale unit prices stable during the

Recession, most likely there was some improvement in the affordability gap for ownership units during the first half of the 1990's. However, at the time of this writing in spring 1997, prices are increasing steeply again.

D. EMPLOYMENT AND HOUSEHOLD PROJECTIONS

The jobs housing nexus relationship in support of a burden on new workspaces to contribute to new housing is based on best estimates of future trends and relationships in San Francisco. In this context, projections of employment and households are provided in this section.

1. ABAG Employment Projection

Two projection series are available at this time. The first is the ABAG 96 series, the most recent available during spring 1997, which is widely used by planning agencies throughout the Bay Area and in San Francisco. The ABAG 96 employment projections are:

1990	566,640
1995	534,610
2000	527,920
2005	600,130
2010	623,100
2015	638,670
2000 - 2015 Total Increase	70,750
Annual Average	4,720

The total employment growth and annual average is indicated for the 2000 to 2015 period because the 1995 to 2000 period will produce no net increase in employment over the 1990 level.

2. Cumulative Growth Forecast

Keyser Marston Associates, Inc. (KMA) has also prepared an alternative projection series that takes into account all the major projects in planning in San Francisco at this time. The projection was prepared for EIR purposes and, as such, starts with the premise that all the projects are implemented. This projection series, called the Cumulative Growth Forecast, was prepared under contract to the San Francisco Redevelopment Agency, working in close coordination with both Redevelopment Agency and Planning Department staff. Projections were independently prepared for each project area based on plans and input from project area staff. After assembling projections of development activity or employment for each area, KMA evaluated the cumulative activity from a market demand perspective to insure that the cumulative projections could meet a market capacity test.

The projects and areas individually examined in the Cumulative Growth Forecast are:

- Transbay Terminal Redevelopment Survey Area
- Rincon Point South Beach Redevelopment Area and proposed amendments, which includes the Giants Ballpark
- Mission Bay North Redevelopment Survey Area - includes entertainment and residential
- Mission Bay South Redevelopment Survey Area - includes new UCSF campus, biotech industrial and residential,
- Bayview Hunters Point Redevelopment Survey Area - includes 49ers stadium and retail mall
- Mid Market Redevelopment Survey Area - residential, new retail complex using old Emporium building, etc.
- North of Market potential survey area
- All other existing Redevelopment Area current plans
- Other South of Market area not included above
- Financial Distinct
- Presidio
- Treasure Island
- Hunters Point Naval Shipyard

A lesser level of analysis was conducted for the rest of the City.

The Cumulative Growth Forecast was prepared only for the year 2015. The employment growth forecast is:

1990	566,600 (ABAG estimate)
1995	534,600 (ABAG estimate)
2000	568,000 (ABAG estimate)
2015	665,400
2000 - 2015 Total	97,400
2000-2015 Annual	6,490

The Cumulative Growth Forecast in many respects serves as a "High Range" Projection in that it assumes the many projects in planning are implemented within a prescribed time frame (which is not necessarily that all projects are built out by 2015). The Cumulative Growth Forecast and the ABAG 96 series bracket the growth in the 2000 to 2015 time frame at 4,700 to 6,500 jobs per year on average over the period.

3. Industrial Employment and Total Employment

The analysis of employment growth during the 1980 decade found that employment increases were experienced in most categories and all "land use activities" — office, retail, etc. with the exception of industrial. Using the ABAG detailed series (Appendix A) which enabled the aggregation by land use activity, we learned that for every job gained in there was an approximate 0.25 jobs lost in the industrial land use activity over the 22 year time period. (Industrial land use activity includes the manufacturing, transportation, communications, and utilities, and wholesale trade sectors). Using the published ABAG 96 series, the industrial loss appears at nearly 0.67 jobs lost in industrial for other jobs gained during the 1980's decade.

The ABAG 96 series projection, however, anticipates that the industrial land use activity sectors that experienced so much decline during the 1980's decade will stabilize and in fact experience increases between 1995 and 2015. All three sectors — manufacturing, TCU and wholesale trade — will grow according to ABAG, resulting in no offset being required in other sectors during the projection period. In the Cumulative Growth Forecast work effort, in consultation with the Planning Department, we concluded that continued decline at a modest level of 1,000 jobs per year, or 20,000 more jobs will be lost in these industrial sectors through the forecast period. The loss of 1,000 jobs per year against gains of 7,490 jobs per year, resulting in 6,490 net new jobs per year, is a ratio of 0.13 jobs lost for every job gained.

To be conservative, this analysis incorporates the long-term historic relationship of 0.25 jobs lost for every new one gained in office, retail, and other employment.

4. Household Projections

Household projections were developed as part of both the ABAG 96 and the Cumulative Growth Forecast series. Household projections closely parallel dwelling unit projections with a minor adjustment for vacancy. The methodology for projection in both cases is anticipated dwelling unit construction given past trends and major planned projects. The household projections for the two forecasts are:

Total Households
San Francisco

	ABAG 96	Cumulative Growth Forecast
1990	305,580	305,580
1995	311,430	311,430
2000	317,730	317,730
2005	325,600	N/A
2010	333,290	N/A
2015	338,390	343,620
1995 - 2015 Annual Ave.	1,350	1,610
2000 - 2015 Annual Ave.	1,380	1,730

The Cumulative Growth Forecast includes the revised plans for Mission Bay and the many residential projects in the proposed redevelopment areas. Nonetheless, the spread between the ABAG 96 projection and the KMA Cumulative Growth Forecast is about 300 households per year; the Cumulative Forecast being 19% higher than the ABAG projection.

It is recalled that the historic twenty-year production of new dwelling units was in the range of 1,100 to 1,300 units per year. The City has a target production of 2,000 per year which would not be met with either projection.

5. Projected Employment Growth and Housing Demand

The analysis of relationships among employees, workers per household, and where San Francisco workers live allows us to evaluate whether the projected housing supply will be sufficient to meet the demand of new San Francisco workers. The key issue for the Affordable Housing nexus program is whether affordable units will be in sufficient supply. With the two sets of projections for future employment and housing growth, and based on affordability conditions and historic experience, we are able to draw conclusions on the need for linking new workspaces with a share of the responsibility for providing affordable housing.

The ABAG 96 and Cumulative Growth Forecast project annual employment growth during the fifteen-year period after the year 2000 in the range of 4,720 to 6,490 jobs per year. This projection incorporates any loss of employment in industrial land use activities; therefore, these increases are net new jobs. We can translate these new workers into new worker households using the 1.63 workers per worker relationship and then assign demand in San Francisco based on the 55% relationship. The resulting total housing demand in the City is:

Projected Employee Housing Demand
2000-2015

	ABAG 96	Cumulative Growth Forecast
New Employees Per Year	4,270	6,490
New Employee Households @1.63	2,620	3,980
New Employee Household Demand in San Francisco @55%	1,440	2,190
Dwelling Unit Production (Supply)	1,380	1,730
Excess of Demand over Supply	60	460

This level demand generated by new employee households is compared to housing production projections at 1,380 units per year for the ABAG projection 1,730 units per year with the Cumulative Growth Forecast projection. In both projections, employee household demand will exceed projected dwelling unit production. Insufficient supply will result in increased rents and home prices, further exacerbating the inaffordability of San Francisco's housing supply.

New employee household demand is not equivalent to total housing demand in San Francisco. The other major source of demand is households where one or more member works in other counties. In addition, there are new retirement households, new student households, and new second residence households. Total housing demand is significantly greater than demand from worker households alone.

In summary, projected employment and housing supply indicate that supply will be insufficient to meet demand and cause the cost of housing to increase even further. With the OAHHP Program and other efforts by the City since the early 1980's, affordable units were produced at a rate of 365 units per year. This rate of production will have to be substantially increased in the future or current conditions will worsen along with all the impacts related thereto — such as more overcrowding, more overpaying, and more workers will be forced to seek affordable housing outside the City and burden the transportation system.

TABLE 1
HISTORIC OFFICE BUILDING CONSTRUCTION
CITY OF SAN FRANCISCO
JOBS HOUSING NEXUS ANALYSIS

	Total Area Sq.Ft.	No. Years	Annual Sq.Ft.	Total Inventory Sq.Ft.	Occupied Inventory	
					Rate *	Sq.Ft.
Buildings Complete through 1955	13.63M		N.A.	13.62M		
Buildings Completed 1956 - 1965	4.47M	11	.41M	18.10M	@95%	19.85M
Buildings Completed 1966 - 1975	16.00M	10	1.60M	34.10M	@95%	32.40M
Buildings Completed 1976 - 1980	8.04M	5	1.61M	42.13M	@95%	40.00M
Buildings Completed 1981 - 1985	12.73M	5	2.55M	54.86M	@93%	51.00M
Buildings Completed 1986 - 1990	10.48M	5	2.10M	65.34M	@88%	57.50M
Buildings Completed 1991 - 1995	1.72M	5	0.35M	65.51M	@93%	60.90M

* KMA estimate based on real estate brokerage material.

Notes: Total SF includes areas outside downtown.
Building completion date differs from approval date or absorption information.
Comprises Classes A, B, C & D and owner occupied buildings.
Excludes government owned buildings.
Not net new space, no record of space demolished.

Source: TRI Commercial Real Estate
Keyser Marston Associates, Inc.

19064/0001-014.xls

SECTION III: MICRO ECONOMIC JOBS HOUSING ANALYSIS

This section presents a summary of the analysis of the linkage between non-residential building types and the number of lower income households that will, on average, be associated with them. This section should not be read or reproduced without the narrative discussions presented in the previous sections.

Analysis Approach and Framework

The micro-analysis establishes the jobs housing linkages for individual building types or "land use activities," using the relationships presented and discussed in the Macro Economic Jobs Housing Analysis for San Francisco overall. The sources used in this analysis are the same as the Macro analysis unless otherwise noted.

The analysis approach is to examine the employment associated with the development of 100,000 square foot building modules of six building types. Then through a series of linkage steps, the employees are converted to households and housing units in demand by affordability level. The findings are expressed in terms of numbers of households related to building area. In the final step we convert the numbers of households back to the per square foot level.

The building types or "land use activities" addressed in the analysis are:

- Office
- Retail/Service
- Hotel
- Research and Development
- Cultural/Institutional
- Medical Related

The analysis is conducted utilizing a computerized model that KMA has developed for application in several other jurisdictions for which the firm has conducted jobs housing nexus analyses. More information on the model and inputs is provided in Appendix G.

Analysis Steps

Tables 2 through 5 at the end of this section summarize the nexus analysis steps for six building types. Following is an expansion of each step of the analysis.

Step 1 - Estimates of Total New Employees

The first step identifies the total number of direct employees who will work at or in the building type being analyzed. Employment densities for office, retail, hotel, and cultural/institutional, are based on ratios used by the City of San Francisco Planning Department in other contexts (primarily drawing from the 1988 Mission Bay EIR). The densities for these building types were reviewed with Planning Department staff as part of the Cumulative Growth Forecast work program.

The employment density for medical related uses was drawn from analysis of the University of California Medical Center (UCSF) new campus EIR and the Kaiser Permanente expansion EIR. In addition, KMA has developed employment density factors for hospitals and other medical facilities elsewhere. The employment density for Research and Development (R&D) is also based on KMA prior work in cities, such as Palo Alto, where R&D is a predominant land use activity and has been surveyed to determine employment density changing density patterns over time.

See Sections I and II for major underlying assumptions. All density factors include a built-in adjustment for normal vacancy in the 5% range. Recessionary vacancies and lower intensity use of workspace buildings during a recession are short-term conditions and not relevant in the housing demand analysis. An affordable housing obligation is a one-time measure which mitigates the impacts over the life of the building.

In the office example, the 100,000 square foot building houses 364 employees, the R&D building 250 employees, etc.

Step 2 - Adjustment for Declining Industrial Employment

This step adjusts for projected declining employment in industrial land use activity, particularly manufacturing, TCU (transportation, communication and utilities) and wholesale trade. As presented in Section II, these sectors have been in long term decline in San Francisco, where depending on the time frame, for every job gained in the office, retail, hotel and other land use activities, 0.25 to .67 jobs were lost in industrial land use activities. However, the projection by ABAG concludes that the decline will end and that employment in these industrial land use sectors will actually experience some minor increase in the decades ahead. Alternatively, KMA has projected a continued decline at a .13 ratio (See Section II). To be conservative in the analysis, however, an even greater discount of 0.25 is used.

The adjustment is made to insure that only net new jobs to San Francisco are counted in the analysis. Replacement jobs do not require additional housing units.

In the office building, the 364 employees are adjusted to 273 net new employees in San Francisco.

Step 3 - Estimate of Number of Households

This step recognizes that there is frequently more than one employee per household and reduces the number of employees to the number of households. The 1990 U.S. Census figure for San Francisco of 1.63 employees per household was used. See Section II.

The number of employee households in our office building is 167.

Step 4 - Breakdown of Employees by Occupation

This step divides the employees representing new households into occupational groupings using industry by occupation matrices prepared by the U.S. Department of Labor and EDD. The occupational categories are Professional/Managerial, Technical/Sales, Clerical, Service, Craft and Operator/Laborer. "Industry" categories closely approximate the building types used in the analysis.

The methodology of individually examining the occupational composition of each building type allows the nexus to take into account the employment differences among land use activities.

Step 5 - Estimates of Employees Meeting the Lower Income Definitions

In this step, occupation is translated to income distribution without consideration to household size which is accounted for in the next step. Therefore, the analysis identifies the number of employees who earn the qualifying amount for the largest size household, or $34,400 in the case of very low-income households, and $46,000 in the case of low-income households. Sources of information for this analysis step include wage data for the various occupations consistent with the building type (e.g., different types of clerical worker wages for the office category) from the Bureau of Labor Statistics and EDD listings. See Appendix E for more information.

Step 6 - Estimate of Household Size Distribution

In this step, household size distribution was sought in order to move from income distribution to the income and size combinations that meet the income definition established by HUD. Since household size varies with income, we used the closest U.S. Census tally and calculated the size distribution for the three income categories (very low, low, and moderate).

In San Francisco, the household size distribution is unusual (compared to the suburbs or large regions) in the extraordinary share of households that are single person households. San Francisco also has a disproportional share of very large households compared to a large region.

Step 7 - Estimate of Households that meet HUD Size and Income Criteria

In this step we had to build a matrix of household size and income to establish probability factors for the two criteria in combination. For each occupational group a probability factor was calculated for each of HUD's income and household size levels. This step is performed for each occupational category and multiplied by the number of households.

Step 8 -- Adjustment to Eliminate Most Multiple Earner Households

This last step makes an adjustment to eliminate, or reallocate to higher income groups, most of the households that have two or more earners, because these multiple earner households may have incomes that make them no longer qualify in the lower income categories. Based on data from the U.S. Census, we have calculated the number of multiple earner households that fall in each income category. From this data we were able to eliminate from the income category those multiple earner households with incomes in excess of the HUD limits.

Step 9 - Adjustment to Discount for Non-Resident Worker

Up to this point, the analysis has assumed all workers would live in San Francisco. As discussed in the previous sections, it is assumed 55% of the employees will demand housing in San Francisco. See Sections I and II.

Analysis Conclusions

The conclusions of the analysis for the six building types, each 100,000 sq.ft. in size, as presented in Tables 2 through 5 are summarized below (figures are rounded):

	Office	Retail	Hotel	Medical	R&D	Cultural/ Institutional
Employees	364	286	222	333	250	113
Net New Employee Households	167	131	102	153	115	61
Demand in SF	91	72	56	84	63	34
Above Mod. HH	39	27	21	37	27	15
Moderate HH	25	19	15	23	17	9
Low HH	16	16	12	15	12	6
Very Low HH	11	10	8	9	7	4
Subtotal	52	45	35	47	36	19
Subtotal as % of All Employees	14%	16%	16%	14%	14%	17%

When the lower income categories are joined with moderate income the differences in terms of share of all employees demanding housing in San Francisco evens out to the 14% to 17% range.

The last table in this section presents these findings per square foot of building area.

TABLE 2
EMPLOYEES, EMPLOYEE HOUSEHOLDS, AND OCCUPATIONAL DISTRIBUTION
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Steps	Office		R&D		Medical		Cultural/ Institutional		Retail		Hotel	
	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
1. Estimate of Employees per 100,000 sq. ft.												
Employee Density Factor (per sq.ft.)		275		400		300		750		350		.75 Employee Per Room*
Number of Employees		364		250		333		133		286		222
2. Adjustment Declining Industrial Employment (25%)		273		188		250		100		214		167
3. Adjustment for Number of Households (1.63 employees/household)		167		115		153		61		131		102
4. Occupation Distribution												
Mgmt/Prof	28%	47	35%	40	38%	58	40%	25	12%	16	16%	16
Tech/Sales	25%	42	16%	18	21%	32	10%	6	11%	14	3%	3
Clerical	40%	67	18%	21	36%	55	20%	12	10%	13	15%	15
Services/Sales	4%	7	1%	1	0%	0	20%	12	48%	63	59%	60
Craft	0%	0	12%	14	0%	0	5%	3	8%	11	3%	3
Oper/Labor	0%	0	18%	21	3%	5	5%	3	11%	14	4%	4
Other	3%	5	0%	0	2%	3	0%	0	0%	0	1%	1
Total (Approx.)	100%	167	100%	115	100%	153	100%	61	100%	131	100%	102

*600,000 sq.ft. @ 600 sq.ft./room = 167 rooms

Source: Keyser Marston Associates, Inc.

TABLE 3
VERY LOW INCOME
ESTIMATE OF QUALIFYING HOUSEHOLDS
LAND USE ACTIVITY/BUILDING TYPES (100,000 sq.ft. building modules)
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Steps	Office	R&D	Medical	Cultural/ Institutional	Retail	Hotel
5, 6, & 7. Estimate of Households Requiring Assistance						
Mgmt/Prof	0.96	0.82	1.19	0.50	0.32	0.33
Tech/Sales	4.61	2.03	3.55	0.68	1.59	0.34
Clerical	27.53	8.52	22.71	5.05	5.41	6.31
Services/Sales	2.42	0.42	-	4.44	22.83	21.82
Craft	-	2.80	-	0.62	2.14	0.62
Oper/Labor	-	5.75	1.28	0.85	4.01	0.99
Other	-	-	-	-	-	-
Total Households (rounded)	35.52	20.34	28.73	12.14	36.30	30.41
8. Adjustment to Eliminate Multiple Earner Households	19.47	11.87	16.43	6.81	18.40	15.12
9. Adjustment to Discount for Non-Resident Workers (55% demand in San Francisco)	10.71	6.53	9.03	3.75	10.12	8.32

Source: Keyser Marston Associates, Inc.

SFNEXUS.XLS Table_2

TABLE 4
LOW INCOME
ESTIMATE OF QUALIFYING HOUSEHOLDS
LAND USE ACTIVITY/BUILDING TYPES (100,000 sq.ft. building modules)
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Steps	Office	R&D	Medical	Cultural/ Institutional	Retail	Hotel
5, 6, & 7. Estimate of Households Requiring Assistance						
Mgmt/Prof	9.17	7.88	11.40	4.80	3.09	3.20
Tech/Sales	9.85	4.33	7.58	1.44	3.40	0.72
Clerical	51.63	15.97	42.60	9.47	10.14	11.83
Services/Sales	5.16	0.89	-	9.47	48.68	46.54
Craft	-	7.89	-	1.75	6.01	1.75
Oper/Labor	-	15.97	3.55	2.37	11.16	2.76
Other	-	-	-	-	-	-
Total Households (rounded)	75.81	52.93	65.13	29.30	82.48	66.80
8. Adjustment to Eliminate Multiple Earner Households	29.67	22.21	27.00	11.76	28.68	22.48
9. Adjustment to Discount for Non-Resident Workers (55% demand in San Francisco)	16.32	12.21	14.85	6.47	15.78	12.37

Source: Keyser Marston Associates, Inc.

SFNEXUS.XLS Table_3

TABLE 5
MODERATE INCOME (100% OF MEDIAN)
ESTIMATE OF QUALIFYING HOUSEHOLDS
LAND USE ACTIVITY/BUILDING TYPES (100,000 sq.ft. building modules)
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Steps	Office	R&D	Medical	Cultural/ Institutional	Retail	Hotel
5, 6, & 7. Estimate of Households Requiring Assistance						
Mgmt/Prof	18.90	16.25	23.52	9.90	6.37	6.60
Tech/Sales	22.03	9.70	16.97	3.23	7.62	1.62
Clerical	64.42	19.93	53.14	11.81	12.65	14.76
Services/Sales	6.44	1.11	-	11.81	60.74	58.06
Craft	-	9.84	-	2.19	7.50	2.19
Oper/Labor	-	19.93	4.43	2.95	13.92	3.44
Other	-	-	-	-	-	-
Total Households (rounded)	111.79	76.76	98.06	41.89	108.80	86.67
8. Adjustment to Eliminate Multiple Earner Households	44.94	30.55	41.17	16.26	34.58	26.67
9. Adjustment to Discount for Non-Resident Workers (55% demand in San Francisco)	24.72	16.80	22.64	8.94	19.02	14.67

Source: Keyser Marston Associates, Inc.

SFNEXUS.XLS Table_4

TABLE 6
MODERATE INCOME (120% OF MEDIAN)
ESTIMATE OF QUALIFYING HOUSEHOLDS
LAND USE ACTIVITY/BUILDING TYPES (100,000 sq.ft. building modules)
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Steps	Office	R&D	Medical	Cultural/ Institutional	Retail	Hotel
5, 6, & 7. Estimate of Households Requiring Assistance						
Mgmt/Prof	19.35	16.63	24.07	10.14	6.52	6.76
Tech/Sales	22.57	9.93	17.38	3.31	7.80	1.66
Clerical	64.60	19.99	53.29	11.84	12.69	14.80
Services/Sales	6.46	1.11	-	11.84	60.91	58.23
Craft	-	9.87	-	2.19	7.52	2.19
Oper/Labor	-	19.99	4.44	2.96	13.96	3.45
Other	-	-	-	-	-	-
Total Households (rounded)	112.98	77.52	99.18	42.28	109.40	87.09
8. Adjustment to Eliminate Multiple Earner Households	9.71	6.66	8.92	3.55	7.51	5.82
9. Adjustment to Discount for Non-Resident Workers (55% demand in San Francisco)	5.34	3.66	4.91	1.95	4.13	3.20

Source: Keyser Marston Associates, Inc.

SFNEXUS.XLS Table_5

TABLE 7
HOUSING DEMAND FACTORS PER SQ FT OF BUILDING AREA
LOW AND MODERATE INCOME HOUSING DEMAND
SAN FRANCISCO JOBS HOUSING NEXUS ANALYSIS

Description	Office	R&D	Medical	Cultural/ Institutional	Retail	Hotel
Very Low Income Households	0.000107	0.000065	0.000090	0.000038	0.000101	0.000083
Low Income Households	0.000163	0.000122	0.000149	0.000065	0.000158	0.000124
Moderate Income Households	0.000247	0.000168	0.000226	0.000089	0.000190	0.000147

Source: Keyser Marston Associates, Inc.

SECTION IV: TOTAL HOUSING LINKAGE COSTS

This section takes the conclusions of the previous section on the number of households in the lower income categories associated with each building type that will demand housing in San Francisco and identifies the total cost of assistance required to make housing affordable. The previous section identified the number of households in the very low, low, and median income categories associated with each square foot of building area.

A key component of the OAHPP analysis is the calculation of the size of the gap between what households can afford and the cost of producing additional housing in San Francisco. This analysis uses a relatively standard methodology to determine what households can afford, and compares that to the cost of providing additional housing. The analysis is conducted for various household sizes that meet HUD standards at very low, low, and moderate-income criteria. Consideration is also given to the cost of producing both sales and rental housing.

A. Income and Household Size Assumptions

Income definitions for housing programs are established by HUD for varying household sizes, as presented in Section II. For estimating the affordability gap, there is a need to match a household of each income level with a unit size and type of tenure according to governmental regulations and policies.

In this analysis, the average income of the qualifying households in each category has been utilized. That is to say that while the upper limit of very low income households is 50% of median income, not all very low income households demanding housing will have incomes as high as 50% of median. Many will have an income level far lower. The average income of very low-income households is more akin to 35% of median and therefore the 35% has been utilized in the analysis.

An alternative policy position is available in making this analysis. One could run the analysis using the upper end of the income definition range. Using the upper end of the range has the effect of increasing the amount households can pay for housing and reducing the affordability gap. Some jurisdictions do calculate affordability gaps in this manner.

Use of the average income for the San Francisco analysis justified, at least in part, to correct for the fact that the income structure in San Francisco is significantly lower than for the larger three county area for which incomes are analyzed annually and for which all federal and state housing assistance programs must be keyed to. As indicated in Section II, median income in San Francisco in 1990 was 81% of the median income for the three county area.

Another policy choice is that of which household size to use in the analysis. The average number of persons per household citywide is 2.4. However the median household size in San Francisco is under 2.0 persons per household (due to the disproportionate shares of total households at the very small and very large ends of the household size range.) In this analysis, the two-person household in a one bedroom unit is used as the average. As can be seen from Appendix F, the affordability gap increases with unit and household size, which is to say that use of the average household size at 2.4 would produce a higher affordability gap.

For each income level, using the average income policy choice and the smaller household and unit size, the assumptions for analysis purposes are as follows:

- Very low income household - a two-person household with an income at 35% of median or $18,000 in 1997, in a one-bedroom apartment.

- Low income households - a two-person household with an income at 70% of median or $36,050 in 1997, in a one-bedroom apartment.

- Moderate-income household - a two person household with an income at median or $51,500 in 1997, in a one bedroom multi-family ownership unit.

Housing Expenditure

Maximum monthly rent for various categories was calculated at 30% of monthly income, including the payment of utilities. A utility allowance of $40 for a one-bedroom unit is based on figures derived from the HUD Section 8 program.

The maximum purchase price limit for for-sale housing is determined using the key assumption that 33% of income can be devoted to housing expenses, including payment of mortgage, property taxes, insurance, mortgage insurance, and homeowner fees. A down payment of 5%, a 30 year loan at 8%, and homeowner expenses of $2,000 are appropriate according to input by the Mayor's Office of Housing and the Redevelopment Agency.

Development Costs

The cost of developing new residential units in San Francisco is high primarily due to high land costs and construction at higher density levels than suburban locations. Other factors that impact costs include labor, special code requirements, and fees. Costs were assembled for a range of unit sizes from studios to three bedroom units in prototypical wood frame three to four-story configurations, and the minimum parking allowed by the code. Costs also include indirect costs such as fees, construction finance, design and engineering. Sources of cost information include private sector developers, non-profit builders active in the City, and the Redevelopment Agency. Housing development costs are intended as averages, and are, in fact, at the lower end of the average range. Occasionally projects are constructed at costs lower than the averages used in the

analysis, but the survey of experience suggests that averages are at least as high as the levels used herein.

For a prototypical one-bedroom rental apartment, the total development cost is estimated at $137,500. The ownership unit costs slightly higher at $152,750.

Affordability Gap

The affordability gaps for a two-person household are:

- $113, 845 at very low income for a one bedroom rental unit.
- $48,188 at low income for a one bedroom rental unit.
- $10,600 at moderate income for a one bedroom ownership unit.

Affordability gaps in San Francisco are among the highest in the nation, for a range of reasons that are well summarized in the City housing documents such as the Comprehensive Housing Affordability Strategy report.

Total Linkage Costs

The last step in the linkage fee analysis marries the findings on the numbers of very low, low and median income households associated with each type of work space building to the costs of delivering or subsidizing housing for them in San Francisco. The rental affordability gap is applied to the very low and low-income households, while the ownership gap is applied to the median income households. The per square foot housing demand factors for each income level, as presented at the end of Section III, are multiplied by the affordability gaps to produce the total linkage cost.

Total Housing Nexus Cost (Per Sq.Ft. Building Area)

	Very Low Income	Low Income	Moderate Income	Total
Office	$12.19	$7.86	$2.62	$22.67
R&D	7.43	5.89	1.78	15.10
Medical	10.29	7.16	2.40	19.85
Cultural/ Institutional	4.26	3.12	0.95	8.33
Retail	11.52	7.60	2.02	21.14
Hotel	9.47	5.96	1.56	16.99

These costs quantify the total linkage between new workspace buildings and the demand for new affordable housing, expressing that connection in terms of cost per square foot of building area.

These total nexus costs represent the legal ceiling for potential fees**: THE TOTAL NEXUS COSTS ARE NOT RECOMMENDED FEE LEVELS**. An appropriate fee range for San Francisco will be explored in the next section of the report.

In establishing the total nexus cost, or maximum fee amount, it is noted that many conservative assumptions were employed in the analysis that result in a total nexus cost that is probably understated by a considerable amount. These conservative assumptions include:

- The commute adjustment assumes that 45% of all employee households will demand housing outside of San Francisco even if units are made affordable.

- The methodology for discounting double income households essentially removes most two-income households from the lower income strata (by assuming the multiple incomes place the households in the middle and upper income categories). The high and growing number of single parent households probably results in more households in the lower income categories than indicated in the analysis.

- Using a two-person household in a one-bedroom unit produces a far lower affordability gap than a larger unit. As matter of policy, much housing assistance is directed toward building larger units, since the market is even less able to deliver larger units than smaller ones, and needs are most acute for larger households.

- Affordability gaps are low compared to the experience of many public agencies and non-profit groups struggling to produce housing in San Francisco.

- Only direct employees are counted in the analysis. Many indirect employees are also associated with each new workspace. Indirect employees in an office building, for example, include janitors, window washers, landscape maintenance people, delivery personnel, and a whole range of others.

In summary, many less conservative assumptions could be made that would result in higher linkage costs than are concluded in this analysis.

APPENDIX A: ABAG DETAILED HISTORICAL EMPLOYMENT SERIES

This appendix provides a time series of employment data by major land use category. For each land use category the industries that predominately occupy that type of building space are included. This series allows the impacts of changing job trends on demand for buildings to be analyzed.

The data was provided by the Association of Bay Area Governments (ABAG) for 1974 to 1994. ABAG aggregates information provided by County Business Patterns (CBP) surveys. In its monitoring of the Bay Area economy, ABAG relies on both the CBP data collected by the federal government and California Economic Development Department data (EDD) that also tracks jobs. These two data sources differ in approach and methodology. CBP data is much more detailed at the industry level and as such is used for this analysis. CBP data is reported at the establishment level and includes sole proprietors and self-employed. EDD data tracks wage and salary employment only and tracks it by the place of record for payroll payment. EDD includes a smaller number of jobs than CBP data. Although there are differences in the two data series, comparing one series across time allows for valid conclusions to be made in the job trends at the industry and land use level.

Year to year variances in the data occur for several reasons. CBP has data suppression requirements to prevent confidential information from being divulged. In some years, ABAG has estimated the data suppressed and in others this calculation was not performed. SIC code designations have been adjusted over time which can also change the industry totals. Finally, the jobs in the administration and auxiliary employment category are not treated the same way in all years.

TABLE
SUMMARY OF LAND USE ACTIVITY TYPES
CITY OF SAN FRANCISCO
JOBS HOUSING NEXUS ANALYSIS

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Land Use																							
Office	127,000	133,000	140,000	146,000	161,000	163,000	173,000	190,000	171,000	197,000	167,000	166,000	188,000	197,000	215,000	210,000	217,000	219,000	216,000	226,000	202,000	220,000	221,000
Retail	55,000	57,000	54,000	56,000	60,000	57,000	61,000	65,000	65,000	67,000	68,000	67,000	72,000	77,000	77,000	77,000	78,000	84,000	84,000	80,000	74,000	75,000	73,000
Hotel	10,000	11,000	10,000	11,000	12,000	12,000	13,000	14,000	14,000	14,000	13,000	13,000	15,000	16,000	16,000	16,000	16,000	17,000	16,000	16,000	19,000	16,000	17,000
Medical	18,000	16,000	22,000	23,000	25,000	22,000	21,000	22,000	21,000	22,000	24,000	24,000	26,000	25,000	26,000	27,000	25,000	34,000	34,000	35,000	33,000	33,000	33,000
Industrial	146,000	145,000	135,000	124,000	121,000	121,000	125,000	132,000	164,000	161,000	129,000	125,000	130,000	129,000	127,000	119,000	120,000	120,000	119,000	114,000	94,000	106,000	99,000
Others	34,000	35,000	96,000	72,000	71,000	66,000	75,000	76,000	55,000	48,000	73,000	82,000	79,000	76,000	65,000	55,000	46,000	46,000	49,000	39,000	41,000	34,000	36,000
Total - Private Industry	*388,000*	*397,000*	*457,000*	*434,000*	*450,000*	*441,000*	*468,000*	*499,000*	*490,000*	*509,000*	*474,000*	*477,000*	*510,000*	*520,000*	*526,000*	*504,000*	*504,000*	*522,000*	*520,000*	*514,000*	*463,000*	*488,000*	*479,000*

Source: Association of Bay Area Governments

TABLE
HISTORIC EMPLOYMENT GROWTH BY LAND USE ACTIVITY
CITY OF SAN FRANCISCO
JOBS HOUSING NEXUS ANALYSIS

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Office Employment																							
FIRE	75,571	77,470	85,327	90,430	99,410	100,976	107,221	114,838	94,227	114,050	86,604	87,471	92,723	99,448	112,701	102,478	95,525	90,952	89,656	101,522	84,733	83,600	86,190
Depository Institutions	24,208	26,512	13,126	14,495	25,410	27,151	27,365	28,916	31,938	30,806	33,036	32,481	34,039	34,595	44,564	29,123	30,309	29,337	30,273	34,188	28,963	28,616	28,288
Others	9,888	9,878	16,517	18,992	17,335	18,595	19,452	21,878	15,701	26,967	12,648	12,502	13,662	15,772	18,082	20,396	16,500	14,521	13,634	18,512	11,355	10,876	11,643
Real Estate	7,839	8,259	9,575	9,172	9,496	8,348	8,988	9,265	9,695	9,484	10,275	11,386	12,021	13,698	12,325	12,596	13,322	14,400	13,164	11,078	11,573	10,940	11,590
Insurance Carriers	18,583	17,791	25,537	25,336	25,839	23,872	27,505	27,198	15,844	13,696	11,865	11,264	10,480	10,701	11,064	10,721	10,497	9,616	9,596	10,292	11,659	11,894	11,538
Security and Commodity Brokers	5,165	5,152	4,055	3,443	3,995	4,415	4,459	5,703	5,348	6,130	6,132	7,336	8,859	8,910	8,584	9,246	8,397	8,557	9,355	8,940	9,828	10,398	11,488
Services	50,997	54,943	54,297	56,722	61,517	61,516	64,941	73,810	76,091	81,590	80,235	78,134	93,479	95,015	100,346	106,455	119,393	126,266	125,976	126,363	116,965	136,132	135,036
Business Services	22,925	24,491	25,006	26,384	28,229	28,872	30,720	35,912	38,617	41,421	38,047	36,261	45,063	46,445	49,338	50,464	40,760	43,771	45,792	45,724	42,783	44,616	45,186
Engineering and Management Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30,017	30,792	27,188	27,541	24,731	25,466	25,727
Others	10,655	11,447	10,333	10,581	11,473	10,915	11,710	13,003	13,321	14,075	13,763	13,673	15,886	16,113	16,282	17,892	13,553	13,862	14,389	14,225	13,694	17,836	18,506
Legal Services	4,428	5,032	5,476	5,800	6,565	7,177	7,629	8,763	9,477	10,357	11,179	11,395	13,149	13,409	15,306	17,193	18,460	20,180	20,782	20,753	18,163	17,991	16,843
Admin/Aux	603	622	2,272	2,409	2,620	2,540	2,096	2,601	242	540	2,524	2,091	2,432	1,961	1,952	1,893	2,239	2,173	2,165	2,110	2,362	14,305	12,035
Nonclassifiable	586	404	803	853	176	281	798	1,067	1,155	1,366	284	836	1,947	2,519	2,077	611	1,587	2,068	527	248	80	84	66
Total - Office Employment	127,153	132,817	140,427	148,005	161,103	162,773	172,960	189,715	171,473	197,006	167,123	166,440	188,149	196,982	215,124	209,543	216,505	219,286	216,159	228,133	201,778	219,796	221,292
Retail Employment																							
Retail Trade	55,139	57,264	54,005	55,699	59,614	57,164	60,984	64,789	64,989	67,323	68,210	66,879	71,939	76,835	76,681	76,850	77,676	83,919	83,503	79,882	74,334	75,330	73,322
Hotel Employment																							
Hotels & Lodging Places	9,584	10,925	9,584	10,782	11,702	11,650	12,765	13,532	13,623	13,918	12,815	12,787	14,880	15,890	16,103	15,842	17,674	16,989	17,902	18,437	18,590	18,224	16,982
Medical Employment																							
Health Services	15,854	16,419	22,378	23,334	24,730	21,542	21,458	21,623	21,098	22,032	23,912	24,305	26,181	25,442	26,393	26,716	25,256	34,320	34,026	35,292	33,083	32,661	32,541

Source: Association of Bay Area Governments

TABLE
HISTORIC EMPLOYMENT GROWTH BY LAND USE ACTIVITY
CITY OF SAN FRANCISCO
JOBS HOUSING NEXUS ANALYSIS

Industrial Employment

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Manufacturing	53,224	54,131	51,637	43,492	44,800	45,739	47,649	52,084	55,269	55,417	49,705	44,383	46,275	46,570	46,802	44,845	45,053	43,958	44,873	40,822	36,527	36,921	36,351
Apparel and Other Textile Products	8,082	9,376	8,608	7,047	8,275	7,943	9,248	10,088	9,713	9,991	9,906	10,158	11,059	10,527	10,319	10,519	11,061	11,582	11,959	11,552	11,962	12,357	12,633
Printing and Publishing	9,997	10,173	9,792	9,576	8,927	8,389	8,573	8,826	9,041	9,049	8,865	8,466	9,022	8,735	10,271	10,529	10,826	10,373	10,917	10,318	9,498	10,046	9,879
Admin/Aux	9,927	9,643	10,878	9,423	9,081	9,743	10,669	12,151	108	177	-	-	-	-	-	-	-	-	-	-	-	-	4,922
Others - Non Durable	12,105	11,718	11,095	7,627	7,440	7,817	7,525	7,126	23,795	8,340	6,281	6,346	6,716	6,788	6,314	6,235	6,580	5,815	6,333	5,511	4,263	4,522	4,342
Durable	13,113	13,221	11,245	9,804	11,068	11,840	11,627	14,092	12,612	12,350	9,797	10,040	12,296	13,199	13,458	10,840	11,392	11,100	10,266	7,771	5,353	4,589	4,775
Wholesale Trade	41,618	40,487	33,449	30,035	28,486	27,031	28,415	30,341	28,535	29,533	26,440	27,337	30,091	30,341	30,327	29,603	28,858	29,710	29,937	30,624	23,694	23,930	22,376
Transportation and Utilities	50,758	50,608	49,661	50,012	47,377	46,235	49,000	49,570	79,702	75,612	53,341	53,383	51,534	50,186	47,591	44,914	46,369	46,153	44,185	42,642	33,691	46,846	40,690
Communication	16,186	15,492	15,839	14,509	13,258	15,966	17,377	18,751	19,402	21,101	20,575	20,487	18,471	17,247	14,554	11,501	12,100	11,532	11,087	10,318	9,751	10,205	10,024
Others	19,490	19,609	19,252	20,452	19,473	16,011	16,350	11,977	22,300	16,427	13,421	13,088	12,044	12,084	12,041	9,754	11,711	11,512	9,907	10,587	8,579	10,022	8,533
Total - Industrial Employment	*145,600*	*145,226*	*134,747*	*123,539*	*120,663*	*121,005*	*125,064*	*131,995*	*163,506*	*160,562*	*129,486*	*125,083*	*129,900*	*129,097*	*126,720*	*119,362*	*120,280*	*119,821*	*118,795*	*114,088*	*93,912*	*107,697*	*99,417*

Source: Association of Bay Area Governments

PREPARED BY: KEYSER MARSTON ASSOCIATES, INC.
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APPENDIX B: HOUSEHOLD AND LABOR FORCE TRENDS

Several trends dramatically changed traditional ratios of persons per household and employed residents per household over the past 25 years. Table B.4.1 shows the changes in the Bay Area since 1970, and the ABAG projections for the years 2000 and 2010. Data is also shown for San Francisco County.

TABLE B.4.1.
TRENDS IN HOUSEHOLD SIZE AND EMPLOYED RESIDENTS: 1970-2010

	Bay Area			San Francisco County	
	Persons/ Household(HH)	Employed Persons/HH	% of population employed	Persons/ Household	Employed Persons/HH
1970	2.90	1.21	40.6%		
1980	2.58	1.30	49.3%	2.19	1.16
1990	2.61	1.40	52.3%	2.29	1.28
2000	2.75	1.38	49.2%	2.40	1.25
2010	2.71	1.40	50.6%	2.35	1.25

Source: US Census and ABAG Projections 96

From 1970 to 1980, average household size in the region declined significantly while the proportion of employed persons per household increased. The result is that an increasing proportion of the total population was in the labor force and employed. In 1970, only 40.6% of the population were employed; by 1990 this had increased to more than 52% of the population. Forecasts are for this ratio to decline slightly by the year 2000 and then start increasing gradually.

While San Francisco has a substantially lower average household size than the region, the proportion of the San Francisco population that is employed is also approximately 50%. Another useful measure is the number of employed residents per household with employed residents. This deducts the number of households with only students, retired people, or unemployed persons. Unfortunately, the 1990 Census only tabulated the number of families with no income earners, not the number of households. For San Francisco County, approximately 15% of family households had no employed person. Another census question asked what percent of households had income earnings, and what percent had welfare, retirement, no income, etc. Approximately 21% of San Francisco households had no earned income in 1990. If one subtracts the number of households without earned income, the ratio of employed residents per household with employed residents (worker households) was 1.56, which is calculated by dividing the 378,921 employed San Franciscans by 242,880 households with employment income. An equivalent ratio for 1980 was approximately 1.5 employed residents per worker household, slightly lower than the current ratio. The average number of San Franciscans

working in San Francisco per worker household in 1990 was 1.27, after subtracting the number of San Francisco residents who work in other counties.

Given the regional forecasts which predict relative stability in persons per household and employed persons per household, it seems reasonable to project that the ratio of workers per household will not change during the next 10-15 years. Characteristics of San Francisco households do not mirror the regional trends; residents include both higher proportions of immigrants with large families and singles or couples without children. High housing prices may encourage older households to retire to lower cost areas. Relative to the past 20 years, a higher proportion of new jobs may be in lower income service categories rather than higher paying office jobs.

According to ABAG's *Projections 96*, the proportion of San Francisco population which is 65+ is expected to increase slightly from 1990 to 2000, from 14.6% to 15.1%, but rise to 17.2% by the year 2010. Taking this as a correlate of households without workers, the number of employed residents per worker household will have to increase slightly to keep the average number of employed residents per household at 1.25, as shown in the table above. If the percentage of households with no workers increases by two percent, the number of employed residents per worker household would increase from 1.56 to 1.63.

Labor force participation ratios tend to correlate with ratios of employed residents to overall population. According to ABAG *Projections 96* data, the overall 1980 labor force participation rate for San Francisco was 62.3% of those 15+. The comparable ratio for 1990 was 65.8%, mirroring the increase in employed persons per household. Projections for 2000 are that 64.2% of those in the age bracket will be in the labor force; for 2010 it will be 64.9%. The conclusion is that changes in relative labor force participation rates will not be significant during the next 15-20 years.

APPENDIX C: COMMUTE RELATIONSHIPS AND TRENDS

The attached table shows the trends and forecasts for residence location for those who work in San Francisco. The database is from MTC and ABAG based on past census data and ABAG Projections 96 for the future.

San Francisco Workers

Along with the reduction of proportion of San Francisco employed residents working in San Francisco, the proportion of all San Francisco jobs held by residents dropped dramatically from 1970 to 1980, dropping from residents holding 62.6% of San Francisco jobs to 56% during that decade. From 1980 to 1990, the proportion of San Francisco jobs held by San Francisco residents dropped by less than one percent. The ABAG/MTC (Projections 96) forecasts anticipate this ratio to remain constant at approximately 55% of San Francisco jobs held by local residents. Although a slight decrease in San Francisco employed residents working in the county was forecast from 1990 to 2000, San Francisco residents were forecast to represent 61% of the increment of new jobholders in the County from 2000 to 2010.

The largest increases in the level of commute to San Francisco occurred from 1970 to 1980, and consisted of residents of Alameda and Contra Costa counties, followed by Marin and San Mateo. The data suggests that the opening of Transbay BART service during the 1970's may have had considerable impact on workplace and residence location among workers both in the East Bay and in San Francisco.

The 1980 Census had a question on work location that itemized both central city and CBD. Unfortunately, the 1990 Census only asked about central city work location so does not provide comparable information. From the 1980 census, one can determine that 33% of San Francisco and San Mateo County residents who worked in San Francisco worked in the financial district, while the proportion for Marin County residents who commuted to the City was 41%. For commuters from Alameda County, 47% of those destined for San Francisco went to the CBD; Contra Costa County was the high with 55% going to the CBD. Overall, 37% of all San Francisco jobs were in the CBD in 1980.

The 1992 Citywide Travel Behavior Survey contains mode split data by origin and by land use activity, but does not relate land use activity or work location by origin point. Of persons who responded to the employee survey, approximately 50.5% lived in the City, below the 55% cited in the Census/MTC data shown in the tables above. It unfortunately is not possible to determine residence location by land use activity information from the CTBS survey, and no other data on this topic is readily available.

From the 1980 Census data which indicates that East Bay commuters to the City have the highest likelihood of working in the CBD, the fact that transit mode split is highest for office land uses and for East Bay commuters (CTBS), and that office uses are predominant in the CBD, one can surmise

that a higher proportion of office workers live outside San Francisco relative to workers in retail, industrial/warehouse, hotel, and cultural/institutional land uses. However, the data does not allow us to project specific residential location data by land use activity. We would estimate that hotel and retail workers are most likely to live in San Francisco, but cannot document it from the available data. The tables from the Transbay Area Plan validate the conclusion. For the C-3 East area (east of Kearny) where office uses certainly predominate, only 43.2% of the workers were San Francisco residents (compared to 54.1% citywide), while East Bay and North Bay residents were over-represented compared to their proportion of the entire San Francisco workforce (31.4% versus 21.9% for East Bay, 10.1% in C-3 versus 8.0% in San Francisco for North Bay).[1]

This data on residence of C-3 East area workers is relatively consistent with the analysis in the 1984 *Summary of the Economic Basis for an Office-Housing Production Program* which forecast that the proportion of C-3 District office workers who lived in San Francisco would decline from 51.6% in 1981 to 45% in 2000. The analysis calculated that the net increment of C-3 District office workers living in San Francisco would be 31%, a factor that would bring the overall average down from 51% to 45% as cited. In the current assessment, the data projects that 55% of additional workers in San Francisco will be City residents, but there is no differential assessment for office and other types of workers. Since the data does show greater in-commutes among C-3 District workers than among those working elsewhere in the City, San Francisco residents may represent 65% of additional workers in some land use activity and locational categories, and 30% to 40% of the increment for office workers in the C-3 District.

Unfortunately, much of the most precise data that was used for the 1984 OAHPP seems to have come from the downtown EIR which was conducted in the early 1980's. The City has not repeated the effort or collected comparable data in recent studies so it is difficult to directly update some of the data drawn from that study.

[1] San Francisco Planning Department, Transbay Area Plan, Table 13.

TABLE B.2.1. WORK AND RESIDENCE LOCATION

RESIDENCE LOCATION OF SAN FRANCISCO EMPLOYEES

	1970	1980	1990	2000	2010	Change 1970-1990	Change 1990-2010
San Francisco	283184	284297	307377	306456	328328	8.54%	6.82%
San Mateo	67723	78706	79022	76420	77905	16.68%	-1.41%
Santa Clara	9052	7438	7594	8059	8022	-16.11%	5.64%
Alameda	35197	50895	60797	61366	66968	72.73%	10.15%
Contra Costa	20491	38236	47714	55090	59312	132.85%	24.31%
Solano	1249	4371	9829	10695	11312	686.95%	15.09%
Napa	458	549	1044	990	883	127.95%	-15.42%
Sonoma	3652	6489	8357	7972	8684	128.83%	3.91%
Marin	31191	37662	33673	32676	34139	7.96%	1.38%
Total	452197	508643	555407	559724	595553	22.82%	7.23%

Proportion of SF Jobs Held by SF Residents

SF res./jobs	62.62%	55.89%	55.34%	54.75%	55.13%
increment		1.97%	49.35%	-21.33%	61.05%

Source: Gabriel-Roche Inc. from MTC Projections and ABAG Projections 96

APPENDIX D: HOUSING PRODUCTION AND CONDITIONS[2]

Overall Housing Production

Table B.5-1, San Francisco Housing Stock Changes, presents the numbers of units completed, demolished, and altered per year for the years 1976 through 1995, along with the net changes. During the twenty year period the City realized a net gain in units each year, with the net change varying from a high of 2,345 units in 1989 to a low of 288 units in 1993. The average net change was 1,158 units.

During the twenty-year period the highest production year occurred in 1989 when 2,573 new units were completed, and the lowest in 1993 when 379 were completed. The two lowest production years in the twenty-year period were 1993 in which the 379 units were produced, and 1995, in which 532 units were produced. Both these years were during a period of strong recession in the real estate industry. The strongest phase was clearly 1985 through 1991, a seven-year period when net growth in the housing stock was well above the twenty-year average.

The average number of new units completed per year during the twenty-year period were 1,330 units. The four-year period from 1992 to 1995 averaged 728 new units per year compared to an average 2,132 new units per year for the four years preceding that. This represents a recent decline in housing production, a portion of which can be attributed to the fact that construction of large multi-unit projects peaked between 1988 and 1991 when large mixed-use residential developments were completed in San Francisco Redevelopment areas and in mixed use commercial districts. The decline is also representative of the general decrease in large-scale real estate development in recent years. The increase in 1994 was due to the completion of a number of large affordable housing projects.

Production by Building Type

Table B.5-2, Units Completed by Building Types, presents the yearly number of units completed by building types for the ten-year period of 1986 through 1995. During that ten-year period, buildings with 20 or more units have consistently represented the largest category of units built. Over the ten years, units in buildings with 20 or more units represented 67% of the units built, while those in 3 to 9 unit structures represented 12 percent, 2 unit structures 8%, single family residences 7%, and 10 to 19 unit structures 6%.

[2]The major source of information for this section is Housing Inventory Report; Planning Department, City and County of San Francisco; May, 1996.

Production by Level of Affordability

Table B.5-3, New Income-Restricted Affordable Housing Construction, presents the number of new income-restricted units produced by year for the years 1980 through 1995 according to level of affordability. During the period of 1980 through 1989 affordable[3] units represented 24% of the units constructed. During the period of 1990 through 1995 the percentage of affordable units produced compared to total units constructed increased to 31%. The average number of affordable housing units produced per year also increased during this period, with an average of 358 affordable units being produced per year from 1990 to 1995 compared to an average of 332 units per year from 1980 to 1989.

Table B.5-4, Major New Income-Restricted Affordable Housing Construction by Bedroom Size, 1990-1995, indicates that the largest category of affordable housing production during this period was in the two-bedroom category. Approximately 29% of the new units produced in major affordable housing developments during this period were 2-bedroom units. The next highest categories were in three and more bedroom units, at 23%, Single Room Occupancy units, at 21%, one bedrooms at 15%, and studios at 11%.

According to San Francisco Planning Department data, San Francisco's universe of restricted affordable housing units consisted of 29,730 units as of February 1997. Approximately 1,830 units, or 6.1% of the affordable units, are "inclusionary" units, constructed by the private sector without public subsidy. The majority of these units are located within redevelopment project areas which have requirements regarding percentages of all housing development within such areas which must be affordable. The remaining units were provided as a result of planning regulations which require that certain percentages of affordable housing be made available under certain development conditions. Of the total of just under 30,000 affordable units, 3,313, or 11.1%, are within the boundaries of redevelopment project areas.

Vacancy Rate

The Residence Element 1992 annual Evaluation Report reported a 4.2% citywide vacancy rate in 1989. The 1990 Census reported a 6.97% vacancy rate, or 22,887 units. According to the 1995 Consolidated Plan, prepared by the Mayor's Office of Housing, this vacancy rate was high due to the inclusion of 2,797 damaged units resulting from the Loma Prieta earthquake which took place shortly before the census was taken; 2,679 newly constructed units not yet completed; 1,477 vacant tourist hotel rooms in residential hotels; and 2,817 vacant vacation homes or executive suites, which are not typically available to the general public. According to the Consolidated Plan no other accurate vacancy data is available. However, the California Department of Finance also generates annual vacancy data. The annual survey indicated vacancy rates of 6.98% for 1992, 6.71% for 1993, 6.62% for 1994, 6.34% for 1995, and 7.34% for January 1996.[4]

[3]Affordable units are defined as very low, 50% of HUD median income; low, 80% of HUD median income; and moderate, 120% of HUD median income.

[4] California Department of Finance, California Population and Housing Estimate, Report E-5.

Rent Levels and Purchase Prices

After growing at a high rate from the mid-1979's to 1990, Bay Area and San Francisco home prices went through a period of correction and stabilization that lasted for five to six years. Increasing demand seems to be resulting in the beginnings of some price escalation once again, but the degree of price increases will depend on the growth in the economy and the ability to build additional housing, both in San Francisco and throughout the region.

The median home values reported by the Census of Population and Housing were $104,600 in 1980 and $298,900 in 1990, an increase of 186% during the decade. According to data compiled by the Real Estate Research Council (RERC) of Northern California, the average market price of single family homes in San Francisco decreased to $250,000 in 1994, before recovering slightly to $257,000 by the 1st quarter of 1996. The 1996 average price in San Francisco compares to a Bay Area nine county average price of $224,000, which ranged from a high average price of $323,000 in Marin County to a low of $141,000 in Solano County.

Data from the San Francisco Board of Realtors has tracked the sale prices for a three-bedroom home in San Francisco. In contrast to the RERC data, it shows a smaller proportionate drop in home prices, from $300,000 in 1989 to $270,000 by 1994, before increasing again to $313,100 by 1995.

Rental data also indicates escalating prices, although relative to home prices, rents did not increase as fast from 1980 to 1990 and did not go through the significant dip of sales prices, being higher in 1996-97 than they were in 1990. According to Census data, median rent in San Francisco went from $267 in 1980 to $613 by 1990. While a dramatic increase, the 130% increase in rent was much below the 186% increase in housing prices.

Surveys by the Bay Area Council found that the Citywide market rate average rent for an advertised two bedroom apartment in San Francisco was $928 in 1990. Rents varied significantly by area, with a range from highs of $1,450 in Northeast San Francisco and $1,200 in the Marina to less than $800 in the Mission, South Central and South Bayshore areas. Some estimates indicate a 20% increase in average rents from 1990 to 1995; the Bay Area Council's rent surveys indicated the $928 Citywide average for advertised vacancies in 1990 increased to $1,075 by 1995, an increase of just under 16%.

TABLE B.5-1
SAN FRANCISCO HOUSING STOCK CHANGES
1976 - 1995

Year	Units Approved/ Bld. Permits	Units Completed New Const.	Units Demolished	Net Gain or (Loss) by Alterations	* Net Change
1976	1,622	1,480	707		773
1977	1,536	1,616	136		1,480
1978	2,045	1,375	174		1,201
1979	1,833	1,516	114		1,402
1980	1,202	980	128		852
1981	1,242	780	288		492
1982	1,215	589	42		547
1983	1,167	1,400	233		1,167
1984	1,313	790	79		711
1985	1,479	1,568	105		1,463
1986	2,037	1,507	173		1,334
1987	2,442	1,553	127		1,426
1988	2,148	2,011	104		1,907
1989	1,508	2,573	228		2,345
1990	1,332	2,065	433	105	1,737
1991	987	1,882	90	(60)	1,732
1992	629	767	76	34	725
1993	1,001	379	26	(65)	288
1994	948	1,234	25	(23)	1,186
1995	525	532	55	(76)	401
Total	28,211	26,597	3,343	(85)	23,169
Average	1,411	1,330	167	(4)	1,158

*****The net change is units legally completed minus units demolished. Beginning in 1990, the net change includes units gained or lost by alteration permits. Illegal conversions or residential hotel unit conversions are not included.
Source: Housing Information Series; Changes in the Housing Inventory for 1995; San Francisco Planning Department; page 6.

TABLE B.5-2 UNITS COMPLETED BY BUILDING TYPES 1986 - 1995						
Year	**Single Family**	**2 Units**	**3 to 9 Units**	**10 to 19 Units**	**20 or More Units**	**TOTAL UNITS**
1986	172	176	217	38	904	1,507
1987	83	200	215	64	991	1,553
1988	191	262	361	76	1,121	2,011
1989	133	122	252	158	1,908	2,573
1990	89	48	190	156	1,582	2,065
1991	79	62	129	87	1,525	1,882
1992	111	100	96	79	381	767
1993	51	74	56	36	162	379
1994	63	62	121	16	972	1,234
1995	69	54	89	89	231	532
Total	1,041	1,160	1,726	799	9,777	14,503
Percent	7%	8%	12%	6%	67%	100%
Average	104	116	173	80	978	1,450

Source: Housing Information Series; Changes in the Housing Inventory for 1995; San Francisco Planning Department; page 12.

TABLE B.5-3
NEW INCOME-RESTRICTED AFFORDABLE HOUSING CONSTRUCTION
By Income Level*

Year	Very Low*	Low	Moderate	Market Rate	Total Units	Total Affordable units	%
1980-1989	1,518	1,013	793	10,427	13,751	3,324	24%
1990	278	180	0	1,607	2,065	458	22%
1991	203	154	32	1,493	1,882	389	21%
1992	16	180	54	517	767	250	33%
1993	108	0	0	271	379	108	28%
1994	686	86	4	458	1,234	776	63%
1995	82	80	10	360	532	172	32%
80-95 Total	**2,891**	**1,693**	**893**	**15,133**	**20,610**	**5,477**	**27%**
Average	181	106	56	946	1,288	342	27%

*Very Low: 60% of HUD median income; Low, 80% of HUD median income; and Moderate, 120% of HUD median income. Very low includes extremely low income.

Source: Housing Information Series; Changes in the Housing Inventory for 1995; San Francisco Planning Department; page 28.

TABLE B.5-4 MAJOR NEW INCOME RESTRICTED AFFORDABLE HOUSING CONSTRUCTION BY BEDROOM SIZE: 1990-1995						
0 BR	1 BR	2 BR	3+ BR	Live/Work	Single Room Occupancy	Total
185	255	499	397	29	362	1,727
10.7%	14.8%	28.9%	23.0%	1.7%	21.0%	100%

Source: Gabriel-Roche, Inc. from Housing Information Series; Changes in the Housing Inventory for 1995; San Francisco Planning Department; pages 49-51.

B.6 Projections of Housing Production[5]

Overall Housing Production

The total number of units approved for development by the San Francisco Planning Department in 1995 was 20% lower than the number of units approved in the two prior years. The department approved approximately 1,200 units in 1995, a decrease from approximately 1,500 units in both 1993 and 1994. As of April of 1996 the department had 627 units under review in projects of 10 or more units. The 627 units were in 11 projects. The number of units going into the department for review during 1995 and the early part of 1996 tended to be fewer and in smaller projects than in the immediate prior years.

Similar to the decrease in units under Planning Department review, the number of units with permits issued by the Building Department decreased in 1995. Only 515 units were issued such permits, a decrease from 948 units in 1994 and 1,001 units in 1993. The previous low was in 1992 when 629 units received building permits, and the previous high was in 1987, when 2,442 received permits. The ten-year average through 1995 was 1,450 units per year.

According to the Planning Department, in recent years a number of approved projects have not been financed. This fact, along with the decreases in volumes of units under review and permits issued, indicates that housing production will remain low unless permit activity increases or financing for major projects improves.

[5]The major source of information for this section is Housing Inventory Report; Planning Department, City and County of San Francisco; May, 1996.

Applying the projected growth of households from ABAG's *Projections 96*, San Francisco should produce 6,550 units from 1995 to 2000, or 1,310 per year, including a 4% vacancy rate, for the 6,300 additional households anticipated. From 2000 to 2010, 15,470 additional households are anticipated, thus production of 1,610 units per year would provide sufficient additional units including the vacancy factor. Taking into consideration the actual housing production, 1430 units per year from 1988 through 1995, the number of units in the pipeline as of April, 1996, and the 1995 to 1996 decrease in units in the pipeline, it can be concluded that unless conditions change the number of additional units required based on ABAG population projections will not be met. ABAG has not updated its projections of affordable housing needs.

Affordable Housing Production

Table B.6-1 indicates that as of April 1, 1996, 1,224 units of income-restricted affordable housing were under review, approved, or under construction. With that number of units in the pipeline it can be assumed that the average number of affordable units built during the last five years (358) will at least be met if not exceeded. The table also indicates that as with affordable housing production in the past, the majority of the units in the pipeline are slated for very low and low-income residents.

Even though it can be anticipated that the production of affordable housing units over the next several years will remain at its current level, there are approximately 8,000 of the existing 30,000 affordable housing units which are at risk of losing their subsidy and going to market rate. These are project-based Section 8 units which were built during the 1970's and 1980's with 15 and 20-year subsidies. Although to date none of the projects which have already reached the end of their subsidies have converted to market rate, the prospect remains that many of the 8,000 units may convert to market rate over the next several years. The federal government has taken interim steps to address this nation-wide problem; however, the potential costs for fully addressing the problem are very high, the government has not come up with a permanent solution, and the risk remains.

TABLE B.6-1
AFFORDABLE HOUSING CONSTRUCTION
MAJOR INCOME-RESTRICTED PROJECTS IN THE PIPELINE
Projects Under Review, Approved, or Under Construction as of 4/1/96

Projects Address/Name	Units	Type of Units/Income Level/Sponsor
214 Haight Street	12	Group Housing, Walden House adolescent
301 Ellis Street	93	Very low income, Catholic Charities
1096 Eddy Street	21	Progress Foundation
1550 Fell Street	70	Group housing, Hamilton Family Center
185 7th Street	29	Very low income, HDNP
3rd & Armstrong Street	53	SFHDC
100 Alemany/Market Heights	46	Family rental low income, BHCF
1171 Mission Street	30	Women very low income, St. Anthony Foundation
974 Howard Street	24	Very low income for disable persons, TODCO
1010 S. Van Ness Avenue	30	Very low income, rental, MHDC
101 Valencia Street	118	Family rental very low income, HDNP
1290 Potrero & 25th	20	Family rental extremely low income, MHDC, SFRA
240 4th Street	30	SRO, elderly rental very low income, TODCO
151 Leland Avenue	51	Special population, Hospice By The Bay, SFRA
670 Valencia	50	Elderly rental very low income, MHDC
347 Dolores Street	65	Elderly rental very low income, Mercy Family H.
835 O'Farrell Street	74	Formerly homeless persons and families, CHP
1 Columbus Avenue/I Hotel	104	Elderly very low income, CCHC
5545 3rd Street	53	Affordable housing for seniors, BRIDGE
150 Bitton Street	92	Affordable rental units, HCDC
29th & Church Street	39	Some affordable units, Archdiocese of S.F.
Fillmore Market Place	120	Family low income, SFRA
Total Units	**1,224**	

Note: Project Sponsor abbreviations included on next page.
Source: Housing Information Series; Changes in the Housing Inventory for 1995; San Francisco Planning Department; page 58.

Project Sponsor Abbreviations
Indicated on Table B.6.1

AI	Asian Inc.
AND	Asian Neighborhood Design
BHCF	Bernal Heights Community Foundation
BRIDGE	BRIDGE Housing Corporation
CCHC	Chinese Community Housing Corporation
CHP	Community Housing Partnership
HCDC	Housing Conservation and Development Corporation
HDNP	Housing Development and Neighborhood Preservation Corporation
MCH	Mercy Charities Housing Corporation
MHDC	Mission Housing Development Corporation
SFHDC	San Francisco Housing Development Corporation
SFRA	San Francisco Redevelopment Agency
TODCO	Tenants and Owners Development Corporation
TNDC	Tenderloin Neighborhood Development Corporation

APPENDIX E: INCOME BY LAND USE ACTIVITY

The table below illustrates average wage by land use activity.

TABLE C.6.b.1.
SAN FRANCISCO WAGES BY LAND USE ACTIVITY: 1995

	Office	Retail	Industrial	Hotel	Cultural/ Institut.	Govern.	Other	Total
95' Wages (1)	$8,530	$1,628	$4,873	$418	$3,481	$1,546	$47	$20,431
'95 Employment	167,379	81,878	114,007	18,287	109,546	31,624	1,383	524,104
Ave. Wage	$50,962	$19,883	$42,743	$22,858	$31,777	$48,887	$33,984	$38,983

Note: '95 Wages in current millions of dollars
Source: San Francisco Planning Department, 1996
Commerce and Industry Inventory, tables 3.1.1 and 5.1.1

The attached list provides estimated 1997 Occupational Wages for San Francisco. This was compiled from EDD data. The data was updated from San Francisco, Alameda, or San Mateo County wages and increased by 3% a year from 1993 or 1994 to 1996, and then increased by 1.7% to project for 1997. Hourly wage rates were multiplied by 2000 to derive an annual income.

TABLE C.6.B.2.
1997 OCCUPATIONAL WAGES FOR SAN FRANCISCO (1)

OES Code	Occupational Title	Average 1996 Wage	Estimated 1997 Wage (2)	Annual Equivalent	Average
Managers and Administrative Occupations					
130020	Financial Managers	$26.30	$26.75	$53,494	
130110	Marketing Pr Managers	$17.20	$17.49	$34,985	
130140	Admin. Services Manager	$19.00	$19.32	$38,646	
150170	Construction Managers	$23.70	$24.10	$48,206	
150230	Comm/Util. Oper.Manager	$23.00	$23.39	$46,782	
150261	Food Service Manager	$12.50	$12.71	$25,425	
150262	Lodging Manager	$13.20	$13.42	$26,849	
					$39,198

Professional and Technical Occupations					
211080	Loan Officer	$15.50	$15.76	$31,527	
211140	Accountants	$14.38	$14.62	$29,249	
213080	Purchasing Agent	$15.20	$15.46	$30,917	
225140	Drafters	$13.60	$13.83	$27,662	
251051	Computer Programmers	$20.30	$20.65	$41,290	
283050	Paralegal Personnel	$16.20	$16.48	$32,951	
313021	Preschool Teacher	$9.40	$9.56	$19,120	
313022	Kindergarten Teacher	$12.97	$13.19	$26,376	
313050	Teacher	$13.83	$14.07	$28,130	
315020	Librarian	$17.00	$17.29	$34,578	
315211	Instructional Aide	$10.00	$10.17	$20,340	
323050	Occupational Therapists	$23.20	$23.59	$47,189	
325050	Licensed Voc. Nurse	$15.70	$15.97	$31,934	
325110	Physicians Assistant	$26.40	$26.85	$53,698	
325181	Pharmacy Technicians	$14.00	$14.24	$28,476	
329050	Medical Assistant	$13.10	$13.32	$26,645	
329110	Medical Record Tech.	$10.50	$10.68	$21,357	
340050	Technical Writer	$15.40	$15.66	$31,324	
					$31,265
Sales and Related					
430020	Insurance Sales Agent	$13.60	$13.83	$27,662	
490112	Retail Sales Agent	$6.65	$6.76	$13,526	
490140	Parts Salesperson	$11.50	$11.70	$23,391	
490170	Counter Clerks	$9.30	$9.46	$18,916	
490210	Stock Clerks	$7.70	$7.83	$15,662	
490230	Cashiers	$6.50	$6.61	$13,221	
490230	Cashiers - union	$11.00	$11.19	$22,374	
					$19,250
Clerical and Administrative Support					
510020	Clerical Supervisors	$15.25	$15.51	$31,019	
531020	Teller	$8.80	$8.95	$17,899	
531050	Account Clerks	$9.77	$9.94	$19,872	
531210	Loan Clerk	$12.33	$12.54	$25,079	
535080	Bill Collectors	$11.63	$11.83	$23,664	

533020	Insurance Adjustor	$18.50	$18.82	$37,631	
533110	Insurance Clerk	$13.19	$13.41	$26,824	
538050	Reservation Agent	$10.40	$10.58	$21,154	
538080	Hotel Desk Clerk	$13.40	$13.63	$27,256	
539140	Real Estate Clerks	$13.60	$13.83	$27,662	
551020	Legal Secretary	$19.20	$19.53	$39,053	
551050	Medical Secretary	$10.65	$10.83	$21,662	
551080	General Secretary	$12.20	$12.41	$24,815	
553050	Receptionist	$10.30	$10.48	$20,950	
553070	Typist/Word Processor	$14.00	$14.24	$28,476	
553140	Personnel Clerks	$12.50	$12.71	$25,425	
553410	Payroll Clerks	$13.20	$13.42	$26,849	
553440	Billing Clerks	$12.30	$12.51	$25,018	
553470	General Office Clerk	$9.90	$10.07	$20,137	
560110	Computer Operators	$13.50	$13.73	$27,459	
560170	Data Entry Keyer	$9.30	$9.46	$18,916	
580050	Dispatcher	$10.90	$11.09	$22,171	
580280	Shipping Clerk	$9.80	$9.97	$19,933	
					$25,171
Service Occupations					
630470	Guards	$10.40	$10.58	$21,154	
650260	Cooks	$9.80	$9.97	$19,933	
650380	Food Prep. Workers	$7.70	$7.83	$15,662	
660020	Dental Assistant	$12.20	$12.41	$24,815	
660080	Nurse Aides	$6.88	$7.00	$13,994	
660110	Home Health Care Worker	$10.30	$10.48	$20,950	
660171	Physical Therapist Assist.	$19.20	$19.53	$39,053	
660172	Physical Therapist Aides	$10.60	$10.78	$21,560	
670050	Janitor	$10.30	$10.48	$20,950	
680050	Hairdressers	$11.10	$11.29	$22,577	
680380	Child Care Workers	$7.40	$7.53	$15,052	
					$21,427

Production, Construction, Operating Occupations					
857050	Equipment Repairers	$11.25	$11.44	$22,883	
897990	Desktop Graphic Design	$10.90	$11.09	$22,171	
899210	Dental Lab Tech	$10.50	$10.68	$21,357	
925430	Printing Press Operators	$12.30	$12.51	$25,018	
					$22,857

(1) California Employment Development Department (EDD)
(2) 1.7% growth factor from Bureau of Labor Statistics
(3) California EDD Labor Market Information Division

APPENDIX F: AFFORDABILITY GAPS

A key component of the OAHPP analysis is the calculation of the size of the gaps between what households can afford and the cost of producing additional housing in San Francisco. This analysis uses a relatively standard methodology to determine the housing that a variety of size households can afford, and compares that to the cost of providing additional housing. The analysis is conducted for various household sizes that meet HUD standards at very low, low, and moderate-income criteria. Consideration is also given to the cost of producing both sales and rental housing.

Definitions and Assumptions

There are many definitions and assumptions that must be clarified to follow the analysis.

Income. Definition of income limits for housing programs are set by HUD for each metropolitan area. For 1997, 100% of median income for San Francisco is cited as $64,400 for a four-person household.[6] A very low-income household is defined as one earning less than 50% of median household income, a low-income household as one between 50% and 80% of median income, and a moderate-income household is one earning 80% to 120% of median income. Median income for smaller households is factored down, thus the median income for a three-person household is defined as 90% of that of a four-person household, while median income for a single-person household is 70% of that of a four-person household.

For this analysis, calculations of housing affordability were calculated for a very low-income household earning 35% of median income, a low-income household earning 70% of median income, and a moderate-income household earning the median income.

Housing Expenditure. Maximum monthly rent for various income categories was calculated as 30% of monthly income, including the payment of utilities. The utility allowance is based on figures derived from the HUD Section 8 program. Rent limits were set for unit sizes and various income levels, with utilities amounting to $30 per month for a studio, $40 for a one-bedroom, $63 for a two-bedroom unit, and $85 for a three-bedroom rental unit.[7] The occupancy standard used for the analysis is one person per bedroom plus one additional person. Thus, it is assumed that a studio is occupied by one person, a two-bedroom unit by three persons, and a three-bedroom unit by a household of four persons.

For calculating maximum purchase price limits for for-sale housing, a key assumption is that 33% of income can be devoted to housing expenses, including payment of mortgage, property taxes, insurance, mortgage insurance, and homeowner fees. A slight modification of the formula used by the Mayor's Office of Housing was utilized, based on inputs from the consultant team and the Redevelopment Agency. A down payment of 5%, a 30 year loan at 8%, and homeowner expenses

[6] U.S. Department of Housing and Urban Development, issued 12/27/96.

[7] Mayor's Office of Housing, 1997 Income, Rent, and Purchase Price Limits, January 30, 1997.

of $2,000 for dues and 5% of income minus the $2000 for other expenses including the taxes and insurance complete the assumptions for purchase of housing. The previous analysis conducted by the Mayor's Office of Housing assumed a 90% mortgage and 10% down payment, and used $1,500 for annual homeowners dues.

Cost of Housing. Estimates of the cost of developing new housing in San Francisco were generated based on three primary sources, actual prices of market rate developments in San Francisco between 1991 and 1995 as reported in the Planning Department's 1996 Housing Inventory Report, evaluation of several BRIDGE Housing Corporation projects in San Francisco, and experience of the San Francisco Redevelopment Agency. While a few private developments achieve lower prices per square foot, larger units and/or additional amenities often result in higher unit prices.

Four unit size prototypes were utilized, ranging from a 500 square foot studio through a 1,100 square foot three-bedroom unit. At generalized cost of $245 per square foot for studios, $235 for a 650 square foot one-bedroom unit, $225 per square foot for a two-bedroom unit, and $220 per square foot for the three-bedroom development, costs ranged from $122,500 for a studio, to $152,750 for a one-bedroom, $191,250 for a two-bedroom, and $242,000 for three-bedroom for-sale units. The cost of developing rental housing was judged to be approximately 10% lower than the cost of the for-sale units. These cost include soft and hard costs, and include land price and fees.

While the purchase price or rental price estimates are higher than the BRIDGE examples, some of the BRIDGE San Francisco projects may not include land value since the project descriptions cite land contributions or below market leases. Project densities for affordable developments seem to range from 40 to 70 units per acre for San Francisco projects, and land values, where cited, seem to range $15-20,000 per unit. Forty to 50 units per acre is a reasonable prototype for San Francisco two-bedroom units. That should allow 3-4 stories of stick construction over a concrete garage/podium.

Affordability Gap Calculation. A summary table and series of tables for each unit size prototype were developed for sale and rental units. Only rental housing was considered for very low income households at 35% of median income, and both rental and sale prototypes were considered for low and moderate income households at the 70% and 100% of median income levels. Supportable unit values for rental housing were developed based on the net operating income stream capitalized at 8%. Net operating income is calculated by subtracting utilities, operating costs, and a vacancy allowance, with the remainder representing the funds available to amortize a mortgage. Supportable values for for-sale units were developed by calculating the supportable mortgage payment once expenses were deducted, and dividing by .95 to get full price with a 5% down payment.

Conclusion

Tables D.1.0R through D.1.3S show the subsidy required for each of the unit sizes for rental and for-sale housing. Table D.2.R summarizes the subsidy requirements for rental housing for the three income levels and for four unit/household sizes. For a very low-income household, the subsidy requirements would range from $85,600 for producing a studio unit to as much as $196,150 for a three-bedroom unit. The average for all unit sizes would be $136,250, slightly less than the approximately $149,500 subsidy required for a two-bedroom unit.

For a low-income household at 70% of median income, the average subsidy would be approximately $66,600, ranging from $28,300 for a studio to $114,200 for a three-bedroom unit. For a moderate-income household, no subsidy would be required for a studio or one-bedroom unit, but a $12,500 subsidy would be required for a two-bedroom unit and a $43,900 subsidy required for a three-bedroom unit.

Comparative subsidies for low and moderate income households in for-sale housing, shown in Table D.2.S, are slightly higher than in rental housing, with an average subsidy at $71,600 for a low income household and $20,100 for a moderate income household, compared to $66,600 and $14,100 averages respectively in rental housing. No subsidy would be required for a studio unit for a moderate-income person earning $45,100, the median income.

TABLE D.1.0R. (Studios)
ESTIMATE OF SUBSIDY REQUIREMENT PER RENTAL UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Very Low Income 35% of Median	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$15,800	$31,570	$45,100
Affordable Monthly Housing Cost @ 30%	$395	$789	$1,128
Less monthly utility allowance (2)	$30	$30	$30
Affordable Monthly Rent	$365	$759	$1,098
Less Monthly Operating Cost (3)	$190	$190	$190
Less Vacancy Allowance @ 3%	$11	$23	$33
Net Monthly Operating Income	$164	$546	$875
Estimated Unit Value @ 8% Cap. Rate	$24,608	$81,971	$131,186
Less Development Cost per Unit	$110,250	$110,250	$110,250
Subsidy Required	$85,643	$28,279	

(1) Studio units and 1 person households
(2) Based on HUD Section 8 figures
(3) Operating cost of $190 per month based on Institute of Real Estate Management, 1995, & local experience

TABLE D.1.0S (Studios)
ESTIMATE OF SUBSIDY REQUIREMENT PER OWNERSHIP UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$31,570	$45,100
Affordable Annual Housing Cost (2)	$10,418	$14,883
Affordable Unit Price (3)	$82,930	$128,200
Development Cost (4)	$122,500	$122,500
Subsidy Required	$39,570	N.A.

(1) Studio unit and 1 person households
(2) Represents 33% of income
(3) Assumes a 95% mortgage, 8% interest rate, & homeowner expense factor by Mayor's Office of Housing + $500
(4) Based on recent San Francisco projects and San Francisco Redevelopment Agency

Source: Gabriel-Roche, Inc. & Keyser Marston Associates, Inc.

TABLE D.1.1R (1 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER RENTAL UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Very Low Income 35% of Median	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$18,000	$36,050	$51,500
Affordable Monthly Housing Cost @ 30%	$450	$901	$1,288
Less monthly utility allowance (2)	$40	$40	$40
Affordable Monthly Rent	$410	$861	$1,248
Less Monthly Operating Cost (3)	$240	$240	$240
Less Vacancy Allowance @ 3%	$12	$26	$37
Net Monthly Operating Income	$158	$595	$970
Estimated Unit Value @ 8% Cap. Rate	$23,655	$89,312	$145,511
Less Development Cost per Unit	$137,500	$137,500	$137,500
Subsidy Required	$113,845	$48,188	

(1) One bedroom units and 2 person households
(2) Based on HUD Section 8 figures
(3) Operating cost of $240 per month based on Institute of Real Estate Management, 1995, & local experience

TABLE D.1.1S (1 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER OWNERSHIP UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$36,050	$51,500
Affordable Annual Housing Cost (2)	$11,897	$16,995
Affordable Unit Price (3)	$97,930	$142,150
Development Cost (4)	$152,750	$152,750
Subsidy Required	$54,820	$10,600

(1) One bedroom units and 2 person households
(2) Represents 33% of income
(3) Assumes a 95% mortgage, 8% interest rate, & homeowner expense factor by Mayor's Office of Housing + $500
(4) Based on recent San Francisco projects and San Francisco Redevelopment Agency

Source: Gabriel Roche, Inc. & Keyser Marston Associates, Inc.

TABLE D.1. 2R (2 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER RENTAL UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Very Low Income 35% of Median	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$20,300	$40,600	$57,950
Affordable Monthly Housing Cost @ 30%	$508	$1,015	$1,449
Less monthly utility allowance (2)	$63	$63	$63
Affordable Monthly Rent	$445	$952	$1,386
Less Monthly Operating Cost (3)	$280	$280	$280
Less Vacancy Allowance @ 3%	$13	$29	$42
Net Monthly Operating Income	$151	$643	$1,064
Estimated Unit Value @ 8% Cap. Rate	$22,675	$96,516	$159,627
Less Development Cost per Unit	$172,125	$172,125	$172,125
Subsidy Required	$149,450	$75,609	$12,498

(1) Two bedroom units and 3 person households
(2) Based on HUD Section 8 figures
(3) Operating cost of $280 per month based on Institute of Real Estate Management, 1995, & local experience

TABLE D.1. 2S (2 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER OWNERSHIP UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$40,600	$57,950
Affordable Annual Housing Cost (2)	$13,390	$19,124
Affordable Unit Price (3)	$113,000	$171,200
Development Cost (4)	$191,250	$191,250
Subsidy Required	$78,250	$20,050

(1) Two bedroom units and 3 person households
(2) Represents 33% of income
(3) Assumes a 95% mortgage, 8% interest rate, & homeowner expense factor by Mayor's Office of Housing + $500
(4) Based on recent San Francisco projects and San Francisco Redevelopment Agency

Source: Gabriel-Roche, Inc. & Keyser Marston Associates, Inc.

TABLE D.1. 3R (3 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER RENTAL UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Very Low Income 35% of Median	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$22,550	$45,080	$64,400
Affordable Monthly Housing Cost @ 30%	$564	$1,127	$1,610
Less monthly utility allowance (2)	$85	$85	$85
Affordable Monthly Rent	$479	$1,042	$1,525
Less Monthly Operating Cost (3)	$320	$320	$320
Less Vacancy Allowance @ 3%	$14	$31	$46
Net Monthly Operating Income	$144	$691	$1,159
Estimated Unit Value @ 8% Cap. Rate	$21,658	$103,611	$173,888
Less Development Cost per Unit	$217,800	$217,800	$217,800
Subsidy Required	$196,142	$114,189	$43,913

(1) Three bedroom units and 4 person households
(2) Based on HUD Section 8 figures
(3) Operating cost of $320 per month based on Institute of Real Estate Management, 1995, & local experience

TABLE D.1. 3S (3 bedroom)
ESTIMATE OF SUBSIDY REQUIREMENT PER OWNERSHIP UNIT (1)
SAN FRANCISCO HOUSING NEXUS STUDY

	Low Income 70% of Median	Moderate Income 100% of Median
Income Level	$45,080	$64,400
Affordable Annual Housing Cost (2)	$14,876	$21,252
Affordable Unit Price (3)	$128,150	$192,800
Development Cost (4)	$242,000	$242,000
Subsidy Required	$113,850	$49,200

(1) Three bedroom units and 4 person households
(2) Represents 33% of income
(3) Assumes a 95% mortgage, 8% interest rate, & homeowner expense factor by Mayor's Office of Housing + $500
(4) Based on recent San Francisco projects and San Francisco Redevelopment Agency

Source: Gabriel-Roche, Inc. & Keyser Marston Associates, Inc.

APPENDIX G: NEXUS METHODOLOGY AND DOCUMENTATION

Step 1 - Estimate of Total New Employees

The estimate of the number of employees is derived based on an employment density factor for each land use. As shown below, the gross building area is divided by the employment density factor to calculate employees.

Gross Building Area	divided by	Employment Density Factor	=	Employees

The employment density factor is different for each land use and can vary widely within each land use depending on land use types. Densities for industrial uses, for example, vary within a huge range. Other land uses are more constant. Employment density factors in this analysis are based on density factors developed by the City of San Francisco, KMA's experience in working in the Northern California market and general industry trends.

The office employment density factor is estimated at 275 sq.ft. per employee. This estimate assumes a 5% office vacancy factor. The employment density factor for retail is 350 sq.ft. per employee and for hotel 0.75 rooms per employee. These density factors are based on typical tenant types in the Northern California and San Francisco markets.

For medical and cultural institutions employment density factor, KMA has relied on trends in several metropolitan areas in California and recent EIRs for San Francisco project data.

The employment density factors used in this analysis are the following:

Office	275/sq.ft./employee
R&D	400/sq.ft./employee
Medical	300/sq.ft./employee
Cultural Institutional	750/sq.ft./employee
Retail	350/sq.ft./employee
Hotel	0.75/room/employee

Step 2 - Declining Industry Adjustment

See Section II of the Report.

Step 3 - Estimate of the Number of Households

This step estimates the number of households represented by a given number of employees. The number of households needs to be estimated since housing assistance is based on household income and household size. The 1990 U.S. Census estimates there are 1.63 wage earners per non-elderly household in San Francisco. Using this factor the number of households can be calculated.

Employees in New Households	divided by	Average Number of Workers per Household	=	New Households

Data Source:

(1) Estimate of Total Households: 1990 Census of Population and Housing

(2) Estimate of Elderly Households: 1990 Census of Population and Housing

(3) Estimate of Employee Labor Force: 1990 Census of Population and Housing

Calculation of Average Number of Workers per Household:

Estimate of Employee[3]	divided by	(Est. of HH[1]	-	Est. of Elderly HH[2])

Step 4 - Breakdown of Households by Occupation

This step divides households by occupational groupings for each land use. For purposes of this analysis, we have relied on the occupational groupings defined by the State of California Employment Development Department and the US Census. Occupational groupings include Managerial/ Professional, Technical/Sales, Clerical, Craft/Kindred, Service, and/or Laborer. For each land use category, such as office, the total number of households identified in Step 4 are desegregated into occupation categories. In this step, we have relied on U.S. Census data which provides comprehensive occupational data for the United States. We then used EDD data for the San Francisco County as a refinement to the national data.

New Households	x	Percentage of Households in each Occupation Category	=	New Households in each Occupation Category

Data Source:

Projections of Employment by Industry and Occupation," San Francisco County, Employment Development Department.

"1980 Census of Population; Occupation by Industry Survey," U.S. Department of Commerce.

Step 5 - Estimate of Employees Meeting the Income Definition

The number of households in each occupation category that fall within the respective income categories are estimated in Step 5. To accomplish this step, GRI first reviewed available wage survey data collected by the U.S. Department of Labor, State of California Employment Development Department.

For most occupations data was available for a select number of job types. Judgments were made based on extrapolation of available data to estimate the percentage of households that have a wage earner that may qualify for assistance. Income levels for the median and lower-income categories, are set by HUD. This does not necessarily mean the household qualifies for assistance since the household must also meet household size criteria.

The most comprehensive wage data was found for office workers, particularly for clerical and professional/technical occupations. Available wage data for other land uses and related occupational groups was less complete and provided data for only select job types, such as welder and cashier. KMA, therefore, made estimates of income distribution by occupation. To estimate the percentage of households earning less than the upper income limit in the craft/kindred, service and operative/laborer occupations, we used the clerical wage data as a benchmark and have made adjustments relying on available wage data for selected job types in each of the occupational categories. This methodology requires adjustments to correct for the possibility that households earning less than the upper income limit for each of these occupations is not based on a representative range of job types but rather on specific job types which may not adequately reflect the range of salaries in an occupation category. Additional research could be undertaken to see if more comprehensive wage data is available.

The next step estimates the number of households in each of the six income subgroups defined by HUD. This is done for the very low and low and moderate-income categories. For this step, we have again relied on clerical wage data. As previously discussed, this data is the most comprehensive and this is utilized to estimate the number of households in each of HUD's income subgroups. This is done for the craft/kindred, service and laborer/operative occupational categories and applies to all land use categories.

The clerical income distribution was utilized to estimate the number of households in each of HUD's six income subgroups. From that distribution, estimates for the four other occupational categories were made based on wage data from a representative sample of jobs. Additional research could be undertaken to obtain more comprehensive and detailed wage data for each occupation category.

Step 6 - Estimate of Household Size Distribution

HUD's criteria for assistance is dependent on a household meeting a combination of income and household size requirements. Step 6 estimates the number of households in each household size category ranging from one person per household to six persons or more per household.

Household Size	
1	39.3%
2	30.2%
3	12.5%
4	8.6%
5	4.5%
6+	4,8%

Data Source:

U.S. Census: Detail Population Characteristics, California.

Step 7 - Estimate of Households That Meet Income and Size Criteria for Assistance

This step calculates the number of households that meet HUD's lower income assistance criteria. Using a matrix format, a probability factor is calculated for each of the three income level subgroups. To determine the probability factor for each occupation category, the probability factors calculated for each HUD level are totaled. This number represents the probability that new households in a given occupation category will meet both income and household size criteria established by HUD.

To determine the number of households that qualify for assistance, the probability factors are multiplied by the number of households by occupation estimated in Step 4. This is done for each land use category.

EXAMPLE

Land Use: Office
Occupation: Clerical
Assistance Level: Very Low

% of Household by Income		% of Households by Size[2]					
Income Levels	% of[2] Households	1 (39.3%)	2 (30.2%)	3 (12.5%)	4 (8.6%)	5 (4.5%)	6 (4.9%)
< $22,500	20%	[.079][3]					
< $25,750	40%		[.121]				
< $29,000	60%			[.075]			
< $32,200	70%				[.060]		
< $34,800	80%					[.036]	
< $37,500	83%						[.041]
Total							[.412]

Households Requiring Assistance: .412 x 67 clerical households[4] = 28 households

[1] Step 5
[2] Step 6
[3] To calculate probability factor multiply the percentage of households by income figure by the 1 person household size percentage
[4] Step 4

Step 8 - Adjustment to Eliminate Most Multiple Earner Households

This last step makes an adjustment to eliminate most of the households that have two or more earners such that the incomes in combination make the household no longer qualify for the lower income categories.

From the U.S. Census, we can estimate the number of multiple earning households that fall within each income category. For example, of all multiple earning households we estimate that 6% fall in the very low-income category. Our methodology in the nexus analysis estimates the number of multiple earner households based on the assumption of 1.63 earners per household (this is an average for all households). This estimate of earners per household overstates the number of multiple earners in the lower end income categories. As a result, we have adjusted the number of multiple earner households presented in the nexus analysis to the estimated number indicated by the U.S. Census data.

Step 9 - Adjustment to Discount for Non-Resident Workers

See Sections I and II of the Report.