Office of the City Manager

<u>WORKSESSION</u>
July 14, 2015

To: Honorable Mayor and Members of the City Council

From: Christine Daniel, City Manager

Submitted by: Eric Angstadt, Director, Planning

Subject: Affordable Housing Nexus Study

INTRODUCTION
Staff is requesting guidance regarding revisions to the Affordable Housing Mitigation Fee, the percentage of affordable units deemed to be equivalent to the fee, and whether modifications should be made to the demolition ordinance in light of the information provided in the *Affordable Housing Nexus Study.*

CURRENT SITUATION AND ITS EFFECTS
The Affordable Housing Nexus Study completed in October 2010 provides the basis for the current Affordable Housing Mitigation Fee (fee) and equivalent percentage of affordable housing units to be included in a project. Given that the study was prepared prior to the full release of data from the 2010 Census and did not analyze ownership or replacement units, it was determined that a revision of the study was needed. The firm of Bay Area Economic (BAE) prepared the October 2010 study and was contracted with directly to update that data and analysis resulting in the attached March 25, 2015 draft of the *City of Berkeley Affordable Housing Nexus Study* (Nexus Study).

The City Council adopted a discounted fee in 2013 for projects which were already in the development process in order to bring much needed housing units to market. The alternative to paying the fee is to restrict 10% of the units in the project to rental rates affordable to very low income households for the life of the project.

The insufficient supply of housing in the region has contributed to more aggressive upward pressure on housing costs. As a point of comparison, the average market rent for a two-bedroom apartment as reported in the 2010 Nexus Study was $1,765 compared to $2,171 in the 2015 draft study, an increase of 23%. In 2010, households with incomes at or greater than 65% of the area median income (AMI) were able to afford market rate rents. However, in 2015 household incomes must be at or exceeding 100% AMI in order to afford market rate rents.

With the continued reduction in federal funding for affordable housing funding, the demise of redevelopment and its associated affordable housing requirements, and court rulings invalidating inclusionary requirements for rental housing, more pressure has

been placed on local municipalities to develop resources to meet the escalating need for affordable housing for households from extremely low to moderate incomes. The updated *Affordable Housing Nexus Study* provides the analysis required to inform the consideration of possible modifications to the current fee, the formula for determining the equivalent number of affordable units to be included in a project, and new requirements for demolition of existing units.

BACKGROUND
The original fee of $28,000 was adopted by City Council on October 16, 2012 (Resolution No. 65,920-N.S.). On February 19, 2013, the City Council adopted Resolution No. 66,015-N.S. which entitled developments to an $8,000 per unit discount for projects which were already in the development process. The discount was extended on October 7, 2014 (Resolution No. 66,809-N.S.) and again on April 7, 2015 (Resolution No. 66,986-N.S.) pending completion and release of the updated Nexus Study which was necessary to provide a current basis for a revised fee.

The methodology for identifying the maximum fee is subject to the California Mitigation Fee Act that requires mitigation fees relate to only the impact of new development being added, and not existing deficiencies. The same commonly-accepted methodology was used for both the 2010 and 2015 nexus studies which estimate demand for goods and services generated by the new households, and the associated number of additional workers required to meet that demand who would need affordable housing.

The 2010 study identified 63.8 new workers that would be associated with a new 100-unit apartment building. These workers would result in 36.5 households distributed across a range of income levels. The study then looked at the financing gap to provide affordable units to households making 65% or less AMI. Translating this gap on a per unit basis resulted in a maximum impact fee of $34,017.

In 2015, 93.27 new workers would be associated with a 100-unit rental project, and 106.43 with a 100-unit condominium (ownership) project. This results in 52.57 and 59.99 new households, respectively, distributed across the full range of incomes. Housing affordability has declined since 2010, and households must now earn more than 100% AMI in order to afford market rents. The financing gap required to produce housing affordable to these new households earning 100% AMI or less resulted in a maximum impact fee of $84,391 for rental units and $96,294 for condominium units. Rather than charging the fee on a per unit basis, it is possible to translate this to a square footage fee using average unit sizes resulting in a fee of $112.24 per square foot for rental units, and $97.98 per square foot for condominiums.

As part of this analysis, it was determined that 25.55% of new rental households and 29.16% of new ownership households would require assistance to acquire affordable housing. This is a substantial increase over the 10% figure from the 2010 Nexus Study, and provides justification for increasing the percentage of affordable units deemed to be equivalent to the fee.

Financial feasibility analysis was conducted to determine the impact of charging the maximum fee on housing production. Four typical rental projects were modeled and several mitigation fees were tested to determine the impact on the return on cost (ROC). It was determined that the current fee could be increased from $28,000 to $34,000 and still allow a reasonable rate of return. A similar analysis was conducted for condominiums resulting in a maximum fee of $75,000 in order to allow for a reasonable rate of return.

The 2015 study includes a new section analyzing the impact of demolishing and replacing existing units and the demand for additional affordable housing. The analysis takes into consideration the impacts associated with the loss of rent-stabilized units or other units that are less expensive due to their age, and the units that replace them which are not subject to rent stabilization due to the new date of construction. The methodology is similar to that previously discussed for new rental and condominium units, except that it analyzes the net difference between new households resulting from employment generated by the new replacement units and the households that are supported by an average rent-stabilized project. The study found the net increase is 26.02 households of which 12.64 have incomes at or less than 100% AMI. The resulting maximum impact fee that can then be supported for replacement units is $41,768, with the equivalent percentage of affordable units being 12.64%.

Staff has requested authority to issue a request for proposals to conduct a feasibility analysis of expanding applicability of the fee to all units in a project. In response to the council referral from April 28, 2015 regarding a possible City Density bonus, this feasibility analysis would include assessment of the impacts of a modified fee, the addition of requirements for local hiring, job training programs and payment of prevailing wages, and various combinations of local concessions and incentives, in order to assess the preferableness to the existing State Density Bonus. This analysis is necessary to inform further discussion on the interrelation between the Affordable Housing Mitigation Fee and the proposed City Density Bonus.

ENVIRONMENTAL SUSTAINABILITY
The *Affordable Housing Nexus Study* does not have a direct impact on the sustainability of the City. However, the mitigation fees supported by the study could result in the production of new housing that would be designed and constructed in compliance with the sustainability policies of the City.

POSSIBLE FUTURE ACTION
The *Affordable Housing Nexus Study* provides a range of options that may be considered in a revised Affordable Housing Mitigation Fee, and introduces new information to support changes to the demolition ordinance. Possible future actions include increasing the fee and equivalent affordable units, reducing the fee and equivalent affordable units, or maintaining the current fee and percentage of affordable units deemed to be equivalent

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION
Possible future modifications to the Affordable Housing Mitigation Fee and number of affordable units deemed to be equivalent could result in additional revenue to the Housing Trust Fund, as well as an increase in affordable housing units. However, any such modifications could also create a deterrent to new development and a decline in revenue for the Housing Trust Fund, as well as the creation of fewer affordable housing units. As a result, any proposed modifications must be carefully analyzed in conjunction with other possible regulatory changes, such as the adoption of a local density bonus.

CONTACT PERSON
Carol Johnson, Land Use Planning Manager, Planning & Development, 981-7411

Attachments:
1: City of Berkeley Affordable Housing Nexus Study – Draft, March 25, 2015

bae urban economics

City of Berkeley Affordable Housing Nexus Study
DRAFT

March 25, 2015

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INTRODUCTION

Purpose of Report

The City of Berkeley's Inclusionary Housing Ordinance has been an important tool in creating affordable housing in the City since its adoption in 1986. Generally speaking, the City's Inclusionary Housing Ordinance (Chapter 23C.12 of the Municipal Code) requires that at least 20 percent of the total number of units in rental and ownership projects with five or more units be affordable to low-income households earning up to 80 percent of the Area Median Income (AMI).[1]

The 2009 California Appellate Court ruling in *Palmer/Sixth Street Properties LP v. City of Los Angeles* ("*Palmer*") overturned previous understandings about the validity and analytic underpinning of inclusionary housing ordinances as applied to market rate rental housing projects. The *Palmer* case found that inclusionary housing requirements on rental developments violate the Costa-Hawkins Rental Act of 1995 and effectively outlawed these programs for new rental properties, compelling jurisdictions throughout California to reconsider their inclusionary ordinances*.* As an alternative, jurisdictions may assess an affordable housing impact fee on new rental developments, based on the affordable housing need generated by the new units. This relationship between new residential development, the need for affordable units, and the associated impact fee must be established through a "nexus study." California case law and the Mitigation Fee Act require California jurisdictions to show through a nexus study that (1) the proposed development is in fact creating an impact and (2) the fee is proportional to the impact.[2] The nexus study effectively establishes the *maximum* fee amount that a jurisdiction may legally assess.

In response to the *Palmer* case, the City of Berkeley retained BAE Urban Economics (BAE) in 2010 to prepare a nexus study that provides the City with a legally defensible affordable housing fee for new rental housing. The 2010 nexus study found that the maximum per unit fee was $34,000 for rental developments. However, the study recommended that the City establish the fee at $19,310 per unit to address concerns related to the financial feasibility of new projects. The City's current (2014) fee rate is $28,000 per unit.

In 2014, the City of Berkeley retained BAE to update the previous nexus study to determine the current maximum fee for rental units. In addition, the City requested an analysis of a) the nexus and maximum fees applicable to new market-rate for-sale projects, and b) for new market rate units that are built to replace older less expensive units that have been demolished or destroyed.

This report is the update to the 2010 nexus study, and also includes these new additional items.

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[1] AMI is established annually for each county in California by the State Department of Housing and Community Development (HCD).
[2] *San Remo Hotel vs. City and County of San Francisco* (1991) is the relevant case law.

Organization of Report

After this introduction, this report contains the following sections:

- **Affordable Housing Needs Assessment.** This section provides an overview of Berkeley's residential market and analyzes the affordability of market rate housing in the City.

- **Affordable Housing Nexus Analysis for New Housing.** This section outlines the nexus study methodology and findings related to new rental and for-sale residential development.

- **Affordable Housing Nexus Analysis for Replacement Housing.** This section outlines the nexus study methodology and findings related to new housing units that are constructed to replace units that were destroyed or demolished.

- **Financial Feasibility Analysis.** This section provides a pro forma analysis to assess the effects of additional fees on development feasibility.

- **Recommendations.** This section offers general recommendations to the City as it considers an affordable housing impact fee based on best practices in the affordable and inclusionary housing field.

AFFORDABLE HOUSING NEEDS ASSESSMENT

This chapter summarizes the current residential market in Berkeley in light of major market shifts in recent years. It is important to note that Berkeley's rental housing market is affected by many factors, including both high demand by all segments of the housing market, as well as the City's Rent Stabilization program, which limits rent increases for existing tenants in units that meet legal requirements for registration.

Rental Market Overview

Rental Units Subject to Rent Stabilization

In June 1980, Berkeley residents approved the Rent Stabilization and Eviction for Good Cause Ordinance (Berkeley Municipal Code Chapter 13.76). In general, the Ordinance limits annual rent increases for units built before June 30, 1980. However, landlords are allowed to charge market rate rents when a unit is vacated and leased to a new tenant.[3] Thus, the Berkeley rental housing market, within which approximately 69 percent of all rental units are subject to stabilization, is directly influenced overall by these limits on rent increases for existing tenants. [4] In housing markets elsewhere in the Bay Area without these requirements for rent stabilization, overall housing needs swing more dramatically, as existing tenants can be charged large rent increases each year in line with housing booms.

The Berkeley Rent Stabilization Board, which implements the rent stabilization law, collects and reports data on rental rates for units subject to rent stabilization on a quarterly basis. A summary of recent rent-stabilized market data is shown below. The Rent Stabilization Board data tracks rents for both "all units" subject to rent stabilization, as well as those in the subset representing "new tenancies" after a unit is vacant and leased again. As shown, the average rent for all units ranged from $1,000 per month for studios to $2,382 for three-bedroom units. Not surprisingly, the rents for new tenancies were higher, as landlords establish new market rate rents when units are vacated and leased to a new tenant. Median rents for new tenancies ranged from $1,092 for studios to $2,910 for three-bedroom units. As shown, there were 5,034 new tenancies in 2013, indicating that approximately 26 percent of rent-stabilized units were re-tenanted in 2013 with new market-rate rents.

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[3] Vacancy decontrol was mandated after the State legislature passed the Costa-Hawkins Rental Act in 1995, which allows rent to increase to market rates when a qualifying vacancy occurs and reinstates rent control for a new tenant.
[4] Data is reported for units subject to the City's Rent Stabilization Ordinance. As of May 15, 2014, 19,118 units were registered with the Rent Stabilization Board. The American Community Survey estimates that there are approximately 27,500 renter households in the City.

Table 1: Average Rent for Units Subject to Rent Stabilization, Berkeley, 1st Quarter 2014

Unit Type	New Tenancies in 2013 (a)		All Units, 2014 (b)	
	Average Rent	Units	Average Rent	Units
Studio	$1,092	1,158	$1,000	3,668
1-Bedroom	$1,469	1,931	$1,242	7,893
2-Bedroom	$2,086	1,547	$1,705	5,975
3-Bedroom	$2,910	289	$2,382	1,026
All Units	**$1,715**	**5,034**	**$1,442**	**19,118**

Notes:
(a) Data on new tenancies reflect all new tenancies that started in 2013, the most recent year-long period for which data are available.
(b) Data on all units are shown as of 5/15/2014.
Sources: Berkeley Rent Stabilization Board, 2014; BAE, 2014.

New Market Rate Rental Units Not Subject to Rent Stabilization

At the other end of the market's spectrum, Berkeley has experienced a rise in new multifamily rental developments in recent years. Monthly rents at new developments are substantially higher than citywide rents for the older units built before 1980 that are subject to rent stabilization. Table 2 summarizes current market data for five multifamily developments in Berkeley that were constructed between 2007 and 2012 (see Appendix A for additional detail). As shown, average rents in 2014 ranged from $2,239 for studios to $4,200 for three-bedroom units.

Table 2: Average Rents for New Multifamily Developments, 2014

Unit Type	Weighted Average Rents (a)	Units
Studio	$2,239	23
1-Bedroom	$2,537	403
2-Bedroom	$3,434	303
3-Bedroom	$4,200	3
Vacancy Rate (b)	3.1%	1,054

(a) Rents reported for five new rental developments: Berkeley Central, Fourth & U, New Californian, Hillside Village, and Library Gardens. These five developments were constructed between 2007 and 2012.
(b) Vacancy rate shown is for all properties in Berkeley that are included in the realAnswers inventory, which consists of 1,054 units in 9 properties. All properties in Berkeley in the realAnswers inventory consist of 50 units or more and were constructed between 2001 and 2012.
Sources: realAnswers, 2014; BAE, 2014.

Rental properties in Berkeley generally have low vacancy rates. Among properties surveyed by realAnswers, a private data vendor which surveys projects with 50 units or more, the vacancy rate was 3.1 percent during the first two quarters of 2014. While this sample only represents a portion of the rental stock in Berkeley, it offers a general benchmark for vacancy rates in the City. Housing economists generally consider a rental vacancy of five percent as sufficient to provide adequate choice and mobility for residents and sufficient income for landlords. Higher rates result in a

depressed rental market, while vacancy rates below five percent tend to restrict resident mobility and indicate an extremely tight housing market.

Rental Housing Affordability

This section discusses the affordability of housing in Berkeley, relative to federal and State-defined household income limits. The U.S. Department of Housing and Urban Development (HUD) and the California Department of Housing and Community Development (HCD) characterize households as "extremely low-income," "very low-income," "low-income," "moderate-income," or "above-moderate income" based on percentages of the Area Median Income (AMI). The income categories are defined below:

- Extremely Low-Income: Up to 30 percent of AMI
- Very Low- Income: 31 percent to 50 percent of AMI
- Low-Income: 51 percent to 80 percent of AMI
- Moderate-Income: 81 percent to 120 percent of AMI
- Above-Moderate Income: More than 120 percent of AMI

In accordance with guidelines established by HUD, housing is considered "affordable" if it costs no more than 30 percent of the household's gross income, including utilities.

Table 3 compares the maximum affordable monthly rent for households of various sizes with the average market rate rents in Berkeley. The average rent shown in the table is a weighted average of rental rates for several recently-constructed large projects in Berkeley, along with the rental rates reported by the Berkeley Rent Stabilization Board.[5] These two data sources are combined and averaged, in order to reflect overall market rate rents in the pre- and post-1980 housing inventory. Maximum affordable monthly rent assumes that households pay 30 percent of gross household income on rent and utilities. As a conservative measure to avoid overstating the affordability of rental housing, this analysis uses household incomes at the mid-point of each income range when calculating affordable rents.[6] Utility costs are based on utility allowances published by the Berkeley Housing Authority.

The data suggest that some moderate-income households can afford market rents in Berkeley, particularly households that can be accommodated in smaller units. The maximum affordable rent for moderate-income households exceeds average market rents for one- and two-person

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[5] Data on newer properties are provided by realAnswers, which surveys rental properties with 50 units or more. The realAnswers inventory includes a total of nine properties in Berkeley, all built between 2001 and 2012, with a total of 1,054 units. The Rent Board provides data on the 19,118 units in Berkeley that were covered by the rent stabilization ordinance as of the first quarter of 2014, all of which were built in 1980 or earlier. Rents for new tenancies were used to compute the weighted average among rent-stabilized properties to reflect the average cost of an apartment for a household beginning a tenancy in Berkeley in 2014. Together, the units surveyed by realAnswers and the Rent Board comprise 73 percent of all rental units in Berkeley.
[6] For example, for the 50%-80% of AMI range, 65% of AMI is used to calculate affordable rents.

households. However, market rents exceed affordable rents for three- or four-person households with moderate incomes.

The analysis also finds that market rents exceed the maximum affordable rent for households with incomes that are below the moderate-income level. Market-rate rents are higher than the maximum affordable rent for low-income households across all household sizes, and are significantly higher than the maximum affordable rent for extremely low- and very low-income households.

Table 3: Affordability of Market Rate Rental Housing in Berkeley, 2014

| | Household (Unit) Size | | | |
	1 Person (Studio)	2 Person (1 Bedroom)	3 Person (2 Bedrooms)	4 Person (3 Bedrooms)
Average Market-Rate Rent (a)	$1,105	$1,529	$2,171	$2,914
Utility Costs (b)	$34	$48	$62	$75
Maximum Affordable Monthly Rent				
Extremely Low Income (up to 30% AMI)				
Household Income at Midpoint of Income Range (c)	$9,825	$11,225	$12,625	$14,025
Max. Affordable Monthly Rent (d)	$212	$233	$254	$276
Amount Above (Below) Market Rate Rent	($893)	($1,297)	($1,917)	($2,638)
Very Low Income (31-50% AMI)				
Household Income at Midpoint of Income Range (c)	$26,200	$29,925	$33,675	$37,400
Max. Affordable Monthly Rent (d)	$621	$700	$780	$860
Amount Above (Below) Market Rate Rent	($484)	($829)	($1,391)	($2,054)
Low Income (51-80% AMI)				
Household Income at Midpoint of Income Range (c)	$40,050	$45,750	$51,475	$57,175
Max. Affordable Monthly Rent (d)	$967	$1,096	$1,225	$1,354
Amount Above (Below) Market Rate Rent	($138)	($434)	($946)	($1,560)
Moderate Income (81-120% AMI)				
Household Income at Midpoint of Income Range (c)	$62,950	$71,925	$80,925	$89,900
Max. Affordable Monthly Rent (d)	$1,540	$1,750	$1,961	$2,173
Amount Above (Below) Market Rate Rent	$435	$221	($210)	($741)

Notes:
(a) Based on a weighted average of rents among rent-controlled properties and among newer properties. Average rents for rent-controlled properties are based on rents for new tenancies in the first quarter of 2014, as reported by the Rent Stabilization Board. Average rents for newer properties are based on information reported by realAnswers, which collects data on properties with 50 units or more, including 9 properties with a total of 1,054 units in Berkeley, all of which were built in 2001 or later.
(b) Utility costs based on utility allowance for multifamily dwellings established by the Berkeley Housing Authority in 2014. Utility cost estimates assume that water, sewer, and trash collection costs are included in monthly rental amount.
(c) Household income limits published by the California Department of Housing and Community Development for Alameda County, 2014. Shows mid-point of income range.
(d) Assumes 30 percent of income spent on rent and utilities.
Sources: California Department of Housing and Community Development, 2014; Berkeley Housing Authority, 2014; BAE, 2014.

Table 4 shows the income required to afford the average rent for a market-rate unit in Berkeley, based on assumptions related to household and unit sizes, using the average market-rate rents shown in Table 3. As shown, the income required as an estimated percent of AMI increases as household sizes increase, from 76 percent of AMI for a one-person household to 128 percent for a four-person household. Overall, Table 4 suggests that households earning 100 percent of AMI or less are typically unable to afford the average market-rate unit in Berkeley.

Table 4: Income Required to Afford Market-Rate Rents in Berkeley, 2014

	Household (Unit) Size			
	1 Person (Studio)	2 Person (1 Bedroom)	3 Person (2 Bedrooms)	4 Person (3 Bedrooms)
Average Monthly Rent (a)	$1,105	$1,529	$2,171	$2,914
Plus Utilities (b)	$34	$48	$62	$75
Total Monthly Housing Costs	$1,139	$1,577	$2,233	$2,989
Annual Housing Costs	$13,669	$18,929	$26,794	$35,868
Household Income Required (c)	**$45,564**	**$63,097**	**$89,314**	**$119,558**
Income Required as a % of AMI (d)	**76%**	**89%**	**106%**	**128%**

Notes:
(a) Based on a weighted average of rents among rent-controlled properties and among newer properties. Average rents for rent-controlled properties are based on rents for new tenancies in the first quarter of 2014, as reported by the Rent Stabilization Board. Average rents for newer properties are based on information reported by realAnswers, which collects data on properties with 50 units or more, including 9 properties with a total of 1,054 units in Berkeley, all of which were built in 2001 or later.
(b) Utility costs based on utility allowance for multifamily dwellings established by the Berkeley Housing Authority in 2014. Utility cost estimates assume that water, sewer, and trash collection costs are included in monthly rental amount.
(c) 30 percent of gross income spent on housing costs.
(d) Income required as a percent of AMI is estimated based on HCD income limits for households of each size and income level.
Sources: realAnswers, 2014; Berkeley Rent Stabilization Board, 2014; California HCD Income Limits, 2014; Berkeley Housing Authority Utility Allowance, 2014; BAE, 2014.

The data presented above indicate that market-rate rental units are generally not affordable to households earning the median income for Alameda County. For many households that earn less than the median income, market-rate rents are substantially higher than the affordable rental amount. The previous (2010) Nexus Study for the Berkeley's Housing Impact Fee found that households earning more than 65 percent of AMI were generally able to afford market-rate rental units, indicating that market-rate units were substantially more affordable at the time when the 2010 Nexus Study was conducted.

For-Sale Market Overview

Berkeley has experienced significant home price increases in recent years, indicating that the Berkeley housing market has largely recovered from the economic recession. Like many Bay Area communities, Berkeley home prices experienced dramatic appreciation between 2000 and 2007 before declining as a result of the economic recession. Following the decreases that occurred during the recession, Berkeley housing prices increased again in 2012 and 2013 and have continued to rise during 2014. For example, as of July 2014, the median home sale price in Berkeley was $785,000, an increase of 21 percent over the July 2013 median. Figure 1 shows median home sale price trends for Berkeley and Alameda County between 2005 and 2014.

Berkeley home sale prices are consistently higher than home sale prices in Alameda County overall, also shown in Figure 1. While Berkeley and Alameda County both experienced decreases in sale

prices beginning in 2008 followed by increases beginning in 2012, the median home sale price in Berkeley remained 18 to 68 percent higher than the Alameda County median in each year between 2005 and 2013. Moreover, Berkeley experienced more a moderate decrease in the median home sale price between 2007 and 2011 (20 percent) than Alameda County overall (43 percent). These data indicate that Berkeley has a strong for-sale housing market, with significant demand as expressed by rapidly rising home prices. It is important to note that the most recent data point, July 2014, shows a median house price surpassing the previous peak in 2008 before the recession. .

Figure 1: Median Home Sale Prices, Berkeley and Alameda County, 2005-2014
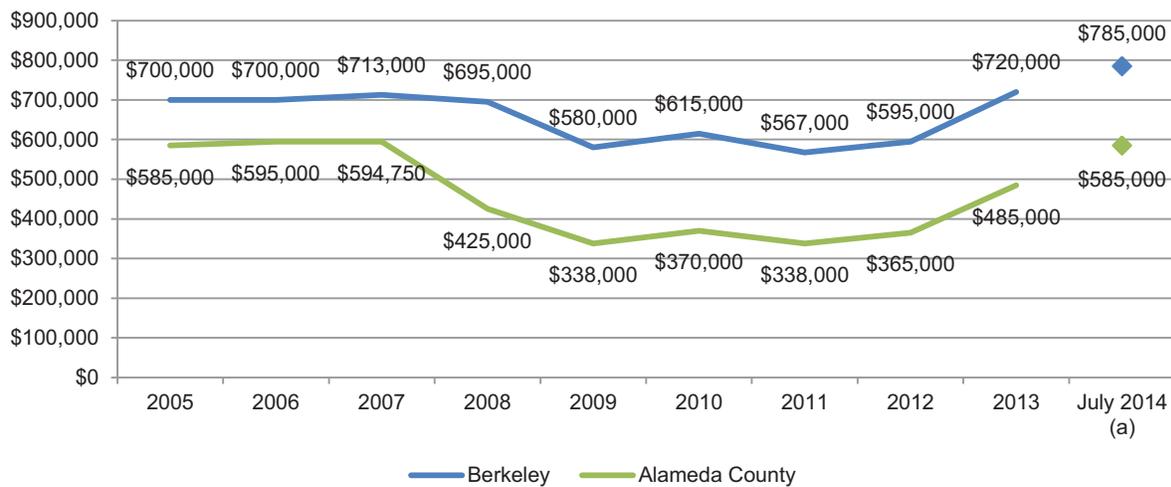
Note:
(a) The July 2014 median sale price is for a single month only and is therefore not directly comparable to the annual medians shown above.
Sources: DataQuick, 2014; BAE, 2014.

For-Sale Housing Affordability

For this study, the affordability of the for-sale marketplace in Berkeley is limited to just multifamily for-sale units, due to the approach used by the City's inclusionary program, which only charges projects with five or more units; this generally results in inclusionary requirements that are not relevant for a new single family home or duplex. Due to the high housing and land costs in Berkeley, and the built-out nature of the community, new for-sale housing projects with five units or more in them tend to be either townhouses or stacked-flat multifamily buildings.

Table 5 presents affordability scenarios for three-person households at various income levels and compares the maximum affordable sale price for each of these households to the sales prices for condominiums sold in Berkeley between July 1, 2013 and July 31, 2014. The maximum affordable sales price was calculated using household income limits published by HCD, the average July 2014 interest rate for 30-year fixed mortgages, and assuming that households provide a 20 percent downpayment and spend 30 percent of gross income on mortgage payments, taxes, and insurance.

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The detailed calculations used to derive the maximum affordable sales price for single-family homes and condominiums are presented in Appendix A.

Condominium sale prices in Berkeley are largely unaffordable for households with low or moderate incomes. As shown in Table 5, a moderate-income household earning 120 percent of AMI can afford a condominium sale price up to $400,235. Among recent condominium sales in Berkeley, only 27 percent were under this price point. Only 12 percent of condominiums recently sold in Berkeley were affordable to households earning 100 percent of AMI, and only five percent were affordable to households earning 80 percent of AMI.

Table 5: Affordability of Condominiums in Berkeley, 2013-2014

Income Level	Income Limit (a)	Max. Affordable Sale Price (b)	Percent of Condos on Market Within Price Range (d)
Extremely Low-Income (Up to 30% AMI)	$25,250	$50,145	0.0%
Very Low-Income (Up to 50% AMI)	$42,100	$128,020	1.0%
Low-Income (Up to 80% AMI)	$60,850	$214,675	5.2%
Median-Income (Up to 100% AMI)	$84,150	$322,360	12.4%
Moderate-Income (Up to 120% AMI)	$101,000	$400,235	26.8%
Median Sale Price			$507,000
Number of Units Sold			97

Notes:
(a) Income limits published by California Department of Housing and Community Development for a
    three-person household in Alameda County, 2014.
(b) Mortgage terms:

Annual Interest Rate (fixed)	4.13%
Term of mortgage (years)	30
Percent of sale price as down payment	20%
Initial property tax (annual)	1.27%
Mortgage Insurance as percent of loan amount	N/A
Annual homeowner's insurance rate as percent of sale price	0.57%
Homeowners Association Fee (monthly, condominiums only)	$360
Percent of household income available for housing costs	30%

(c) Consists of all full and verified sales of single-family residences in the 95035 between 1/1/2013 and 8/15/2013
(d) Consists of all full and verified sales of condominiums in Berkeley between 7/1/2013 and 7/31/2014.
Sources: DataQuick, 2014; Freddie Mac, 2014; California Department of Insurance, 2014; Alameda County Auditor-Controller, 2014; Condos.com, 2014; Zillow.com, 2014; BAE, 2014.

AFFORDABLE HOUSING NEXUS ANALYSIS FOR NEW HOUSING

This chapter quantifies the link between new residential rental and for-sale development and the demand for additional affordable housing. The demand for affordable housing units is then translated into an impact fee for new residential units.

Methodology

It is important to note that the methodology required to identify the maximum mitigation fee is subject to the California Mitigation Fee Act, which requires that such fees are related only to the increment of new development being added, and cannot mitigate market deficiencies caused by the existing marketplace. In other words, a mitigation fee cannot charge new developments for all affordable housing needs, only the affordable housing needs to be generated by the new project. This leads to a commonly-accepted methodology which estimates the household spending of just the new market-rate unit occupants (in terms of households), and the resulting portion of new workers arising from this new spending that in turn, would need affordable housing.

A brief overview of the nexus analysis methodology follows below. Subsequent sections will discuss each step in greater detail.

Step 1: Determine number of lower-income households generated by residents in new multifamily rental units or condominiums in Berkeley
- **Step 1A:** Estimate household incomes of residents in new Berkeley units
- **Step 1B:** Determine the number of workers by industry generated by new resident spending
- **Step 1C:** Determine the number of lower-income households among these workers

Step 2: Calculate cost to house lower-income households
- **Step 2A:** Determine the permanent loan amount developers can secure to build an affordable unit
- **Step 2B:** Calculate the financing gap per affordable unit
- **Step 2C:** Apply the per unit financing gap to the number of lower-income households generated by new resident spending

Step 1: Determine number of lower-income households generated by residents in new multifamily rental units or condominiums in Berkeley

The first step in this analysis is to determine the affordable housing need generated by new rental and condominium developments. In order to do this, BAE estimated the household incomes of residents in new Berkeley apartments and condominiums, determined the number of workers that would be induced by the new household spending, and estimated the number of lower-income households that be formed and comprised of these new workers.

For the purposes of this analysis, BAE assessed the impact of a new market-rate 100-unit apartment complex and a new market rate 100-unit condominium development. Although many residential projects in Berkeley are smaller than the hypothetical 100 units, the analysis uses a hypothetical 100-unit development to simplify the calculation of per unit impacts and fees.

Step 1A: Estimate household incomes of residents in new Berkeley rental units and condominiums

Multifamily Rental Units: Table 6 presents the annual household income required to rent new apartments in Berkeley. The analysis is based on the average rent across a sample of new apartment complexes in Berkeley, and assuming households spend 30 percent of gross income on rent and utilities. New rental housing was defined as apartment complexes built between 2007 and 2012. Complexes were selected for geographic diversity, as well as variation between developers in an effort to capture a range of product types and target markets. Appendix A presents rent characteristics at the five new developments sampled for this analysis. Based on the weighted average monthly rent of $2,906 across studios, one-bedrooms, two-bedrooms, and three-bedrooms, the annual household income required to afford these market rents is $118,400.[7]

Table 6 also presents the aggregate income for all households in the hypothetical new rental development. As shown, the aggregate income is calculated by simply multiplying the household income by 100 units. This results in an aggregate income in the development of $11.8 million.

Table 6: Household Income Required to Rent New Housing in Berkeley, 2014

Average Monthly Rent (a)	$2,906
Plus Utilities (b)	$53
Total Monthly Housing Costs	$2,959
Annual Housing Costs	$35,510
Household Income Required (c)	**$118,400**
Number of Households in Development	100
Aggregate Income in Development	**$11,840,000**

Notes:
(a) Based on rents at new apartment complexes, as shown in Appendix A.
(b) Utility costs based on utility allowance for multifamily dwellings established by the Berkeley Housing Authority in 2014. Utility cost estimates assume that water, sewer, and trash collection costs are included in monthly rental amount.
(c) 30 percent of gross income spent on housing costs.
Sources: realAnswers, 2014; Berkeley Housing Authority, 2014; BAE, 2014.

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[7] See Appendix C for a detailed discussion of student tenants in new apartment complexes, and the effect of student spending on affordable housing need.

Condominiums: Table 7 shows the annual household income required to afford a new condominium in Berkeley. Due to the lack of recent condominium development in Berkeley, data on sales of newly-constructed condominiums were not available. To estimate the expected sale price of new condominiums in Berkeley, the analysis uses data on recent resales of existing condominiums and estimates that the sale price for new condominiums would be ten percent higher than the resale price of existing condominiums. Using this methodology, the estimated sale price of a new condominium is $557,700. An annual household income of at least $135,100 is required to afford this sale price.

Table 7: Household Income Required to Purchase a New Condominium in Berkeley, 2014

Median Condominium Sale Price, Resales (a)	$507,000
Estimated Sale Price for New Condominiums (b)	$557,700
Monthly Housing Costs for a New Condominium (c)	$3,377
Annual Housing Costs	$40,521.39
Household Income Required (d)	**$135,100**
Number of Households in Development	100
Aggregate Income in Development	**$13,510,000**

Notes:
(a) Median sale price among all full and verified sales of condominiums in the City of Berkeley between July 1, 2013 and July 31, 2014. Data for resales are used because no data on recent purchases of new condominiums in Berkeley are available.
(b) The sale price for a new condominiums in Berkeley is estimated to be ten percent higher than the median condominium resale price.
(c) Monthly homeownership costs are based on the following assumptions:

Annual Interest Rate	4.13%
Term of Mortgage (years)	30
Percent of sales price as down payment	20%
Initial property tax (annual)	1.27%
Mortgage Insurance as a percent of sale price	N/A
Annual homeowner's insurance rate as a percent of sale price	0.57%
Homeowners Association Fee (monthly)	$360
(d) Percent of household income available for housing costs:	30%

Sources: DataQuick, 2014; Freddie Mac, 2014; California Department of Insurance, 2014; Alameda County Auditor-Controller, 2014; Condos.com, 2014; Zillow.com, 2014; BAE, 2014.

Step 1B: Determine number of workers by industry generated by new resident spending

New household spending within an economy supports jobs. As households spend money on retail goods, food, and health, personal, professional, and educational services, they support job growth in these and other sectors.

To estimate the effect of new household spending on employment generation, this nexus study uses IMPLAN ("Impact analysis for Planning"), a widely-accepted and utilized software model. At the heart of the model is an input-output dollar flow table. For a specified region, the input-output table accounts for all dollar flows between different sectors of the economy. Using this information, IMPLAN models the way income injected into one sector is spent and re-spent in other sectors of the

economy, generating waves of economic activity, or so-called "economic multiplier" effects. Appendix B contains a more detailed overview of IMPLAN.

The IMPLAN model is also able to estimate the number of *direct*, *indirect*, and *induced* jobs generated by a given economic "event." For the purpose of this analysis, the economic "event" is the household spending by occupants of new residential units in Berkeley. *Direct* jobs refer to jobs created as an immediate result of new household spending. For example, households spend money at grocery stores, creating direct jobs in the form of cashiers and baggers. *Indirect* and *induced* job generation refers to the process whereby money spent by a household continues to circulate through an economy in subsequent transactions, supporting employment at places other than the initial point of sale. In the case of the grocery store example, *indirect* jobs would include people who work for the store's suppliers or truck drivers who deliver goods to the store. *Induced* jobs would be employment generated when the grocery store employees, store suppliers, and truck drivers spend money in the economy. This analysis includes direct, indirect, and induced jobs in the employment generation associated with new household spending.

The IMPLAN model is customized to reflect the economic characteristics of the specified region – in this case the nine-County Bay Area. The nexus analysis considers regional employment generation, rather than jobs generated in Berkeley exclusively, because household spending in Berkeley creates jobs throughout the Bay Area. Many of these workers cannot afford to live in Berkeley precisely because of the City's high rents. If the analysis solely considered workers living in Berkeley, it would in effect discount the needs of households who currently cannot afford to live in Berkeley, and propagate the need for affordable housing in the City. In essence, this analysis considers employment effects beyond the City's borders in order to address the City's "fair share" of regional housing need.

Multifamily Rental Units: Table 8 presents an estimate of new jobs by industry resulting from household spending associated with new multifamily rental development. As shown, a 100-unit apartment complex generates approximately 93 jobs across various industries.

Condominiums: Table 8 also presents an estimate of new jobs by industry resulting from household spending associated with new condominium development. As shown, a 100-unit condominium complex generates approximately 106 jobs across various industries.

Table 8: Direct, Indirect, and Induced Employment Generation from New Rental and Condominium Households

| | | Number of Jobs (a) | |
| | | New Rental | New Condo |
NAICS Code	Industry	HHs	Owner HH
11, 21	Natural Resources	0.48	0.54
23	Construction	0.67	0.76
31-33	Manufacturing	1.82	2.08
42	Wholesale Trade	3.16	3.60
44-45	Retail Trade	17.55	20.02
48-49, 22	Transportation, Warehousing, and Utilities	2.90	3.31
51	Information	1.82	2.07
52	Finance & Insurance	10.21	11.65
53	Real Estate & Rental & Leasing	4.42	5.05
54-55	Professional & Technical Services; Management of Companies & Enterprises	4.81	5.49
56	Administrative & Waste Services	4.28	4.88
61	Educational Services	4.00	4.57
62	Health Care & Social Assistance	13.83	15.78
71-72	Arts, Entertainment & Recreation; Accommodation & Food Services	13.79	15.74
81	Other Services, except Public Administration	8.68	9.91
	Government	0.85	0.97
	Total Jobs	**93.27**	**106.43**

Notes:
(a) Job generation is output of the IMPLAN model, and shows direct, indirect,
and induced employment generated by household spending.

Sources: IMPLAN; BAE, 2014.

Step 1C: Determine number of lower-income households generated by new resident spending

Most worker households[8] in the Bay Area have more than one resident and many have more than one employed person. In some instances, economists estimate household income for workers by simply multiplying worker earnings by industry by the average number of workers per worker household. This methodology relies on the unsatisfactory assumption that on average workers make the same amount of money as other workers in their household. Given the diversity of household composition, this assumption is not appropriate. For example, a household may have a teacher and a doctor, with significantly different individual earnings.

To address this issue, this analysis makes use of a detailed and rich data set published by the U.S. Census known as the Public Use Microdata Sample (PUMS). Derived from a five percent sample of all households per the American Community Survey, and available for defined areas of 100,000 or more population, this data allows one to cross tabulate variables such as industry of employment and household income. The PUMS data set was queried to identify the number of households by income category by industry (controlling for household size) to construct a household income distribution by industry. The distribution was constructed based on the income categories defined by the California Department of Housing and Community Development (HCD). These HCD income

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[8] A worker household is defined as a household with one or more employed persons. They may be wage and salary workers, or self-employed/sole proprietors.

categories are defined as a percentage of the Area Median Income (AMI), adjusted for household size.

As a conservative measure, the income distribution was adjusted to account for the fact that households earning up to 100 percent of AMI require rental housing assistance in Berkeley. This assumption stems from the analysis presented in Table 4, which found that households earning 100 percent of AMI or less generally cannot afford the market rents in the City. The household income distribution by industry is shown in Appendix A.[9]

Housing need is based on the number of households rather than the number of jobs. As such, jobs are translated into households by dividing the number of jobs by the average number of workers per worker household in Alameda County.[10]

Multifamily Rental Housing: Table 9 applies the income distribution by industry to the number of jobs generated in each industry as a result of spending by households in new rental units. As shown, a 100-unit apartment complex generates a total of 53 households across the various income groups and 26 households earning up to 100 percent of AMI.

Condominiums: Table 10 applies the income distribution by industry to the number of jobs generated in each industry as a result of spending by households in condominiums. As shown, a 100-unit condominium development generates a total of 60 households across the various income groups and 29 households earning up to 100 percent of AMI.

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[9] At the time of this analysis, the most recent PUMS data was from the 2012 American Community Survey. BAE used the 5-year (2008-2012) sample to provide the highest possible level of statistical reliability. These incomes were compared to household income limits published by the California Department of Housing and Community Development, to determine the percentage of households falling into each income category. The analysis controlled for household size, to address the varying HCD income limits for each household size.

[10] Average workers per worker household from American Community Survey, 2008-2012.

Table 9: Employment and Household Generation from a New 100-Unit Multifamily Rental Development by Income Level

NAICS Code	Industry	Total Jobs (a)	Estimated Jobs by Percent of AMI (b)					
			Up to 30% AMI	30% to 50% AMI	50% to 80% AMI	80% to 100% AMI	100% to 120% AMI	Above 120% AMI
Private Sector								
11, 21	Agriculture and Natural Resources	0.48	0.09	0.08	0.08	0.08	0.04	0.11
23	Construction	0.67	0.09	0.09	0.09	0.12	0.06	0.21
31-33	Manufacturing	1.82	0.10	0.13	0.15	0.24	0.16	1.03
42	Wholesale Trade	3.16	0.24	0.30	0.36	0.50	0.28	1.48
44-45	Retail Trade	17.55	2.32	2.14	2.14	3.10	1.59	6.27
48-49, 22	Transportation, Warehousing, and Utilities	2.90	0.28	0.31	0.36	0.54	0.28	1.12
51	Information	1.82	0.10	0.10	0.11	0.22	0.16	1.14
52-53	Finance, Insurance, and Real Estate	14.63	0.89	0.96	1.27	1.92	1.32	8.26
54-55	Professional, Scientific, & Technical Services, & Mgmt of Companies	4.81	0.22	0.19	0.25	0.48	0.35	3.33
56	Administrative and Support and Waste Management Services	4.28	0.73	0.68	0.61	0.77	0.35	1.13
61	Educational Services	4.00	0.37	0.31	0.38	0.60	0.38	1.96
62	Health Care and Social Assistance	13.83	1.23	1.22	1.37	2.05	1.27	6.69
71-72	Leisure and Hospitality	13.79	2.21	2.24	2.03	2.32	1.15	3.85
81	Other Services Except Public Administration	8.68	1.40	1.22	1.17	1.46	0.82	2.62
All Government Employment		0.85	0.06	0.06	0.07	0.13	0.09	0.44
	Total Jobs	**93.27**	**10.34**	**10.03**	**10.44**	**14.52**	**8.31**	**39.64**
	Number of Households (a)	**52.57**	**5.83**	**5.65**	**5.88**	**8.18**	**4.68**	**22.34**

Notes:
(a) Total Jobs is output of IMPLAN model, and shows direct, indirect, and induced employment generated by household spending. Columns to right may not sum to Total Jobs due to independent rounding.
(b) Based on 2012 HCD Income Limits.
(c) Average number of workers per worker household calculated for Alameda County based on American Community Community Survey data, 2008-2012.

Total Workers   725,920
Total Households with Workers   409,157
Avg. Workers per Household   *1.8*

Sources: American Community Survey, 2008-2012, including the Public User Microdata Sample; CA Department of Housing and Community Development, 2012; BAE, 2014.

Table 10: Employment and Household Generation from a 100-Unit Condominium Development by Income Level

NAICS Code	Industry	Total Jobs (a)	Estimated Jobs by Percent of AMI (b)					
			Up to 30% AMI	30% to 50% AMI	50% to 80% AMI	80% to 100% AMI	100% to 120% AMI	Above 120% AMI
Private Sector								
11, 21	Agriculture and Natural Resources	0.54	0.10	0.09	0.09	0.09	0.05	0.13
23	Construction	0.76	0.11	0.10	0.10	0.14	0.07	0.24
31-33	Manufacturing	2.08	0.12	0.15	0.17	0.27	0.19	1.18
42	Wholesale Trade	3.60	0.27	0.34	0.41	0.57	0.32	1.69
44-45	Retail Trade	20.02	2.64	2.44	2.44	3.53	1.82	7.15
48-49, 22	Transportation, Warehousing, and Utilities	3.31	0.32	0.35	0.41	0.62	0.32	1.28
51	Information	2.07	0.11	0.11	0.13	0.25	0.18	1.30
52-53	Finance, Insurance, and Real Estate	16.70	1.02	1.09	1.45	2.19	1.51	9.43
54-55	Professional, Scientific, & Technical Services, & Mgmt of Companies	5.49	0.25	0.22	0.28	0.54	0.40	3.79
56	Administrative and Support and Waste Management Services	4.88	0.84	0.78	0.70	0.88	0.39	1.29
61	Educational Services	4.57	0.42	0.35	0.44	0.68	0.43	2.24
62	Health Care and Social Assistance	15.78	1.40	1.39	1.56	2.34	1.45	7.63
71-72	Leisure and Hospitality	15.74	2.52	2.56	2.31	2.65	1.31	4.39
81	Other Services Except Public Administration	9.91	1.60	1.40	1.33	1.67	0.93	2.98
All Government Employment		0.97	0.07	0.06	0.08	0.14	0.10	0.51
	Total Jobs	**106.43**	**11.80**	**11.44**	**11.91**	**16.57**	**9.48**	**45.23**
	Number of Households (a)	**59.99**	**6.65**	**6.45**	**6.71**	**9.34**	**5.34**	**25.49**

Notes:
(a) Total Jobs is output of IMPLAN model, and shows direct, indirect, and induced employment generated by household spending. Columns to right may not sum to Total Jobs due to independent rounding.
(b) Based on 2012 HCD Income Limits.
(c) Average number of workers per worker household calculated for Alameda County based on American Community Community Survey data, 2008-2012.

Total Workers 725,920
Total Households with Workers 409,157
Avg. Workers per Household 1.8

Sources: American Community Survey, 2008-2012, including the Public User Microdata Sample; CA Department of Housing and Community Development, 2012; BAE, 2014.

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Step 2: Calculate Cost to House Lower-Income Households

The next step in the nexus analysis is to calculate the cost to house the lower-income households calculated in Step 1. This is done by determining the per unit "financing gap" that affordable housing developers (e.g., non-profit developers) encounter when securing a permanent loan for their projects. In other words, the cost to house a low-income household is the difference between the cost to develop an affordable unit and the amount the developer can borrow to build the unit.

Step 2A: Determine the permanent loan developers can secure to build an affordable unit
Affordable housing developers are able to secure a permanent loan based on their net operating income (NOI) per unit. NOI is equal to rental income less operating expenses and vacancy. As shown in Table 11, households can afford monthly rents ranging from $569 for extremely low-income households to $2,042 for households at 100 percent of AMI. These rents are based on household income limits for three-person households and assuming households spend 30 percent of their income on rent and utilities.[11] Standard deductions are taken for operating expenses and vacancies to determine NOI.

BAE used conventional financing assumptions to determine the supportable loan amount per unit for each income level. As shown in Table 11, the loan amount ranges from approximately $5,200 per unit for extremely low-income units to $184,700 for units serving households at 100 percent of AMI.

Step 2B: Calculate the financing gap per affordable unit
The financing gap per affordable unit is equal to the total development cost less the supportable loan amount per unit. According to cost data provided on applications for 2014 low-income housing tax credits, the average development cost for affordable housing in Berkeley and the surrounding area is approximately $429,400 per unit.[12] Based on the supportable loan amount calculated in Step 2A, the financing gap per affordable unit ranges from $424,200 for extremely low-income units to $244,700 for units serving households at 100 percent of AMI.

Step 2C: Apply the per unit financing gap to the number of lower-income households generated by new tenant spending
The final step in calculating the impact fee is to apply the financing gap per unit to the number of units demanded at each income level (from Step 1C).

Multifamily Rental Units: As shown in Table 11, the cost to address the affordable housing need generated by new multifamily rental development is $8.44 million for a 100-unit apartment complex. This cost can be translated into a per unit fee simply by dividing by 100, resulting in a per unit fee of $84,400.

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[11] The analysis assumes a three-person household for consistency with the 2014 Alameda County average household size of 2.78 persons per household, per California Department of Finance estimates.
[12] This weighted average cost is based on data from 7 developments with a total of 392 units in Berkeley and neighboring cities.

Condominiums: As shown in Table 11, the cost to address the affordable housing need generated by new condominium development is $9.63 million for a 100-unit condominium development, or $96,300 per unit.

Table 11: Affordable Housing Impact Fee Calculation for New Rental and Condominium Units

Financing Gap Analysis

					Source
Total Affordable Unit Development Costs	$429,400				Interviews with affordable housing developers & data from funding applications for recent projects
Financing Terms					
Debt Coverage Ratio	1.30				
Interest Rate	6.00%				
Term of Loan (months)	30				Data from funding applications for recent projects

	Income Level as a Percent of AMI				Source
	Up to 30%	31%-50%	51%-80%	80%-100%	
Household Income Limit	$25,250	$42,100	$60,850	$84,150	Based on a 3-person HH, CA Dept. of Housing & Comm. Dev.
Affordable Monthly Rent per Unit	$569	$991	$1,459	$2,042	30% of income to rent and utilities
Monthly Operating Expenses	$500	$500	$500	$500	Data from funding applications for recent projects
Vacancy	5%	5%	5%	5%	Interviews with affordable housing developers
Net Operating Income per Unit	$41	$441	$886	$1,440	Affordable Monthly Rent less Operating Expenses & Vacancy
Monthly Supportable Debt Service per Unit	$31	$339	$682	$1,107	Previous row divided by Debt Coverage Ratio
Loan Amount	$5,233	$56,578	$113,712	$184,710	Based on financing terms above
Financing Gap per Affordable Unit	$424,167	$372,822	$315,688	$244,690	Total Development Costs less Loan Amount

Fee Calculation for New Rental Units

	Up to 30%	31%-50%	51%-80%	80%-100%	Source
Units Demanded	5.83	5.65	5.88	8.18	See Table 9
Total Financing Gap	$2,472,119	$2,107,056	$1,857,621	$2,002,332	Product of prior row and Financing Gap per Affordable Unit
Max. Impact Fee per 100-Unit Development	$8,439,129				Sum of columns in previous row
Max. Impact Fee per Unit	**$84,391**				Prior row divided by 100

Fee Calculation for New Condominiums

	Up to 30%	31%-50%	51%-80%	80%-100%	Source
Units Demanded	6.65	6.45	6.71	9.34	See Table 10
Total Financing Gap	$2,820,800	$2,404,246	$2,119,630	$2,284,753	Product of prior row and Financing Gap per Affordable Unit
Max. Impact Fee per 100-Unit Development	$9,629,429				Sum of columns in previous row
Max. Impact Fee per Unit	**$96,294**				Prior row divided by 100

Sources: Interview with affordable housing developers, 2014; California HCD, 2014; http://www.treasurer.ca.gov/ctcac/2014/application.asp, 2014; City of Berkeley, 2014; BAE, 2014.

Findings

This study presents the maximum legally justifiable affordable housing fee that could be charged on new multifamily rental housing based on the identified need for new affordable housing. As noted above, the maximum per unit fee supported by this nexus study is $84,400 for multifamily rental developments and $96,300 for new condominium developments (see Table 11). In other words, the City could charge developers of new multifamily developments up to $84,400 per market rate rental unit to be developed and charge developers of new condominium developments up to $96,300 per unit, based on the nexus between new market rate development and the need created by that development to house low income households induced by the new market rate unit's household spending.

The City may also choose to assess the impact fee on a per square foot basis rather than a per unit basis, thereby allowing fees to scale up or down to correspond to unit size. Assuming an average unit size of 752 square feet (see Appendix A) for new apartment units in Berkeley, a $84,400 fee for rental units would translate into $112.24 per square foot. Among recent condominium sales in Berkeley, unit sizes averaged 983 square feet, which results in a fee totaling $97.98 per square foot for condominiums.

The fee rates presented in this chapter are the maximum fee rates that the City of Berkeley may legally assess on new residential development. However, the City is not required to assess fees at the maximum rate allowed by law. Many jurisdictions assess fees at rates that are lower than the maximum legal fee rate in order to improve the financial feasibility of new development. For example, the fee that the City of Berkeley adopted following the City's previous (2010) Affordable Housing Nexus Study was lower than the maximum legal fee presented in the study. A subsequent chapter of this report will evaluate the financial feasibility of market-rate residential development in Berkeley to estimate feasible fee rates that will not impinge on housing production in the City.

AFFORDABLE HOUSING NEXUS ANALYSIS FOR REPLACEMENT UNITS

This chapter quantifies the link between units that are built to replace previously rent-stabilized units that have been demolished or destroyed and the demand for additional affordable housing. The demand for affordable housing units is then translated into an impact fee for new residential units. The fee analyzed in this section is meant to address the impacts of the loss of rent-stabilized units or other older, less expensive units, that become uninhabitable and the subsequent replacement of these units by new units that are either not subject to rent stabilization due to their new date of construction, or otherwise would likely be more expensive to support the costs of new construction.

Methodology

A brief overview of the nexus analysis methodology for replacement units follows below. Subsequent sections will discuss each step in greater detail.

Step 1: Determine the <u>*net increase*</u> *in lower-income households generated by tenants in new replacement units*
- **Step 1A:** Estimate household incomes of residents in rent-stabilized units in Berkeley
- **Step 1B:** Determine the number of workers by industry generated by resident spending by households in rent-stabilized units
- **Step 1C:** Determine the number of lower-income households among these workers
- **Step 1D:** Determine the difference between the number of lower-income workers generated by spending from households in rent-stabilized units and the number of lower-income workers generated by spending from households in replacement units.

Step 2: Calculate cost to house lower-income households
- **Step 2A:** Determine the permanent loan amount developers can secure to build an affordable unit
- **Step 2B:** Calculate the financing gap per affordable unit
- **Step 2C:** Apply the per unit financing gap to the net increase in lower-income households generated by spending by tenants in new replacement units

Step 1: Determine <u>net increase</u> in lower-income households generated by tenants in new replacement units

The first step in this analysis is to determine the net increase in affordable housing need generated when new units are built to replace units that are demolished or destroyed. In order to do this, BAE estimated the household incomes of residents in rent-stabilized units in Berkeley as a proxy for the likely former occupants of the units being replaced. Next, BAE determined the number of workers that would be supported by household spending by these new market rate households, and

estimated the number of lower-income households that would be formed and comprised of these workers. These figures were then compared to the number of lower-income households induced by new rental developments to determine the net increase in lower-income households associated with replacing rent-controlled units with new rental units. Thus, this methodology, while similar to the approach utilized in the prior chapter for new development that did not previously exist, varies by estimating just the increase in household spending by the higher income new occupants (paying new construction market rate rents), versus the former occupants assumed to be not as affluent, and paying rent that approximates rent stabilized rates. This is a net increase approach, based on different incomes of households in the former building and the new replacement building.

For the purposes of this analysis, BAE assessed the impact of replacing a 100-unit rent-stabilized rental complex with a new 100-unit market-rate rental complex. Although replacement units would likely consist of a smaller number of units in most cases, a hypothetical 100-unit development is used to simplify the calculation of per unit impacts and fees.

Step 1A: Estimate household incomes of residents in rent-stabilized units in Berkeley

Table 12 presents the annual household income required to afford the average rent for a rent-stabilized unit in Berkeley. The analysis is based on the average rent for all 19,118 units subject to rent stabilization in Berkeley (as shown in Table 1) according to data from the Rent Stabilization Board, and assuming households spend 30 percent of gross income on rent and utilities. Based on the average monthly rent of $1,442 for rent-stabilized units, the annual household income required to afford these market rents is $59,800. The aggregate income in the 100-unit hypothetical development totals $6.0 million.

Table 12: Household Income Required to Rent an Average Rent-Stabilized Unit in Berkeley, 2014

Average Monthly Rent for Rent-Controlled Units (a)	$1,442
Plus Utilities (b)	$53
Total Monthly Housing Costs	$1,495
Annual Housing Costs	$17,945
Household Income Required (c)	**$59,800**
Number of Households in Development	100
Aggregate Income in Development	**$5,980,000**

Notes:
(a) Based on the average rent among all units in Berkeley subject the Rent Stabilization Ordinance as of May 2014.
(b) Utility costs based on utility allowance for multifamily dwellings established by the Berkeley Housing Authority in 2014. Utility cost estimates assume that water, sewer, and trash collection costs are included in monthly rental amount.
(c) 30 percent of gross income spent on housing costs.
Sources: Berkeley Rent Stabilization Board, 2014; Berkeley Housing Authority, 2014; BAE, 2014.

Step 1B: Determine number of workers by industry generated by households in rent-stabilized units

The number of workers supported by spending by households in rent-stabilized units was estimated based on household expenditures by households living in rent-stabilized units. Similar to the analysis of workers generated by expenditures from households living in new units, the analysis of workers supported by expenditures from households living in rent-stabilized units is based on outputs provided by IMPLAN.[13]

Table 13 presents an estimate of jobs by industry resulting from household spending by tenants in rent-stabilized units. As shown, a 100-unit rent-stabilized apartment complex supports approximately 47 jobs across various industries.

Table 13: Direct, Indirect, and Induced Employment Supported by Households in Rent-Stabilized Units

NAICS Code	Industry	Number of Jobs, Average Rent Controlled HH (a)
11, 21	Natural Resources	0.24
23	Construction	0.34
31-33	Manufacturing	0.92
42	Wholesale Trade	1.59
44-45	Retail Trade	8.86
48-49, 22	Transportation, Warehousing, and Utilities	1.47
51	Information	0.92
52	Finance & Insurance	5.16
53	Real Estate & Rental & Leasing	2.23
54-55	Professional & Technical Services; Management of Companies & Enterprises	2.43
56	Administrative & Waste Services	2.16
61	Educational Services	2.02
62	Health Care & Social Assistance	6.99
71-72	Arts, Entertainment & Recreation; Accommodation & Food Services	6.97
81	Other Services, except Public Administration	4.39
	Government	0.43
	Total Jobs	**47.11**

Notes:
(a) Job generation is output of the IMPLAN model, and shows direct, indirect, and induced employment generated by household spending.

Sources: IMPLAN; BAE, 2014.

Step 1C: Determine the number of lower-income households supported by spending by households in rent-stabilized units

The analysis estimates the income distribution for workers and households supported by tenants in rent-stabilized units based on the number of jobs by industry shown in Table 13. The methodology used to apply the income distribution to workers and households relies on PUMS data, using the same methodology detailed in the previous chapter in Step 1C to estimate the income of workers and households that would be induced by new units.

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[13] Further information about the IMPLAN model is provided in the previous chapter and in Appendix B.

Table 14 applies the income distribution by industry to the number of jobs supported in each industry as a result of spending by households in rent-stabilized units. As shown, a 100-unit rent-stabilized apartment complex supports a total of 27 households across the various income groups and 13 households earning up to 100 percent of AMI.

Table 14: Employment and Households Supported by a 100-Unit Rent-Stabilized Development by Income Level

NAICS Code	Industry	Total Jobs (a)	Estimated Jobs by Percent of AMI (b)					
			Up to 30% AMI	30% to 50% AMI	50% to 80% AMI	80% to 100% AMI	100% to 120% AMI	Above 120% AMI
Private Sector								
11, 21	Agriculture and Natural Resources	0.24	0.04	0.04	0.04	0.04	0.02	0.06
23	Construction	0.34	0.05	0.04	0.05	0.06	0.03	0.11
31-33	Manufacturing	0.92	0.05	0.07	0.08	0.12	0.08	0.52
42	Wholesale Trade	1.59	0.12	0.15	0.18	0.25	0.14	0.75
44-45	Retail Trade	8.86	1.17	1.08	1.08	1.56	0.80	3.16
48-49, 22	Transportation, Warehousing, and Utilities	1.47	0.14	0.15	0.18	0.27	0.14	0.57
51	Information	0.92	0.05	0.05	0.06	0.11	0.08	0.58
52-53	Finance, Insurance, and Real Estate	7.39	0.45	0.48	0.64	0.97	0.67	4.17
54-55	Professional, Scientific, & Technical Services, & Mgmt of Companies	2.43	0.11	0.10	0.12	0.24	0.18	1.68
56	Administrative and Support and Waste Management Services	2.16	0.37	0.35	0.31	0.39	0.17	0.57
61	Educational Services	2.02	0.19	0.16	0.19	0.30	0.19	0.99
62	Health Care and Social Assistance	6.99	0.62	0.62	0.69	1.03	0.64	3.38
71-72	Leisure and Hospitality	6.97	1.11	1.13	1.02	1.17	0.58	1.94
81	Other Services Except Public Administration	4.39	0.71	0.62	0.59	0.74	0.41	1.32
All Government Employment		0.43	0.03	0.03	0.04	0.06	0.05	0.22
	Total Jobs	**47.11**	**5.22**	**5.06**	**5.27**	**7.33**	**4.19**	**20.02**
	Number of Households (a)	**26.55**	**2.94**	**2.85**	**2.97**	**4.13**	**2.36**	**11.28**

Notes:
(a) Total Jobs is output of IMPLAN model, and shows direct, indirect, and induced employment generated by household spending. Columns to right may not sum to Total Jobs due to independent rounding.
(b) Based on 2012 HCD Income Limits.
(c) Average number of workers per worker household calculated for Alameda County based on American Community Community Survey data, 2008-2012.

Total Workers	725,920
Total Households with Workers	409,157
Avg. Workers per Household	*1.8*

Sources: American Community Survey, 2008-2012, including the Public User Microdata Sample; CA Department of Housing and Community Development, 2012; BAE, 201⸍

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Step 1D: Determine the net increase in the number of lower-income workers generated by spending from households in replacement units

In order to determine the impact of spending by households in new replacement units, the nexus analysis compares the number of lower-income households supported by expenditures from households in rent-controlled units to the number of lower-income households induced by expenditures from households in replacement units. Because replacement units would be new, the employment induced by replacement units can be assumed to be equivalent to the employment induced by other new multifamily rental units in Berkeley.

The net increase in lower-income households induced by spending from tenants in new replacement units is shown in Table 15, based on the number of households induced by a new rental project (as shown Table 9) and the number of households supported by a rent-stabilized project (as shown in Table 14).

Table 15: Net Increase in Households by Income Level Generated by Spending from Tenants in 100 Replacement Units

	Total Households	Estimated Households by Percent of AMI (b)					
		Up to 30% AMI	30% to 50% AMI	50% to 80% AMI	80% to 100% AMI	100% to 120% AMI	Above 120% AMI
New Households from Employment Generated by New Rental Project (a)	52.57	5.83	5.65	5.88	8.18	4.68	22.34
Households Supported by Average Rent-Stabilized Project (b)	26.55	2.94	2.85	2.97	4.13	2.36	11.28
Net Number of Households	**26.02**	**2.88**	**2.80**	**2.91**	**4.05**	**2.32**	**11.06**

Notes:
(a) From Table 9.
(b) From Table 14.
Sources: American Community Survey, 2008-2012, including the Public User Microdata Sample; CA Department of Housing and Community Development, 2012; BAE, 2014.

Step 2: Calculate Cost to House Lower-Income Households

The next step in the nexus analysis is to calculate the cost to house the net increase in lower-income households calculated in Step 1. The methodology used to calculate the cost to house the net increase in lower-income households induced by replacement units is the same as the methodology used to calculate the cost to house the total number of lower-income households induced by new units, and is outlined below. As detailed in the previous chapter, this is done by determining the per unit "financing gap" between the cost to develop an affordable unit and the amount the developer can borrow to build the unit.

Step 2A: Determine the permanent loan developers can secure to build an affordable unit

Affordable housing developers are able to secure a permanent loan based on their net operating income (NOI) per unit. NOI is equal to rental income less operating expenses and vacancy. As shown in Table 11 and Table 16, households can afford monthly rents ranging from $569 for

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extremely low-income households to $2,042 for households at 100 percent of AMI. These rents are based on household income limits for three-person households and assuming households spend 30 percent of their income on rent and utilities. As shown in Table 16, the loan amount ranges from approximately $5,200 per unit for extremely low-income units to $184,700 for units serving households at 100 percent of AMI.

Step 2B: Calculate the financing gap per affordable unit

The financing gap per affordable unit is equal to the total development cost less the supportable loan amount per unit. According to cost data provided on applications for 2014 low-income housing tax credits, the average development cost for affordable housing in Berkeley and the surrounding area is approximately $429,400 per unit.[14] Based on the supportable loan amount calculated in Step 2A, the financing gap per affordable unit ranges from $424,200 for extremely low-income units to $244,700 for units serving households at 100 percent of AMI.

Step 2C: Apply the per unit financing gap to the net increase in lower-income households generated by spending by tenants in new replacement units

The final step in calculating the impact fee is to apply the financing gap per unit to the net increase in the number of units demanded at each income level (from Step 1D). As shown in Table 16, the cost to address the net increase in affordable housing need generated by a replacement rental development is $4.18 million for a 100-unit apartment complex, resulting in a per unit fee of $41,800.

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[14] This weighted average cost is based on data from 7 developments with a total of 392 units in Berkeley and neighboring cities.

Table 16: Affordable Housing Impact Fee Calculation for Replacement Rental Units

Financing Gap Analysis

		Source
Total Affordable Unit Development Costs	**$429,400**	Interviews with affordable housing developers & data from funding applications for recent projects
Financing Terms		
Debt Coverage Ratio	1.30	
Interest Rate	6.0%	Data from funding applications for recent projects
Term of Loan (months)	30	

	Income Level as a Percent of AMI				
	Up to 30%	31%-50%	51%-80%	80%-100%	Source
Household Income Limit	$25,250	$42,100	$60,850	$84,150	Based on a 3-person HH, CA Dept. of Housing & Comm. Dev.
Affordable Monthly Rent per Unit	$569	$991	$1,459	$2,042	30% of income to rent and utilities
Monthly Operating Expenses	$500	$500	$500	$500	Data from funding applications for recent projects
Vacancy	5%	5%	5%	5%	Interviews with affordable housing developers
Net Operating Income per Unit	$41	$441	$886.29	$1,440	Affordable Monthly Rent less Operating Expenses & Vacancy
Monthly Supportable Debt Service per Unit	$31	$339	$682	$1,107	Previous row divided by Debt Coverage Ratio
Loan Amount	$5,233	$56,578	$113,712	$184,710	Based on financing terms above
Financing Gap per Affordable Unit	$424,167	$372,822	$315,688	$244,690	Total Development Costs less Loan Amount

Fee Calculation

	Up to 30%	31%-50%	51%-80%	80%-100%	Source
Net New Units Demanded	2.88	2.80	2.91	4.05	See Table 15
Total Financing Gap	$1,223,534	$1,042,852	$919,399	$991,021	Product of prior row and Financing Gap per Affordable Unit
Max. Impact Fee per 100-Unit Development	$4,176,806				Sum of columns in previous row
Max. Impact Fee per Unit	**$41,768**				Prior row divided by 100

Sources: Interview with affordable housing developers, 2014; California HCD, 2014; http://www.treasurer.ca.gov/ctcac/2014/application.asp, 2014; City of Berkeley, 2014; BAE, 2014.

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Findings

This study presents the maximum legally justifiable affordable housing fee that could be charged on rental units that are built to replace rental units that are demolished or destroyed, based on the identified net increase in the need for new affordable housing. As noted above, the maximum per unit fee supported by this nexus study is $41,800 for replacement multifamily rental developments (see Table 16). In other words, the City could charge developers of new replacement units up to $41,800 per market-rate unit to be developed to replace units that demolished or destroyed. Assuming an average unit size of 752 square feet (see Appendix A) for new apartment units in Berkeley, a $41,800 fee for rental units would translate into $55.55 per square foot.

As discussed in the previous chapter, the fee rates presented in this chapter are the maximum fee rates that the City of Berkeley may legally charge, and the City may adopt a fee that is lower than the maximum legal amount in order to account for financial feasibility concerns. The following chapter of this report will evaluate the financial feasibility of market-rate residential development in Berkeley to estimate feasible fee rates that will not impinge on housing production in the City.

In addition to the increased demand for lower-income households calculated by the preceding methodology, there is another impact on the supply of affordable units. The demolition of an older unit, and its subsequent replacement with a higher rent new unit, removes a more affordable unit from the market, even if it preserves the same number of units in the market. The exact magnitude of this loss is situation specific. As such, it does not lend itself to the easy calculation of a single fee applicable to all replacement units. In order to properly quantify the proportional impact from a specific demolition proposal a formula would have to be developed that would at a minimum take into account the rental history of the units demolished, the assumed average rent of the replacement units and the proposed size of the replacement units. Devising such a formula was beyond the scope of this nexus study update. The maximum supportable impact fee calculated with the study methodology already exceeds the feasible impact fee so further quantifying the impacts as discussed above would only continue to increase the maximum supportable fee above the feasible fee at this time. If the Council wished to pursue this calculation a further investigation would be need to define a formula capable of determining on a situation specific basis the impact of unit demolitions.

FINANCIAL FEASIBILITY ANALYSIS

This chapter considers refining the maximum fee amounts identified in the previous chapters by analyzing the maximum amount of fee that can be paid by a market rate project, and still create financially feasible market returns necessary to produce new market rate housing in Berkeley.

Methodology and Analysis

The financial feasibility testing relies on a static pro forma analysis of typical development projects, including all requisite inclusionary units, parking, impact fees, and other costs. The measure of return, which allows for analysis without considering specific combinations of debt and equity (e.g. leverage), is a simple measure of overall profit compared to total cost. This measure of return is called Return on Cost (ROC); developers typically seek at least a 10 to 12 percent ROC to consider a project feasible.

The pro forma analysis shows the ROC generated by four prototype projects in Berkeley, all of which consist of three stories of multifamily rental units above ground-floor retail space and podium parking. All residential units in the prototype projects are two-bedroom units measuring 900 square feet on average. This average unit size is based on the average size among new two-bedroom units in Berkeley, as shown in Appendix A, rounded to the nearest 100 square feet. The development program includes 6,000 square feet of retail space and 93 parking spaces.

Development standards such as floor area ratio (FAR), parking requirements, and open space requirements are based on zoning provisions in the West Berkeley Commercial (C-W) zoning district, which is an area in which there has been recent development interest and activity and which currently has some potential development sites. The maximum FAR in the C-W zoning district is 3.0, with a 50-foot height limit for mixed-use projects. Parking requirements in the C-W zoning district call for one parking space per residential unit and one space per 500 square feet of commercial floor area for most commercial uses. The C-W zoning district calls for 40 square feet of open space per residential unit. These development standards are similar to development standards in many of the other zoning districts in Berkeley that allow for multifamily residential development.

The four projects that are analyzed include two rental projects and two condominium projects. Alternative A1 shows the ROC for a rental project based on the current Housing Impact Fee, while Alternative A2 shows the ROC for a rental project using a higher fee rate. Alternative B1 shows the ROC for a condominium project that provides inclusionary units per the City's inclusionary ordinance and Alternative B2 shows the ROC for a condominium project that provides a Housing Impact Fee in lieu of providing the inclusionary units. Sensitivity testing was conducted on Alternatives A2 and B2 to determine the maximum Housing Impact Fee rates that can be assessed while ensuring a reasonable rate of return to the developer.

The pro forma analysis was conducted on a conservative basis, using estimates for land costs, construction costs, and other expenses that are at the high end of the likely range and rental rates and sale prices that reflect the current average. Developer returns for individual projects may vary from the returns shown in the pro forma analysis based on factors specific to each project, and would likely be slightly higher than what is shown, but could also be lower if interest rates increased substantially or due to shifts in other factors analyzed.

As mentioned above, the minimum profit for a feasible project, measured by ROC, is typically between 10 and 12 percent. However, to account for zones with lower height limits or allowable FAR, more open space requirements, or other provisions that may reduce overall return, as well as to provide policy adaptability if economic conditions change (e.g., higher interest rates or variations in costs), the fee rates tested in the pro forma analysis allow for feasible projects with profit margins that exceed this threshold.

Multifamily Rental Development: Alternative A1 shows the ROC for a rental project on which the Housing Impact Fee is assessed at the current fee rate ($28,000 per market rate unit). Monthly rental rates are based on the average rent for new two-bedroom units in Berkeley, as shown in Appendix A. The ROC in Alternative A1 is 15.5 percent, indicating a profit to the developer that exceeds the amount needed to make a project feasible.

Sensitivity testing was conducted in Alternative A2 to determine the maximum Housing Impact Fee that can be charged to developers of new multifamily rental projects while maintaining development feasibility. As shown, a Housing Impact Fee can be assessed at a rate of $34,000 per unit while providing 13.9 percent ROC to the developer, indicating that the Housing Impact Fee for market rate rental units can be increased to $34,000 per unit while continuing to allow for a reasonable return.

Condominium Development: Alternative B1 shows the ROC for a condominium project that provides 20 percent of units to be sold at affordable sale prices in accordance with the City's Inclusionary Housing Ordinance. The sale price for inclusionary units ($198,700) is based on the City's 2014 allowable sale price for affordable inclusionary units measuring 850 to 999 square feet. The average market rate sale price used in the analysis is based on the average sale price among all two-bedroom condominiums sold in Berkeley between July 2013 and July 2014 (approximately $567,000). However, because most, if not all, sales of recent condominiums in Berkeley consist of resales of existing units, the analysis uses an estimated sale price for new condominiums that is ten percent higher than the average among recent sales.[15] As shown, the ROC in Alternative A1 is 16.4 percent, indicating a profit to the developer that exceeds the amount needed to make a project feasible.

Alternative B2 shows the ROC for a condominium project that provides a Housing Impact Fee rather than the inclusionary units. Sensitivity testing was conducted to determine the maximum Housing

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[15] Data for resales are used because no data on recent sales of new condominiums in Berkeley are available.

Impact Fee rate that can be charged to developers of new condominium projects while maintaining development feasibility. As shown, a Housing Impact Fee can be assessed at a rate of $75,000 per unit while providing 14.0 percent ROC to the developer, indicating that the Housing Impact Fee can be assessed at a rate of $75,000 per market rate condominium unit while continuing to allow for a reasonable return.

Table 17: Berkeley Mitigation Fee Feasibility Analysis

Development Assuptions		Rental Alt A1 Current With Fee	Rental Alt A2 Maximum New Fee	Condo Alt B1 Current (with inclusionary units)	Condo Alt B2 Maximum New Fee
Site Size (acres) (a)		1.00	1.00	1.00	1.00
Land Cost and Prep/sq.ft.		$ 110	$ 110	$ 110	$ 110
FAR		3.0	3.0	3.0	3.0
Total Buildable Square Feet per FAR		130,680	130,680	130,680	130,680
Number of Floors		4	4	4	4
Developable Footprint/1st Floor (b)		39,200	39,200	39,200	39,200
Gross Sq. Ft. Residential (c)		91,480	91,480	91,480	91,480
Residential Units					
Less: Common Area Residential	20%	(18,296)	(18,296)	(18,296)	(18,296)
Sq, Feet for Residential Units		73,184	73,184	73,184	73,184
Size per Unit (all 2-bedroom) (d)		900	900	900	900
Number of Units (total)		81	81	81	81
Number of Market Rate Units		81	81	65	81
Number of Affordable Units	20%	-	-	16	-
Vacancy Rate (for rental)		5.0%	5.0%		
Pricing					
Market Rate Rent/Momth (e)		$ 3,400	$ 3,400		
Market Rate Condo Sale Price (f)				$620,000	$620,000
Affordable Condo Sale Price (g)				$198,700	$198,700
Parking For Residential Units					
Parking Ratio (per unit)		1.00	1.00	1.00	1.00
Number of Spaces - Res		81	81	81	81
Sq. Ft. Per Space		350	350	350	350
Total For Res Parking		28,350	28,350	28,350	28,350
Retail Space					
Sq. Ft.		6,000	6,000	6,000	6,000
Rent/sq.ft./month (NNN)		$ 2.25	$ 2.25	$ 2.25	$ 2.25
Vacancy Rate		10.0%	10.0%	10.0%	10.0%
Parking for Retail Space					
Parking Ratio (per 1,000 sq. ft.)		2.0	2.0	2.0	2.0
Number of Spaces - Retail		12	12	12	12
Sq. Ft. Per Space		350	350	350	350
Total for Retail Parking		4,200	4,200	4,200	4,200
Construction Costs					
Hard Costs / Sq. Ft. Residential		$ 215	$ 215	$ 250	$ 250
Hart Costs /Sq. Ft. Retail		$ 150	$ 150	$ 150	$ 150
Parking Costs /Space		$ 20,000	$ 20,000	$ 20,000	$ 20,000
Soft Costs (as % of hard)		20.0%	20.0%	20.0%	20.0%
Impact Fees/Res Unit		$ 3,536	$ 3,536	$ 3,536	$ 3,536
Impact Fees/Retail Sq. Ft. (h)		$ 5.75	$ 5.75	$ 5.75	$ 5.75
Financing Costs					
Loan-to-Cost Ratio		70.0%	70.0%	70.0%	70.0%
Interest Rate		6.5%	6.5%	6.5%	6.5%
Fees/Points/Loan Costs		2.0%	2.0%	2.0%	2.0%
Loan Period (months)		18	18	18	18
Avg. Outstanding Balance		60.0%	60.0%	60.0%	60.0%
Operating Costs for Rental (% of Rev)		30%	30%		
Cap Rate - Rental Residential		5.5%	5.5%		
Affordable Housing Impact Fee		$28,000	$34,000	$ -	$ 75,000
Cap Rate - Retail		6.5%	6.5%	6.5%	6.5%

Pro Forma Analysis	Rental Alt A1 Current With Fee	Rental Alt A2 Maximum New Fee	Condo Alt B1 Current (with inclusionary units)	Condo Alt B2 Maximum New Fee
Land Cost	$ 4,791,600	$ 4,791,600	$ 4,791,600	$ 4,791,600
Residential				
Hard Costs for Units	$ 19,668,200	$ 19,668,200	$ 22,870,000	$ 22,870,000
Soft Costs	$ 3,933,640	$ 3,933,640	$ 4,574,000	$ 4,574,000
Current Fees (exc. Affordable)	$ 286,416	$ 286,416	$ 286,416	$ 286,416
Affordable In-Lieu	$ 2,268,000	$ 2,754,000	$ -	$ 6,075,000
Parking for Units	$ 1,620,000	$1,620,000.00	$1,620,000.00	$1,620,000.00
Subtotal	$ 27,776,256	$ 28,262,256	$ 29,350,416	$ 35,425,416
Retail				
Hard Costs	$ 900,000	$ 900,000	$ 900,000	$ 900,000
Soft Costs	$ 180,000	$ 180,000	$ 180,000	$ 180,000
Current Fees	$ -	$ -	$ -	$ -
Parking for Retail	$ 240,000	$ 240,000	$ 240,000	$ 240,000
Subtotal	$ 1,320,000	$ 1,320,000	$ 1,320,000	$ 1,320,000
Total Costs Before Financing	$ 33,887,856	$ 34,373,856	$ 35,462,016	$ 41,537,016
Financing Costs				
Interest	$ 1,387,708	$ 1,407,609	$ 1,452,170	$ 1,700,941
Fees/Points	$ 474,430	$ 481,234	$ 496,468	$ 581,518
Subtotal	$ 1,862,138	$ 1,888,843	$ 1,948,638	$ 2,282,459
Total Project Costs	$ 35,749,994	$ 36,262,699	$ 37,410,654	$ 43,819,475
VALUE ANALYSIS				
Rental Residential				
Gross Rental Revenue	$ 3,304,800	$ 3,304,800	$ -	$ -
Less: Vacancy	$ (165,240)	$ (165,240)	$ -	$ -
Less: Operating Costs	$ (991,440)	$ (991,440)	$ -	$ -
NOI	$ 2,148,120	$ 2,148,120	$ -	$ -
Retail				
Gross Rental Revenue	$ 162,000	$ 162,000	$ 162,000	$ 162,000
Less: Vacancy	$ (16,200)	$ (16,200)	$ (16,200)	$ (16,200)
NOI	$ 145,800	$ 145,800	$ 145,800	$ 145,800
Caplitalized Value of Income				
Rental Units	$ 39,056,727	$ 39,056,727	$ -	$ -
Retail	$ 2,243,077	$ 2,243,077	$ 2,243,077	$ 2,243,077
Total Capitalized Value	$ 41,299,804	$ 41,299,804	$ 2,243,077	$ 2,243,077
Condominiums				
Gross Sales Revenue	$ -	$ -	$ 43,479,200	$ 50,220,000
Less: Marketing Costs (5%)	$ -	$ -	$ (2,173,960)	$ (2,511,000)
Net Sales Revenue	-	-	$ 41,305,240	$ 47,709,000
Total Project Value	41,299,804	41,299,804	43,548,317	49,952,077
Less: Developmet Costs	$ (35,749,994)	$ (36,262,699)	$ (37,410,654)	$ (43,819,475)
Profit	$ 5,549,811	$ 5,037,105	$ 6,137,663	$ 6,132,602
Profit as % Return on Cost	15.5%	13.9%	16.4%	14.0%

Notes:

(a) Analysis is based on a one-acre site with at 150-foot street frontage and 290.4-foot lot depth.

(b) Calculated as though the parcel abuts a residential district and therefore requires a rear yard setback equal to 10% of the lot depth, which reduces the size of the one-acre lot by 4,360 square feet to allow for the rear setback. The developable footprint is equal to the size of the first floor of the project, which will consist of parking and retail space.

(c) Calculated by subtracting the ground floor from the total buildable square feet per the FAR, resulting in three 30,493-square foot stories of residential units above the ground floor parking and retail space. This results in 8,707 square feet of open space at the second-floor level (39,200 square feet at the ground floor less 30,493 square feet on floors 2 through 4), providing 107 square feet of open space per unit. The C-W zoning district and many other zoning districts in Berkeley that allow for multifamily housing require 40 square feet of open space per unit.

(d) Based on the average size of a new residential unit in Berkeley, as shown in Appendix A, rounded to the nearest 100 square feet. This assumes that new condominiums will be typically be the same size as new rental units in Berkeley.

(e) Based on the average rental rate for new 2-bedroom units in Berkeley, as shown in Appendix A, rounded to the nearest $100.

(f) Based on the average sale price among all full and verified sales of two-bedroom condominiums in Berkeley between July 1, 2013 and July 31, 2014. Data for resales are used because no data on recent purchases of new condominiums in Berkeley are available. The sale price for new condominiums is estimated to be ten percent higher than the median resale price. Figure differs from figure shown in Table 7 because the feasibility analysis considers two-bedroom units only rather than all units recently sold.

(g) Per City of Berkeley Inclusionary Housing Program requirements. Sale amount could potentially be increased if adjusted to new mortgage assumptions and AMI levels.

(h) Childcare and affordable housing fees are assessed on retail space measuring 7,500 square feet of more.

Findings

Based on the above financial feasibility tests, the maximum fee identified by the nexus analysis per market rate unit is higher than today's market conditions would allow in terms of financial feasibility for a project. Thus, in order to continue stimulating market rate housing production in Berkeley, for both rental and ownership units, the nexus-derived fee amount could be reduced to the levels shown.

Table 18: Fee Maximums Compared to Financially Feasible Fee Amounts

	Per Market Rate Rental Unit	Per Market Rate For-Sale Unit
Maximum per Nexus Analysis	$84,391	$96,294
Maximum per Pro Forma Analysis	$34,000	$75,000

Source: BAE, 2014.

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RECOMMENDATIONS

The financial feasibility of new residential development is an important consideration in setting the affordable housing impact fee rates. This nexus study determines the maximum impact fee the City of Berkeley may charge; the City may choose to set its fee at levels lower than the maximum fee supported by this analysis. Jurisdictions generally strive for a balance between extremely high fees that can depress housing production, and extremely low fees that do not allow the City to collect enough funds to address affordable housing need. This balance is particularly important because generation of affordable housing fees depends on new market-rate residential development in Berkeley.

To account for financial feasibility considerations, this study suggests that the City should set fee rates based on the rates found to be feasible in the previous chapter. This suggests that the fee for new market-rate rental units should total $34,000 per unit and the fee for new condominium units should total $75,000 per unit. Because the financial feasibility of building replacement units is the same as the financial feasibility of building new units, the recommended fee rate for replacement rental units is the same as the recommended fee rate for new rental units, or $34,000 per unit.

APPENDIX A: NEXUS STUDY DETAILED TABLES

Table A.1: New Multifamily Rental Projects in Berkeley, April 2010

Property	Unit Type	Size (sq. ft.)	Rental Rate Low	Rental Rate High	Unit Mix
Berkeley Central	Studio	474	$2,400	$2,600	8
2055 Center St	1-Bedroom	793	$2,800	$3,250	99
Built in 2012; 143 units	2-Bedroom, 1 Bath	826	$3,700	$3,900	6
143 Units	2-Bedroom, 1 Bath	955	$3,900	$4,200	6
	2-Bedroom, 2 Bath	1,160	$5,800	$6,300	10
	2-Bedroom, 2 Bath	1,598	$5,900	$6,250	5
	2-Bedroom, 2.5 Bath	1,256	$5,900	$6,250	3
	2-Bedroom, 2.5 Bath	1,706	$6,300	$6,300	3
	2-Bedroom, 2.5 Bath	1,713	$6,300	$6,300	3
	Weighted Average			**$3,591**	
Fourth & U	1-Bedroom	632	$2,000	$2,400	30
2020 4th St	1-Bedroom	720	$2,276	$2,306	26
Built in 2010; 171 units	1-Bedroom	738	$2,769	$2,800	35
	1-Bedroom	747	$2,699	$2,800	20
	2-Bedroom, 2 Bath	953	$3,100	$3,100	32
	2-Bedroom, 2 Bath	956	$1,806	$1,806	3
	2-Bedroom, 2 Bath	1,078	$2,900	$3,200	15
	2-Bedroom, 2 Bath	1,106	$3,190	$3,190	8
	2-Bedroom, 2 Bath	1,307	$2,869	$2,879	2
	Weighted Average			**$2,688**	
New Californian Apartments	1-Bedroom	620	$2,400	$2,400	92
1888 Berkeley Way	2-Bedroom, 1 Bath	850	$3,400	$3,400	30
Built in 2010; 148 units	2-Bedroom, 2 Bath	950	$3,300	$3,300	26
	Weighted Average			**$2,761**	
Hillside Village	Studio	406	$2,100	$2,100	15
1797 Shattuck Avenue	1-Bedroom	442	$2,400	$2,400	11
Built in 2008; 94 units	2-Bedroom, 1 Bath	592	$2,800	$2,800	15
	2-Bedroom, 1.5 Bath	720	$2,900	$2,900	10
	2-Bedroom, 2 Bath	687	$3,000	$3,000	40
	3-Bedroom, 2 Bath	1,100	$4,200	$4,200	3
	Weighted Average			**$2,782**	
Library Gardens	1-Bedroom	594	$1,895	$2,500	45
2020 Kittredge Street	1-Bedroom	614	$1,895	$2,500	45
Built in 2007; 176 units	2-Bedroom, 1 Bath	717	$2,850	$3,800	45
	2-Bedroom, 1 Bath	797	$2,850	$3,800	41
	Weighted Average			**$2,748**	
Weighted Averages	Studio	430	$2,239		23
	1-Bedroom	678	$2,537		403
	2-Bedroom	871	$3,434		303
	3-Bedroom	1,100	$4,200		3
	Overall Weighted Average	**752**	**$2,906**		

Sources: RealFacts, 2014; BAE, 2014.

Table A.2: Income Level by Industry, Persons by 2012 Income Limits

NAICS Code	Industry	Estimated Household Income as a Percent of AMI (a)						
		Up to 30% AMI	30% to 50% AMI	50% to 80% AMI	80% to 100% AMI	100% to 120% AMI	Above 120% AMI	Total
Private Sector								
11, 21	Agriculture & Natural Resources	18.4%	17.3%	16.5%	16.1%	8.6%	23.0%	100.0%
23	Construction	13.9%	13.2%	13.5%	18.2%	9.4%	31.8%	100.0%
31-33	Manufacturing	5.6%	7.1%	8.3%	13.2%	9.0%	56.7%	100.0%
42	Wholesale Trade	7.6%	9.5%	11.3%	15.7%	9.0%	46.9%	100.0%
44-45	Retail Trade	13.2%	12.2%	12.2%	17.7%	9.1%	35.7%	100.0%
48-49, 22	Transportation, Warehousing, & Utilities	9.8%	10.5%	12.5%	18.8%	9.7%	38.7%	100.0%
51	Information	5.3%	5.4%	6.1%	11.9%	8.6%	62.7%	100.0%
52-53	Finance, Insurance, & Real Estate	6.1%	6.5%	8.7%	13.1%	9.0%	56.5%	100.0%
54-55	Professional, Scientific, & Technical Services, & Mgmt of Companies	4.6%	4.0%	5.1%	9.9%	7.3%	69.1%	100.0%
56	Admin, Support, & Waste Mgmt Srvcs	17.1%	16.0%	14.4%	18.1%	8.1%	26.4%	100.0%
61	Educational Services	9.2%	7.7%	9.6%	15.0%	9.4%	49.0%	100.0%
62	Health Care & Social Assistance	8.9%	8.8%	9.9%	14.8%	9.2%	48.4%	100.0%
71-72	Leisure & Hospitality	16.0%	16.3%	14.7%	16.8%	8.3%	27.9%	100.0%
81	Other Services Except Public Admin	16.1%	14.1%	13.4%	16.8%	9.4%	30.1%	100.0%
All Government Employment		7.4%	6.5%	8.6%	14.7%	10.5%	52.3%	100.0%

Notes:

(a) Based on a cross tabulation of Public Use Microdata Samples (PUMS) from the 2008-2012 American Community Survey. These incomes were compared to household income limits published by the California Department of Housing and Community Development, to determine the percentage of households falling into each income category. The analysis controlled for household size, to address the varying HCD income limits for each household size.

Sources: Census, Public-Use Microdata Sample (PUMS), 2000; CA Dept. of Housing and Community Development, 2009; BAE, 2010.

Table A.3: Calculation of Maximum Affordable Sales Price for Condominiums, Berkeley, 2014

	Household Income (a)	Sale Price	Down Payment (b)	Total Mortgage (b)	Monthly Payment	Monthly Property Tax (c)	Mortgage Insurance (d)	Homeowner's Insurance (e)	Homeowner's Association Fee (f)	Total Monthly PITI (g)
Extremely Low Income (30% AMI) 3 Person HH	$25,250	$50,145	$10,029	$40,116	$194.54	$53.07	$0.00	$23.64	$360	$631.25
Very Low Income (50% AMI) 3 Person HH	$42,100	$128,020	$25,604	$102,416	$496.65	$135.49	$0.00	$60.36	$360	$1,052.50
Low Income (80% AMI) 3 Person HH	$60,850	$214,675	$42,935	$171,740	$832.84	$227.20	$0.00	$101.21	$360	$1,521.25
Median Income (100% AMI) 3 Person HH	$84,150	$322,360	$64,472	$257,888	$1,250.60	$341.16	$0.00	$151.98	$360	$2,103.75
Moderate (120% AMI) 3 Person HH	$101,000	$400,235	$80,047	$320,188	$1,552.72	$423.58	$0.00	$188.70	$360	$2,525.00

Notes:
(a) Income limits published by U.S. Dept. of Housing and Urban Development for a four-person household in Santa Clara County, 2010.
(b) Mortgage terms:

Annual Interest Rate (fixed)	4.13%	July 2014 Freddie Mac average fixed interest rate
Term of mortgage (years)	30	
Percent of sale price as down payment	20%	
(c) Initial property tax (annual)	1.27%	Alameda County Auditor-Controller
(d) Mortgage Insurance as percent of loan amount	0.00%	Only included if down payment is less than 20%.
(e) Annual homeowner's insurance rate as percent of sale price	0.57%	CA Dept. of Insurance website, based on average of all quotes, assuming $100,000 of coverage.
(f) Homeowners Association Fee (monthly)	$360	Average taken from survey of currently selling condos.
(g) PITI = Principal, Interest, Taxes, and Insurance		
Percent of household income available for PITI	30%	

Sources: California Department of Housing and Community Development, 2014; Freddie Mac, 2014; Alameda County Auditor-Controller, 2014; Condos.com 2014; Zillow.com, 2014; BAE, 2014.

APPENDIX B: OVERVIEW OF IMPLAN

This appendix provides additional clarification of the workings of the IMPLAN input-output model. It provides a step-by-step account of how IMPLAN estimates economic impacts using new residential development as an illustrative example. Definitions of key *italicized* terms are provided in footnotes for the benefit of the reader. This section begins with an overview of the data that IMPLAN uses internally, and moves forward through the process of how the model estimates the impacts of the construction phase of the proposed casino.

What is IMPLAN?

As stated in the main body of the text, IMPLAN is an input-output model that estimates the total economic implications of new economic activity within a specified geography. The model uses national industry data and county-level economic data to generate a series of multipliers, which in turn estimate the total economic implications of economic activity.

At the heart of the model is a national input-output dollar flow table called the Social Accounting Matrix (SAM). Unlike other static input-output models, which just measure the purchasing relationships between industry and household sectors, SAM also measures the economic relationships between government, industry, and household sectors, allowing IMPLAN to model transfer payments such as unemployment insurance. Thus, for the specified region, the input-output table accounts for all the dollar flows between the different sectors within the economy.

National Industry Data. The model uses national production functions for 440 sectors to determine how an industry spends its operating receipts to produce its commodities. The model also uses a national matrix to determine the *byproducts*[16] that each industry generates. To analyze the impacts of household spending, the model treats households as an "industry" to determining their expenditure patterns. IMPLAN couples the national production functions with a variety of county-level economic data to determine the impacts for our example.

County-Level Economic Data. In order to estimate the county-level impacts, IMPLAN combines national industry production functions with county-level economic data. IMPLAN collects data from a variety of economic data sources to generate average output, employment, and productivity for each of the industries in a given county. It also collects data on average prices for all of the goods sold in the local economy. In the case of our example, IMPLAN uses an average of all the economic data across the nine Bay Area counties to estimate the impacts to the region.[17] IMPLAN gathers data on the types and amount of output that each industry generates within the region. In addition, the IMPLAN model uses county-level data on the prices of goods and household expenditures to

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[16] The byproducts refer to any secondary commodities that the industry creates.
[17] The Bay Area is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

determine the consumption functions of regional households and local government, taking into account the availability of each commodity within the specified geography.

Multipliers. IMPLAN combines this data to generate a series of SAM-type multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of tables to show the economic event's *direct*, *indirect*, and *induced* impacts to gross receipts, or output, within each of the model's 440 sectors. These outputs are described below:

- **Direct Impacts**. Direct impacts refer to the dollar value of economic activity available to circulate through the economy. In the case of new residential development, the direct impacts are equal to the new households' discretionary spending. The direct impacts do not include household savings and payments to federal, state, and local taxes, as these payments do not circulate through the economy.

    It should be noted that impacts from retail expenditures differ significantly between the total economic value of retail and the amount available to circulate through the local economy. The nature of retail expenditures accounts for this difference. The model assumes that only the retail markup impacts the local economy, particularly for industries heavily populated with national firms such as gas stations and grocery stores. Since local stores buy goods from wholesalers and manufacturers outside of the area, and corporate profits also leave the local economy, only the retail markup will be available for distribution within the local economy. To the extent that retailers' headquarters are located within the county or region, the model allocates their portions of the impacts to the local economy.

- **Indirect Impacts.** The indirect impacts refer to the "inter-industry impacts of the input-output analysis."[18] In the new housing example, indirect impacts results from spending by the local and regional companies that the new households buy goods and services from. Retail establishments, restaurants, personal service providers, and other firms use the payments they receive from new households to buy equipment and supplies, rent space, pay their employees, etc. These expenditures have an impact on the economy.

- **Induced Impacts.** The induced impacts refer to the impacts of household spending by the employees generated by the direct and indirect impacts. In other words, induced impacts result from the household spending of employees of business establishments that the new households patronize (direct) and their suppliers (indirect). The model accounts for local commute patterns in the geography. For example, if 20 percent of construction workers who work in the region live outside of the region, the model will allocate 80 percent of labor's disposable income into the model to generate induced impacts. The model excludes payments to federal and state taxes and savings based on the geography's average local tax

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[18] IMPLAN Pro User's Guide, 2000.

and savings rates. Thus, only the disposable incomes from local workers are included in the model.

Specifying the "Event" and Running the Model

Once the model is built for the specified geographies, it is time to specify the "event" that the model will analyze and run the model.

Specifying the "Event." The "event" refers to the total economic value of industry output that we are interested in analyzing. In the case of the ongoing economic impacts of a new residential development, the "event" would be the total household incomes of the households that buy or rent the homes.

Running the Model. Once the event is specified, IMPLAN runs the event through the model to generate the results. IMPLAN applies the local data on average output per worker and compensation per worker to determine the direct impacts. It then applies the value of the event to the national production functions and runs a number of iterations of this value through the production functions for the local economy to determine the indirect and induced impacts. During each iteration, the model removes expenditures to government, savings, and for goods bought outside of the local economy so that the results only include those dollars that impact the local economy.

Summarizing the Impacts

Once the model is run, IMPLAN generates a series of output tables to show the direct, indirect, and induced impacts within each of the model's 440 sectors. IMPLAN generates these tables for three types of impacts: output, employment, and value added. The nexus study is concerned with the employment impacts.

- *Output* refers to the total economic value of the project in the local economy.

- *Employment* shows the number of employees needed to support the economic activity in the local economy. It should be noted that for annual impacts of ongoing operations, the employment figure shown represents the amount of employment needed to support that activity for a year. Furthermore, IMPLAN reports the number of jobs based on average output per employee for a given industry within the geography. This is not the same as the number of full-time positions.

- *Value Added* shows the total income that the event generates in the local economy. This income includes:

- o *Employee Compensation* – total payroll costs, including benefits[19]

- o *Proprietary Income* – payments received by self-employed individuals as income[20]

- o *Other Property Type Income* – payments for rents, royalties, and dividends[21]

- o *Indirect Business Taxes* – excise taxes, property taxes, fees, and sales taxes paid by businesses. These taxes occur during the normal operation of businesses, but do not include taxes on profits or income.[22]

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[19] Ibid.
[20] Ibid.
[21] Ibid.
[22] Ibid.

APPENDIX C: STUDENT SPENDING ESTIMATES

The nexus model assumes that households earning $118,400 occupy new apartments in Berkeley, based on the market rents in these units (see Table 6). This assumption drives the projected demand for affordable housing generated by new apartment development in Berkeley. However, many new apartment units in Berkeley are occupied by students. While most students have significantly lower household incomes than $118,400, they can afford high rents through personal savings, familial assistance, financial aid, grants, and by putting more people in each unit. In fact, as discussed below, student spending actually generates a *greater* demand for affordable housing in the region, compared to a household earning $118,400.

Between 2000 and 2014, UC Berkeley enrollment grew by over 15 percent from 31,267 to 36,204 students, according to University data. Students contribute to the local economy through their purchases and fees paid to the University, and thereby also contribute to the regional need for affordable housing.

Table C.1 shows student spending estimates based on survey data by the University of California, Berkeley. Adjusting student expenditures on rent and utilities to reflect rents at new apartment complexes in Berkeley (as shown in Appendix A.1), the average UC Berkeley student has expenditures on the order of $49,800 a year. Therefore, conservatively assuming an average of two students per household, each student household in a new apartment complex spends approximately $99,600 annually on student fees, goods, and services.

In comparison, the IMPLAN model run conducted for this study indicates that the households earning $118,400 make only $84,900 in direct expenditures in the region annually, i.e., less than the $99,600 spent by student households. Therefore, by using household income (as opposed to student spending) as the basis for determining the affordable housing impact of new development, the nexus study is actually taking a more conservative approach to quantifying the impact of new residential development.

Table C.1: Expenditures by Students Occupying New Apartment Complexes

	Undergraduate (a)		Graduate (a)		Average Student (b)	Average Student Adjusted for Full Calendar Year	Adjusted to Reflect Rents at New Apt Complexes (e)
	Resident	Non-Resident	Resident	Non-Resident			
Rent/Utilities	$7,112	$7,112	$11,946	$11,946	$8,481	$11,308	$16,491
Food	$2,556	$2,556	$6,614	$6,614	$3,705	$4,940	$4,940
Personal	$2,116	$2,116	$1,480	$1,480	$1,936	$2,581	$2,581
Transportation	$724	$724	$3,002	$3,002	$1,369	$1,826	$1,826
Books	$1,230	$1,230	$772	$772	$1,100	$1,100	$1,100
Health (c)	$2,190	$2,190	$3,154	$3,154	$2,463	$2,463	$2,463
Student Fees (c)	$12,972	$35,850	$12,972	$28,074	$20,421	$20,421	$20,421
Total	**$28,900**	**$51,778**	**$39,940**	**$55,042**	**$39,475**	**$44,639**	**$49,822**
Percent of Student Body (d)	*45.9%*	*25.8%*	*18.1%*	*10.2%*	*100.0%*		

Notes:

(a) Spending patterns shown for nine-month academic year unless otherwise noted. Spending information provided by UC Berkeley Financial Aid and Scholarships Office for 2014-2015.

(b) Represents weighted average based on percent of student body.

(c) Student fees, books, and healthcare plan costs are not adjusted for full calendar year.

(d) Based on the following student body distribution from the Fall 2013 UC Berkeley Student Profile:

Undergraduates: 71.7%

Graduates: 28.3%

California residents: 64.0%

(e) Assumes 2 students per unit. See Appendix B.1 for average rent at new complexes.

Sources: UC Berkeley Financial Aid and Scholarships Office, 2014; UC Berkeley Facts at a Glance, 2014; BAE, 2014.