The Housing Bottom Line

Fiscal Impact of New Home Construction on California Governments

Prepared by :

The Blue Sky
Consulting Group

June 2007

Funded through a grant by :

California **Homebuilding** Foundation

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Abstract

This study examines the fiscal impact of new housing on California governments. Specifically, we looked at both one-time and new ongoing revenues and expenditures at the city, county, and state levels. We estimated costs and revenues using an average, per-household-based approach in which the total costs or revenues associated with current residents were divided by the number of current households to arrive at an average per-household cost or revenue calculation. The per-household figure for current households was applied to new households to estimate future revenues and costs. In certain cases, we adjusted this per-household method to incorporate differences between new and current residents based on socioeconomic characteristics of a typical new household, such as the likelihood that a new household has a school-age child, the projected spending of the new household members on taxable goods, and the probability of utilizing government-supported social service or health programs. Ultimately, we found that for a new, median-priced house, the ongoing fiscal impact is positive, at $771, $190, and $3,498 at the city, county, and state levels, respectively. In addition, one-time net revenues are on average positive, producing an additional $3,017, $1,706, and $15,858 for cities, counties, and the state, respectively, each year. In sum, new housing construction has a substantial net fiscal benefit to the state and local governments in California.

Executive Summary

The purpose of this analysis is to estimate the fiscal impact of new housing in California. Specifically, our analysis seeks to answer the question: What is the fiscal impact on city, county, and state government budgets when a new house is built? This analysis examines both the one-time costs and revenues associated with the construction of a new, occupied dwelling, as well as the ongoing service costs and revenue effects of new housing,

Housing has long been recognized as a significant component of the state's economy. Numerous studies and experts have documented the impact of new housing on job creation and overall economic growth. The fiscal impact of housing, however, has been the subject of far less analytical examination. Although many consulting firms and university researchers have looked at the fiscal effects of a specific development project on one city or one county, we found no previous study that examines the overall fiscal effects of housing at the state level or looks at multiple cities or counties (let alone all the municipalities in California, as we have in this analysis).

Lacking this analytical work, many local officials and researchers operate under the belief that new residential construction does not "pay its own way." However, it is possible that new residential development is more fiscally beneficial than conventional wisdom holds. For example, because actual housing values are going up much faster than the assessed values of existing homes, new houses (initially assessed at market value) will generate substantially more property tax revenues than homes of equal value that have not been on the market for several years.

The current body of research on the fiscal impact of housing does not include a multi jurisdiction analysis of whether or not new housing pays its own way. This study seeks to fill the gap in the existing literature by analyzing this question in detail.

Methodology

Most of the available work examining the fiscal impact of housing in California has been done by consultants hired by local jurisdictions to set the level of a "fiscal impact fee." Impact fees are generally paid by developers to cover the cost of government services or infrastructure required to serve a new home. A major difference between these studies and the analysis done for this report is that, while the other studies look at the impact of a specific proposed development project, we are considering the fiscal impact of housing in general terms, focusing on the impact of the "next house" to be built.

The most common method for land-use fiscal impact analysis is the per-capita average cost method (also known as the per-capita multiplier method). Using the average cost method, costs and revenues for a new population are estimated based on the average costs and revenues for current residents. That is, the method estimates the costs to serve a new resident as being equal to the total costs for serving existing residents divided by the total number of existing residents receiving a particular service. A similar method is employed to estimate the revenues generated by new residents. To arrive at a per-household estimate of net impact, the net per-capita estimate (new per-capita revenues less new per-capita costs) is multiplied by the household size.

The basic unit of analysis in this study is the "new house." In other words, we sought to answer the question: What is the effect on government revenues and expenditures each time a new house is built? We looked at houses priced at the median value for the local housing market. Our analysis examined the ongoing effects once a new house is occupied as well as the one-time fiscal effects that occur during the construction phase.

Our analysis looks primarily at operating expenditures and revenues of general purpose governments, and does not include special-fund supported programs or local enterprise activities. This is because, for the most part, these activities have no net fiscal effect. Fees collected pay for the service provided.

This study also does not include a separate analysis of capital outlay expenditures and revenues, but does include debt service payments that are used to support current and future capital facilities. The implicit assumption of this approach is that the current level of spending on debt service will, in combination with other capital financing sources

such as Mello Roos bonds, and development exactions, provide an adequate funding stream for the needed capital expenditures resulting from new housing.

Finally, when possible, we used a conservative assumption or relied on a conservative estimate so as to not overstate the fiscal benefit of housing.

The Impact of Business Growth Related to New Housing

Without the construction of new housing, economic growth would undoubtedly slow as a result of increasing home prices, crowding, and other factors. Similarly, it is not likely that much in the way of new housing would be constructed without employed residents to occupy the new dwellings. And while there may be periods during which the rate of growth of one group exceeds the other, in the long run, population growth and economic growth occur together. For this reason, we have estimated the costs and revenues associated both with a new house itself, as well as with the new business activity that is likely to accompany this new house.

Construction Phase Impacts

Some of the fiscal impacts associated with new housing are tied directly to construction of the new house (and should not, therefore, be estimated on a per-capita basis). These costs include, for example, that portion of building inspection and planning and zoning activities that are not covered by fees and charges paid by developers. We estimated these fiscal effects on a per-new-house basis as opposed to a per-capita basis.

There are also revenues specifically associated with the building of a new house, such as the sales taxes paid on the sale of construction materials and the income or corporation tax paid on the on builder's profits. We also estimated the amount of revenues from the local property transfer tax, which is levied when a piece of property changes hands, including when it is first sold from the contractor or developer to its first occupants.

City and County Analysis

For most of the revenue and expenditure categories analyzed, cities and counties were treated in the same way. However, because counties provide services both to all county residents and to residents of unincorporated areas (i.e. areas that are not part of a city), we separately estimated the impact of those costs and revenues that differ based on the location within the county, such as sales taxes and property transfer taxes, and law enforcement and fire protection services.

City and county property tax revenue from new construction was determined by estimating the value of the house and then subtracting the value of the land prior to construction. We then applied the relevant property tax rate (taking into account the impact of the homeowner's exemption) to the added value from the construction.

Sales tax revenues were determined using an estimate of household spending on taxable goods as a function of the income of the residents based upon the purchase price of the house. Then, the local sales tax rate for the relevant jurisdiction was applied to the estimated taxable expenditures.

In order to determine both the amount of county health and social services program subvention revenue and expenditures per household, we determined each household's probability of participating in subvention-supported health or social service programs compared to the overall participation rate as a function of household income.

Utility user tax revenues and other local tax revenues were calculated on a per-household basis.

On the local government expenditure side of the equation, we estimated all local government expenditures, except for construction-related spending and spending on health and social services programs, on a per-household basis.

State Analysis

Our analysis of the state-level fiscal effects of new housing construction was conducted using a method analogous to the method used for cities and counties. Revenues and expenditures were calculated on a per-household basis, except in cases where the new households were not likely to resemble the average current household.

We estimated revenues in three categories: personal income tax, sales tax, and all other revenue sources. In addition, we estimated the school share of the property tax generated by a new home, and included this amount as an offset to state general fund costs for K-12 schools and community colleges. In terms of expenditures, we prepared estimates for K-12 education, higher education, health and social services, corrections, and all other programs.

For income taxes, we calculated average personal income tax rates by income brackets and estimated personal income tax revenues based upon the projected income of the new households as a function of the purchase price of the home. For the sales tax, as with cities and counties, we estimated likely taxable sales activity as a function of income based on home price and applied the state sales tax rate. All other revenues were calculated on a per-household basis.

In terms of state expenditures, we estimated the state's obligation to K-12 schools for a new household by determining the expected number of new students in an average new household. We then estimated the total per-student expenditures (based on funding from both state general fund and local property tax sources). Finally, we estimated the amount of new property taxes that the new house would generate and applied the resulting amount as an offset to the state's costs.

To estimate the new housing-related state general fund costs for each of the three segments of public higher education in California (California Community College, California State University, and University of California), we determined the probability, based on income, of attending one of these public higher education institutions, estimated the number of college-age students in a household, and multiplied by the state general fund cost per student.

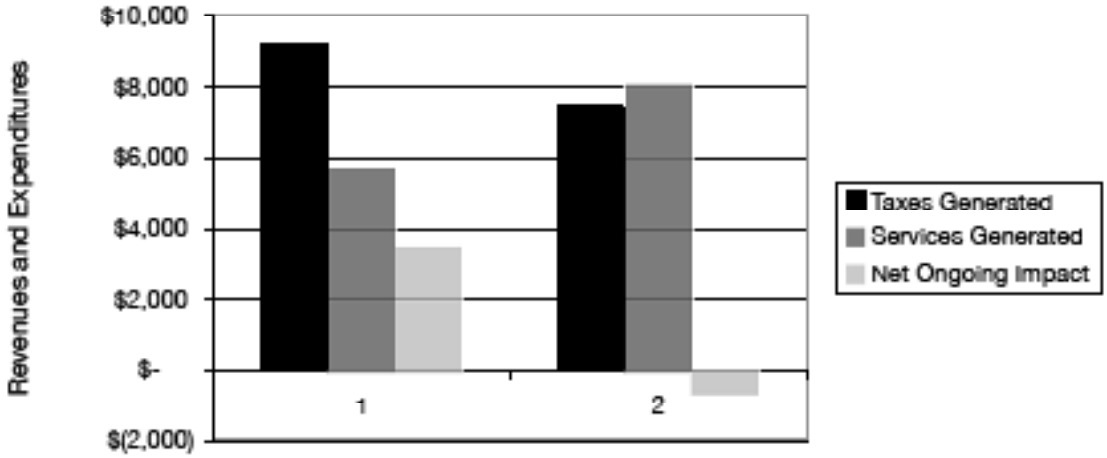
For corrections costs, we estimated the probability that someone residing in a new house would be incarcerated based on the income of the household and applied that probability to the per-inmate cost of housing inmates in state prison. Similarly, for health and human services costs, we estimated the likelihood that someone in a new household would receive health or social services benefits based on household income and multiplied that rate by the cost per recipient of these services.

Finally, we estimated the cost of all other state expenditures on a per-household basis.

Results

The results of our analysis indicate that, on average, construction of a new house provides substantial fiscal benefits for all levels of government in California. Specifically, we found that when a median-priced house is built, the state receives an ongoing fiscal benefit of $3,498 and a one-time benefit of $15,858. The average city receives an ongoing fiscal benefit of $771 and a one-time benefit of $3,017. The fiscal impact of new housing on counties depends on the location in the county in which the new construction occurs. Construction of a median-priced home in the incorporated portion of the county yields an ongoing fiscal benefit of $571 as compared to a $266 annual cost for houses built in the unincorporated area of counties. The one-time county-level fiscal impacts are positive for houses regardless of where in the county the house is built, at $1,332 for houses built in the incorporated portion of the county and $2,323 for houses built in the unincorporated portion of the county. The average dwelling built in a county produces a one-time fiscal benefit of $1,706 and an ongoing benefit of $190.

Ongoing Fiscal Impact of a New House Compared to an Existing House to the State, Per Year.



	New Household	Existing Household
Taxes Generated	$9,250	$7,469
Services Generated	$5,752	$8,100
Net Ongoing Impact	$3,498	$(631)

Introduction

The purpose of this analysis is to estimate the fiscal impact of new housing in California. Specifically, our analysis has sought to answer the question: What is the fiscal impact on city, county, and state government budgets when a new house is built? Our analysis examined both the one-time costs and revenues associated with the construction, as well as the ongoing service costs and revenue effects of a new, occupied dwelling.

Housing has long been recognized as a significant component of the state's economy. Numerous studies and experts have documented the impact of new housing on job creation and overall economic growth.[1] The fiscal impact of housing, however, has been the subject of far less analytical examination. Indeed, a review of the literature on the fiscal impact of housing revealed no previous statewide analysis of the fiscal effects of new housing in California. Even an expanded search of similar studies in other states yielded surprisingly few previous efforts.

Despite the well-documented economic benefits of new-home construction, the fiscal impacts of housing may well have a more significant impact on local land use decision-making. Local elected officials certainly take into consideration the economic benefits of a proposed development project, but, at bottom, the fiscal impact of the proposed development likely will have a more significant influence on decision-making.

Does Housing Pay its Own Way?

As a result of the limitations put into place by Proposition 13 and other measures approved by the voters and the legislature, local governments are constrained in their ability to raise additional revenues to support new residential neighborhoods. These fiscal limitations have, in turn, created a perception among many local officials and researchers that new residential construction does not "pay its own way."

Furthermore, as property taxes have been restricted, sales taxes have increased in importance as a source of discretionary income for cities and counties. Because housing does not, by itself, generate sales tax revenues (although the residents of new housing do spend money on taxable purchases) many local governments have opted to approve commercial development in place of expanded residential neighborhoods. A study by the Public Policy Institute of California suggests that city efforts to recruit businesses in pursuit of increased sales tax revenues have "hampered housing and other non-retail development." In a survey of city governments throughout California, officials consistently favored retail growth over other types of development.[2]

Although it is true the property tax makes up a smaller proportion of tax revenues than likely would have been the case without Proposition 13, it is possible that new residential development is more fiscally beneficial than conventional wisdom would indicate. Because actual housing values are going up much faster than assessed values of existing homes, new houses (initially assessed at their market value) will generate substantially more property tax revenues than homes of equal value that have not been on the market in several years.

In addition, the demographic characteristics of new households may make these houses more fiscally beneficial relative to the average existing house. If, because of the high cost of new homes, new residents are wealthier relative to the average existing resident, these new residents may provide more revenues through sales tax and may utilize fewer social services relative to the average existing household.

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1 See Sacramento Regional Research Institute, "The Economic Benefits of Housing In California," June 2006.

2 Paul G. Lewis and Elisa Barbour. *California Cities and the Local Sales Tax.* San Francisco: Public Policy Institute of California, 1999.

Our analysis seeks to fill the gap in the existing literature with respect to the state-wide fiscal impact of new housing, particularly focusing on whether new housing does in fact "pay its own way." Our analysis looks primarily at operating expenditures and revenues of general purpose governments, and does not include special-fund supported programs or local enterprise activities. This is because, for the most part, these activities have no net fiscal effect; fees collected pay for the service provided.

Our study does not include a separate analysis of capital outlay expenditures and revenues, but does include an estimate of debt service costs, which are used to support current and future capital facilities. This approach implicitly assumes that the current level of spending for debt service (continued into the future) will, in combination with other capital financing sources such as Mello Roos bonds and development exactions, provide an adequate funding stream for the needed capital expenditures resulting from new housing.

Previous Studies

Because of California's size and regional variation, performing a statewide study is a complex endeavor. Although many consulting firms and university researchers have looked at the fiscal effects of a specific development project on one city or one county, we found no previous study that examines the overall fiscal effects of housing at the state level or takes on multiple cities or counties (let alone all the municipalities in California as we have attempted in this analysis).

What little research has been done on the topic was summarized by Alan Altshuler and Jose Gomez-Ibanez in their book, Regulation for Revenue.[3] If the authors have an overall conclusion about the fiscal impact of housing, it probably is that "generalizations must be heavily qualified… because cost and revenue allocation involve difficult methodological problems and costs greatly depend on specific local circumstances."[4] The authors trace the conventional wisdom about the fiscal impact of new housing, starting with studies from the 1940s to the 1970s, which generally concluded that "housing for low- and moderate-income families often did not pay its way but most other forms of development did."[5] However, based on subsequent research from the 1980s, Altshuler and Gomez-Ibanez[6] asserted that, "some local planners and budget analysts concluded that 'profitable' development [was] far more rare than previously believed."[7] (The task of our research project, then, is to determine whether circumstances have changed sufficiently since the 1980s to warrant a reassessment of the conventional wisdom.)

Only two of the studies reviewed by Altshuler and Gomez-Ibanez were relevant to California, and these studies examined the impact of office construction in San Francisco. One of the studies concluded that offices paid their own way and the other that they did not, highlighting the importance and difficulty of methodological choices. Altshuler and Gomez-Ibanez point out the myriad difficulties associated with conducting a reliable analysis of the fiscal impact of new development. From the shortcomings of previous methods to the poor quality of the data, they remarked on the near impossibility of accurately and precisely estimating capital costs. They write: "Common financing practices may prevent even the most sophisticated or best-intentioned local governments from allocating capital costs fairly between… current and future residents."[8]

Most of the available work examining the fiscal impact of housing in California has been done by consultants hired by local jurisdictions to set the level of a "fiscal impact fee."[9] Impact fees are generally paid by developers to cover the cost of government services and infrastructure required to serve a new home. Frequently, these fees are designed to cover the costs of new capital facilities or infrastructure required to service a new development. Some jurisdictions also charge a fee to cover ongoing service costs. Most commonly, impact fees (charged by general purpose local governments) pay for such costs as hooking a house up to water and sewage systems, building and repairing roads, and

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3 Altshuler and Gomez-Ibanez, *Regulation for Revenue*, The Brookings Institution and The Lincoln Institute of Land Policy, Washington, DC (1993).

4 ibid, p. 77.

5 ibid, p. 78.

6 ibid.

7 ibid.

8 ibid. p. 79.

9 Sacramento Transportation Authority Development Impact Study. Newport Beach, CA: David Taussig & Associates, Inc, 2006. Found online: http://www.sacta.org/pdf/agendas/2006/may11/AdminReport08 percent20(Revised_2).pdf on 6.15.06.

Hodges, Hart and Brett Bonner et al. Development Impact Fees for Bellingham, 2005. Found online at: http://www.cob.org/documents/mayor/boards-commissions/budget-advisory/2005-09-20-development-impact-fees.pdf, 6.15.06.

Plumas County AB 1600 Fees, Analysis by Pacific Municipal Consultants. Obtained from Plumas Public Works Director, Tom Hunter.

increasing the capacity of the fire and police departments, among other activities. These fees can often offset the costs of anticipated growth.[10]

One study, performed by Economic and Planning Systems, Inc. (EPS) in 1998, looked at the impact of a specific development in the City of Hollister in San Benito County. The study used a combination of marginal and average costs and revenues to estimate the expected impact of the new development over a 12-year period. In addition, the study considered the population served as the population of the community plus half of employees. Finally, they looked at capital expenditures as a binary question and assumed that any capital investments above the level currently implemented in an average year would be funded through a special Mello Roos tax.[11] EPS did another study one year later for the City of Woodland and Yolo County using a very similar methodology.[12] Both of the EPS studies found that the specific developments in question yielded a fiscal deficit. However, there are some major methodological differences between this study and the EPS studies. First, while the EPS studies look at the impact of a specific proposed development project, we are considering the fiscal impact in general terms, focusing on the impact of the "next house" to be built. In addition, the EPS studies examine the fiscal impact of a development in one city, while this study examines the impact in cities and counties across California.

Probably the best, most relevant work that has been done on the fiscal impact of new housing has been done by Michael Coleman. His analysis presents the estimated fiscal impact of theoretical proposed development projects. For each type of project, Mr. Coleman estimates both the revenue impact and the expected increase in costs for a theoretical California city. Ultimately his conclusion is that both retail and industrial development have a far more positive fiscal impact than does residential development (although single-family residential development does at least pay its own way).[13]

Because no previous study had attempted to analyze the statewide effects of new housing across multiple jurisdictions, one of the major challenges of our study was to adapt existing fiscal impact analysis methodologies in a way that could provide accurate and reliable results.

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[10] Jonathan Levine. "Equity in Infrastructure Finance: When Are Impact Fees Justified?" *Land Economics,* Vo. 70, No. 2, 1994.

[11] "City of Hollister and San Benito County Fiscal Impact Study of New Development." Prepared by Economic and Planning Systems, Inc, 1998.

[12] "City of Woodland and Yolo County Fiscal Impact Study of New Development." Prepared by Economic and Planning Systems, Inc, 1999.

[13] Michael Coleman. Found online at: www.californiacityfinance.com on 6.10.06.

Methods for Estimating Fiscal Impact

The most common method for land-use fiscal impact analysis is the per-capita average cost method (also known as the per capita multiplier method). Using the average cost method, costs and revenues for new residents are estimated based on the average costs and revenues for current residents. That is, the method estimates the costs to serve a new resident as being equal to the total costs for serving existing residents divided by the total number of existing residents receiving a particular service. A similar method is employed to estimate the revenues generated by new residents (i.e., total revenues collected divided by total number of residents paying the tax or fee). To arrive at a per-household estimate, the net per-capita estimate (new per-capita revenues less new per-capita costs) is multiplied by the household size.

This method makes some implicit assumptions. Specifically, it assumes that marginal costs are, over time, equal to average costs. In other words, the method relies on the assumption that the cost of providing a service to the next new resident is equal to the average cost of providing a service to the average existing resident. For example, this method assumes that the cost of providing fire protection will be the same for the next resident as it is for the average current resident. In addition, for long-run analysis, it assumes that current costs are indicative of future costs and that service levels remain constant. (Additionally, to the extent that either average costs or revenues change over time, the results of a methodology that relies on these inputs will need to be updated in order to remain an accurate tool for policy makers.)

Of course, it is also possible that the addition of one new resident or household will have a negligible impact on government costs; the fire department may be able to cover one additional household without adding any new personnel or equipment. The addition of a hundred households, however, likely will require both additional staff and equipment. Therefore, over time and across jurisdictions, the cost of serving a new resident is likely equal to the cost of providing services to the average current resident. In other words, in some communities, the impact of one additional resident may be below average if service demands can be met within existing capacity. However, in another community, the addition of one new resident may trigger the need for hiring additional staff or expanding programs, thereby resulting in an above-average cost for a new resident. Thus, for many revenues and expenditures, a new resident will, on average, resemble the average current resident. Although these assumptions may not be valid in each and every case over the short run, over the long run average cost very closely approximates marginal cost.[14]

The per-capita multiplier method is popular because it has some major advantages over alternative methods, specifically a regression-based approach. Although such an approach has some analytical appeal, it is subject to an important limitation. A regression-based approach seeks to estimate the change in government costs when new people are added to a community, while controlling for other factors that may influence costs. However, it is very difficult if not impossible to control for these other factors that influence costs. Additionally, the arrival of new residents in a community is not an exogenous factor in determining service levels. That is, the arrival of new residents may well create a demand for more or fewer services, which in turn influences government expenditure levels. In a study prepared by the Lincoln Institute of Land Policy, Helen Ladd examined the effect of population growth on local revenues and expenditures by doing a longitudinal regression analysis. She openly cautions, however, that her results do not hold service levels constant and that the political climate that may be correlated with population growth is endogenous to her model.[15] In other words, the factors that influence government costs are correlated with the influx of the very people she is studying.

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[14] Robert Nakosteen, et al. The Fiscal Impact of New Housing Development in Massachusetts: A Critical Analysis. Prepared for the Citizens' Housing and Planning Association, 2003. Found online at: http://www.chapa.org/pdf/fiscalimpact.pdf on 6.10.06.

[15] Ladd, Helen. *Effects of Population Growth on Local Spending and Taxes*. Cambridge, MA : Lincoln Institute of Land Policy, 1992.

Methodology

To prepare our estimate of the one-time and ongoing operating expenditures and revenues associated with development of new houses in California, we relied on an average cost-based approach, modified to incorporate specific information based on the demographic characteristics of new residents.

The basic unit of analysis is the "new house." In other words, we sought to answer the question: What is the effect on government revenues and expenditures each time a new house is built? We looked at houses priced at the median value for the local housing market.[16] Our analysis looked at all new housing units, including both single- and multi-family; results presented are for an "average house." The fiscal impact is broken down into ongoing costs and revenues once a new house is occupied as well as the one-time fiscal effects that occur during the construction phase.[17] We concentrated on general fund revenues and programs, excluding special funds and programs entirely supported by fees and user charges. Our analysis examined the impact on government operating revenues and expenditures, both during the construction phase and after a new dwelling unit is occupied. When possible, we took a conservative assumption or relied on a conservative estimate so as to not overstate the fiscal benefit of housing.

Data Sources

The primary data source for our analysis was the state budget and the local financial transaction data for cities and counties maintained and published by the State Controller's Office.[18] We also relied on the Integrated Public Use Microdata Series (IPUMS) for demographic information, consumer expenditure data from the Department of Commerce, and building permit data from the Construction Industry Research Board.

Basic Methodology: Per-Capita Average Cost Method

Our method consists of determining the per-capita costs and revenues for each level of government and then multiplying the result by the average household size to arrive at a per-household estimate. Specifically, the total cost for each type of government service is estimated based on budget data and then divided by the population served to arrive at a per-capita cost. Taking into account the likely average household size for a new house, we estimated the added costs and revenues associated with a new household.

Additionally, our analysis incorporated more specific estimates whenever possible. For example, it was possible to estimate new residents' contribution to sales tax revenues by estimating the expenditures of the new residents based on income. We were also able to use the purchase price of a new house to estimate the increase in local property tax revenues stemming from the new construction. We similarly estimated the social service costs for a new household based on the estimated income of new residents (higher income households are less likely, on average, to use many health and social services programs, particularly where these programs are means-tested). Details of our methodology are presented in the following sections of this report and in the appendices.

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16 Data supplied by CBIA. For a list of median house prices, see Appendix A.

17 We focused solely on operating revenues and expenditures and not on those associated with capital outlay. Thus, revenues and expenditures associated with development impact fees, proceeds of bonds, tax revenues supporting voter-approved indebtedness, and other expenditures on new and improved capital facilities are not examined in our analysis.

18 Note that there is great variation in how budget data is supplied to the Controller from one jurisdiction to the next. Generally, research has found that the totals reported are correct (see PPIC) but the way revenues or expenditures are reported within sub-categories may vary considerably. Thus, our results are likely correct on average, but examining the results for individual local entities or subcategories may be misleading.

Estimating the Impact of Business Growth Related to New Housing

As population growth has historically coincided with business growth, our methodology captures the business and regional economic growth accompanying new development. While there is a bit of a "chicken and egg" debate as to which factor causes the other, people would not purchase and occupy new houses without jobs to support the mortgage, and new residents purchasing goods in the community support economic growth. Thus, regardless of whether housing instigates business growth or the reciprocal is true, there is certainly a positive feedback cycle. Altshuler and Gomez-Ibanez reach this same conclusion, noting that "to the extent that the two are related, any analysis of the fiscal impacts of new commercial development must consider the fiscal impacts of the residential development it attracts, and vice versa."[19]

Without the construction of new housing, regional economic growth would undoubtedly slow as a result of increasing home prices, crowding, and other factors. Similarly, it is not likely that much in the way of new housing would be constructed absent employed residents to occupy the new dwellings. While there may be periods during which the rate of growth in one factor exceeds the other, over time these two rates will grow together.

Our estimation method implicitly assumes that the ratio of people to jobs remains steady over the long run, so that employment grows with population. Therefore, for most categories of revenues and expenditures, we were able to simply rely on a per-capita analysis, without separately estimating the fraction of additional service costs or revenues attributable to individuals or businesses. For example, when population and employment expand as a result of the construction of a new house, costs for fire protection will increase as well. However, because we implicitly assume that the ratio of people to jobs remains the same, we can simply calculate the per-capita increase knowing that some fraction of the increase is attributable to the new residence and some to the accompanying new workplaces.

Because business growth is directly related to population growth, new residents not only consume goods and services, but also represent additional members of the workforce. Thus, in cases where we explicitly estimated the impact of the new residents or residences (e.g., property and sales taxes), we separately estimated the business-related impacts. This allowed us to estimate not only the direct marginal revenues associated with the house, such as the property taxes collected on the house itself, but also the secondary revenues garnered as a result of the business growth, such as the property taxes collected on new businesses or expansions of existing ones.

Construction Phase Costs and Revenues

The fiscal impact of new housing development can be characterized by two distinct phases: one-time costs and revenues associated with the construction itself and ongoing effects associated with the occupied dwelling following the construction process.

Because we are not explicitly estimating the new expenditures associated with capital outlay (we implicitly assume that per-capita debt service costs, developer-paid impact fees, and Mello Roos financing sources cover new capital outlay costs) our analysis focuses on the (relatively small) category of one-time government expenditures associated with providing services during the construction period. Specifically, a house in construction has no residents to demand services, and while it is true that a new, uninhabited house will require some services such as minimal police and fire protection, because there are no residents, these costs are likely to be very minor. In addition, we did not separately estimate the additional property taxes paid during the construction of the house. These additional revenues are likely to equal or exceed any service costs during the construction period.

[19] Altshuler and Gomez-Ibanez, op. cit., p. 87.

In terms of the revenues associated with the building of a house, we looked at the taxes paid on profits earned by homebuilders and sales taxes paid on construction materials. We also estimated the amount of the local property transfer taxes collected.

Local construction-related revenues and expenditures

While most of the revenues collected and services provided by local governments are ongoing, certain categories of construction-related revenues and expenditures are one-time budget items specifically linked to the building of a new house or to the business growth associated with it. In order to reflect this division of costs, the general-purpose (i.e., not fee-supported) expenditures and revenues associated with building permit issuance and inspection, plan checking, zoning, engineering, and other construction-related budget items were divided into three categories: those related to new housing construction, those related to new business activity stemming from new construction, and all other (assumed to be per-capita).

Special Considerations

A Note about the "Triple Flip"

Starting in the 2004-05 fiscal year, the state instituted the "triple flip," a policy dedicating a funding stream to repay voter-approved Economic Recovery Bonds (ERBs). This policy change involved reducing the local sales tax rate by one-quarter percent and increasing the state rate by the same amount to repay the bonds. Local governments are given an equivalent level of property tax revenues to replace lost revenue from the sales tax. To replace the property tax dollars that had previously been used to fund public schools, the state increased the contribution from the general fund. Thus, while in essence, revenue from the general fund is being used to repay ERBs, there are three intermediate steps (hence the name "triple flip"). In addition, while this transaction involves large amounts of money, the net impact on local governments is relatively inconsequential: sales tax revenues are lower than they would have otherwise been while property taxes are higher by an equivalent amount. Furthermore, once the ERBs are repaid,[20] the triple flip will be reversed. Consequently, our analysis has, in essence, ignored the triple flip. We have relied on local expenditure and revenue data from the 2003-04 fiscal year. This was the most current data available from the State Controller, and it is prior to the implementation of the triple flip. To estimate the impact on school costs, we have relied on current (FY 2006-07) cost information, but have used the school property tax share from FY 2003-04, which also eliminates the impact of the triple flip.

A Note about the Vehicle License Fee

As a result of recent changes made to the Vehicle License Fee (VLF) in the State Budget Act of 2004, the growth in VLF-related revenues are now allocated based on growth in assessed value rather than based on population (as previously). However, as a simplifying assumption, we include the VLF within per-capita revenues for the following reasons. First, we are working with 2003-04 budget data, which predates the change in VLF allocation methodology. Second, while there may be long-term incentive effects of this legislation, the early-year fiscal impacts are negligible. Third, as VLF revenues are distributed as a function of growth in assessed value and assessed value growth is heavily correlated with population growth,[21] the per-capita value is a fairly good approximation.

[20] The ERBs are scheduled to be repaid sometime between 2010 and 2023, depending on the rate of growth in sales tax revenues and the amount of "excess" state revenues allocated to repayment.

[21] http://www.uctc.net/papers/VLF-report.pdf

Results

State Level Analysis

Our analysis indicates that each time a new, median priced house is built (and occupied) in California, the state receives a net fiscal benefit, both on a one-time and an ongoing basis. Based on a median priced home of $576,360, we estimate that this new home will generate $9,250 in new, ongoing revenues, but will require just $5,752 in new, ongoing service costs.[22] Thus, the net, annual fiscal benefit of a new house to the state is $3,498.

Table 1: State Ongoing Fiscal Impact of New House Compared to Existing House

	New Household	Existing Household	New - Existing
REVENUES			
Personal Income Tax	$5,607	$4,042	$1,565
Sales and Use Tax	$2,449	$2,233	$216
Corporation Tax	$835	$835	$0
Other Revenues and Transfers	$360	$360	$0
TOTAL	$9,250	$7,469	$1,780
EXPENDITURES			
Public Education (K-12)	$1,753	$2,973	($1,220)
Higher Education (UC, CSU, and CCC Systems)	$1,000	$767	$234
Means-Tested Public Assistance	$449	$1,253	($804)
Health and Human Services	$1,070	$1,070	$0
Corrections & Rehabilitation	$101	$659	($558)
Other Expenditures	$1,309	$1,309	$0
Homeowner's Exemption Relief	$70	$70	$0
TOTAL	$5,752	$8,100	($2,348)
NET ONGOING IMPACT	$3,498	($631)	$4,129

As the table above indicates, the bulk of the new revenues come from the personal income tax. Our analysis indicates that a household occupying a new, median-priced home would generate more than $5,600 per year in income taxes, nearly $1,600 more than the average existing household. This additional income tax reflects the fact that the average income of new households is substantially higher than the average income of existing households.

[22] Median prices were provided by the CBIA.

The new household would also generate more in sales taxes relative to the average existing household. Overall, a new household would generate $1,780 more in state general fund tax revenue than the average existing household. The substantial fiscal benefit stemming from new home construction reflects, in part, the increase in home values and prices that has occurred in recent years. Because of the relatively high cost of new homes, new households tend to be wealthier than the average California household. These typical new households earn more income, and pay more in income taxes. They also tend to purchase more in the way of taxable goods, and therefore end up generating more in sales taxes relative to the average California household.

Because the average newly constructed house has a higher assessed value than the average existing house, new houses generate more in property taxes relative to existing houses. A portion of these additional property taxes directly offsets state costs for K-12 education.[23] Because these new households are wealthier than the average household, they are more likely to contain college-going members. Consequently, the costs for higher education are higher for a new household relative to the average existing household.

In addition, much of the state budget goes to programs such as health and human services (e.g., Medi-Cal and CalWorks) and the prison systems. The higher relative income of residents of new households ultimately means that they are much less likely to utilize means-tested public assistance or social service programs or be incarcerated, relative to the average Californian. Thus, state expenditures for these categories brought about by the construction of a new house are much lower than for the average, existing house.

Our analysis indicates that the average state general fund cost for K-12 schools (net of the property tax offset) is about $1,750 per household (compared with an estimation of about $2,973 for the average existing household). Similarly, the average state cost for means-tested health and social services programs is about $450 for new households, as compared with about $1,250 for the average existing household. Finally, we estimate that the average cost for corrections is just over $100 per year for new households, as compared with $650 for existing households. Overall, we estimate that the average new household requires about $2,350 less in service costs each year, relative to the average existing household.

One-Time Effects

In addition to the ongoing effects, there are one-time benefits associated with building a new house, primarily from sales taxes paid on construction materials and the income or corporation tax paid on builder profits. The average one-time benefit to the state is $15,858. Note that our methodology does not include an explicit estimate of one-time state costs. Thus, our methodology implicitly assumes that any one-time state costs are offset by property taxes paid on the land during construction (which offsets state costs for K-12 schools) and other fees, user charges or other taxes paid by construction workers, builders, suppliers or others.

[23] Because households with higher incomes are more likely to attend a public college or university, some of this particular fiscal benefit is offset by higher costs to the state for the CCC, CSU, and UC system.

Table 2: One-Time Costs and Revenues

Revenue Source	Benefit to the State
Corporate Tax Revenue	$4,331
Sales Tax Revenue	$11,527
TOTAL	$15,858

City and Regional Analysis

To estimate the local fiscal effects of new housing, we calculated a result for each local entity and then aggregated the results across regions. Results were aggregated because, while we believe that our results are accurate on average, there may well be inaccuracies in the results for any individual entity. There is a great deal of variation in the way local entities report budget information to the state controller. This variation, in turn, creates variation in the results of our estimation model.[24] Therefore, while we believe that our results are accurate on average across regions, they likely are not a reliable way of estimating the fiscal impact of new housing for any individual jurisdiction. One by-product of this aggregation is that local variation in the fiscal effects of new housing is to some extent obscured. That is, small or even negative fiscal impacts in some cities are offset in our results by large, positive fiscal impacts in others. Our results, therefore, represent the average fiscal impact within a region, but there is a considerable degree of variation around this average.

In presenting our results, each local entity was weighted by the average number of new housing permits issued in 2004 and 2005, as captured by the Construction Industry Research Board. The results for each region include the weighted results for each city in that region. Results for counties are presented separately, below.

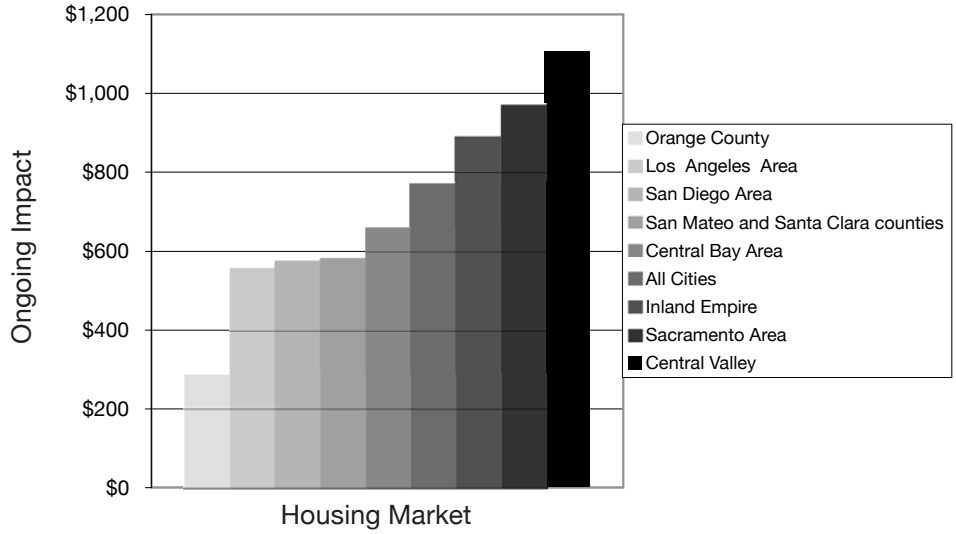
Our analysis indicates that, on average, a new, median-priced house generates $771 of new net revenues for cities in California each year.[25] We examined the following housing markets: the Central Bay Area, San Mateo and Santa Clara counties, Sacramento Area, the Central Valley, Los Angeles Area, Orange County, The Inland Empire (Riverside and San Bernardino counties), and San Diego Area. When examined on a regional basis, the fiscal impacts of new housing in cities was positive in all of the six regions we examined, ranging from a low of $287 for cities in Orange County and a high of $1,107 for cities in the Central Valley. The following table summarizes the fiscal impacts for these major housing markets.

[24] Note that we excluded any outliers from our analysis. Outliers were defined as any entity with a result more than two standard deviations from the mean result.

[25] The median price was based on the median for the region in which the city is located. See Appendix A.

Table 3: Ongoing Fiscal Impact of a New House to Cities, by Region

Housing Market	Ongoing Impact
All Cities	$771
Central Bay Area	$660
San Mateo and Santa Clara counties	$582
Sacramento Area	$971
Central Valley	$1,107
Los Angeles Area	$558
Orange County	$287
Inland Empire	$891
San Diego Area	$576



One of the factors contributing to the overall positive fiscal effects of housing is the utility users tax, which constitutes an important source of local discretionary revenue. The fiscal impact we identified is substantially higher for the group of cities with a utility user's tax, as indicated in the table below.

Table 4: City Ongoing Fiscal Impact of New House by Utility User's Tax

All Cities	Cities w/ Utility Users Tax	Cities w/o Utility Users Tax
$771	$837	$725

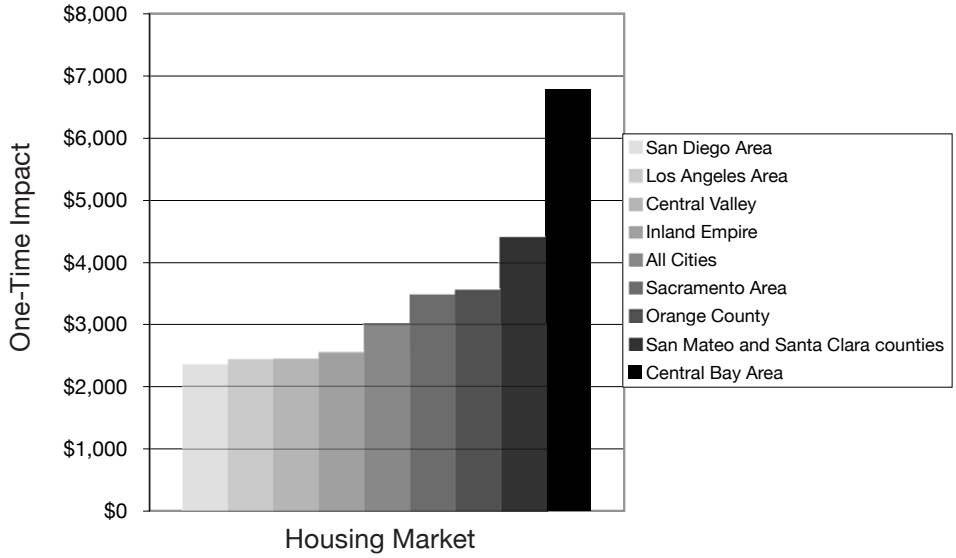
In addition to the impact of the utility users tax, the substantial fiscal benefit of new housing stems largely from the higher average price (and corresponding property tax impact) of new houses relative to the average existing house and from the higher average income and taxable expenditures of new residents. Indeed, our results indicate that for each percentage point increase in a city's share of the property tax, the net annual fiscal benefit increases by $24 per house.

One-time Effects

The average one-time fiscal benefits (from sales tax, transfer tax, and construction-related revenues) are also positive, yielding an additional $3,017 in net revenues in the first year for the average city.

Table 5: One-Time Fiscal Impact of a New House to Cities, by Region

Region	One-Time Fiscal Impact
All Cities	$3,017
Central Bay Area	$6,790
San Mateo and Santa Clara counties	$4,412
Sacramento Area	$3,483
Central Valley	$2,448
Los Angeles Area	$2,439
Orange County	$3,553
Inland Empire	$2,551
San Diego Area	$2,353



County-Level Analysis

Although there was a great deal less variation between counties than between cities, our results are still more useful in understanding averages across the state than in describing results for individual counties. On average, a new house at median market value generates $571 of ongoing net new revenues for houses built in the incorporated portion of counties and a loss of $266 for houses built in the unincorporated portion of counties.[26]

Each county was weighted by the average number of new permits issued between 2004 and 2005, as captured by the Construction Industry Research Board. Results are presented in the table below.

[26] The primary reason for the negative fiscal impact of houses in the unincorporated area appears to be the high per-capita costs for sheriff's patrols. This effect may be an artifact of our methodology in which we assign all sheriff's department costs (net of estimated contract policing revenue and jail-related expenditures) to the unincorporated population. In fact, some sheriff's department services are likely provided to all county residents, however, we do not currently have a basis for determining the extent of these county-wide costs. In addition, variation in the way counties report data to the controller may result in an understatement of the contract policing revenues (and a consequent overstatement of this cost).

Table 6: County Ongoing Fiscal Impact by Region

Region	Ongoing Fiscal Impact	One-Time Fiscal Impact
Weighted Average	$190	$1,706
Incorporated Portion of Counties	$571	$1,332
Unincorporated Portion of Counties	($266)	$2,323

As with cities, the property and sales taxes constitute major revenue sources and account for a large portion of the fiscal benefits observed (for entities that experience benefits).

One important difference between cities and counties is the administration of many public assistance programs, many funded through subventions from the state and federal governments. As noted in our methodology section, above, we estimate that both the caseloads and costs for these programs would be lower for new households than for the average existing household. We also estimated that the subvention revenues used to pay for these programs would be lower as a result.

One-time Effects

Our estimate of the one-time revenues, including sales tax on materials, the transfer tax paid on the new house, and the fees paid by builders, is positive for both the incorporated and unincorporated areas of counties. We estimate that these one-time benefits total $1,332 when a house is built in the incorporated area of counties and $2,323 when a house is built in the unincorporated area. The average dwelling unit built in a county produces a one-time fiscal benefit of $1,706.

Conclusions

The results of our analysis indicate that, on average, construction of a new house provides substantial fiscal benefits to all levels of government in California. Specifically, we found that when a median priced house is built, the state receives an ongoing fiscal benefit of $3,498 and a one time benefit of $15,858. The average city receives an ongoing fiscal benefit of $771 and a one-time benefit of $3,017. The average county receives an ongoing fiscal benefit of $190 and a one-time benefit of $1,706. On average, a new house built in the incorporated area yields an ongoing fiscal impact of $571 and a one-time fiscal benefit of $1,332. Construction in the unincorporated areas of counties yields a negative ongoing fiscal impact of $266 with a one-time benefit of $2,323.

Two related factors contribute to the substantial, positive fiscal impact of new housing, both on a one-time and an ongoing basis. The first is the higher revenue impact associated with new households relative to existing households. Because the purchase price of new homes is higher than the purchase price of existing homes, new households tend to generate more property taxes than existing houses. In addition, because these new households have higher incomes relative to existing households, they tend to pay more in income taxes and spend more on taxable goods, thereby generating more in sales tax revenues. The second factor relates to service costs. Here again, the higher income of new households tends to be correlated with lower social services and corrections costs for these households, relative to the average household. These lower social service and corrections costs are partially offset by higher costs for higher education, but the net result is still a substantial, positive fiscal impact.

Discussion of Methodology

Overview

As noted previously, our primary methodology for estimating costs and revenues was the per-capita average cost method. Where appropriate, we also relied on additional economic or demographic information in order to improve the accuracy of our estimates. In addition, we relied on a series of simple regression analyses to estimate several of the parameters used in this analysis. Details of our methodology are presented below.

Method for Estimating Business Related Impacts

In order to estimate the extent of additional property taxes generated by businesses, we ran a time-series panel-data regression to estimate the increase in the value of non-residential construction permits associated with one additional job.[27] This type of regression holds the county constant.[28] In other words, it attempts to determine the increase in non-residential construction permits independent of the county in which the new job is located. We took the value of the new commercial property associated with an increase of one job and multiplied it by the number of new jobs associated with the new household (the household size in the jurisdiction times the average number of jobs per person in the county) to estimate the increase in commercial assessed value stemming from (or at least correlated with) the construction of a new dwelling unit.

We estimated the increase in sales taxes accompanying business growth by estimating the number of new employees associated with a new house. Specifically, we multiplied the local job rate by the (new) household size.[29] Research suggests that, across the state, 47 percent of sales tax revenues in California are paid by businesses.[30] Thus, 47 percent of the sales tax revenues would be sensitive to business growth. We took the proportion of sales tax revenues attributed to businesses and found the value per employee in the jurisdiction. This value, multiplied by the number of new jobs associated with the new house, gave us the growth in sales tax revenue from businesses caused by or correlated with a new house.

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[27] Labor Force Data From: http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/AreaSelection.asp?tableName=Labforce

Value of Construction Permits from Construction Industry Research Board.

[28] In other words, panel time-series isolates the variation associated with each county and creates a dummy (binary) variable for each county such that each county has a specific output value. For more details, see Appendix F.

[29] Data from: http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/AreaSelection.asp?tableName=Labforce

[30] Ring, Raymond J., Jr. "The Proportion of Consumers' and Producers' Goods in the General Sales Tax." National Tax Journal 42, No. 2 (June 1989): 167-79

Construction Related Costs and Revenues

In terms of the revenues associated with the building of a house, we looked at the taxes paid on profits earned by homebuilders (including income and corporation taxes) and the sales tax collected on materials. We estimated that 8.5 percent of the final house price is profit and that 40 percent of the final house price was spent on taxable building materials.[31] To estimate the one-time sales tax impact, we multiplied the taxable sales by the corresponding state or local sales tax rate (i.e., that fraction of the sales tax going to the corresponding jurisdiction).[32]

We also estimated the amount of the local property transfer tax, which is levied when a piece of property changes hands, including when it is first sold from the contractor or developer to its first occupants.[33] The tax is a percent of total sales price, and varies by jurisdiction. We estimated the total amount of transfer tax by multiplying the sales price by the rate.

To estimate the Corporation Tax Revenues, we multiplied the tax rate (8.84 percent in California) by the estimated profit.[34]

Our estimation of one-time revenues is conservative because it does not include the income tax paid by workers building houses or the secondary effects of having more people employed (the fiscal impact of the multiplier effect). While it is possible that some of the people who work in construction would otherwise be unemployed and receiving unemployment benefits or cash assistance, it is also possible that they would be working at their next-best option, which may be only slightly less lucrative; it is even possible that they moved to the state specifically to build new houses. Although these additional economic impacts cause positive fiscal effects, they also can result in costs for services. The implicit assumption in our method is, therefore, that all of these workers, if they were not employed in construction, would be working in a job that pays something similar to what they make in construction. Thus, this approach likely underestimates the one-time fiscal benefits of new housing.

Our calculations for one-time revenues are as follows:

$$One-Time\ Corporation\ Tax\ Revenues = 8.84\% * 8.5\% * HousePrice$$

$$One-Time\ Sales\ Tax\ Revenues = Sales\ Tax\ Rate * 40\% * House\ Price$$

$$Property\ Transfer\ Tax\ Revenues = Property\ Transfer\ Tax\ Rate * House\ Price$$

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31 These estimates are based upon conversations with the California Building Industry Association. Specifically, CBIA estimated that materials constitute 60 percent of construction costs. Given that 25 percent of house price is land and 8.5 percent is profit, 0.6*(1-0.25-0.085) = 0.399.

32 See: http://www.boe.ca.gov/news/sp111500att.htm

33 These rates are collected and published by Michael Coleman on the website. See: http://www.californiacityfinance.com/PropTransfTaxRates.pdf.

34 See: http://www.taxadmin.org/fta/rate/corp_inc.html. Because some portion of builders' profits accrue to builders that are organized as Subchapter S corporations, these profits are passed through to individual partners or shareholders and taxed as personal income. This net income would be subjected to a 1.5 percent corporation tax rate plus a 9.3 percent marginal personal income tax rate (leaving aside the surtax under Proposition 63). Thus, by applying the 8.84 percent corporation tax rate, we are understating the tax revenues likely generated on these profits.

For the above formulas, the Corporation Tax Rate for the state is 8.84 percent and the Sales Tax Rate and Property Transfer Tax Rate are specific to the area being analyzed. Again, the proportion of the house price that is profit is 8.5 percent and the proportion of the house price that is constituted by taxable materials is estimated to be approximately 40 percent.

Local Construction-related Revenues and Expenditures

While most of the revenues collected and services provided by local governments are ongoing, certain categories of construction-related revenues and expenditures are one-time budget items specifically linked to the building of a new house or to the business growth associated with it. In order to reflect this division of costs, the general purpose (i.e. not fee-supported) expenditures and revenues associated with building permit issuance and inspection, plan checking, zoning, and other construction-related categories were divided into one-time and ongoing components.

In order to break these revenues and expenditures down by the proportion which is one-time construction-related revenues/costs versus ongoing revenues/costs, we used national expenditure data on private construction and building permit data from the Construction Industry Research Board. This construction data breaks down total construction expenditures into three categories: new residential construction, new non-residential construction, and renovations.

Using these three categories, we then allocated the construction-related revenues and expenditures. To determine the proportion of the budget item attributed to new homes, we divided the expenditures by the number of new residential permits in the corresponding year, thus finding a one-time value for a new house.[35] To determine the proportion of the budget item attributable to new businesses, we estimated the number of new jobs associated with that new house using labor force participation rates at the county level.[36] We then took the value of construction from new businesses, divided by the current number of jobs in the county to yield the per-employee value, and then multiplied that value by the number of new employees associated with a new house.

Finally, the remaining revenues and costs associated with construction were attributed to renovation, and were calculated on a per-capita basis. Here the implicit assumption is that new residents engage in remodeling at about the same rate as current residents.

At the city level, this category includes: revenues from construction permits, and zoning, subdivision, and plan checking fees, and engineering fees, inspections, and other construction related revenues, as well as planning, regulation enforcement, housing, and "other" from the community development category of the city budget. At the county level, this includes: revenues from construction permits and zoning permits. Construction development taxes are allocated in our model to finance capital outlay, and are thus not included in the analysis.

[35] We averaged 2003 and 2004 to approximate the 2003-2004 fiscal year (July 2003- June 2004). This data came from http://www.cirbdata.com/ .

[36] Labor Force Participation Rates available online at: http://lehd.dsd.census.gov/led/datatools/qwiapp.html

City- and County-Level Analysis

For most of the types of revenue and expenditure categories analyzed, cities and counties were treated in the same way. Cases where the methodology differs are noted in the relevant section of this report. In addition, because counties provide services both to all county residents and to residents of the unincorporated area (i.e., to areas that are not part of a city), we separately estimated the impact of those costs and revenues that differ based on the location within the county. Specifically, the following categories were calculated both for new housing units located in the unincorporated area and for new housing located within a city's boundaries: property taxes, sales taxes, property transfer taxes, law enforcement revenues and expenditures, and fire protection expenditures. All other revenues and expenditures were determined to be countywide and a single calculation was used regardless of the location of the new housing unit within the county.

REVENUE SOURCES

Property Taxes

To estimate the amount of property taxes generated by a new house, we first estimated the increase in assessed value stemming from the new construction. To determine this increase in assessed value, we subtracted from the sales price an estimate of the value of the land before the house was built (approximately 25 percent of the sales price).[37] In addition, we adjusted the increase in assessed value to reflect the impact of the homeowner's exemption.[38] The resulting assessed value calculation was multiplied by 1 percent and then by the jurisdiction's share of the property tax collected (estimated separately for cities and counties).

To estimate the increase in assessed value from increased business activity associated with the new house, we conducted a regression analysis that estimated the increase in assessed value stemming from an increase in jobs. Using this coefficient and the estimated number of new jobs associated with the new dwelling, we were able to construct an estimate of increased assessed value. This figure was multiplied by one percent and then by the jurisdiction's share of the property tax.[39]

City Property Tax Shares

To estimate the share of the property tax going to an individual city, we divided total property taxes collected, excluding levies for debt service, by 1 percent of the assessed value in the jurisdiction. This value represents an average across the entire city, although in fact the city share may vary substantially depending on the specific tax rate area in which a new house is located.

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37 Estimated by the California Building Industry Association.

38 Although this relief is only available to homeowners who live in their house, including it for all houses results in a slight underestimate of the total property taxes generated, which is the more conservative approach. See http://www.boe.ca.gov/members/yee/taxsrvs/files/2006/OwnerPropExemp.pdf for more information.

39 A weakness of this method is that it does not adjust for the state programs that help fund blighted neighborhood developments by lowering the effective property tax rate. However, it is very unlikely that this would affect a large proportion of new houses, which are rarely built in formerly blighted areas.

County property tax shares

Although the average county share of the property tax is reported by the State Board of Equalization (and could be estimated using the method employed above for cities), the fiscal impact of new housing varies depending on whether a dwelling is located the incorporated or unincorporated area of the county. Therefore, it was necessary to estimate an average share for each of these two areas.

To accomplish this task, we constructed the following two equations, and then solved for each of the unknown variables, SI and SU:

$$SU * AVU_t + SI * AVI_t = PTax_t$$

$$SU * AVU_{t+1} + SI * AVI_{t+1} = PTax_{t+1}$$

Where

SU = Share of the property tax in the unincorporated area

SI = Share of the property tax in the incorporated area

AVU_t = Assessed value in the unincorporated area in period t

AVI_t = Assessed value in the incorporated area in period t

$PTax_t$ = Total county property taxes collected in period t

AVU_{t+1} = Assessed value in the unincorporated area in period t+1

AV_{It+1} = Assessed value in the incorporated area in period t+1

$PTax_{t+1}$ = Total county property taxes collected in period t+1

Note that solving these equations relies on the assumption that the shares of property taxes going to the county in both the unincorporated and incorporated areas remain constant from period t to period t+1. Although the shares may change somewhat due to new annexations or incorporations or other factors, in general these shares are very stable over time (barring significant reallocation of property taxes by the legislature).[40]

Sales Taxes

To estimate sales taxes generated by a new household, we estimated the income of its residents based upon the purchase price of the house. To construct our estimate, we preformed a series of regression analyses using income by home value data from Integrated Public Use Microdata Series (IPUMS)[41] and spending habits data by income bracket from the Bureau of Labor Statistics.[42] Our regressions estimated the average income of a household by home value and spending on taxable goods as a function of income (for more information on our methods, see Appendix C).

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[40] In 6 counties, solving the above equations yielded implausible results, likely due to the fact that the shares did not in fact remain constant over the period examined (2002-03 to 2003-04). In these counties the shares were estimated by selecting the mid point between the possible values for the incorporated area share, where zero is the lower bound and the average share across the entire county is the upper bound.

[41] See: http://www.ipums.umn.edu/.

[42] See: http://www.bls.gov/cex/csxann04.pdf.

Using data on the sales tax rate by jurisdiction from the State Board of Equalization, we multiplied estimated spending on taxable goods by the effective local sales tax rate to find the revenue to the jurisdiction from the sales tax. This value, in addition to the increase in sales tax revenue associated with business growth (see business growth section, above, for more details) gave us the total increase in sales tax revenues associated with the new house. In sum:

Increased sales tax revenues = sales tax rate * total new spending

Total new spending = new spending by residents + new spending by businesses

Where the sales tax rate is specific to the jurisdiction.[43] *New Spending by Residents* is determined by average spending by income bracket, and the income of residents by house price was determined through IPUMS.[44] For the *New Spending by Businesses*, see the section: Business Growth. It is worth noting that this method implicitly assumes that all spending associated with a new house occurs within the jurisdiction in which the new house is located. This assumption is certainly an underestimation for some jurisdictions and overestimation in others, but on average across regions and in the aggregate, it should provide an accurate estimate.

Transfer Tax Revenues

When a new house is purchased, buyers in many jurisdictions pay a transfer tax based upon the local transfer tax rate.[45] We estimated the additional revenue from transfer taxes as a one-time revenue.[46]

Health and Social Services Subventions Revenues

Although it is unlikely that any members of a household occupying a newly purchased, median priced house will receive health or social services programs such as Medi-Cal or CalWorks, there is at least a small fraction of households that may include one or more members that receive these benefits (e.g., a relative or live-in employee may qualify for certain benefits). Many of these programs are supported with subventions from the state and federal governments. Our analysis assumes that increases in service demands will result in increases in subvention revenues. For county services provided exclusively to the indigent, such as general relief, we assumed that a new household would have no impact on county costs. In other words, we assumed that the probability of a new household increasing the indigent population and corresponding costs was zero.

Using a household's probability of utilizing subvention-supported health or social service programs compared to the overall participation rate allowed us to make a more accurate estimate of health or social service expenditures and revenues than a simple per-capita, average cost method.

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[43] According to the Legislative Analyst Office (http://www.lao.ca.gov/1994/proposition percent5F172.pdf), 6 percent of the Public Safety sales tax goes to the cities in a county based upon the total spending in the county. Sales Tax Rate = 1 percent Bradley Burns Tax + Any Special District Taxes + 0.5 percent County's Public Safety Sales Tax + 0.75 percent Dedicated Transportation and Public Safety Fund + 0.5 percent Realignment. Special Districts and their rates were found through the Board of Equalization at: http://www.boe.ca.gov/sutax/pdf/districtratelist.pdf

[44] See: http://usa.ipums.org/usa/.

[45] See: http://www.californiacityfinance.com/PropTransfTaxRates.pdf.

[46] In addition, because a new house likely will be sold in the future, we also estimated the ongoing value of transfer tax revenues on a per household basis.

Using census data, we estimated the proportion of Californians receiving any means-tested health or social services. This allowed us to find the total revenues per recipient. Using regression analysis, we then estimated the probability that a person will be receiving any health or social services as a function of home price (for details, see Appendix D). To determine the new revenues associated with a new house, we multiplied the probability of receiving health or social services benefits based on home value by the revenues per case.

This category includes state financial assistance for Mental Health Programs, Health MIA, Health, Alcohol, and Drug Abuse Programs, and Other Aid for Health Programs, as well as service charges for Mental Health Services. These calculations apply only to counties.

Utility Tax

Utility tax revenues were calculated on a per household basis (for those jurisdictions that have a utility users tax). The utility tax collected at the county level is exclusively from the unincorporated portion of the county. Thus, the per-household revenue estimate was calculated by taking the total revenues divided by the number of households in the unincorporated portion of the county.

Other Revenues

All other revenues were calculated on a per-household basis. In other words, the total amount of revenue for these categories as reported by the State Controller was divided by the number of households in the city. Appendix H and Appendix I contain a list of all revenue sources included in this category.[47]

[47] As previously noted, our analysis does not explicitly include an estimate of capital outlay expenditures associated with new construction. However, we implicitly account for these expenditures in the following way: First, debt service costs are included as a per capita cost (see "Other Expenditures below). Therefore, our method assigns new residents the same responsibility as existing residents to pay debt service on capital outlay expenditures. Second, we determine the total amount of capital outlay expenditures in a jurisdiction that is not paid for with bond proceeds (i.e. pay as you go financed capital outlay) and allocate fraction of the estimated per-capita revenues from our model sufficient to pay these pay as you go costs. The net result is that, although we do not explicitly estimate the required amount of capital outlay needed to serve a new home, we do include an estimate sufficient to maintain the current level of capital outlay spending.

EXPENDITURES

Law Enforcement and Police Protection

For cities, public safety expenditures were estimated on a per capita basis. For counties, many public safety services are primarily provided to residents of the unincorporated areas and to residents of cities on a contract basis. For houses built in cities, our analysis assumes that the net value for revenues and expenditures is zero. That is, in some cases counties make a "profit" by providing contract police services while in others it may cost more to provide the service that the county receives in revenues. On average, however, we believe that, because these are voluntary contractual relationships, neither party would continue to participate in the contract to the extent that it was not financially advantageous to do so. Therefore, over time and when averaged across time periods and jurisdictions, this category is a "wash."

To estimate the net cost to counties of providing police protection (sheriff's patrols, etc.) to residents of the unincorporated areas, the estimated revenues associated with contract policing were subtracted from total sheriff's department expenditures. The remaining expenditures are for providing police protection to the unincorporated portion of the county, and thus are divided by the total population in the unincorporated region of the county to get the per capita costs for public safety services. This value multiplied by the average household size gave us the estimated expenditures for a new household in the unincorporated area. (County public safety costs are assumed to be zero for houses built inside incorporated cities.)

In other words, our methodology, which we only applied when a house was built in an unincorporated portion of a county, is as follows:

$$Net\ Law\ Enforcement\ Expenditures = Total\ Law\ Enforcement\ Expenditures - Total\ Law\ Revenues$$

$$New\ Law\ Enforcement\ Expenditures = \frac{Net\ Law\ Enforcement\ Expenditures}{Unincorporated\ Population} * Household\ Size$$

Note that public safety expenditures calculated in this manner do not include expenditures on county jails, which are considered per-capita, countywide expenditures.

Fire Protection Expenditures

For the most part, cities provide their own fire protection, which we calculated on a per-capita basis. For cities that provide fire protection on a contract basis, we also estimated increased costs on a per-capita basis. Because most city residents receive fire services from a city, county expenditures in this category primarily benefit residents of the unincorporated area.

Because the population served by this expenditure is the unincorporated population, per-capita costs were estimated as total costs divided by the population of the unincorporated portion of the county.[48] Per-capita costs were multiplied by the average household size to yield the new expenditures per household.

In summary, we used the following methodology when a house was built in an unincorporated portion of a county:

$$Increase in Fire Protection Expenditures = \frac{Fire Protection Expenditures}{Unincorporated Population} * Household Size$$

Health and Social Services Expenditures

Expenditures for health and social services programs were estimated in a manner directly analogous to the method used to estimate subvention revenues allocated for this purpose (see above). In sum, we found the costs per participant and estimated the new expenditures given the probability that the new households would receive means-tested health or social services.

Other Expenditures

With the exception of construction-related expenditures (see introduction) and health and social services expenditures, all other expenditures at the city-level were calculated on a per-capita basis.[49] In other words, the budget total was divided by the population in the city that year, and multiplied by the average household size in that city to arrive at an amount per household. There are a few expenditure categories that we believe would be increased by less than the per-capita level (such as expenditures for hospitals, mental health facilities, etc, since people in income brackets high enough to purchase a new house are likely to be insured or purchase care privately). Thus, the expenditure level is an upper bound, and our estimation of the fiscal effects on cities remains conservative. Enterprise activities, such as airports or fee-supported waste collection, were excluded from our analysis.[50]

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[48] Note that some residents of unincorporated areas receive fire services from a special district. Consequently, the population served by county fire departments is somewhat smaller than the county unincorporated population. However, no data exists with which to estimate the size of the population of unincorporated area residents served by fire districts.

[49] The 0.25 percent transportation earmarked sales tax is, by definition, equal to the related expenditures and is thus excluded from the per capita calculations.

[50] If an enterprise activity had a surplus or deficit that resulted in a transfer to or from the general purpose government budget, we treated this amount as a per capita revenue or expenditure.

State-Level Analysis

Our analysis of the state-level fiscal effects of new housing construction was conducted using a method directly analogous to the method used for cities and counties. Revenues and expenditures were calculated on a per household basis, except where a more accurate method could be used. For example, we estimated the income of new residents based on home value and used the resulting value to estimate taxable spending and sales tax revenues (rather than estimating sales taxes on a per-capita or per-household basis). Similarly, we used our income estimate to determine social services and corrections utilization rates and, ultimately, expenditures.

Revenues were estimated in three categories: personal income tax, sales tax, and all other revenue sources. In addition, we estimated the school share of the property tax generated by a new home, and included this amount as an offset to state general fund costs for K-12 education and community colleges. Expenditures were estimated for K-12 education, higher education, health and social services, corrections, and all other.

REVENUE SOURCES

Personal Income Tax Revenues

We calculated average personal income tax rates by income brackets and estimated personal income tax revenues based upon the projected income of the new households using IPUMS data.[51] To estimate the average tax rate by income bracket, we used data from the Franchise Tax Board (FTB). FTB reports the total income earned and the total income tax collected for income classes (for example, the 172,038 people in California who earned $31,000 - $39,999 in 2003 earned a collective $5,419,048,000 and paid a total of $62,624,000 in personal income taxes).[52] Thus, we were able to calculate the average personal income tax rate for each income class by dividing total taxes paid by total income ($62,624,000/$5,419,048,000 = 1.2 percent in our example).

In order to estimate the income tax for any income level (rather than just for income brackets) we estimated a linear relationship between income and income tax rate by bracket using a simple regression model. (For more information, see Appendix B.) The resulting coefficient multiplied by the estimated household income for new households resulted in our estimate of the average personal income tax revenues collected from a new household.

Sales and Use Tax

As with cities and counties, we ran a regression to predict incomes of new residents based upon the value of the house using data from IPUMS. We then incorporated data on spending habits by income bracket from the Bureau of Labor Statistics and ran another regression estimating spending on taxable goods as a function of income (for more information on our methods, see Appendix C).[53] We then multiplied the spending levels by the state portion of the sales tax (5 percent) to arrive at an estimate of the sales taxes paid by new residents.[54] The amount paid by new residents in addition to the increase in sales tax revenues associated with business growth (see business growth section for more details) gave us the total increase in state sales tax revenues associated with the new house.

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51 See: http://usa.ipums.org/usa/.

52 For data on personal income tax, see: http://www.ftb.ca.gov/aboutftb/annrpt/2004/2004ar.pdf.

53 For data on spending habits, see: http://www.bls.gov/cex/csxann04.pdf.

54 For data on sales tax rates, see: www.boe.gov.

In sum:

$$\textit{Increased Sales Tax Revenues} = \textit{Sales Tax Rate} * \textit{Total New Spending}$$
$$\textit{Total New Spending} = \textit{New Spending by Residents} + \textit{New Spending by Businesses}$$

Where the Sales Tax Rate is the state portion of the sales tax (5 percent); New Spending by Residents is determined by average spending by income bracket, and the income of residents by house price was determined through IPUMS. New Spending by Businesses is the new taxable spending by business growth attributable to the new house.[55]

Other Revenues

All other revenues were calculated on a per-capita basis.[56] In other words, the total revenue for these categories as reported in the 2006-07 adopted budget was divided by state population and multiplied by the average household size to arrive at an amount per household.

EXPENDITURES

Elementary and Secondary Education (K-12)

We estimated the state's obligation to K-12 schools for a new household by determining the expected number of new students in an average new household. We then estimated the total per-student expenditures (based on funding from both state general fund and local property tax sources). Finally, we estimated the amount of new property taxes that the new house would generate and applied the resulting amount as an offset to the state's costs.

Using the reported total Proposition 98 guarantee (K-12 plus California Community College funding) from the adopted 2006-07 budget, we subtracted the funding for Community Colleges to arrive at net K-12 funding. We then took the total estimated public school enrollment for 2006-07, and divided into the total K-12 Proposition 98 guarantee amount to estimate the total per-student expenditures from both state general fund and local property taxes.[57]

We used IPUMS data to find the proportion of the California population that was enrolled in a public K-12 school to get a public school attendance rate. Taking the average household size and multiplying it by the rate of public K-12 attendance gave us the total probability of attendance for a household (i.e., the expected number of students per new household). This value multiplied by the per-student cost gave us the total K-12 cost per household.

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[55] Our methodology assumes that the spending that will be done by the new residents is done in the jurisdiction where the house is built. This undoubtedly overstates sales tax revenues to some cities and understates it to others, but is, on average, accurate.

[56] This includes the corporation tax, which we assumed increases at a per capita rate. The per capita method provides a lower bound for new corporation tax revenues, since it is possible that new home construction (at higher prices) will result in higher levels of business growth.

[57] Estimated to equal 2005-06 enrollment since the LAO projects flat enrollment growth for 2006-07.

Some proportion of this per-student funding is paid for by local property taxes. In order to determine the contribution to schools paid for by property taxes, we estimated the increase in property taxes generated by the new house (using the same methodology as we employed to estimate city and county property taxes). Multiplying the total property taxes generated by the statewide average school share yields an estimate of the total property taxes generated by a new house available to offset the state contribution to education. That is, we estimated the state's cost as being equal to the total per-household expenditures minus the property tax contribution.

Higher Education

To estimate the new housing-related state general fund costs for each of the three segments of public higher education in California (California Community College, California State University, and University of California), we determined the probability, based on income, of attending one of these public higher education institutions, estimated the number of college age students in a household, and multiplied by the state general fund cost per student.[58] We looked exclusively at the undergraduate students at these schools, excluding graduate students who typically reside in their own household.

To estimate the probability of attending a state-supported institution, given household income, we used attendance by family income data from the National Center for Education Statistics (NCES).[59] We multiplied the proportion of students in a given income bracket by the number of undergraduates enrolled in each higher education segment. This yielded the total number of students in each income bracket going to each school. We then found the proportion of the population in each income bracket using IPUMS data, which, multiplied by the proportion of people in the 18-25 age group, gave us the total number of 18- to 25-year-olds in each income bracket. The number of students in each type of school in each income bracket divided by the total number of 18- to 25-year-olds in that income bracket gave us the probability that an 18- to 25-year-old in that income bracket attended each type of institution.

We then calculated the average number of college-age students per household (defined by the National Center for Education Statistics or NCES as 18- to 25-year-olds) based on family income bracket.[60] We used IPUMS data to determine the proportion of California's population that in the 18-25 age group and multiplied by the average number of people per household to arrive at an estimate of the average number of 18- to 25-year-olds in a given household.

The number of college age students per household times the probability of attending a state-supported institution of higher education yields the expected number of enrolled students in a new household. This rate times the per-student cost of that type of school yields the increase in cost to the state for higher education stemming from the new housing construction.

In sum:

$$New\,Spending\,on\,HigherEd = Number\,new\,students * FTE\,Cost\,to\,State$$

$$Number\,new\,students = Probability of Attending\,Given\,Income * num\,18-25\,yr\,olds\,in\,house$$

$$Probability\,of\;\;Attending\,Given\,Income = \frac{Total\,from\,Income\,Bracket\,Enrolled}{Total\,from\,Income\,Bracket\,in\,State}$$

Corrections & Rehabilitation

[58] This figure includes the general fund cost only, and does not reflect the full cost per student, which is paid for with a combination of fees, university funds, federal funds, and other sources.

[59] For data on enrollment by income, see: http://nces.ed.gov/das/library/tables_listings/show_nedrc.asp?rt=p&tableID=2999.

[60] Note that the NCES data is presented by income bracket. In order to calculate the probability of attendance for any income level, we conducted a regression analysis using the income bracket as data points. For more information, please see Appendix G.

While there are no actual prison inmates residing in a new house, it is possible that someone who initially occupies a new house will end up becoming an inmate. In order to avoid understating this cost, we estimated the probability that a person who had previously lived in a house of a given value was now living in a state prison.

We began with the breakdown of inmates by income (from national data).[61] Income was measured as the total monthly income during the period immediately prior to incarceration. We multiplied the fraction of inmates in a given income bracket by the estimated total inmate population in California[62] to arrive at the total inmates by income bracket. This number, divided by the total number of Californians in that income bracket (found in IPUMS) gave us the "incarceration rate" for each income bracket.

The total cost for corrections for the additional household is equal to the total cost for a year divided by the total number of inmates (per-inmate cost) times the "incarceration rate."[63] In sum:

$$Increase\,in\,Spending = Per\,Inmate\,Cost * Number\,of\,New\,Inmates$$

$$Per\,Inmate\,Cost = Total\,Spending\,on\,Correctional\,Facilities / Total\,Inmates$$

$$Number\,of\,New\,Inmates = Probability\,of\,Being\,an\,Inmate\,Given\,Income\,Bracket * Household\,Size$$

$$Probability\,of\,Being\,an\,Inmate\,Given\,Income\,Bracket = \frac{Total\,Inmates\,From\,Income\,Bracket}{Total\,People\,From\,Income\,Bracket}$$

$$Total\,Inmates\,From\,Income\,Bracket = Proportion\,of\,Inmates\,from\,Income\,Bracket * Total\,Inmates$$

Health and Social Services

There are health and human services expenditures at the state level that are means-tested (i.e. CalWORKS and SSI) and that are not means tested (i.e.: public health programs). All non-means-tested health and human services spending was considered to be per-capita, and thus the increase in the expenditures for a new household was equivalent to the value for the average existing household. Although it is unlikely that any members of a household occupying a newly purchased, median priced house will utilize means-tested health or social services programs such as MediCal or CalWorks, we nevertheless estimated the probability that a member of a new household (e.g., a relative or live-in employee) may qualify for certain benefits.

Using data from IPUMS, we found the proportion of the California population receiving means-tested assistance from health and human services programs. This allowed us to find a cost of providing means-tested assistance per participant. We then used the IPUMS data to run a regression estimating the rate of means-tested health and human services program participation as a function of home value. We multiplied the per-household expenditures on health and human services programs by the probability that the household will participate in one or more of these programs. Our methodology for this category is, in sum:

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[61] Data through National Archive of Criminal Justice Data. Available online at: http://www.icpsr.umich.edu/SDA/NACJD/02598-0001/CODEBOOK/2598.htm

[62] See: http://www.lao.ca.gov/1997/052097_inmate_pop_growth/pb052097_addressing_inmate_pop.pdf.

[63] We used the output of these formulas as the data for a regression to estimate incarceration rates as a function of income prior to conviction in order to calculate probabilities for any income level, not just income brackets.

$$ExpendituresMeans-TestedPerParticipant = TotalMeansTestedExpenditures / (Population * StateParticipationRate)$$

$$NewMeans-TestedExpend = ExpendPerParticipant * HHSize * PARate(F(Income))$$
$$TotalOtherExpenditures = (TotalNotMeans-Tested) / TotalCAHouseholds$$
$$TotalNewExpenditures = NewMeans-Tested + NewOtherExpenditures$$

Other Expenditures

All other expenditures were estimated on a per-capita basis. Specifically, total expenditures for all other categories were summed and divided by the state population in 2006 and then multiplied by the average household size to arrive at a cost per household.

Appendix A: Median House Prices

Our analysis included an estimate of the fiscal impact of new-home construction based on the median price for the region. The table below presents the median new house prices by region used in our analysis. This data was provided by the California Building Industry Association.

Housing Market	Median Home Price
San Francisco Area	$789,000
East Bay (Alameda and Contra Costa counties)	$673,620
Santa Clara and San Mateo Counties	$737,900
Sacramento Area	$462,060
Central Valley I (Fresno County and Bakersfield)	$369,950
Central Valley II (Stanislaus, San Joaquin, and Merced counties)	$443,990
Los Angeles Area	$559,900
Orange County	$870,990
Inland Empire	$457,990
San Diego Area	$568,900
California	$576,360

We combined these regions into housing markets such that the Central Bay Area included both San Francisco and the East Bay and the Central Valley included Stanislaus, San Joaquin, Merced, and Fresno counties, as well as Bakersfield, which is in Kern County.

Appendix B: Income

Estimating Income

Estimating the income of new households based on home price presented a unique challenge. While the census gathers data on both house value and income, available online through the Integrated Public Use Mirodata Series (IPUMS),[64] this data describes occupants' current income and current house value, not the income they had when they bought the house or the price they paid for it. Relying on this data, then, would understate the income of a new resident if houses appreciate faster than incomes grow. On the other hand, we used data from 2000, when the many new financing instruments were becoming available that allowed buyers to buy more expensive houses for a given income level. For example, interest-only loans have made it possible to buy houses four or even five times one's annual income, and using data from 2000 might overestimate the income of a new home owner (calculated as a ratio to home price). These two competing biases in the end are likely to offset one another, as indicated in the table below. Using data from IPUMS, we ran the following regression to estimate the income of residents as a function of House Value, with a 95 percent coefficient confidence interval of 0.156 – 0.164 and an R^2 is 0.9996.

Income = $48,693.09 + (0.16*House Value)

Below, please see a summary of the income estimated by region and median home price. The Income Multiplier column describes the ratio of home price to income. Notice that the regression yields results such that homebuyers purchase houses between 3.4 and 4.5 times their income.

Housing Market	Median Home Price	Income	Income Multiplier
San Francisco Area	$789,000	$174,933	4.5
East Bay	$673,620	$156,472	4.3
Santa Clara and San Mateo	$737,900	$166,757	4.4
Sacramento Area	$462,060	$122,623	3.8
Central Valley I	$369,950	$107,885	3.4
Central Valley II	$443,990	$119,731	3.7
Los Angeles Area	$559,900	$138,277	4.0
Orange County	$870,990	$188,051	4.6
Inland Empire	$457,990	$121,971	3.8
San Diego Area	$568,900	$139,717	4.1
California	$576,360	$140,911	4.1

[64] IPUMS is available online at: http://www.ipums.umn.edu/.

Appendix C: Spending on Taxable Goods

We regressed taxable spending on income using spending habits data from the Bureau of Labor Statistics. Their report, Consumer Expenditures in 2004[65] listed the average spending on a variety of goods and services by annual income bracket. We used the median value for the bracket as the income value for our regression,[66] and we estimated the spending on taxable goods by assigning spending categories to taxable and non-taxable categories.[67]

With the data described above, we performed a regression analysis to find the best fit linear formula for estimating spending on taxable goods as a function of income.

Specifically, our formula was:

Taxable Spending = $3,882.78 + 0.171*(Annual Income)

Our 95 percent coefficient confidence interval is 0.148 - 0.194, and our R^2 is 0.9946.

[65] Consumer Expenditures in 2004, Bureau of Labor Statistics, Report 996, April 2006. Available online at: http://www.bls.gov/cex/csxann04.pdf.

[66] The income brackets presented were $70,000-$79,999, $80,000 - $99,999, $100,000 - $119,999, $120,000 - $159,999, and $150,000 (assigned a point value of $175,000). Finally, we converted all the values to 2006 dollars.

[67] Taxable goods include: Food away from home, alcoholic beverages, housekeeping supplies, household furnishings and equipment, vehicle purchases, gasoline and motor oil, reading material, tobacco products, miscellaneous expenditures, 90 percent of apparel and services, and 10 percent of personal care products and services. This excludes all food eaten at home, spending on housing and hotels, utilities, fuels, and public services, household operations, vehicle expenses outside of purchases and gas / motor oil, public transportation, healthcare, entertainment, education, cash contributions, all personal insurance and pensions, as well as 10 percent of apparel and services and 90 percent of personal care products and services.

Appendix D: Public Assistance

We ran a regression to create a formula for the probability of being on public assistance based upon the value of the new house. We used data from IPUMS that described Californians based upon the value of their house and whether or not they received any income from public assistance. We used the functional form:

$y = m(1/x) + b$

This form allows the dependant (x) value to asymptotically approach zero, such that as house value increases, the probability of its residents being on public assistance declines. The results of our regression are presented below.[68]

Probability of Public Assistance = 0.008 + 196.8*(1/House Price)

Although the R^2 is low (0.001) our results are statistically significant (T-stat = 12.27). Our 95 percent coefficient confidence interval is 165.4 – 228.3.

Our model estimates public assistance participation as described in the table below.

Housing Market	Median Home Price	Prob. Of Public Assistance
San Francisco Area	$789,000	0.825 percent
East Bay	$673,620	0.829 percent
Santa Clara and San Mateo	$737,900	0.827 percent
Sacramento Area	$462,060	0.843 percent
Central Valley I	$369,950	0.853 percent
Central Valley II	$443,990	0.844 percent
Los Angeles Area	$559,900	0.835 percent
Orange County	$870,990	0.823 percent
Inland Empire	$457,990	0.843 percent
San Diego Area	$568,900	0.835 percent
California	$576,360	0.834 percent

[68] Implicit in our methodology is the assumption that, once home price is controlled for, public assistance participation variation by county is random.

Appendix E: Prison Rate

To estimate probability that a new household will increase corrections costs, we estimated the "prison going rate" as a function of income prior to incarceration. We used data from the National Archive of Criminal Justice[69] describing the current prison population in terms of their income prior to incarceration. We were able to use this data to estimate the proportion of the Californians in each income bracket who are incarcerated. We used the following functional form:

$y = m(1/x) + b$

Where y is the probability of incarceration and x is the income prior to incarceration. This functional form allows the dependant value to asymptotically approach zero, such that as income increases, the probability of being incarcerated will decrease and approach zero without ever becoming negative. The results of our regression are below.

Probability of Incarceration = $-5.7 \times 10^{-5} + 152.8 * (1/\text{Income})$

The 95 percent coefficient confidence interval is 119.7 – 185.9 and the R^2 is 0.9238. Below, please find a table describing the outcomes for the California regions.

Housing Market	Median Home Price	Prob. Of Incarceration
Statewide Rate	$329,264	0.07 percent
San Francisco Area	$789,000	0.08 percent
East Bay	$673,620	0.09 percent
Santa Clara and San Mateo	$737,900	0.09 percent
Sacramento Area	$462,060	0.12 percent
Central Valley I	$369,950	0.14 percent
Central Valley II	$443,990	0.12 percent
Los Angeles Area	$559,900	0.10 percent
Orange County	$870,990	0.08 percent
Inland Empire	$457,990	0.12 percent
San Diego Area	$568,900	0.10 percent
California	$576,360	0.10 percent

[69] Available online at: http://www.icpsr.umich.edu/SDA/NACJD/02598-0001/CODEBOOK/2598.htm

Appendix F: Estimating New Non-Residential Property Value

To estimate the increase in non-residential property values as a function of new employees, we took longitudinal non-residential permit data[70] and longitudinal employment data.[71] The change in the value of non-residential permits was regressed on the change in the number of employees such that:

$$\Delta \text{ New Non-Residential Permits} = A + B^{*}(\Delta \text{ Employees}).$$

We did a fixed-effect regression so that there is a dummy variable for each county, which controls for the fact that a given county has characteristics that affect commercial growth and remain constant over time. We found that for each new employee, an additional $4,400 of new non-residential property is built over the baseline of non-residential property growth. The R^2 is 0.3843 and the 95 percent coefficient confidence interval is $4,038 to $4,841.

[70] From CIRB.

[71] From www.bls.gov.

Appendix G: Other Regressions

All other regressions were fairly straightforward and took a linear functional form. Details are below.

Estimating Personal Income Tax Rate

We used data from the California Franchise Tax Board[72] on the total income and total taxes collected by income bracket. We interpolated an income tax rate by income, converted to 2006 dollars, and ran a regression. We found the following formula:

$$\text{Income Tax Rate} = 0.01329 + (1.88*10^{-7})*(\text{Income})$$

Our 95 percent coefficient confidence interval is $(1.63*10^{-7}) – (2.13*10^{-7})$ and our R^2 is 0.9274.

Estimating Education Spending

We used a combination of data on higher education attendance data from the California Department of Education,[73] the National Center of Education Statistics,[74] and IPUMS[75] to determine the probability that an 18- to 25-year-old from a household within a specific income bracket would be enrolled in a public university. We then estimated the increase in California's costs as follows:

Per-Student Cost * Probability of Enrollment = Additional Higher Ed Cost to California.

We then found the Higher Education Cost as a function of income such that:

$$\text{Cost} = \$227.73 + 0.00548*(\text{Income})$$

Our 95 percent coefficient confidence interval is -0.0036 – 0.0145 and our R^2 is 0.7732.

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[72] California Franchise Tax Board, 2004 Annual Report. Available online at: http://www.ftb.ca.gov/aboutftb/annrpt/2004/2004ar.pdf.

[73] Total K-12 enrollment, 2005-2006. Available online at: http://data1.cde.ca.gov/dataquest/EnrollEthState.asp?Level=State&TheYear=2005-06&cChoice=EnrollEth1&p=2.

[74] Proportion of Undergraduates by Income Bracket available online at: http://nces.ed.gov/das/library/tables_listings/show_nedrc.asp?rt=p&tableID=2999.

[75] The proportion of the California population in public schools. Data available online at: http://usa.ipums.org/usa/.

Appendix H: City Budget Walkthrough

REVENUES

Functional revenues are subtracted from the expenditure category that they are gathered to finance.[76] Thus, the revenues described below are general revenues only.

Taxes

Property taxes and sales taxes are estimated using a marginal revenue method. The construction development tax is a financing source for capital outlay and is not included in ongoing revenues. All other taxes are estimated using the standard per-household method.

Special Benefit Assessments

All revenues from special benefit assessments are gathered to support a specific service, and thus are netted out of the appropriate expenditure category.

Licenses and Permits

All revenues from licenses and permits are calculated using the standard per-household method. Construction permits, which should go with construction-related revenues and expenditures, are functional revenues and are deducted from the appropriate expenditure.

Fines and Forfeitures

All revenues from fines and forfeitures are calculated using the standard per-household method.

Revenue from Use of Money and Property

All revenues from use of money and property are calculated using the standard per-household method.

Intergovernmental Transfers

All revenues from transfers are calculated using the standard per-household method.

Current Service Charges

Because those service charges that might be considered construction-related (such as zoning, subdivision, and plan checking fees) are functional only, all general revenues related to current service charges are calculated using the standard per-household method.

Other Revenues

All other revenues are calculated using the standard per-household method.

Other Financing Sources

These revenues are related to capital outlay (sale of bonds, etc) and thus are not included in our analysis of ongoing costs.

[76] The data from the California Controller's office has a field of expenditure data specifically netted of functional revenues.

EXPENDITURES

The expenditures have been netted of functional revenues and capital outlay investments.[77]

General Government

All expenditures on general government are calculated using the standard per-household method.

Public Safety

All expenditures on public safety are calculated using the standard per-household method.

Transportation

All expenditures on transportation are calculated using the standard per-household method.

Community Development

Expenditures on planning, and construction and engineering regulation and enforcement are calculated as construction-related expenditures. Other expenditures (redevelopment, housing, employment, community promotion, and other) are calculated using the standard per-household method.

Health

Health expenditures such as solid waste, sewers, cemeteries, administration, and other are calculated using the standard per-household method. Health expenditures such as physical and mental health and hospitals and sanitariums are calculated as a public assistance related expenditure. Finally, aid to indigents is excluded from ongoing service costs because a construction of a new house is assumed to have no impact on the indigent population.

Culture and Leisure

All expenditures on culture and leisure are calculated using the standard per-household method.

Public Utilities

All expenditures on public utilities are calculated using the standard per-household method.

[77] The data from the California Controller's office has a field of expenditure data specifically netted of functional revenues. Capital outlay had to be subtracted out manually.

Appendix I: County Budget Walkthrough

REVENUES

Unlike cities, the State Controller's data for counties does not separate functional and general revenues.

Taxes

Property taxes and sales taxes are estimated using a marginal revenue method, and the utility user's tax is from only the unincorporated portion of the county. The construction development tax is a financing source for capital outlay and is not included in ongoing revenues. All other taxes are estimated using the standard per-household method.

Special Benefit Assessments

Operations are calculated using the standard per-household method. Capital outlay revenues are not included in the ongoing revenue analysis.

Licenses, Permits, and Franchises

Revenues from construction and zoning licenses are calculated as construction-related. All revenues are calculated using the standard per-household method.

Fines, Forfeitures, and Penalties

All revenues from fines, forfeitures, and penalties are calculated using the standard per-household method.

Revenue from Use of Money and Property

All revenues from use of money and property are calculated using the standard per-household method.

Aid from Other Governments

Most of transfer revenues are calculated using the standard per-household method. Those revenues earmarked for public assistance expenditures (at the state level: public assistance programs and administration, aid for mental health, health programs, alcohol and drug abuse, aid for other health, and the childcare food program, and at the federal level, public assistance programs and administration, and health administration) are calculated as public assistance related revenues. Aid related to indigents is not included.

Charges for Current Services

Charges such as mental health fees, California children's services fees, and institute care services were calculated as public assistance related revenues. All other revenues were calculated using the per-household method.

Miscellaneous Revenue and Other Transfers In

All miscellaneous revenues transfers related to enterprises are calculated using the standard per-household method.

Other Financing Sources

This category related entirely to capital outlay (revenue from bonds, long-term debt proceeds) and is thus not included in ongoing revenues.

EXPENDITURES

Capital outlay is excluded.

General Government

All general government expenditures are calculated using the per-household method.

Public Protection

Expenditures on police and fire protection are considered to be for the unincorporated portion of the county only. Expenditures on the building inspector are considered to be construction related. All other expenditures on public protection are calculated using the standard per-household method.

Public Ways and Facilities

All expenditures on public ways and facilities are calculated using the standard per-household method.

Health

Health expenditures on medical care, mental health, and drug and alcohol abuse services are considered public-assistance related expenditures. Total public health is calculated using the standard per-household method.

Sanitation

All expenditures on sanitation are calculated using the standard per-household method.

Public Assistance

Expenditures on welfare, social services, care of court wards, and other public operations are considered to be public assistance related. Veteran services are calculated using the standard per-household method. Expenditures related to indigent services are not included in ongoing service costs.

Education

All expenditures on education are calculated using the standard per-household method.

Recreation and Cultural Services

All expenditures on recreation and cultural services are calculated using the standard per-household method.

Debt Service

All expenditures on debt service are calculated using the standard per-household method.

Transfers Out

All transfers out to enterprises are calculated using the standard per-household method.

Appendix J: Pay-As-You-Go Capital Outlay Expenditure

To avoid overestimating ongoing revenues, some of which might be financing pay-as-you-go capital outlay, we took the total expenditures on capital outlay minus the value of capital outlay specific financing sources. The remaining value was subtracted from general revenues.

For cities, those revenue sources earmarked for capital outlay are: revenues from bonds, the sale of real and personal property, and the construction and development tax.

For counties, those revenue sources earmarked for capital outlay are: revenues from bonds, special benefits for capital outlay, the sale of fixed assets, other long-term debt proceeds, and the construction and development tax.