

A TURNER CENTER REPORT - MARCH 2020

The Costs of Affordable Housing Production: Insights from California's 9% Low-Income Housing Tax Credit Program

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Introduction

In February of 2016, California’s Legislative Analyst’s Office (LAO) reported that California’s shortfall of subsidized housing units—affordable to those who earn 80 percent or less of the median income where they live—was about 1.7 million housing units.¹ The LAO estimated that closing this shortfall through new construction would cost in excess of \$250 billion in public subsidies, though the report also noted: “There is a good chance the actual cost could be higher.”

That caveat now seems prescient. Between 2016 and 2019, the costs to develop a new affordable unit under the Low-Income Housing Tax Credit (LIHTC) program have increased from \$425,000 per unit to more than \$480,000 per unit, an increase of 13 percent in just four years (after accounting for inflation). Costs per square foot have increased by 30 percent over the same time period, reaching \$700 per square foot in 2019. A report by the federal Government Accountability Office (GAO) found that average development costs for new LIHTC projects in California were the highest in the nation, eclipsing those in New York City.²

These escalating costs represent a significant challenge to a state struggling with an affordable housing crisis, and erode the impact of

the increased public subsidies directed toward building new housing. Understanding why it costs so much to build new housing can help to identify opportunities for the state and localities to bring down the price of development. In this brief, we analyze the factors that influenced total development costs for new construction projects that were awarded 9% tax credits through the LIHTC program between 2008 and 2019. We also interviewed developers and general contractors to better understand the mechanisms contributing to these cost increases. While the 9% LIHTC program represents only one of the ways that subsidized housing is built in California, the data collected through the application process provide valuable insights into the factors that influence development costs.

The research shows that hard construction costs—specifically the costs of material and labor—are the primary driver of rising development costs. The shortage in the construction labor market and higher prices for general contractors (as well as the subcontractors they hire) is affecting affordable housing development—just as this shortage impacts market-rate development. The research also highlights the importance of other costs, including local development fees, lengthy entitlement processes, parking requirements, prevailing wages or local hire requirements, and state and local design

This report is part of the Turner Center’s [The Cost of Building Housing Research Series](#), which examines the different cost factors that layer together to comprise the total costs to build housing in California. Accompanying this report, we have also released [The Hard Costs of Construction: Recent Trends in Labor and Material Costs for Apartment Buildings in California](#), which looks specifically at the factors influencing hard construction costs in both market and affordable developments. Previous studies include [Making It Pencil: The Math Behind Housing Development](#), in which we outline how land costs, construction costs, local fees, and financing costs all contribute to the total development cost for a housing project. In our work on [impact fees](#) and [development fees](#), we found that waning tax revenue and the loss of state and federal funding for infrastructure resulted in rising local exactions on new housing. And in [Perspectives: Practitioners Weigh in on Drivers of Rising Housing Construction Costs in San Francisco](#), we examined the ways in which lengthy permitting processes as well as local regulations and requirements can increase the cost of both market-rate and affordable housing projects.

regulations (including those that require more sustainable building techniques). In other words, affordable housing development is not immune to the same cost drivers pushing up the costs of market-rate developments, nor to all the ways building in California is more expensive than in other states. However, the research also highlights that affordable housing developers face a cost that market-rate developers don't: the increased complexity in financing affordable projects and the need to manage multiple funding sources that add requirements and delays to every project.

The report proceeds as follows. First, we describe the data and methodology used in this report. Second, we present findings from the descriptive analysis, interweaving the quantitative and qualitative data to describe the factors that contribute to affordable housing development costs. We then present a multivariate regression model that allows us to assess which factors have a significant effect on costs, controlling for differences in project type and location. Development costs are influenced by what is being built and where—for example, an infill project with 10 stories and underground parking in San Francisco will face different costs than a low-rise building with surface parking in the Central Valley. A regression model allows us to control for those differences and identify the cost drivers more precisely. We conclude with policy recommendations as well as a discussion of the limitations of the current analysis. The solutions are not straightforward, and ultimately require additional data and research on development costs as well as approaches to cost containment that do not forgo the mission of providing high-quality affordable housing.

Methodology

This paper focuses on affordable housing built with Low-Income Housing Tax Credit (LIHTC) financing. Since 1986, the LIHTC program has been the most important source of funding for the construction of affordable housing. In California, more than 225,000 new units have been funded under the LIHTC program; our research has shown that the program contributes significantly to the development of high-quality properties that promote housing stability and economic security for low-income families.³

This paper focuses on new construction projects that were awarded 9% tax credits through the LIHTC program between 2008 and 2019.⁴ The 9% LIHTC program represents only a slice of the affordable housing units built in California: LIHTC also includes a 4% tax credit program, and subsidized housing can also be funded through federal or state grants or through local inclusionary programs. This means that the results presented here may not apply to all affordable housing developments. However, California's Tax Credit Allocation Committee (TCAC) makes data on 9% projects publicly available, providing an opportunity to study what is influencing the costs of these projects. To collect the data, the Turner Center filtered through and entered data by hand for 724 projects.⁵ The data primarily come from submitted tax credit applications, including the information provided in the overview section of the application, the Sources and Uses table—which provides detailed data on the sources of funding and cost line items—and the claimed Basis Boosts.⁶ We cross-checked these data against TCAC staff reports on each individual project. If there was a discrepancy



between the information presented in the application and in the staff report, we deferred to the data in the staff report. However, it is important to note that these data reflect the developer's estimates of project costs at time of application, and not the final costs after the development is completed. As a result, the data in this report should be considered conservative estimates of the total costs of development.⁷

The resulting dataset includes 678 new construction projects awarded 9% tax credit funding between 2008 and 2019.⁸ Table 1 presents general information about the sample. Approximately 60 percent of the sample constitutes projects designed for families, and the majority (70 percent) are between 40 and 100 units. Approximately 30 percent of the projects are located in Los Angeles, but the sample includes projects across all of California's regions, as well as across all of the years in the sample.

Table 1 also shows the distribution of project characteristics that could influence development costs, including amenities like structured parking⁹ or an elevator. Nearly 60 percent of projects included a requirement that contractors pay prevailing wage, 70 percent were assessed local development fees, and almost half included some form of sustainable building techniques, such as energy or water conservation measures or the use of natural materials. More than three-quarters of projects included at least four separate sources of funding.

We also find that more than half (59 percent) of the projects in our sample are sited in either "High Segregation & Poverty" or "Low-Resource" neighborhoods. These designations are based on the 2018 amendments to California's Qualified Allocation Plan (QAP)—the policy document that guides state requirements and guidelines for tax credit projects—and are designed to encourage more development in higher-resource communities.¹⁰ TCAC's decision to incentivize building in higher-resourced neighborhoods is aligned with research that increasingly points to the negative effects of living in neighborhoods characterized by high levels of segregation and poverty, particularly for children.¹¹

In addition to the quantitative data analysis, we interviewed 13 affordable housing developers and general contractors in order to better understand the results of the quantitative analysis. Interviews included questions about a) the changing context for affordable housing development in the state, b) the biggest contributors to costs from the respondents' perspective, c) the factors that they felt put up the greatest barriers to cost containment, and d) the approaches they and/or policymakers have taken to bring down the costs of development. Each of the interviews was transcribed and coded to identify common themes from across all 13 respondents.



Table 1: Descriptive Statistics, LIHTC 9% New Construction Projects, 2008 - 2019

Project Type		Project Characteristics	
Large Family	412	Prevailing Wage	59.8%
Senior	126	Development Fees	69.5%
Special Needs/SRO	140	Sustainable Construction	41.8%
Number of Units		Structured Parking	32.1%
Small (Less than 40 units)	155	Elevator	39.2%
Medium (40-100 units)	448	Number of Funding Sources	
Large (More than 100 units)	50	Less than 4	11.5%
Regional Distribution		4 to 8	79.9%
Capital North	39	More than 8	8.6%
Central Coast	71	Year of Project Award	
Central Valley	93	2008	29
Inland Empire	55	2009	52
Los Angeles	191	2010	61
North and East Bay	56	2011	78
Orange	41	2012	64
Rural	32	2013	53
San Diego	54	2014	65
San Francisco	12	2015	61
South and West Bay	34	2016	59
Neighborhood Opportunity Ranking		2017	54
Highest Resource	10.1%	2018	55
High Resource	11.1%	2019	47
Moderate Resource	19.4%	Total Projects	678
Low Resource	31.2%		
High Segregation & Poverty	27.9%		

General Trends in Affordable Housing Development Costs

In this section, we present the results of the descriptive analysis, discussing the major cost drivers that have led to significant increases in average LIHTC development costs over time. In all of these analyses, we adjust costs for inflation to 2019 dollars using the Bureau of Labor Statistics’ national CPI index for urban consumers. We also present the costs adjusted by unit and by square feet, since these two metrics present slightly different results (as units have generally gotten smaller over time).

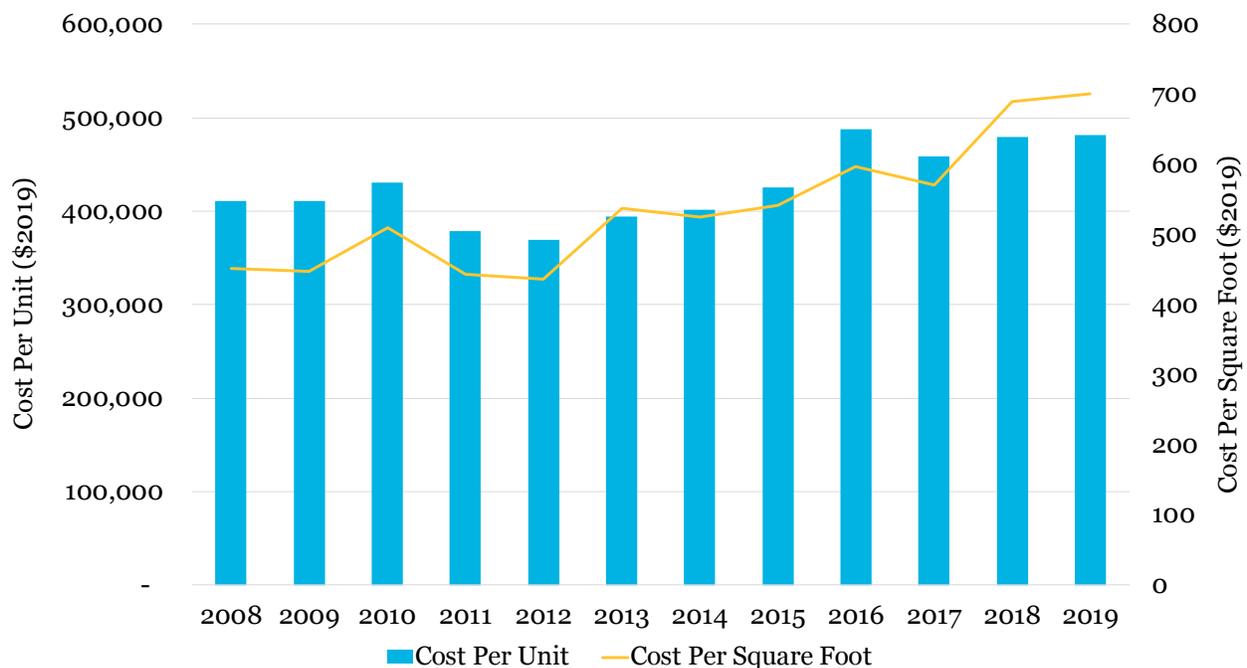
Total development costs have risen dramatically since 2008.

Several studies in recent years have pointed to the high and rising costs of LIHTC development in California; our analysis shows

that this trend continues unabated. Figure 1 presents data on total development costs from 2008 and 2019, adjusted for inflation and averaged by the cost per unit and the cost per square foot. Since 2008, the average cost per unit of 9% LIHTC new construction increased from \$411,000 to \$480,000, an increase of over 17 percent. The cost per square foot has risen even more dramatically, from \$451 per square foot in 2008 to \$700 per square foot in 2019, an increase of 55 percent. (In part, the difference in these two measures relate to what is being developed: in recent years, the number of square feet per unit has gone down, as has the number of bedrooms per unit.)

This increase in costs has material consequences for the supply of new affordable housing—in broad terms, the same amount of public subsidy is now needed to build two units at 1,000 square feet as was needed for three units just 10 years ago.

Figure 1: Total Development Costs, LIHTC 9% New Construction Projects, 2008 - 2019



Source: Turner Center Analysis of TCAC 9% LIHTC Project Applications. All figures adjusted for inflation.

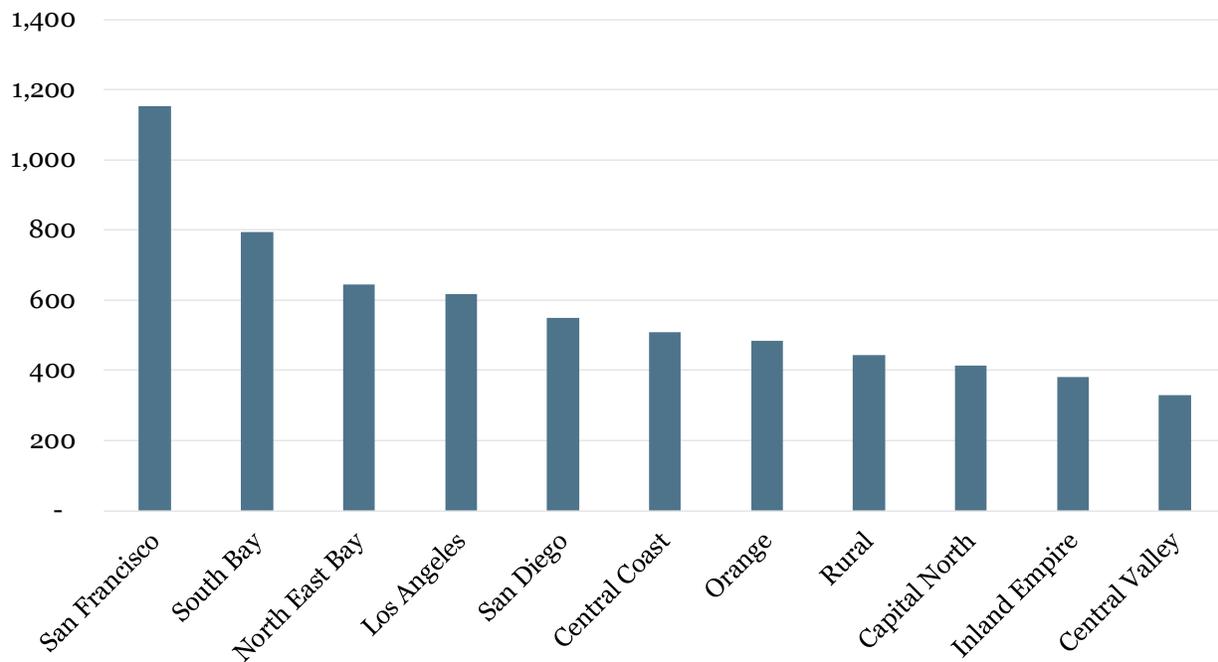
Total development costs vary substantially by region, and are most expensive in California's San Francisco Bay Area.

The statewide average in development costs obscures significant regional variation (Figure 2). Projects in San Francisco cost significantly more than in any other part of the state, averaging \$1,100 per square foot for all projects built between 2008 and 2019. In contrast, projects in the Central Valley cost approximately \$330 per square foot. However, even in the Central Valley, development costs are still higher than the national average—while comparable data are hard to come by, between 2013 and 2017, multifamily developments nationally cost between \$148 and \$233 per square foot to build.¹²

In Figure 3, we present broader regional trends over time, grouping project awards into

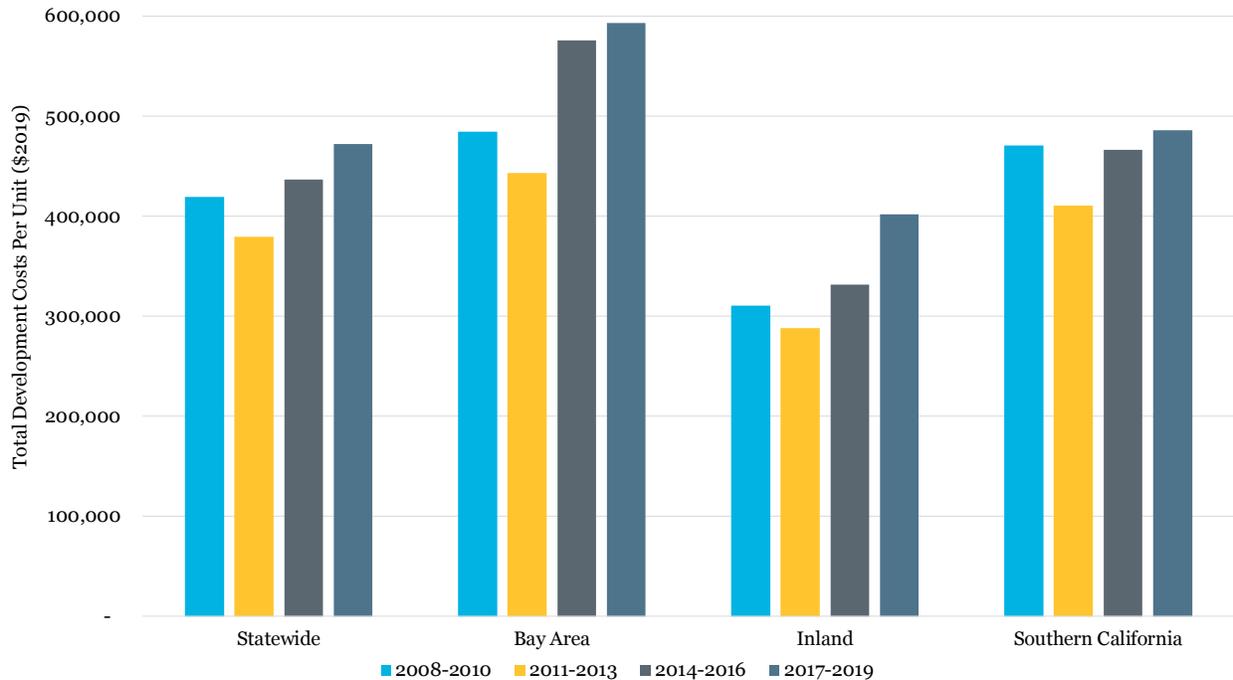
3-year intervals that follow broader economic trends.¹³ All the regions experienced a decline in total development costs during the 2011-2013 time period, reflecting the economic recession and housing market slowdown in California. Since then, however, costs have only escalated. Statewide, development costs per unit have increased 12.6 percent from 2008-2010 to 2017-2019. Projects in the greater San Francisco Bay Area—which includes Oakland and San Jose—increased by 22.4 percent to an average of almost \$600,000 per unit in the past three years. While lower than the rest of the state, inland areas (including the Central Valley, Inland Empire, and rural TCAC regions) experienced the greatest percent increase in development costs since the recession. Projects in these geographies saw a 30 percent increase from 2008-2010 to 2017-2019.

Figure 2: Average 9% LIHTC Development Costs Per Square Foot by TCAC Region, 2008-2019



Source: Turner Center Analysis of TCAC 9% LIHTC Project Applications. All figures adjusted for inflation. Data are presented by square foot in part to account for differences in unit size across regions.

Figure 3: Regional Differences in Total Development Costs Per Unit Over Time



Source: Turner Center Analysis of TCAC 9% LIHTC Project Applications. All figures adjusted for inflation.

The main driver of these increases is hard construction costs.

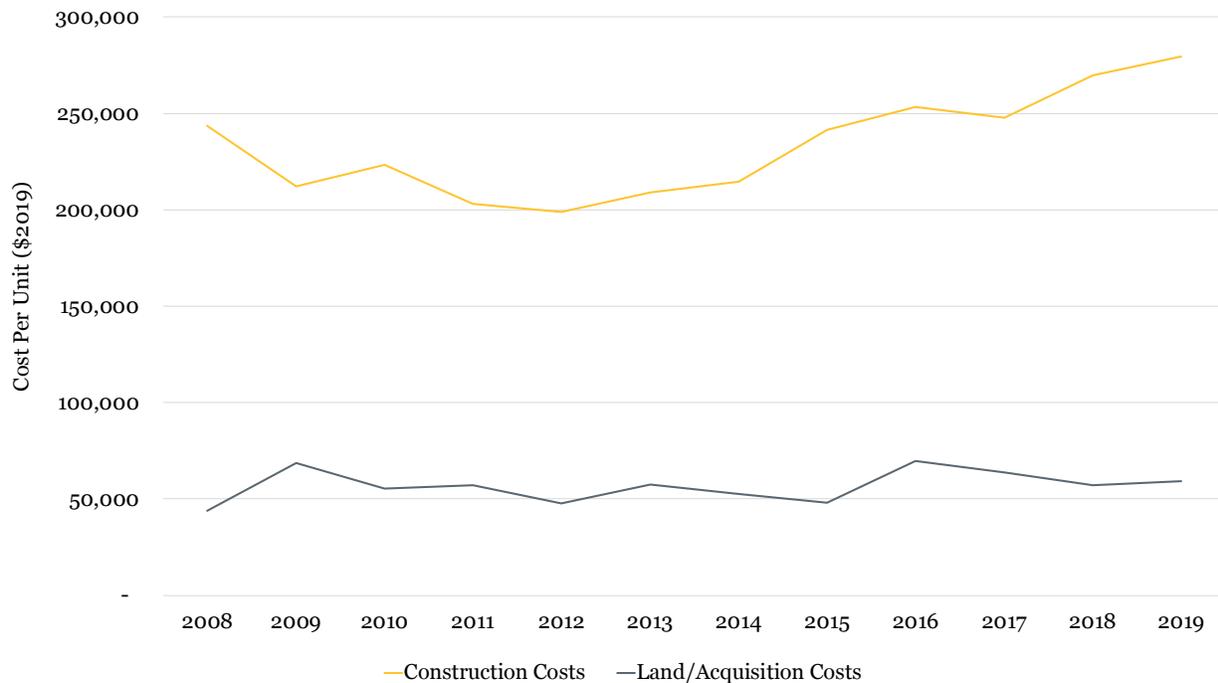
Total development costs are made up of a lot of different line items, including land or property acquisition costs, construction costs, architectural/engineering costs, local development fees, as well as fees associated with the “soft” costs of development (e.g., legal fees, appraisals, and insurance). In Figure 4, we compare the change in land costs with the change in hard construction costs over time. Although reporting of land costs can vary across LIHTC projects (since some projects rely on donated land and don’t always include the full amount of what that land would cost at market valuation), in general, the reported costs of land acquisition has remained largely flat since the end of the recession.

In contrast, hard construction costs have increased by 40 percent since 2012. Interviews further emphasized the role of construction in driving the upward trend in costs; developers consistently pointed to the bids coming from

their general contractors as the key factor contributing to cost increases. One affordable housing developer who works largely in the Bay Area shared that “when I look at all the lines of a pro forma, what has changed most dramatically is the pricing that is coming from the general contractor. Prices have increased nearly 50 percent in terms of the dollars per square foot in the past few years. I don’t think that we are designing buildings that look or operate much differently. It’s the materials and labor costs coming from the contracting end that have changed.”

As we discuss in more detail in the report [The Hard Costs of Construction: Recent Trends in Labor and Material Costs for Apartment Buildings in California](#), it is hard to disentangle the relative contribution of labor versus materials on hard construction costs. For example, a contractor will generally provide a bid sheet with just the total amount it will cost to install the drywall or electrical work on a project. This bid sheet rarely itemizes the share of the costs that are going to labor. Interviews

Figure 4: Trends in Hard Construction and Land Acquisition Costs, California 9% LIHTC Projects, 2008 - 2019



with general contractors suggested that both factors play a role— with tariff battles contributing to increased material costs for lumber and metal—but emphasized that the bulk of the rising costs was coming from labor. Figure 5 displays trends in general contractor wages between 2008 and 2018 for Los Angeles, San Francisco, and California—while increases have been most dramatic in San Francisco, wages overall have increased faster than the cost of inflation.

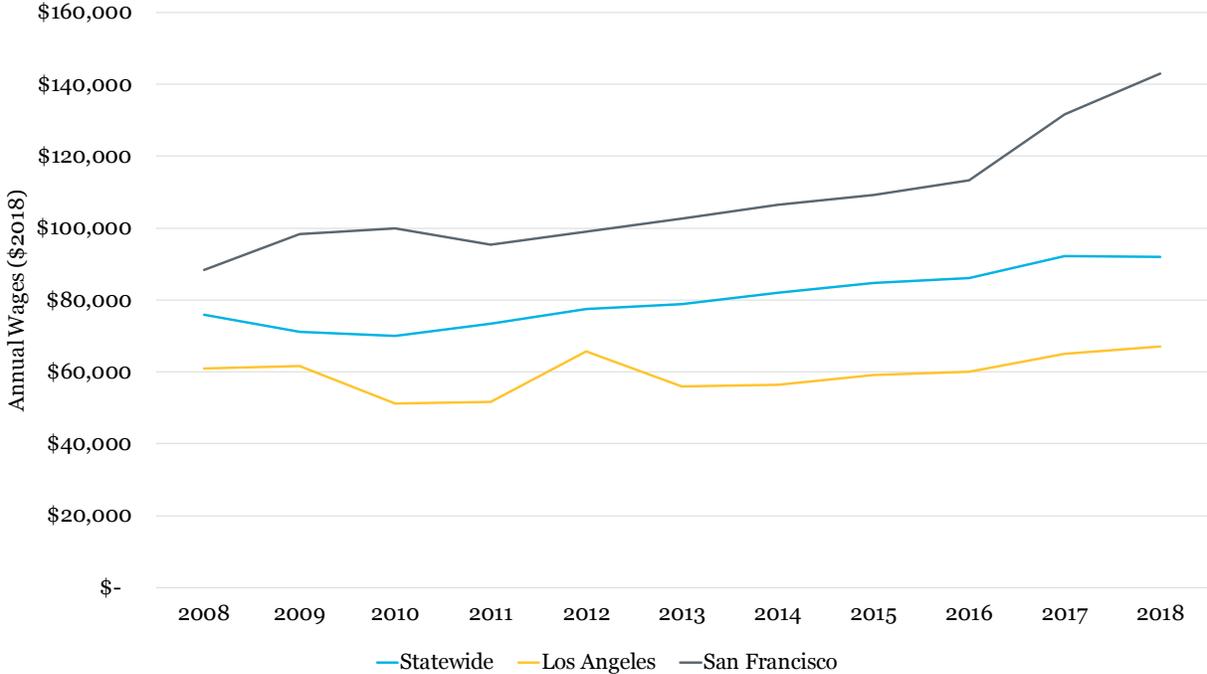
The role of wages in driving cost increases is not unique to affordable housing development. Since the recession, there has been a significant mismatch between the number of permitted units—increasing more than 430 percent between 2009 and 2018—and the growth in the construction sector, where the number of workers has only expanded by 32 percent.¹⁴ General contractors noted that anti-immigration rhetoric, as well as a tight labor market overall, has made it hard to find construction workers, let alone workers with more multifamily construction experience and/or those trained in the specific trades.

Prevailing wage requirements are associated with higher average development costs.

In addition to the general labor market shortage driving up wage costs, affordable housing developments are also often required to pay prevailing wages. Prevailing wages are determined by the California Department of Industrial Relations, and are usually based on rates specified in collective bargaining agreements. Although the LIHTC program does not trigger prevailing wage requirements, LIHTC projects often layer other forms of public funding that do require either federal or state prevailing wage, or they may be subject to local project labor agreements for their construction contracting.¹⁵

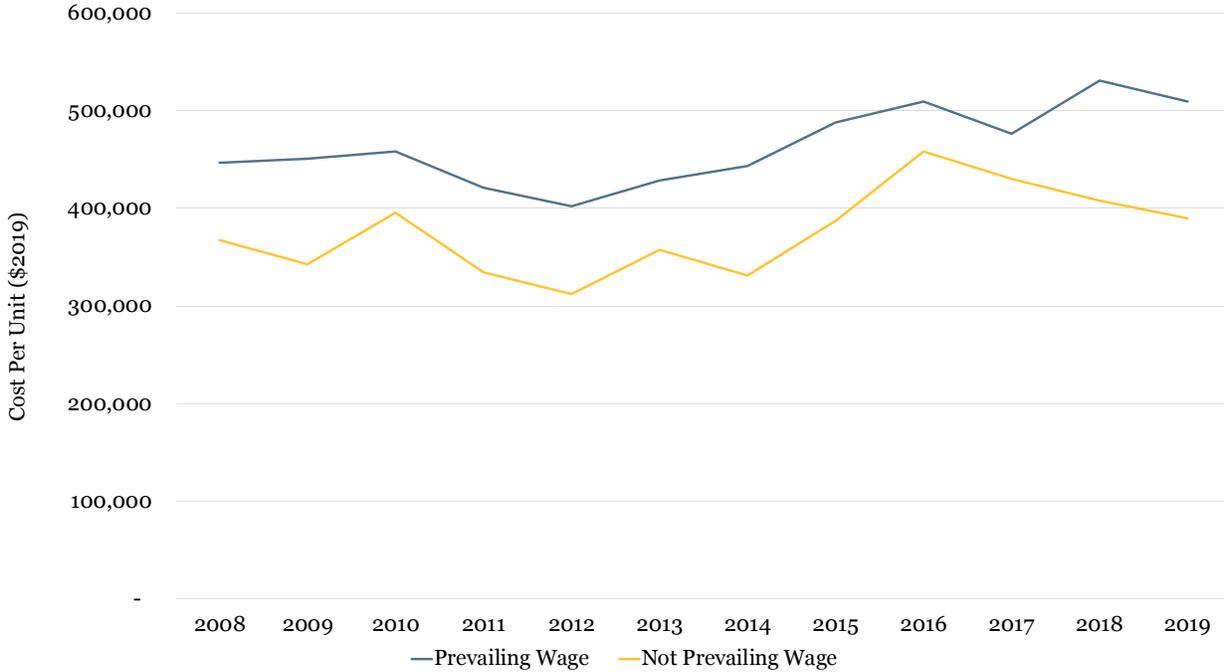
Approximately 60 percent of LIHTC projects awarded funds between 2008 and 2019 were subject to either prevailing wage or local project labor agreements, or both. Prevailing wages tend to be higher than the “open shop” or non-union wages in local markets, though it can depend on the county and the

Figure 5: Average Annual Wages for Residential Multi-Family General Contractors, 2008 - 2018



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, General Contractors, Multifamily Residential Construction, available online at <https://www.bls.gov/cew/>. Wages adjusted for inflation.

Figure 6: Trends in Total Development Costs Per Unit in California, by Prevailing Wage, 2008 - 2019



specific trade classification. Because of these higher wage rates, the LIHTC program allows developers to claim a 20 percent increase on their development cost limits if the project includes prevailing wage requirements.

Figure 6 shows that prevailing wage cost more than non-prevailing wage projects, though the difference between these two types of projects varies over time. For example, in 2016 and 2017, the gap between prevailing and non-prevailing wage projects narrowed, in part because open shop construction wages had risen substantially (in part due to the shortage of construction labor).

The gap between market and prevailing wages also varies by region. In the Sacramento region, for example, prevailing wage projects in our sample were 36.4% more expensive than those without prevailing wage, and in the Central Valley, the gap was 27.5%. In contrast, in cities like San Francisco, San Jose, and Los Angeles, which have a larger union presence and higher open shop wages overall, the gap was only around 10 percent.

Prevailing wages increase the cost of development for a number of reasons. Besides paying higher wage rates, prevailing wages trigger additional requirements such as payroll certification that can add to costs. Interviews consistently highlighted that while the higher wages accounted for some of the increased costs, the additional “paperwork and bureaucracy” associated with prevailing wage increases soft costs and may also prevent contractors from taking on a prevailing wage project when demand for labor is strong. For example, contractors who want to take on a

state prevailing wage job need to register with the Department of Industrial Relations, which exceeds the requirements under the federal rules set forward in the Davis-Bacon Act. Several developers noted that when “there is a shortage of workers... with prevailing wage, you’re probably cutting your vendor pool in half by having a prevailing wage project. Because if ten guys would bid a project, you’re probably going to only get 5 that would bid a prevailing wage project.” Other developers similarly noted that affordable housing developers are often selecting from a “smaller pool of general and subcontractors because of the prevailing wage or project labor agreement requirements and all the ‘headache’ and paperwork that comes with that.”

The challenges of finding construction workers in a tight labor market can be exacerbated when the project also includes local hiring requirements, such as recruiting from small or minority-owned businesses. These requirements are considered a condition of using public subsidy, but they increase developer costs. An affordable housing developer that builds in multiple states explained, “[Local hire] is what I meant when I said an affordable unit needs to satisfy a lot of policy goals. And they are good goals. But on the implementation end, it does cause these unforeseen situations with limiting the labor pool. Let’s say there’s 4 to 5 affordable housing developers and we’ve all been funded with A1 measure funding,¹⁶ and we all break ground pretty much at the same time. So if you’re looking for framers, there are only so many small local framers, minority-owned... it’s just very difficult to check all the boxes.”



General contractors also noted that they can also run into difficulties on prevailing wage projects when government agencies don't approve payments, which means that they prefer to select non-prevailing wage jobs. One said: "The city or county that is funding part of the project has labor compliance on staff, and they won't approve the release of funds for that monthly pay application until all the labor requirements are met. So what happens is that contractors end up going unpaid for weeks and weeks and weeks, while agency staff are trying to sort out some problem with the wage compliance or the labor compliance paperwork, and so, often I just decide, I don't need this headache."

Rising construction costs also contributes to increased contingency and construction financing costs, driving up total development costs.

The rise in construction costs also leads to higher costs related to the interest on construction loans (since the amount that the developer needs to borrow goes up) as well as construction contingency costs. Contingency funds are a requirement of project funders, and refer to the capital a developer sets aside for unexpected expenses during the development process. For example, contingency funds can help to cover unexpected costs associated with land remediation or "a new fee imposed by the city that we hadn't anticipated" as one developer noted. However, rising construction costs are leading developers to turn to their contingency funds more quickly. One developer who works in the LA region noted that: "In a different era, we wouldn't have to dip into our contingency funds and had funding left over at the end of the development process. But in the last 3-4 years, we hardly have any contingency left." Across all the interviews, developers reported that they have needed to increase their contingencies because cost

escalations make it more difficult to accurately assess the final costs of development. Several developers also highlighted that utility delays have contributed to projects running up against deadlines and eating into contingency costs. As one explained: "We run into issues with the utilities. We had a project that finished not too long ago, and basically had a 6-month delay based on PG&E not completing its work on time. So we are finding that a lot of our contingency costs are directly related to utilities."

Developers further noted that because of labor market and general contractor shortages, they were running into increased costs related to the deadlines for occupancy imposed by the LIHTC program. The program requires that a project be completed in under two years. "That timing is rushed in a way that is not for market-rate developers. We're often getting bids on plans that aren't 100% finalized, which leads to change orders that can increase costs. There's a premium that you pay for bringing on a general contractor when it's rushed." Other developers noted that they will use contingency funds to pay for overtime so they can meet regulatory deadlines.

Affordable projects face both political and funding constraints in achieving efficiencies of scale.

On average, larger development projects can achieve efficiencies of scale, reducing per unit or per square foot costs. The relationship isn't exactly linear, because high-rise buildings (often referred to as Type I projects) require more steel and concrete than lower-rise buildings and therefore see higher material costs. However, in general, the more units and higher density that is allowed on a parcel will reduce overall project costs for similar types of buildings.

Figure 7: Examples of Average Density 9% LIHTC Projects



Third Avenue Apartments,
Walnut Creek

PATH Villas Eucalyptus,
Inglewood



Yet, with the exception of infill projects in downtown urban areas, LIHTC developments in California tend to be relatively low density. The average project size for a 9% LIHTC new construction project is less than 55 units and under 3 stories. Density is measured as the number of units per acre of land; for the projects for which these data were available, we found that the average density was 50 units per acre. However, nearly a third of projects were less than 20 units per acre. Figure 7 presents two photos of properties representing the average density (50 units/acre) for LIHTC developments to help visualize the relationship between building density and land use.

Developers pointed to two key reasons for why projects tend to be smaller and lower

density. The first factor is local city design requirements and, in particular, ongoing resistance to larger, denser affordable housing developments. As one developer aptly put it: “It is impossible to overstate the continued resistance to new affordable development in most cities in California.” Developers noted that they often needed to make concessions to density or design to get through the permitting process, and that this works to limit how many units they can build on the lot.

The second reason has to do with the structure of tax credit financing. To ensure that credits are broadly distributed across the state, TCAC allocates a specific proportion of 9% credits to different regions (and establishes “set asides” for specific policy areas such as special needs

and supportive housing). TCAC also sets a cap on the amount of funding that can be allocated to any one project. However, with development costs rising, the “cap” on funding in the 9% credit program is often too low for larger projects. Developers sometimes split larger projects into multiple phases, and/or propose projects that are smaller than what could be built on the parcel. In Santa Clara County, for example, one developer explained that “we have given up on doing a 9% project that is above 60 units. Because of the cap, we can’t propose larger, more efficient projects.” Developers also shared that as a result, they have increasingly been turning to the 4% credit program for larger projects.

Developers also noted that larger projects also make it more difficult to find sufficient local gap financing to make a larger project pencil. For example, a developer who builds in the Central Valley explained: “We’ve settled on the ‘sweet spot’ of doing between 50-60 units at a time, because that is the only way we can find sufficient gap financing to make a 9% tax credit deal work. The bigger the project, the bigger the gap.”

The complexity associated with affordable housing funding streams—as well as the associated programmatic rules—also adds significantly to development costs.

Market-rate projects generally draw on two funding sources: equity from an investment partner and debt in the form of a permanent

loan from a bank. In contrast, affordable housing projects require developers to identify a “stack” of capital to close the gap between what they can finance with debt and tax credit equity and what it costs to actually build the development. Developers consistently pointed to this complexity in the interviews as a cost driver, with one explaining: “You usually need at least three public agency loans or grants and tax credits and a regular bank loan. The process of having to apply for all of those is time consuming, and usually the way it works is that there is a leveraging game that they all play. Everyone wants someone else to put money in the project first, and you have to have your local money before you apply for your state money. And obviously you have to have all your other money before you apply for tax credits. So definitely a costly process that comes along with that.”

The data from 2008-2019 show that only 11.5 percent of 9% LIHTC projects had fewer than 4 external sources of funding (including tax credit equity), with 80 percent of projects bringing together 4 to 8 sources of funding. Nearly 10 percent of projects relied on more than 8 funding sources. Each of these sources of funding, while necessary for the project to be built, adds to the costs of development. A common theme in the interviews was that the increasing financial complexity of deals was adding significantly to soft costs and, when coupled with long time delays, can affect hard costs as well (particularly in the context of rising construction costs). One developer noted: “Our projects are getting more and more complex over time, which means at a



minimum increased attorney and consultant fees.” Developers also noted that syndication costs have increased as financial consultants need to manage multiple funding streams and partners. Another pointed to how this complexity creates a vicious circle of costs: “The increase in costs drives demand to go find more sources of soft financing and that adds to the complexity and layers, and with how many partners are in the deal that have to negotiate final terms, and then you have to deal with HUD, USDA and/or HCD in the same transaction, and all of that adds many more layers of complexity and many more legal counseling parties. Which in turn increases costs.” Different regulatory requirements can also lead to delays in agencies (such as California’s Department of Housing and Community Development (HCD)) closing out construction loans, which further increases the amount of interest a developer needs to pay on a project.

According to developers, the fragmented nature of public funding has increased in recent years, particularly with the loss of redevelopment in 2012. On the positive side, more cities have stepped in with bond financing, and the state has launched several important new funding programs. Yet this new fragmentation leads to additional complexity. One developer said: “The more public agencies involved, the more complicated it is and the slower it moves.” Additional funding sources can also add design or community benefit requirements. As one developer noted: “A lot of cities will add on requirements. They say ‘hey, we are putting so much amount of money into this, and we need to be accountable to our tax payers and constituents so if you build this we are expecting you to provide community benefits.’ So we add a community room or other amenities, and that makes sense to me, they are all really good things, but it makes our work and our project more expensive.”

Complexity in financing for permanent supportive housing—as well as how it is accounted for—is a key factor in increased development costs.

Over the last few years, the state has made funding for permanent supportive housing a priority. Many local jurisdictions have passed bond and other funding measures to address the homelessness crisis. This policy priority has influenced LIHTC awards as well, and an increasing share of TCAC’s awards are going to projects that provide housing for individuals and families with special needs or who have experienced chronic homelessness (Figure 8). However, supportive housing tends to be more expensive in terms of total development costs than either family or senior housing.

Permanent supportive housing is a model that combines affordable housing, health care, and supportive services to help individuals and families become stably and permanently housed. It typically targets people who are experiencing chronic or prolonged homelessness, who have multiple barriers to housing, and who are unable to maintain housing stability without supportive services.

There are three reasons for these higher costs. First, supportive housing projects tend to include smaller units such as studios, which are more expensive to build (since a kitchen and a bathroom are more expensive per square foot than additional bedrooms), and they are also more likely to be located in higher-cost areas like San Francisco or Los Angeles. On average, a supportive housing unit costs \$443,990 to build, compared to \$435,330 for a family unit and \$370,513 for a senior unit; these cost differences are even higher when calculated on

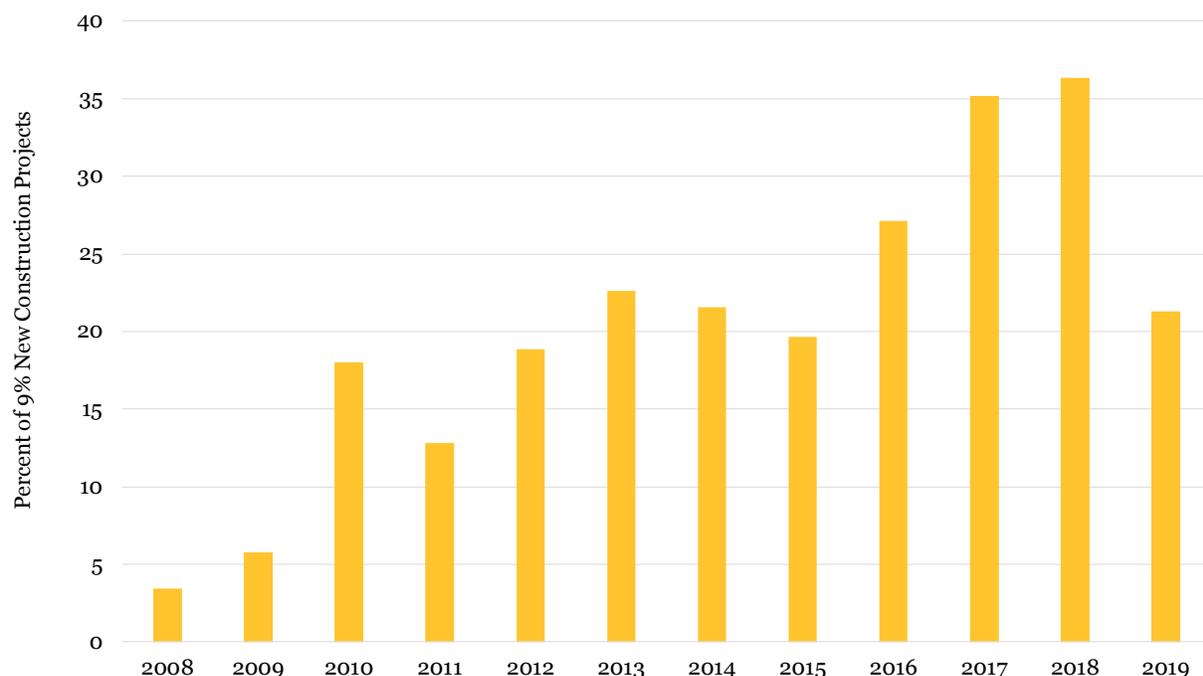
a square foot basis, with supportive housing costing on average \$773 per square foot to build compared to \$560 per square foot for senior properties and \$443 per square foot for family properties. Developers also noted that supportive units often experience more “wear and tear,” and that they take this into account when they are designing the project to extend the durability of the units.

Second, supportive housing projects also entail higher operating costs: for example, they require more on-site staff such as security or supportive services, require more capital improvements and renovations over time, and incur higher insurance rates. Developers estimate that operating costs for supportive housing “can be as much as double per unit what a standard family development would be.” While counterintuitive, these operating costs show up in total development costs, and explain at least part of the rise in costs in recent years as the state has shifted toward building more supportive housing.¹⁷ In effect, developers capitalize operational reserves into their development costs since the rent payments for supportive housing—if not further subsidized by Project-Based Section

8 vouchers—aren’t sufficient to cover operations. For example, a developer in Los Angeles explained that “When you’re doing supportive housing and you’re serving households at 30 percent of AMI or even lower, if there is no Project-Based Section 8 rental assistance, then you have to capitalize all those operating expenses up front, and it adds significant costs to the project.”

Third, funding for supportive housing is particularly fragmented, and often includes public agencies without expertise in housing finance or development. On average, supportive housing projects have more funding sources than either family or senior projects (an average of 6.2 funding sources per project). One developer explained: “Supportive housing funds are more difficult to close. It’s not their fault necessarily, but the agencies take longer to close the transaction and longer to convert to permanent financing. So all of that makes it more of a headache to deal with, and increases costs, but we do it because we need the gap financing. But we just know that in advance we are going to have to deal with a more complex transaction and it’s going to take longer.”

Figure 8: Percent of California’s 9% LIHTC New Construction Projects That Are Supportive Housing



Lack of government staff and capacity slows down approvals and can lead to significant time delays, which in turn increases costs.

While hard to quantify, the interviews pointed to a perennial problem in the development process that certainly contributes to the overall costs of development: bureaucratic delays on the one hand and local resistance to the efficient permitting of new buildings on the other. The lack of updated zoning codes in many cities means that every project requires variances of some sort. A developer in Southern California expressed a common concern across the interviews: “Most affordable housing projects in California, because you have such outdated zoning codes, typically need some approval at the city planning level. And many often have to go to a planning commission hearing, and require a lot of time and effort. It is so rare that there is a by-right opportunity. If land use approval processes could catch up to where we need to be to respond to the housing crisis, so we can have by-right opportunities, that would make a huge difference in time and costs.” In fact, many developers noted that “the biggest drivers of costs are not necessarily what planning staff add to your project, but rather that you have to go through their process and get stuck in a long development period.”

Particularly in an environment in which construction costs are rising, these delays have material consequences. One developer said: “The less time we take in entitlements, the cheaper it is. I know that’s very obvious. But on a current project, we’ve had to redesign the building 4 times. If we had just

been able to get through the original designs, not only would we have avoided a lot of the construction escalation costs, but we would have saved hundreds of thousands of dollars on the design piece of it.”

While some of these delays are the result of local or political opposition to the project, interviews also highlighted that another problem is the lack of knowledge or sufficient capacity among public agency staff to deal with applications. Especially with newer legislation—like SB35, which provides some streamlining benefits for affordable housing—public agencies may not be familiar with the law, or may not have accounted for it in their permitting processes.

Capacity is also strained by the volume of new construction. One developer noted: “The impact of this big building boom, and what it’s done on the staffing and capacity of all these different public agencies has been felt. For example, there aren’t enough fire inspectors to go around, there aren’t enough staff in the planning departments and the bureau of engineering and building and safety.” Developers also noted that in some cities, data on the available parcels for development is outdated, which can also lead to unexpected costs. For example, one developer that focuses in the South Bay noted that “the less cities know about themselves and their land and what’s on it, the more expensive it becomes for us. They don’t actually know where the utilities are, they don’t have full site control, and boundaries are in question. Often utilities work is incomplete, so we are out there doing x-rays or potholing to figure out if a tank is out there.”



Cities often add to costs with local design, parking, or environmental requirements.

While some cities have made affordable housing easier to develop, others continue to require significant add-ons that can make building cost prohibitive. Key among these is parking requirements, particularly in infill locations where the parking needs to be located underground. A lot of cities still require 1-2 parking spaces per unit, as well as spaces for guest parking.

Open space requirements can also add on to costs. In the Central Valley, for example, many cities require a significant share of land (e.g., 25 percent) to be devoted to open space, even when the development is located near a park or other greenway. Reducing these requirements can allow for greater density on the existing land, increasing the number of units that the developer can build.

Sustainable building materials or additions (e.g., such as solar or a recycled water system) can also add to costs (Table 2). TCAC allows developers to increase the cost limits that affect the basis on which they request tax credits if their projects include substantial onsite renewable energy generation, if buildings are more energy efficient than state Title 24 standards, if they irrigate with reclaimed water, and/or if they install sustainable building materials such as bamboo or cork.¹⁸

While many developers noted that these costs can be seen as an upfront investment in longer-term environmental benefits, they

nevertheless add to the costs of construction. And, as we also found in our case study of San Francisco,¹⁹ environmental regulations aren't always being thought of in terms of their total costs and benefits. For example, a city's solar requirement may not take into account that the project is a dense, infill development where solar is prohibitively expensive (and could ultimately lead to the project not being built), yet the climate benefits of the project and the reduced car travel garnered by more units being located close to transit could have outweighed the GHG benefits that the solar would have provided.

Developers were particularly concerned about the state's new 2019 energy standards—which went into effect in January 2020—that give local jurisdictions incentives to apply environmental standards beyond state standards. For example, West Hollywood is moving to require that all new buildings must include either solar photovoltaic, solar thermal, or a vegetative roof. The concern relates as much to the increased complexity of the different regulations as to the hard costs. A common sentiment was that to bring down costs, the state needs to “streamline the sustainability requirements rather than making them more onerous,” and ensuring that there is better alignment between local, state, and TCAC regulations. Misalignment between local and state regulations, coupled with continual changes to the building code, can also increase costs associated with building inspections, particularly when they require multiple agencies to review the plans or building and/or change orders after something has already been built to an outdated standard.

Table 2: Total Development Costs for Projects with Sustainable Building Techniques, California, 2008-2019

Project Type	Cost Per Unit	Cost Per Square Foot
Project Includes Sustainable Building Techniques	435,262	555
Project Does Not Include Sustainable Building Techniques	418,070	518

Local development fees have declined in recent years, but there remains significant variability in the amount of fees localities charge on affordable projects.

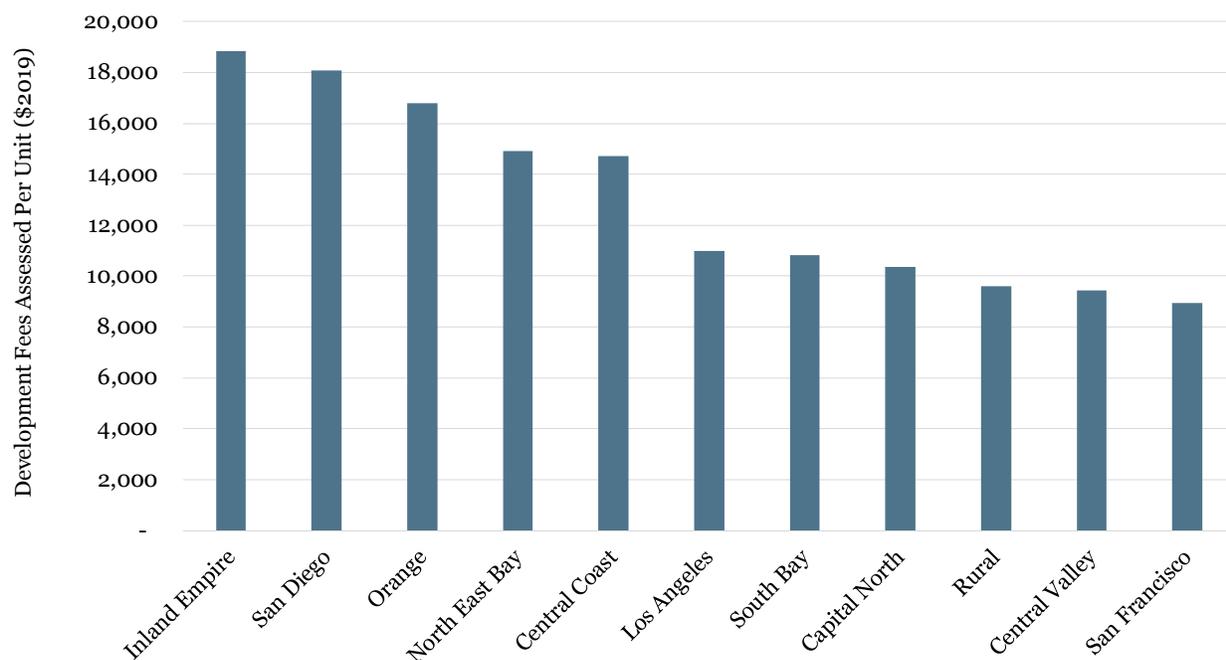
Recent Turner Center research has highlighted the role that development fees—which cities levy to pay for services needed to build new housing or to offset the impacts of growth on the community—play in driving up the cost of housing in California cities.²⁰ Interviews with developers highlighted that this cost driver is not limited to market-rate projects—many cities charge fees on affordable projects as well. Approximately 70 percent of the projects in the sample were assessed development fees.

The average fees charged across all the properties was \$12,900 per unit. But developers said the amount levied on affordable projects varies from one jurisdiction to another, with certain cities charging “astronomical development fees.” We found that of affordable projects assessed fees between 2008 and 2019, 25 percent paid more than \$20,000 in development fees per unit and in some cases

as much as \$45,000 per unit. These fees tend to be higher in suburban communities, with the Inland Empire, San Diego, and Orange County regions charging the highest average fees per unit (Figure 9). Developers also noted that cities are increasingly establishing “community facilities districts”, which require ongoing payments that increase operating costs over the long term. For example, one developer who builds in more suburban and exurban regions of the state explained that they are often required to pay for “the streets and street lighting, so new projects are bearing the costs of maintenance for amenities that have historically been the responsibility of local governments. It can be a one-time fee or ongoing maintenance. So you might have a project that ends up paying \$10,000 per year for park maintenance for open space outside the boundaries of their project, or street lighting. That’s pretty common in the majority of our projects.”

While developers noted that some cities had exempted certain fees for affordable housing projects (like park impact fees), other cities have increased their fees “across the board, permit fees, plan check fees, and fees for the

Figure 9: Average Development Fees Assessed Per Unit by TCAC Region



city inspectors to come out. Those have really skyrocketed the past decade, at least 2x. It's a pretty significant increase." Per unit fees for senior projects were only slightly lower than for family projects, though variation across project types was not nearly as significant as across jurisdictions.

Model Results: Key Drivers of Development Costs

As we discuss in the methodology section, none of these cost drivers are independent from one another. For example, multi-story infill developments in San Francisco may be more likely to require an elevator than those in the Central Valley; or projects awarded funding in 2018 may incorporate more sustainable building materials than those awarded funding in 2008. Regression models allow us to consider the various factors that influence project costs at the same time, and can be helpful in isolating which drive up costs more significantly than others.

Table 3 presents the results of a series of models that look at the factors that are associated with higher development costs. We present four separate models—the first two panels present the results on a per unit basis and present the results in dollar amount as well as in percent difference. The second two panels present the results per square foot.

The results largely support the descriptive findings presented above, and show that the rising costs are not just an artefact of differences in building types or location. The key findings from the model are:

- **Project size influences costs.**

On average, efficiencies of scale translate into a reduction of about \$1,162 for every additional unit in a project, or approxi-

mately 78 cents per square foot. While not a large dollar figure in relation to total development costs, it suggests that adding even 20 units to a building with only 40 units could result in savings of \$20,000 per unit.

- **Permanent supportive housing costs the most to build on a per square foot basis.**

On average, permanent supportive housing costs \$129 more per square foot than senior developments, while family housing costs \$52 less per square foot than senior housing. However, when we look at costs per unit, we find that both family housing and supportive housing cost more than senior properties.

- **Even after controlling for what is being built, developments in the San Francisco Bay Area cost significantly more to build than anywhere else in the state.**

On average, a unit in the Bay Area costs \$140,000 more to build than in the state's inland regions, or \$226 per square foot. Projects in LA are also more expensive than in the state's inland regions, but the price premium for developing in LA (\$64,000 per unit) is less than half than that in the Bay Area. Costs for developments in rural areas are not significantly different than those in the Central Valley.

- **Projects in High Segregation and Poverty tracts cost less than projects in higher resourced neighborhoods.**

On average, projects in high poverty tracts cost \$14,000 or 3 percent less per unit to build than those in higher resource tracts, including those with low- or moderate-resource designations. After controlling for other factors, we do not find a cost difference for developments built in Low Resource, Middle Resource, or High or Highest Resource tracts.

Table 3: Model Identifying Factors that Contribute to Per Unit and Per Square Foot Development Costs, California, 2008 - 2019

Variables	Per Unit Cost				Per Square Foot			
	\$2019		Percent		\$2019		Percent	
Project Size (Number of Units)	-1,162	***	-0.3%	***	-0.78	**	-0.2%	***
Year Awarded Funding (Compared to Projects Built in 2008 and 2009)								
2010 to 2014	-18,883	*	-2.3%		39.04	*	5.4%	
2015 to 2019	49,393	***	13.2%	***	122.54	***	22.4%	***
Type of Development (Compared to Senior Projects)								
Permanent Supportive Housing	23,265	*	5.8%	*	129.39	***	15.8%	***
Family Housing	92,079	***	22.1%	***	-52.63	**	-11.9%	**
Geography (Compared to Inland California)								
Bay Area	140,940	***	32.8%	***	226.83	***	37.3%	***
Los Angeles	64,389	***	18.3%	***	76.13	***	19.4%	***
Rural Counties	-13,238		-1.6%		-56.44		-5.5%	
Opportunity Category (Compared to Other Opportunity Categories)								
High Poverty and Segregation Tract	-16,056	*	-4.2%	*	-3.81		-1.4%	
Project Characteristics								
Project Includes Prevailing Wage	53,390	***	13.4%	***	80.89	***	15.9%	***
Project Includes Structural Parking	35,945	***	7.8%	**	43.88	*	10.2%	**
Project Includes Elevator	38,125	***	8.4%	***	103.76	***	17.1%	***
Project Includes Sustainable Building Materials	17,125	*	3.8%	*	12.05		1.7%	
Project Includes Development Fees	16,313	*	6.3%	**	31.23	*	9.2%	**
Each Funding Source	6,453	**	1.7%	***	2.92		1.3%	*
Intercept	264,025	***	1247	***	313.09	***	574.2	***
Adjusted R-squared	0.5261		0.5491		0.5139		0.5893	
Number of Observations	626		626		590		590	

Source: California LIHTC 9% Projects, 2008 – 2019. All dollar amounts adjusted for inflation.

Notes: *** p < 0.001, ** p < .01, * p < .10 (indicates the significance of the result—estimates without stars are not significantly different from the comparison group).

- **Prevailing wage raises total development costs by approximately \$53,000 per unit, or by 13 percent.**

While the model can't control for quality of workmanship, change orders, or time to completion—things a more trained labor force could help with and bring down costs in the short- and long-term—prevailing wages are associated with higher total development costs.²¹

- **The addition of an elevator and/or structured parking both substantially increase the costs of development.**

These each add about \$35,000 to \$38,000 to the cost per unit, or 8 percent, though the impact of an elevator is larger on square foot costs.

- **Projects that include sustainable design features—such as energy conservation measures—also have higher development costs, adding about 4 percent or \$17,000 dollars per unit.**

One limitation of this current analysis is it doesn't distinguish between energy efficiency improvements, water conservation measures, and sustainable building materials (such as cork). Additional research is needed to understand the role that environmental standards play in contributing to development costs, as well as whether the initial investments allow developers to save on operating costs over time (thereby reducing long-term costs).

- **Projects that report paying local development fees are also more expensive per unit, even after controlling for other characteristics.**

Development fees matter. Cities that impose development fees on affordable projects increase the cost of building by about \$16,600 per unit.

- **On average, every additional source of funding on a project is associated with an increase of \$6,400 per unit, or 2 percent, in total development costs.**

While small in comparison to some of the other variables in the model, it nevertheless can translate to significant costs. A project with eight rather than four sources of funding will cost on average \$24,000 more per unit, though it is also possible that more expensive projects require more funding sources.

As with every model, these numbers are estimates, and there will be variation across projects in how much could be saved if some of the factors were addressed through policy reforms. (See the Technical Appendix included with this paper for more discussion of the limitations of this model.) Nevertheless, the model suggests areas where policymakers should debate the pros and cons of how particular policy choices influence the costs of affordable housing development. There are also opportunities to bring down the costs of development, including lessons learned from what has worked in other states. In the next section, we discuss the policy implications of this research.



Policy Implications

Many of the costs detailed in this study are not unique to affordable housing—rising construction and labor costs, delays caused by lengthy entitlement processes, local development fees and design requirements, and environmental building standards are driving up the costs of market-rate units as well. Ultimately, California will not solve its housing crisis unless policymakers develop a robust pro-housing policy agenda, one that includes streamlining development permits and reforming zoning so that all cities are building their fair share of both affordable and market-rate housing.

However, there is also a need to reduce the costs of building subsidized housing. In the current economic climate, new market-rate construction will not meet the housing needs of families earning below 60 percent of the area median in which they live. In addition, the increasing prevalence of unhoused individuals and families will require substantial investments in affordable housing. State policymakers—as well as many local jurisdictions—have recognized the need to invest in new subsidized housing, and the last four years have seen a significant expansion of funding for affordable and supportive housing through both state legislation and local bond measures. But continuing to spend \$700,000 on a unit of affordable housing—with an increasing share of that coming from public subsidies—will make it that much harder to build the supply we need.

Tackling these costs won't be easy. In some cases, the costs are driven by desirable policy goals such as local hiring and living wages, climate change mitigation and resilience, and greater opportunity for residents living in LIHTC buildings. In others, they are the result of a fragmented affordable housing system that has evolved over decades. Undoing

those layers of complexity will require more than just tweaking rules here and there. In addition, 9% LIHTC projects are just one slice of the larger affordable housing landscape, so changing the state's QAP will be insufficient to move the needle on costs more broadly. The data presented here are also incomplete, and there are opportunities to dig deeper into final cost certifications and even the applications themselves to better understand what matters most when it comes to costs. In other words, rather than hard and fast recommendations, the ideas in this section are intended to spark discussion for how California can take a leadership role in not only addressing the affordable housing crisis, but also reforming the system so every dollar of public subsidy has the greatest positive impact.

The state should streamline funding and better target its resources to reach households at all AMI levels.

The bureaucratic complexity of financing a 9% LIHTC deal adds considerable cost and time to every project, and contributes to additional “spillover” costs in the form of higher predevelopment and construction loan interest, syndication fees, and legal costs. Moreover, adding state public agencies to the list of stakeholders who need to approve and monitor compliance with grants only adds delays when those agencies are confronting staffing shortages and other capacity constraints. Particularly when it comes to permanent supportive housing—which is often funded by both health and human services and housing agencies—streamlining funding sources, regulations, and reporting requirements could help to reduce costs.

There is also an opportunity to better align the level of funding with need. For example, for some families experiencing housing instability, a grant to cover unexpected expenses, or the preservation of an existing unit, may be sufficient and a more cost-effective way of

preventing homelessness than having the family move into a supportive housing unit. Similarly, market-based subsidies like LIHTC, inclusionary units, and/or a state-level renter's tax credit may be better suited to assist households at 60 percent of AMI, with deeper, government-based funding sources such as project- or tenant-based vouchers targeted at those with lower incomes. In the current environment, these subsidies are often layered to get to desired layers of affordability, but it also means that a larger amount of funding goes to a smaller share of the households who need support. Aligning subsidies to need could expand access to housing stability while ensuring that much needed resources for affordable housing are effectively utilized.

This type of system reform won't happen overnight, and will require more research as well as stakeholder engagement to understand the complete landscape of funding sources and how they could be streamlined. The state could also explore how other states are approaching cost containment to assess which would work in California. For example, in Minnesota, the state housing finance agency coordinates a single RFP, with all state agencies (as well as some local funders such as the Saint Paul Public Housing Agency) committing to use a single application for multiple funding resources. That coordinated process provides funders the flexibility to assemble creative finance packages that best fit each project during the project review and selection processes.²² While it may not be possible to align all funding sources in a state as large as California (and with such different housing market contexts), consolidating funding sources and reporting requirements at the state level (such as the No Place Like Home Program, the Multifamily Housing Program, and the Infill Infrastructure Grant program) could be a valuable first step. More generally, state policymakers can initiate a process to research and provide recommendations on

how to better align funding sources (especially for permanent supportive housing) and reduce the complexity of every deal.

Continue to build on and strengthen the state's Regional Housing Needs Allocation (RHNA) process to ensure that all jurisdictions are planning for and expediting the approval of their fair share of housing for low-income households.

California has long recognized that all cities and regions have a responsibility to plan for and build new housing for households at all income levels; this principle is embedded in the state's Housing Element law and the Regional Housing Needs Assessment (RHNA) process. For too long, these tools have lacked accountability measures, but in recent years, the state legislature has strengthened RHNA as well as the Housing Accountability Act (AB 3194). For example, the current RHNA cycle requires regions to use data to more accurately and fairly reflect job growth and housing needs. SB35 (and SB765) requires cities that do not meet their RHNA goals to provide streamlined, ministerial review of qualifying infill housing projects that include affordable housing. In addition to providing an important tool for affordable housing developers to entitle sites, SB35 has strengthened RHNA reporting requirements and expanded the number of cities that submit annual production reports.

However, a key priority for the state should be to expand pro-housing production strategies and ensure that localities are not putting up barriers to affordable housing developments even if they are technically compliant with their Housing Element. Land use and zoning reform should be part of that effort, as should policies that streamline approval and permitting processes. The state could also play a role in building the capacity of cities to understand how various policy decisions—

including parking requirements and other local design standards such as setbacks and open space regulations—can make projects financially infeasible. Currently, data gaps and the lack of tools to assess how various requirements impact the cost and likelihood of new developments make it difficult to hold local jurisdictions accountable to their RHNA goals. [The Turner Center Development Dashboard](#) provides one example of how data and interactive online tools can help to bring transparency to the relationship between housing policies and development feasibility.

While not specific to affordable housing, the legislature also needs to reform how local development fees are assessed. As one interviewee noted, “The system is byzantine. We’re asking jurisdictions for funding and going through lengthy funding application processes, and then we get to a point where they are giving us the money but just taking it back through the payment of development fees.” Several cities have waived certain impact fees for affordable housing in recent years, a policy that could be adopted more broadly. At a minimum, the state should work to increase the transparency of fees (including utility and school impact fees), tighten oversight of how cities determine the relationship between a project and the fees it is assessed, and explore other local funding options for infrastructure that do not place the entire cost burden on new and affordable housing.²³

Review and reform the system for determining 9% LIHTC application points and the eligible basis for new projects in the Qualified Allocation Plan (QAP).

While harder to quantify, at least part of the increased costs of development on 9% tax credit projects comes from the requirements to receive funding as set forth in the state’s QAP. A common sentiment across the inter-

views was that the state—and to some extent localities like San Francisco—have increasingly turned to affordable housing to meet an ever expanding set of policy goals, including environmental sustainability, living wages and local jobs, community amenities such as child-care centers and health care clinics, and access to amenity-rich, higher-resourced areas. All of these are worthy policy objectives, yet as these requirements are embedded in the application point system (and are often required for a project application to be competitive) and then incorporated into the cost limits that developers can claim for receiving the credits, the QAP itself becomes a mechanism by which costs escalate. Even over the last ten years, the QAP has expanded the basis limit increase for project amenities, in many cases, without a clear link between the boost and the actual costs. Balancing the short-term costs with the long-term benefits garnered from these upfront investments in affordable housing is far from easy. Current practice appears to favor adding amenities and project requirements without sufficient evaluation or assessment of their benefits, or the tradeoffs they require in terms of additional subsidized units.

However, setting a hard line cost containment threshold is unlikely to solve the problem, and may lead to fewer developments rather than more. Already, developers are running up against the 130% high-cost threshold, which affects the feasibility of potential affordable deals. Nor is directing funding solely to lower cost projects in inland areas a viable solution: the highest cost developments are often located in areas with the greatest affordable housing needs and supply shortages. The data show that costs are driven by multiple factors. Adopting simple metrics such as costs per unit without regard for a much more complex set of factors that go into costs would undermine efforts to build high-quality affordable housing in areas that need it most.

The state should review building code and environmental regulations, and assess the relative costs and benefits of additional regulations against the need for more housing.

As with funding sources, the complexity, ever-changing landscape, and lack of communication across agencies administering environmental and building code regulations adds to total development costs. While the state should be investing in building techniques to mitigate climate change and conserve water, these building features do add costs, and may make subsidized housing increasingly expensive to build. Balancing the costs of these interventions against the need for affordable housing, as well as assessing the relative costs of different building requirements, could help to ensure that there is consensus that these investments are worth making. As the state's new environmental laws go into effect, policymakers may want to explore whether cities should be allowed to require environmental building features that go beyond state standards, particularly if those requirements boost project costs over a specified threshold. Exploring how other states are incorporating environmental goals—for example, levying stormwater fees on all residential properties (new and existing) to more broadly distribute the costs of these new systems—could also distribute the costs more equitably.

Developers also noted the importance of data and analysis to inform which sustainable building techniques and materials garner the most benefits, not only in terms of the environment, but also longer term costs of operating the operators. As one explained: “Life cycle costing would be a really good thing for green improvements. We are very proud of our work to retrofit our older properties because there have been substantial operating cost benefits

on those transactions—particularly the less glamorous items such as toilets. Clearer data on costs/benefits and architects who have a better handle on some of the lower cost investments would go a long way to making sure we're spending public subsidies wisely.”

Build capacity among developers to reduce costs and promote innovation in the construction industry.

TCAC should increase the transparency and reporting of construction bids, and support smaller developers with data and best practices on how to reduce costs. The lack of publicly available and reliable data on construction costs makes it difficult to know which contractor bids are inflated, a concern raised by the GAO report as well. While larger developers can turn to their own portfolio and find similar projects to compare historical data, smaller developers are often unable to assess whether a sub or general contractor bid is significantly above market. In addition, among larger affordable housing developers we interviewed, many indicated that they had been working to implement cost reduction measures, including beginning the process of value-engineering earlier in the development process and reviewing cost sheets post-completion to assess where inefficiencies emerge. Developers who have internal general contractors—or who work with a construction manager—felt like they were able to estimate and control costs better than those who sought out hard bids only after the design and entitlement process was finalized. Expanding the capacity of both large and small developers to identify cost savings measures and ensure the reasonableness of bids by sharing data and best practices could increase efficiency statewide, and also ensure that all communities and smaller developers benefit from the innovations happening at the project level.

There is also the potential for the affordable housing development community to rely more on industrialized construction, also sometimes referred to as modular or factory-built housing. Industry research suggests that off-site construction can save as much as 20 percent on the cost of building a three or four story wood-frame multifamily development, and shorten the construction timeline by between 40 and 50 percent.

However, industrialized construction still faces barriers in getting to scale, and these barriers are often higher for affordable housing. For example, affordable housing projects face greater financial barriers to using modular units. Modular factories require a large deposit up front in order to cover ordering of materials. While private developers may be able to access more flexible forms of capital, affordable housing developers draw from fewer and more regulated capital sources, limiting their ability to spend earlier in order to save later. The state could help to spur innovation in this area by running a pilot program to create supplemental revolving construction loans for affordable housing developers that make use of offsite technology, in effect seeding the industry to lower costs for subsidized development. The state could also seed industrialized construction more broadly, for example, by setting aside funding to do research and development to improve building techniques and materials, or investing in modular production as an economic development strategy. In the short term, there is also need to educate the affordable housing field (e.g., architects, general contractors, public agency staff) about off-site construction, since it requires that all stakeholders adapt to new workflows and inspection procedures.

In addition to innovations in construction methods, there is a need to increase investment in training programs and grow the construction labor force.

California needs a more robust labor pool to meet the demand for building in the state, especially as the state steps up goals for production. The state (as well as the federal government) could increase support for labor training programs, such as those at community colleges that prepare students for apprenticeship exams. Immigration policy also clearly plays a role in the labor shortage: foreign-born workers made up roughly one quarter of the US construction workforce in 2015.²⁴

However, it may also be helpful to conduct more research to understand what barriers workers face in entering these programs and/or the construction industry more generally. Construction jobs can pay living wages (particularly when workers have specialized knowledge or belong to one of the trades), and can also promote entrepreneurialism and small business formation. Yet there are also barriers to entering the construction industry, such as drug testing, inadequate transportation options to worksites, irregular work hours (which can complicate commuting and/or childcare arrangements) and uneven work and income across seasons or business cycles. Understanding which of these factors prevent additional workers from pursuing construction work could help the state identify new programs and/or make existing workforce development programs more effective in expanding access to these jobs for more of California's workforce.

Invest in data and research to better understand the ongoing challenges to building more affordable housing at lower cost.

The analysis in this report is also limited in that it cannot assess all the factors that influence the costs of 9% LIHTC new construction projects, let alone other forms of subsidized housing. Significantly more research is needed to understand the full set of drivers that influence the costs of affordable housing development. We have invested considerable time in inputting and cleaning the TCAC application data, but this process is ongoing, and there is more data to be mined from the applications. We continue to work on this project, and we plan to publish additional briefs in the coming months. For example, we hope to better understand differences in costs between the 4% and the 9% tax credit programs; explore in greater detail the role of specific project characteristics, including different types of sustainable building techniques, on costs; as well as conduct more detailed analysis on the sources of funding and their fragmentation. However, overall, the state should continue to support data collection and research in the housing sector. For example, TCAC could support ongoing research on its LIHTC awards by converting its application and cost certification data into a database format (as opposed to PDFs), and policymakers could continue to support HCD as it builds its RHNA and Housing Element data infrastructure.

Conclusion

California's rising affordable housing development costs stand in direct opposition to its goals in addressing the housing crisis. The research presented here confirms that costs on 9% LIHTC new construction projects have significantly outpaced inflation, meaning that more public subsidy dollars are building fewer and fewer affordable units. Most of the drivers of these costs are not unique to affordable housing—rather, they stem from a tight labor market on the one hand and the challenges of entitling multi-family properties on the other. As long as most of the zoning in the state is limited to single-family homes, building a more balanced mix of units affordable to households at all income levels will be difficult.

However, the analysis and interviews also point to opportunities for how the affordable housing system could be reformed to build more housing more quickly and at a lower cost. As California passes landmark legislation to protect tenants and expand funding for affordable housing, it also needs to take a leadership role in reforming the system so every dollar of public subsidy has the greatest positive impact.

ENDNOTES

1. California Legislative Analyst's Office. (2016). "Perspectives on Helping Low-Income Californians Afford Housing." Retrieved from: <https://lao.ca.gov/publications/report/3345>.
2. U.S. Government Accountability Office. (2018). "Low-Income Housing Tax Credit: Improved Data and Oversight Would Strengthen Cost Assessment and Fraud Risk Management." Report GAO-18-627. Retrieved from: <https://www.gao.gov/products/gao-18-637>.
3. Reid, C. (2018). "The Links Between Affordable Housing and Economic Mobility." Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/links-between-affordable-housing-and-economic-mobility>.
4. Future research will extend the cost analysis to the 4% tax credit program and to rehabilitation and preservation projects.
5. While data on these projects are publicly available, they do not exist in a comprehensive database. Instead, they are posted online in a series of individual documents, largely in PDF format.
6. Developers can claim a "boost" to the amount of tax credits they can receive based on certain items in the LIHTC regulations, such as prevailing wage requirements, seismic mediation, sustainable building techniques, as well as being located in certain types of geographies.
7. For approximately 15 percent of the projects, we had data from both the applications and the cost certifications. In about 40 percent of cases, the application and cost certification data were aligned, however, if they were not aligned, the final cost certification data was generally higher.
8. We did not include projects that were funded under the American Recovery and Reinvestment Act (ARRA) of 2009. To help cover shortfalls in LIHTC credit demand due to the recession, ARRA allowed developers to receive grants in lieu of the tax credits, raising concern that these projects may not be the same as those not funded under the grant program. We also could not find applications or staff reports for all the projects.
9. Structured parking refers to either underground parking or parking in podium structures.
10. In the revised California regulations, large family developments (in contrast to projects that focus on senior housing or that are smaller in scale) located in a census tract designated on the TCAC/HCD Opportunity Area Maps as "Highest" or "High" Resource receive an extra 8 points on their application. Although the maps use several different indicators to characterize a tract's resource level, in general "Highest" and "High" resource tracts tend to

be lower poverty, more suburban, and have a greater share of non-Hispanic White households.

11. For example, see Chetty, R., Hendren, N., & Katz, L. (2016). “The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment.” *American Economic Review* 106, no. 4 (April 2016): 855–902; Ellen, I. G., Horn, K. M., & Kuai, Y. (2018). “Gateway to Opportunity? Disparities in Neighborhood Conditions among Low-Income Housing Tax Credit Residents.” *Housing Policy Debate* 28 (4): 572–91; Galster, G. C. (2012). “The Mechanisms of Neighborhood Effects: Theory, Evidence, and Policy Implications.” In *Neighbourhood Effects Research: New Perspectives*, edited by Maarten van Ham, David Manley, Nick Bailey, Ludi Simpson, and Duncan Maclennan, 23–56. Dordrecht ; New York: Springer Science+Business Media B.V.

12. Fannie Mae (2017). “Multifamily Market Commentary.” Washington, D.C. Retrieved from: https://www.fanniemae.com/resources/file/research/emma/pdf/MF_Market_Commentary_031517.pdf.

13. This aggregation allows us to smooth out differences in regions caused by a small number of projects in any one year.

14. Turner Center Analysis of State of California Department of Finance, Construction Permits, Annual data, from 1975, Residential and U.S. Bureau of Labor Statistics Data: Federal Reserve Bank of St. Louis and U.S. Bureau of Labor Statistics, All Employees: Construction: Residential Building Construction in California.

15. Funding sources for affordable projects may trigger state or federal Davis-Bacon prevailing wage requirements, which differ from state level prevailing wage requirements in terms of oversight regulations as well as wage rates. See: California Tax Credit Allocation Committee, California Debt Limit Allocation Committee, Department of Housing and Community Development, California Housing Finance Agency, Newman, M., Shawn, B., & Woodward, S. (2014). *Affordable Housing Cost Study*. Retrieved from: https://www.treasurer.ca.gov/ctcac/affordable_housing.pdf.

16. Measure A1 was a bond measure in Alameda County that created a new funding source for affordable housing but includes local hiring requirements.

17. More directly, these costs show up in terms of foregone private permanent debt, which is a typical source of financing for family and senior housing projects.

18. This is an incomplete list of sustainable building elements, and regulations have changed over time. Please see TCAC guidelines for a more complete description of sustainable building techniques encouraged through the TCAC point scoring system and basis limit regulations.



19. Reid, C. & Raetz, H. (2018). “Perspectives: Practitioners Weigh in on Drivers of Rising Housing Construction Costs in San Francisco, Turner Center for Housing Innovation at UC Berkeley. Retrieved from: https://turnercenter.berkeley.edu/uploads/San_Francisco_Construction_Cost_Brief_-_Turner_Center_January_2018.pdf.
20. Mawhorter, S., Garcia, D., & Raetz, H. (2018). “It All Adds Up: The Cost Of Housing Development Fees In Seven California Cities.” Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/development-fees.>; Raetz, H., Garcia, D., & Decker, N. (2019). “Current Practices and Policy Considerations to Improve Implementation of Fees Governed by the Mitigation Fee Act.” Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/residential-impact-fees-in-california>.
21. Isolating the costs of prevailing wage can be challenging, since prevailing wage projects are different from non-prevailing wage projects. Differences in costs may be attributable to differences we can’t measure, and not prevailing wage per se. While it is impossible to control for every factor that influences development costs, we ran additional models using propensity score matching (which helps to reduce these differences) and found the same substantive results, though estimates of the impact ranged from around \$40,000 a unit to \$55,000 depending on the model specification.
22. Kaplan, M. (2018). “The state’s role in financing regional housing priorities: Minnesota’s Consolidated RFP.” The Brookings Institution. Retrieved from: <https://www.brookings.edu/blog/the-avenue/2018/04/16/the-states-role-in-financing-regional-housing-priorities-minnesotas-consolidated-rfp/>.
23. See: Mawhorter, S., Garcia, D., & Raetz, H. (2018). “It All Adds Up: The Cost Of Housing Development Fees In Seven California Cities.” Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/development-fees.>; Raetz, H., Garcia, D., & Decker, N. (2019). “Residential Impact Fees in California: Current Practices and Policy Considerations to Improve Implementation of Fees Governed by the Mitigation Fee Act.” Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/residential-impact-fees-in-california>.
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Acknowledgments

This report was made possible thanks to support from the Chan Zuckerberg Initiative—specifically their support for the intensive data collection and cleaning that it took to do this analysis—and Bank of America, which provided support for our research assistants. We would especially like to acknowledge Adrian Napolitano and Beatriz Stambuk-Torres, whose assistance on the quantitative analysis and interviews was invaluable to the research project. We also appreciate the contributions of the Turner Center’s team, especially Carol Galante, Elizabeth Kneebone, David Garcia, Ben Metcalf, and Cora Johnson-Grau for their thoughtful feedback and contributions to the report.

Lastly, we would like to thank all the developers and contractors who took the time to work with us on this project; their knowledge and experience was crucial to our ability to understand the intricacies of the tax credit program and the factors that are impacting affordable housing development in California.

