Low-Income Housing Tax Credit Construction Costs: An Analysis of Prevailing Wages

August 2, 2024

TERNER CENTER FOR HOUSING INNOVATION
UC BERKELEY

Introduction

The high cost of construction is a fundamental obstacle to building more housing in California. This is particularly true for subsidized affordable housing, since higher costs typically translate into the need for more public funding. In 2023, it cost approximately $708,000 to develop one subsidized housing unit funded with Low Income Housing Tax Credit (LIHTC) equity in California[1], nearly 10 percent more than in 2019, after accounting for inflation.

The high costs of housing development are the result of a number of different factors. Certainly land values play an important role in why it is so expensive to build new housing in California. But in recent years, both material and labor costs have increased faster than inflation in the economy as a whole as a result of factors such as supply chain issues and labor market shortages.[2] Local policies such as development fees and minimum parking requirements can also increase costs, as can building codes.[3] In general, these factors apply to both market-rate and affordable housing development, and contribute to the challenges developers face in making projects "pencil".[4]

However, Terner research has shown that subsidized housing faces additional cost drivers, including the high transaction and regulatory costs associated with putting together the various sources of funding needed to make the rents affordable to low-income families.[5] These public funding sources also often include other important policy priorities that may drive up costs, including using sustainable building techniques to reduce climate pollution and water consumption and/or encouraging development in higher opportunity neighborhoods (which may increase land costs or necessitate more costly design or building typologies).

Public funding for subsidized housing is also often coupled with the requirement to pay prevailing wages, which tend to be higher than non-prevailing wage rates. The premise that funding—in the form of subsidies for affordable housing—should generate high quality jobs is grounded in policy priorities that ensure public investments lead to community benefits. Research has shown that the construction sector includes a significant share of low wage workers.[6] Workers on prevailing wage projects are usually paid more, and research studies suggest that prevailing wage requirements can promote worker safety and training.[7] However, prevailing wages can also drive up the cost of subsidized housing construction, meaning that policymakers need to commit more public funding for each new unit. In an era of scarce resources, it is important to understand the potential trade-offs between requiring prevailing wages and maximizing the total number of new subsidized housing units.

To help inform conversations on how to balance these two objectives, in this brief, we present data for subsidized housing projects awarded Low Income Housing Tax Credits (LIHTC) in California between 2020 and 2023. We analyze how projects paying prevailing wages differed in hard construction costs from those that did not. We then examine how many projects that did not require prevailing wages used other sources of public funding, including state tax credits as well as other sources of federal, state, and local funding. We conclude with the limitations of this analysis and provide suggestions for future research.

Background

Under prevailing wage requirements, construction contractors are required to pay employees specified wages and benefits that reflect the levels most "common" in a specific geographic area.[8] Prevailing wages are often required as part of publicly-funded projects. For example, the federal Davis-Bacon Act of 1931 requires prevailing wages on most federally-funded housing projects, such as those built using HOME or Community Development Block Grant dollars.[9]

However, projects funded by the Low-Income Housing Tax Credit (LIHTC) program–the major source of funding for subsidized housing development–do not automatically trigger prevailing wage requirements. Because it is a tax credit rather than a direct subsidy, prevailing wages apply only if the project also layers in other sources of funding that require either federal or state prevailing wages. For example, projects that include specified funding from the California Department of Housing and Community Development–such as the Multifamily Housing Program–include prevailing wage requirements. Local governments may also provide funding–such as housing trust funds or infrastructure financing–that trigger prevailing wages. Prevailing wages can also be required as a condition of using state programs that override local zoning controls: for example, affordable housing projects that receive streamlined land use approvals under California Senate Bill (SB) 35 (extended and expanded with 2023's SB 423) are required to pay prevailing wages.[10] They can also be required by local governments, for example, when zoning approvals require local discretionary actions and result in the project being subject to a Project Labor or Community Benefits Agreement.

Previous research on the effects of prevailing wage laws has found that prevailing wage requirements increase construction costs on subsidized housing projects.[11] This is likely due to both higher wage rates, as well as the additional "paperwork and bureaucracy" associated with prevailing wage projects. A tight labor market can also make it harder to find contractors that have the capacity to administer prevailing wage contracts. Advocates for prevailing wages argue that using a better compensated labor force is likely to increase the quality of workmanship, thereby reducing injuries, change orders, and time to completion, all of which could contribute to lower costs overall. There has been less empirical research evidence documenting these benefits, in part due to the lack of publicly available data on construction bids, development timelines, and/or construction quality. Expanding research in these areas–including increasing the transparency and availability of data on construction costs and wages–would advance the field's understanding of the benefits and costs of prevailing wages, as well as provide insights into how to improve other outcomes in the construction sector.

Analysis

In this brief, we present data on projects awarded LIHTC funding between 2020 and 2023 in California, scraped from publicly available applications. The data reflect the developer's estimates of project costs at time of application, and not the final costs after the development is completed. The analysis includes both new construction and acquisition/rehab projects, as well as projects that were awarded 9 percent and 4 percent credits.[12] We model the relationship

between prevailing wage and per unit construction costs. Prevailing wages–by influencing the cost of labor–are most likely to have an impact on the hard costs of construction, which is why we focus on those costs rather than total development costs (which are influenced by a broader set of factors, including land costs, interest rates, and impact fees). All dollar amounts are adjusted for inflation to 2024 dollars. We include an Appendix with more detailed methodological notes and full model results at the end of this brief.

The project level data included in this analysis includes 859 LIHTC awards, spanning both the 9 percent and 4 percent tax credit programs (Table 1).[13] Collectively, these investments will add or preserve over 75,400 units of subsidized housing, including homes for people experiencing homelessness, seniors, and low-income families. The majority of the applications (80 percent) were for new construction, with the rest going towards acquiring and retrofitting existing buildings.

Table 1: Characteristics of Sample of Awarded LIHTC Applications, 2020 - 2023

	All Projects	9%	4%
Total Number of Projects	859	291	568
Total Number of Units	75,426	17,266	58,160
Development Type			
% New Construction	80.4	83.5	78.9
% Acquisition/Rehabilitation	19.6	16.5	21.1
Property Type			
% Family	41.9	46.4	39.6
% Special Needs	24.2	30.9	20.8
% Senior	11.3	15.5	9.2
% Non-Targeted	18.3	0.0	27.6
% At-Risk	4.3	7.2	2.8
Prevailing Wage			
# Prevailing Wage	452	171	281
% Prevailing Wage	52.6	58.8	49.5

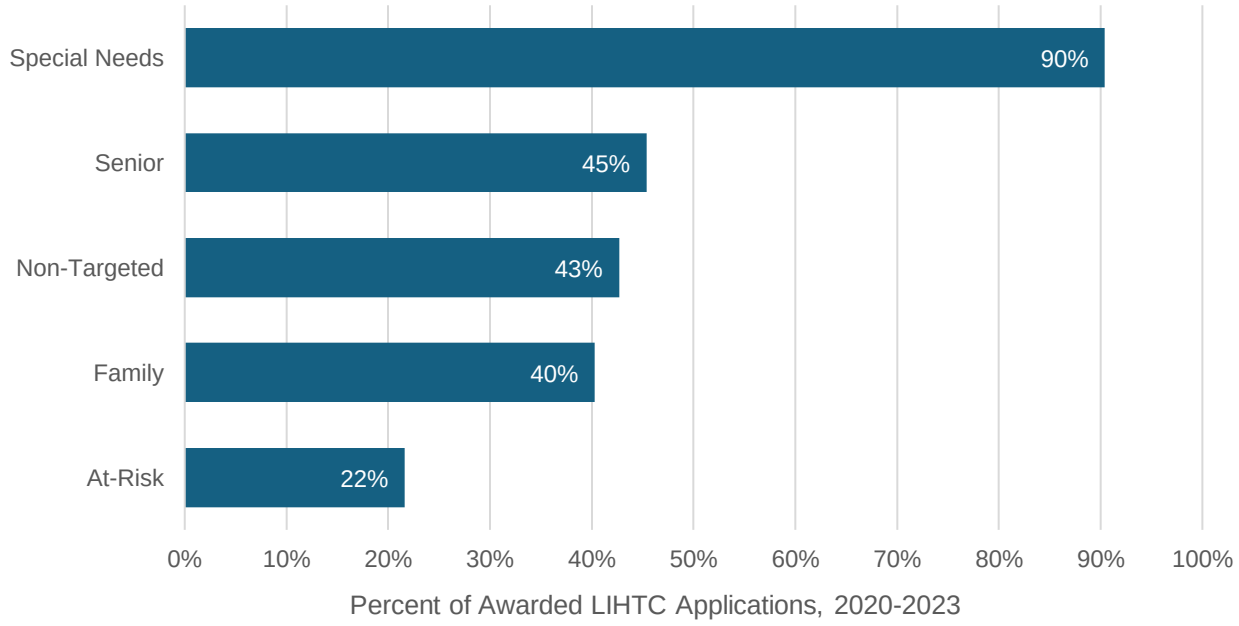
Source: Analysis of LIHTC project application data, Shazia Manji, Pratish Patel, Carolina Reid, and Quinn Underriner (2023).“California Low-Income Housing Tax Credit Database, 2020 – 2023,” Cal Poly, San Luis Obispo, and Terner Center for Housing Innovation, Berkeley, California.

The majority of LIHTC awards–53 percent–were for projects that indicated that they would use prevailing wages on their tax credit applications.[14] Prevailing wages were more commonly included on 9 percent than 4 percent tax credit project applications: this likely reflects the fact that a greater share of 9 percent developments are directed to seniors or households with special needs. These properties often require more subsidy sources to get to deeper affordability levels,

thus increasing the likelihood that one of the subsidy sources will come with a prevailing wage requirement.

The presence of prevailing wages also varies by project type. For example, 90 percent of Special Needs project applications (which include units for people with physical or mental health disabilities, and can often be dedicated to people who have been experiencing homelessness) included prevailing wages (Figure 1). In comparison, only 40 percent of LIHTC applications designated for families included prevailing wages. Applications for funding for at-risk properties–defined as the acquisition and rehabilitation of existing developments at risk of losing their affordability due to expiring deed restrictions–were the least likely (22 percent) to indicate that they would pay prevailing wages.

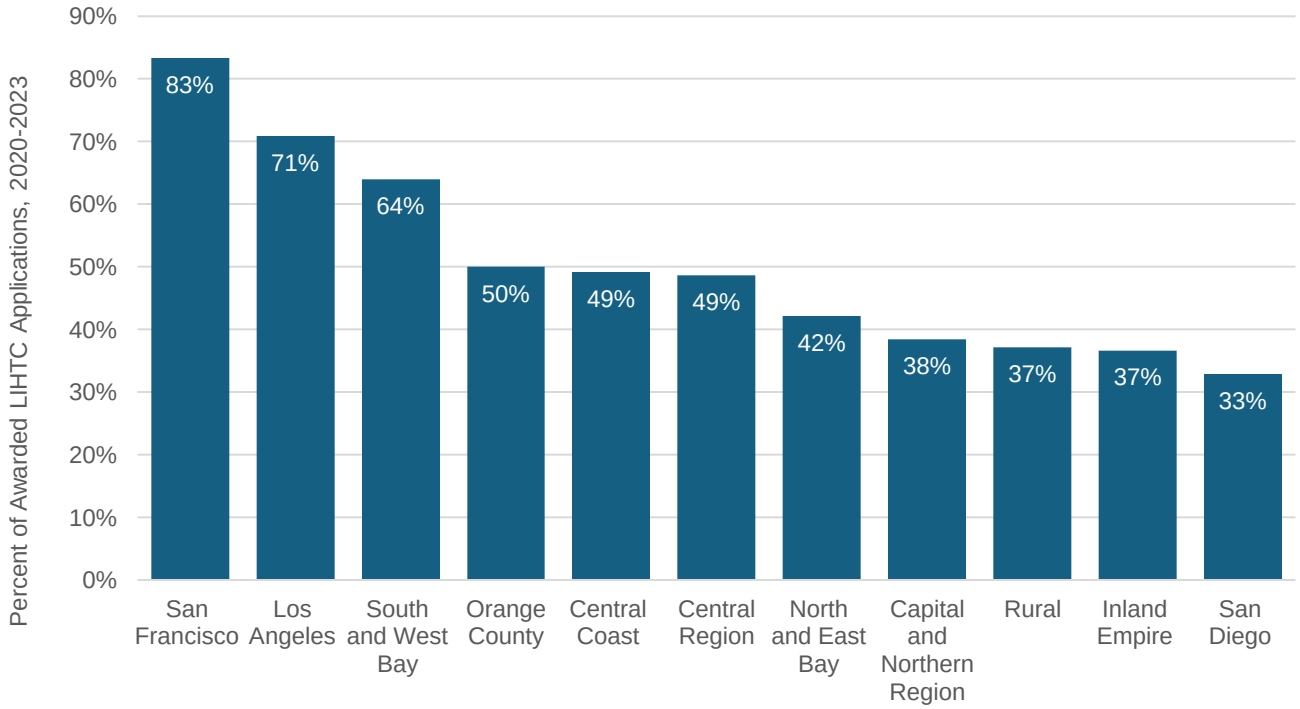
Figure 1: Awarded LIHTC Project Applications Indicating Presence of Prevailing Wages by Property Type, 2020 - 2023



Source: Analysis of California Low-Income Housing Tax Credit Database, 2020 – 2023.

The share of applications indicating that they would pay prevailing wages also varies by location: for example, 83 percent of applications in San Francisco included prevailing wages, compared to 38 percent in San Diego and Orange Counties (Figure 2). This regional variation may be a consequence of whether projects are located in jurisdictions that require labor agreements as part of local funding or land use decisions, the types of properties that are being built, or as a result of developers needing to layer in additional funding sources to make the projects viable in higher cost markets.

Figure 2: Awarded LIHTC Project Applications Indicating Presence of Prevailing Wages by Region, 2020 – 2023



Source: Analysis of California Low-Income Housing Tax Credit Database, 2020 – 2023.

On average, construction costs on applications with prevailing wages are higher than those without. Average per unit construction costs for project applications indicating that they would pay prevailing wages was $428,000, compared to $258,000 for those that did not.[15] However, not accounting for differences across property types and regions overstates the impact of prevailing wage on construction costs. For example, if projects paying prevailing wages are more likely to use steel construction (for buildings over five stories, for example), or have underground parking, the additional costs may be more a function of the building typology than the fact that the developer paid prevailing wages. In addition, there is likely a strong correlation between projects paying prevailing wages and high cost markets: as noted above, in cities where developers need to layer in more subsidies to build affordable housing, they are more likely to use a source of funding that triggers prevailing wage.

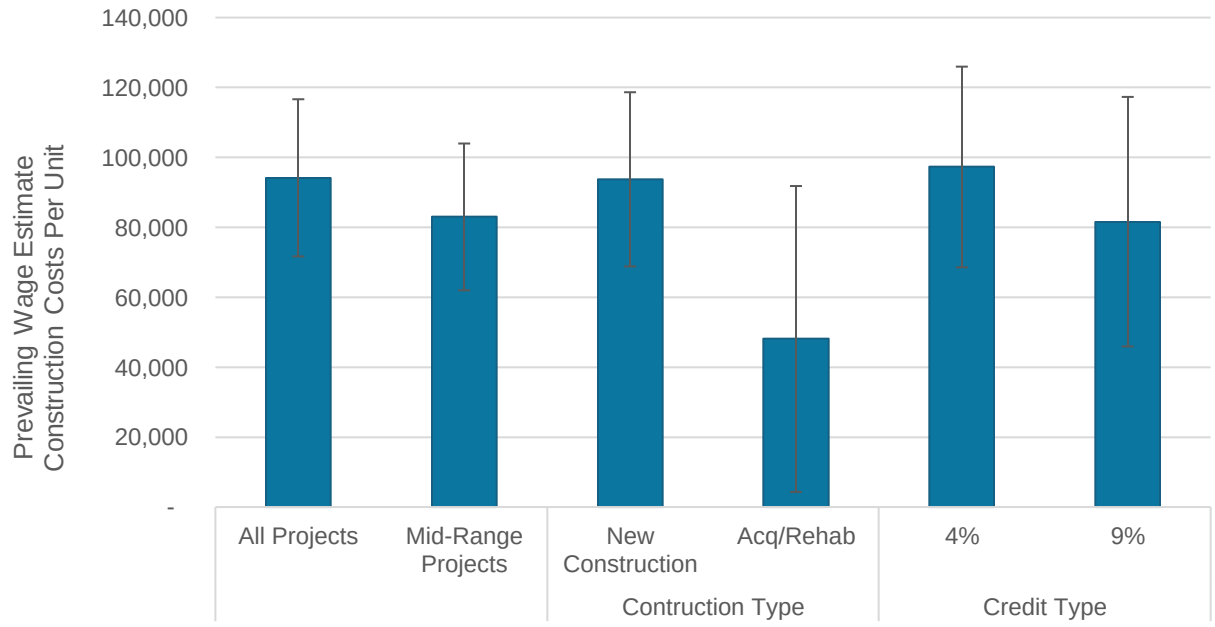
To control for these differences in project characteristics that may also impact construction costs, we ran a series of regression models to better isolate the additional cost that prevailing wage projects incur. The strength of a regression model is that it allows us to better compare apples to apples: how do two projects in the same place with similar characteristics differ on costs, and how much of this difference could be explained by prevailing wages? It is important to acknowledge that the model presented here is not causal: we cannot capture all the differences between projects that might influence costs.[16] However, the model does allow us to get closer to

an estimate of the association between prevailing wage and project costs, in comparison to the average differences noted above.

The full model, presented in the Appendix, emphasizes that a number of property characteristics influence the overall cost of building subsidized housing, above and beyond prevailing wage. For instance, new construction is more expensive than acquisition/rehab, and projects that include more than five stories or that incorporate structured parking or retail space are all more expensive than those that do not. The model also shows that as the number of units go up, total per unit construction costs decrease, reflecting the economies of scale associated with larger buildings. Regional differences are also pronounced: San Francisco, Santa Clara, and Oakland regions have by far the highest per unit construction costs, across all building typologies.

Once we account for these various property characteristics, however, we find that applications with prevailing wage are associated with a statistically significant increase in construction costs. Figure 3 presents estimates of the added cost of prevailing wage for different sets of projects. In the model that includes every LIHTC project in our sample, we find that projects indicating that they would pay prevailing wage cost approximately $94,000 more per unit. When we account for potential error around this estimate, we find that the increased cost associated with prevailing wages ranges from about $84,800 to $106,700.[17]

Figure 3: Estimate of the Effects of Prevailing Wages on Per Unit Construction Costs



Source: Analysis of California Low-Income Housing Tax Credit Database, 2020 – 2023.

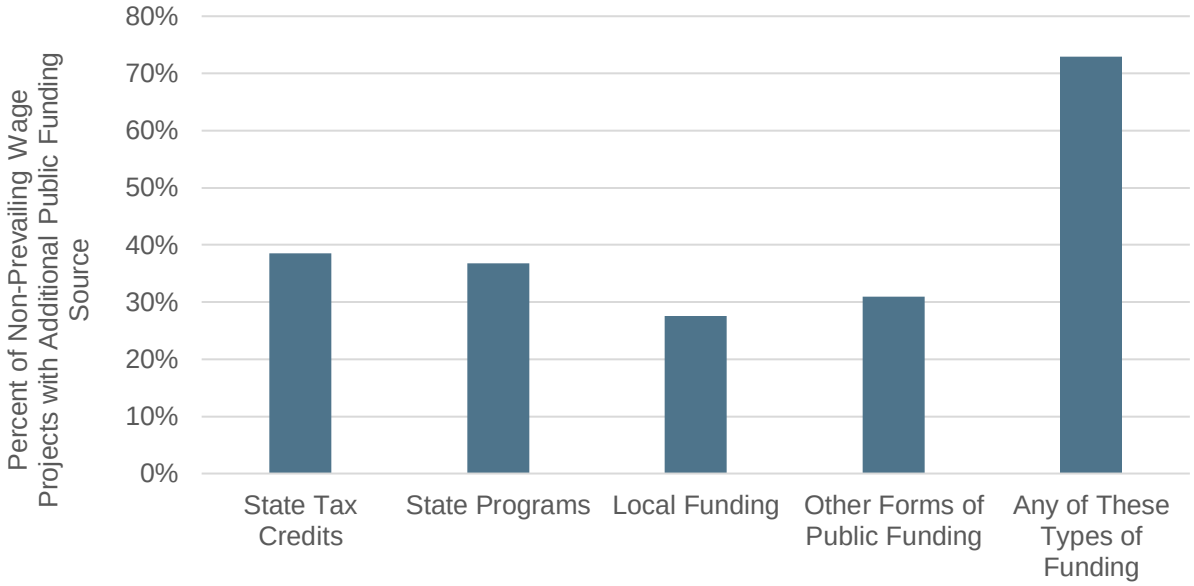
The estimates change slightly when we look at different subsets of the sample. When we stratify the sample and look separately at 4 percent and 9 percent applications, we find that the effect is greater for 4 percent than 9 percent projects. The estimate is lower for rehab projects; prevailing

wage is associated with about $48,000 higher construction costs per unit, although there is significant variation (as indicated by the large error bars). While this is lower than new construction, the average per unit construction costs of rehab projects are also lower: approximately $144,000 per unit). Finally, we tested the model for "mid-range" projects, dropping projects that cost less than $85,000 or more than $650,000 per unit from the sample.[18] These "outlier" projects may be particularly sensitive to unique construction conditions that we can't adequately control for in the model. For mid-range projects, we find that the association between prevailing wages and added construction costs is around $83,000 per unit.

What Other Sources of Funding Are Used to Fund Non-Prevailing Wage LIHTC Projects?

One of the questions confronting lawmakers under AB 3190 is whether to extend prevailing wage requirements to more LIHTC developments, by increasing the types of public funds that would trigger prevailing wage. Although we do not conduct specific analysis to assess the impacts of various triggers being discussed under AB 3190, in this section, we present data that looks at what other sources of funding are commonly used in combination with the federal LIHTC. On average, LIHTC projects include five separate sources of funding, highlighting the complexity of existing LIHTC capital stacks and the challenges in compiling funding to make subsidized housing possible.[19]

Figure 4: Share of Non-Prevailing Wage Projects that Include Other Sources of Public Funding

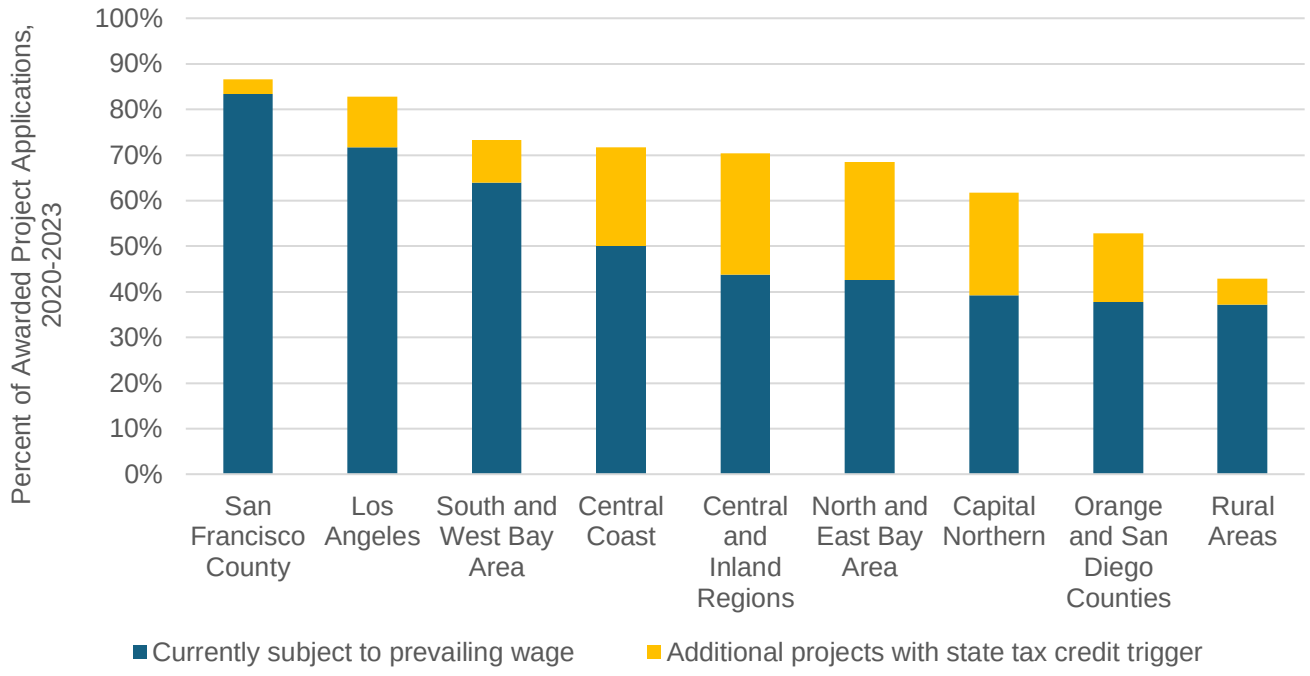


Source: Analysis of California Low-Income Housing Tax Credit Database, 2020 – 2023. **Note**: "Other forms of public funding" include funds from a local public housing authority, a redevelopment agency or successor agency to a redevelopment agency, regional government entities, or a California Native American tribe. Land donations, bonds, and fee waivers were also included in this category.

We find that 73 percent of applications that do not indicate prevailing wages use at least one other source of public funding (Figure 4). One common source of additional funding is the state's low-income housing tax credit program: nearly 40 percent of LIHTC project applications that do not currently indicate the use of prevailing wage are also requesting state tax credits. Others layer in one or more other sources of state or local subsidies.

If prevailing wage requirements were triggered by use of these other funding streams, it would have different implications across California's diverse regions. For example, in San Francisco and San Jose, if the state tax credit were to trigger prevailing requirements, it would only affect a small share of additional construction projects not already paying prevailing wages: 3 and 9 percent respectively. However, in the Central Valley and Inland regions of the state, an additional 27 percent of projects would be required to pay prevailing wages. This could have an impact on subsidized housing production as these regions have fewer sources of local gap subsidy for affordable housing to make up the difference.[20]

Figure 5: Additional Share of LIHTC Projects that Would Be Subject to Prevailing Wages If Required by State Tax Credit Funding by Region



Source: Analysis of California Low-Income Housing Tax Credit Database, 2020 – 2023.

Conclusion

Requiring prevailing wages is associated with higher construction costs for subsidized housing. Although we cannot control for all project characteristics that may have an impact on construction costs, we find that LIHTC projects in California awarded credits between 2020 and 2023 cost an estimated $94,000 more per unit to build, if they planned to pay prevailing wages, though the estimate can range +/- $25,000 depending on sample. It also does not mean that future projects will automatically cost $94,000 more per unit to build if they include prevailing wages—the actual cost will depend on multiple factors (including those we include in our models). The research is also limited in that it analyzes projected rather than actual costs: future studies should compare projected with actual costs. However, the analysis suggests that requiring prevailing wages as a condition of additional funding sources, such as state tax credits, will likely increase the costs of construction and may reduce how many units can be built with existing resources.

This conclusion does not mean that prevailing wages should not be pursued. Paying higher wages is a policy choice with public benefits, as are decisions to invest in affordable housing projects in higher opportunity neighborhoods or to subsidize sustainable building techniques to mitigate climate change. It is also important to ensure that lower costs on non-prevailing wage projects are not the result of illegal or exploitative labor practices. More research is needed to better understand the differences between wages, working conditions, and building quality on prevailing versus non-prevailing wage projects, as well as how these might vary by region. In addition, understanding the broader set of factors that are associated with higher construction and development costs will be critical to advancing efforts to increase the supply of subsidized housing.

Appendix

The analysis presented in this brief relies on data scraped from applications for LIHTC funding between 2020 and 2023. California's Tax Credit Allocation Committee (TCAC) makes project application data available online. The Terner Center has been creating an updated database of these applications, extracting information on project characteristics, sources of funding, and cost line items.[21] These data reflect the developer's estimates of project costs at time of application, and not the final costs after the development is completed. They are also not always complete or internally consistent: for example, an application may fail to answer a question, or one section of the application will have slightly different data (e.g., presence of an elevator) than another section. To ensure the highest quality data possible, we went back and entered missing data manually (for example, by cross-referencing staff reports).

For this analysis, we focus only on construction costs for awarded projects. These include the rows in the Sources and Uses budget that cover: Site Work, Structures, General Requirements, Contractor Overhead, Contractor Profit, Prevailing Wages, General Liability Insurance, and Third-party Construction Management. We do not include Construction Interest and Fees, nor other development costs associated with the project, such as Land Acquisition, Architectural or Legal Fees, Impact Fees, or Other Project Costs. All dollar amounts were adjusted for inflation to 2024 dollars.

One challenge in modeling the factors associated with higher construction costs is that multiple factors–above and beyond prevailing wages–will influence construction costs, and these may be correlated with prevailing wage requirements. To account for these differences, we ran a series of multivariate regression models that control for these potential differences, such as construction type, region, or the year construction started. Because the choice of variables to include in a model can be subjective, we present multiple iterations below to show the effects of including different variables on the prevailing wage coefficient.

Table A1 presents the analysis of how we developed the final model used to derive our estimate of $94,000. Model 1 shows the model with only the association between prevailing wage and per unit construction costs: it shows a positive coefficient of $170,795, which can be interpreted as "when a project application indicates prevailing wages, construction costs per unit are $170,795 higher than when it doesn't." In Models 2 - 4, we add variables that the literature has shown are associated with construction costs. In each model, the R^2 value goes up. This can be interpreted as the share of variation in per unit construction costs that we are explaining with our model: in Model 4, we are explaining 76 percent of the variation in per unit construction costs. In other analyses, we tested alternative and additional controls, such as the number of buildings or the share of two or more bedroom units, as well as measures like whether or not the building had an elevator. However, these were either insignificant, or they were so closely related to other measures in the model (e.g., elevators were strongly correlated with number of stories) that they did not improve the model fit.[22]

Table A2 presents the full models for the estimates presented in Figure 3 presented in the brief.

Table A3 presents the full model for per square foot construction costs.

Analyzing the different funding sources that are included in LIHTC applications is particularly challenging, since developers do not enter funding source names consistently. The applications in the sample contained over 2,500 unique names in the Permanent Sources of funding table. We cleaned these data by reconciling different spellings of similar names (e.g., AHSC, Affordable Housing Sustainable Communities, HCD AHSC grant) or identifying through web searches new programs or sources of funding. We then categorized different funding sources into eight categories: federal funding programs, state funding programs, local funding sources, funding from public housing authorities, funding from redevelopment agencies or successor agencies to a redevelopment agency, other public funding sources, private funding, or "paper costs" - for example, when a developer defers fees but no funding changes hands.

Table A1: Construction Cost per Unit, Linear Regression Model

	Dependent Variable: Construction Cost per Unit (2024$)							
	Model 1		Model 2		Model 3		Model 4	
Intercept	257,607	***	112,720	***	85,395	***	40,386	*
Prevailing Wage	170,795	***	109,332	***	93,138	***	94,161	***
Project Characteristics								
9% LIHTC Project							5,286	
New Construction			201,636	***	214,229	***	202,432	***
For Profit Developer							-7,588	
Number of Permanent Sources							5,444	***
Building Characteristics								
Number of Units			-247	***	-405	***	-489	***
Structured Parking							59,020	***
Retail Space							21,229	*
Stories (Comparison: Single Story Building)								
Two to Five Stories			30,579	***	14,587		27,873	***
More than 5 Stories			98,754	***	49,620	***	51,973	***
Project Type (Comparison: Non-Targeted)								
Seniors							-13,853	
Special Needs							-8,545	
Large Family							55,961	***
At Risk							40,867	*
Location								
Infill			35,408	***	30,579	***	13,879	
Region (Comparison: Inland, Central, and Rural Regions)								
Capital Northern					-3,050		8,308	

Central Coast						67,365	***	64,905	***
Los Angeles						22,960		28,355	**
San Diego and Orange County						-5,995		-12,903	
South and West Bay						158,545	***	138,317	***
North and East Bay						87,196	***	80,479	***
San Francisco County						230,288	***	230,492	***
Year (Comparison: 2020)									
2021						8,957		11,483	
2022						29,929	***	23,812	*
2023						19,708		12,075	
N	859		859		859		859		
Adj R-Sq	0.2692		0.5833		0.7048		0.7602		
F Value	317.11		201.18		129		109.79		
Pr > F	<.0001		<.0001		<.0001		<.0001		
*** < .001, ** p < .01, * p< .05									

***p < .001, ** p < .01, * p< .05

Notes: Regions were defined by documentation retrieved from the TCAC website: https://www.treasurer.ca.gov/ctcac/apportionment/index.asp. We combined San Diego and Orange County into one category, as well as the Inland Empire, Central, and Rural counties into the other, in the model. Including all the regions reduced model fit (due to the large number of variables and small overall sample size) and did not substantively change the estimates.

Table A2: Estimates for Other Samples included in Figure 3, Linear Regression

	Dependent Variable: Construction Cost per Unit (2024$)									
	Model 1: New Construction Only		Model 2: Acquisition Rehab Only		Model 3: 9% Only		Model 4: 4% Only		Model 5: Mid-Range Projects	
Intercept	211,964	***	80,376	*	120,875	***	16,435		50,830	***
Prevailing Wage	93,736	***	48,080	***	81,620	***	97,266	***	82,985	***
Project Characteristics										
9% LIHTC Project	7,786		9,114						7,034	
New Construction					198,931	***	199,828	***	9,113	***
For Profit Developer	-3,223		-9,004		-372		-11,638		5,903	
Number of Permanent Sources	8,254	***	4,030		317		7,791	***	1,357	***
Building Characteristics										
Number of Units	-538	***	-268		-748	***	-435	***	-447	***
Structured Parking	62,041	***	-30,175		74,851	***	55,718	***	48,232	***
Retail Space	27,623	**	-31,120		65,951	***	4,214		17,695	

Stories (Comparison: Single Story Building)										
Two to Five Stories	32,583	***	-13,277		-26,804		37,526	***	30,135	***
More than 5 Stories	46,798	***	41,622		-4,201		61,754	***	54,532	***
Project Type (Comparison: Non-Targeted)										
Seniors	-11,760		-14,333		-46,839		-14,139		54,532	
Special Needs	-3,264		82,880	*	-33,827		-915		-14,345	
Large Family	72,851	***	-10,777		19,273		56,250	***	-7,502	***
At Risk			1,676				29,642		49,047	
Location										
Infill	5,681		74,233	*	7,435		14,902		9,970	
Region (Comparison: Inland, Central, and Rural Regions)										
Capital Northern	16,007		10,711		-2,981		14,439.00		12,818	
Central Coast	67,673	***	77,956	*	63,003	***	75,301	***	69,131	***
Los Angeles	38,687	***	35,120		30,010		27,904		39,256	***
San Diego and Orange County	-16,755		11,402		-30,677		2,267		-11,116	
South and West Bay	156,428	***	97,782	*	113,433	***	143,743	***	110,134	***
North and East Bay	97,680	***	49,544		100,605	***	76,058	***	72,132	***
San Francisco County	310,273	***	138,689	***	161,462	***	249,649	***	143,225	***
Year (Comparison: 2020)										
2021	10,825		28,639		15,092		8,765		8,518	
2022	19,626		42,707		49,975	**	26,451	*	13,672	
2023	19467		3,474		59,140	***	8,333		9,085	
N	691		168		291		568		774	
Mean Value: Per Unit Construction Costs	396,859		144,368		350,321		346,021		340,990	
Adj R-Sq	0.6789		0.598		0.7372		0.7948		0.7095	
F Value	64.43		8.86		32.57		87.66		73.06	
Pr > F	<.0001		<.0001		<.0001		<.0001		<.0001	
*** < .001, ** p < .01, * p< .05										

Table A3: Linear Regression Models

	Per Square Foot Construction Costs	
	Model 2	
Intercept	85	***
Prevailing Wage	90	***
Project Characteristics		
9% LIHTC Project	8	
New Construction	245	***
For Profit Developer	-7	
Number of Permanent Sources	4	
Building Characteristics		
Number of Units	0	***
Structured Parking	-53	***
Retail Space	24	
Stories (Comparison: Single Story Building)		
Two to Five Stories	39	*
More than 5 Stories	89	***
Project Type (Comparison: Non-Targeted)		
Seniors	15.5	
Special Needs	31.8	
Large Family	-47.4	***
At Risk	20.1	
Location		
Infill	2	
Region (Comparison: Inland, Central, and Rural Regions)		
Capital Northern	7.8	
Central Coast	70.7	***
Los Angeles	46.0	*
San Diego and Orange County	-5.4	
South and West Bay	144.3	***
North and East Bay	89.1	***
San Francisco County	323.8	***
Year (Comparison: 2020)		
2021	13.7	
2022	30.9	
2023	29.2	
N	859	

Mean Value: Per Square Foot Construction Costs	389	
Adj R-Sq	0.5877	
F Value	49.92	

Endnotes

[1] This is for new construction projects only, and includes the full list of projects provided by TCAC.
[2] J. Wong. (2024). "The Effect of Inflation, Supply Chain Disruption, and Labor Shortages on Real Estate Development," Pepperdine Caruso School of Law, retrieved from https://law.pepperdine.edu/surf-report/posts/effect-inflation-supply-chain-disruption-labor-shortages-real-estate-development-justin-wong.htm.
[3] Raetz, Hayley, Teddy Forscher, Elizabeth Kneebone, and Carolina Reid (March 2020). "The Hard Costs of Construction: Recent Trends in Labor and Materials Costs for Apartment Buildings in California." Berkeley, CA: Terner Center for Housing Innovation. https://ternercenter.berkeley.edu/hard-construction-costs-apartments-california.
[4] Garcia, David (2023). "Making It Pencil: the Math Behind Housing Development – 2023 Update." Berkeley, CA: Terner Center for Housing Innovation. Retrieved from https://ternercenter.berkeley.edu/research-and-policy/making-it-pencil-2023/.
[5] Reid, Carolina (March 2020). "The Costs of Affordable Housing Production: Insights from California's 9% Low-Income Housing Tax Credit Program." Berkeley, CA: Terner Center for Housing Innovation. Kneebone, Elizabeth and Carolina Reid (April 2021). "The Complexity of Financing Low-Income Housing Tax Credit Housing in the United States," Berkeley, CA: Terner Center for Housing Innovation.
[6] Jacobs, Ken and Kuochih Huang (2021). The Public Cost of Low-Wage Jobs in California's Construction Industry. UC Berkeley Labor Center, Retrieved from: https://laborcenter.berkeley.edu/the-public-cost-of-low-wage-jobs-in-californias-construction-industry/
[7] Clark, Mike. "The Effects of Prevailing Wage Laws: A Comparison of Individual Workers' Wages Earned on and off Prevailing Wage Construction Projects." *Journal of Labor Research* 26, no. 4 (September 1, 2005): 725–37. https://doi.org/10.1007/s12122-005-1008-2. Duncan, Kevin, and Russell Ormiston. "What Does the Research Tell Us about Prevailing Wage Laws?" *Labor Studies Journal* 44, no. 2 (June 1, 2019): 139–60.
[8] Federal prevailing wages are set by the U.S. Department of Labor. The Department of Labor surveys contractors, unions, local officials, and other interested parties to collect wage data. If a majority of the workers within an occupation earn the same wage, that wage becomes the prevailing wage. In California, prevailing wage rates are set by the Department of Industrial Relations. https://www.dir.ca.gov/oprl/dprewagedetermination.htm
[9] For more on Davis Bacon see: https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/Tab3.pdf For HUD guidance, see https://www.hud.gov/sites/dfiles/OCHCO/documents/13441AII-5SECH.pdf.
[10] Manji, Shazia and Ryan Finnigan (2023). "Streamlining Multifamily Housing Production in California: Progress Implementing SB 35." UC Berkeley: Terner Center for Housing Innovation. Retrieved from: https://ternercenter.berkeley.edu/research-and-policy/sb-35-evaluation/.
[11] A recent review of the peer-reviewed literature–which is relatively sparse–found that while studies on schools and highway projects showed mixed results for the effects of prevailing wage requirements, published research on the impacts of prevailing wages in subsidized housing has consistently found increased costs. Duncan, Kevin, and Russell Ormiston. "What Does the Research Tell Us about Prevailing Wage Laws?" *Labor Studies Journal* 44, no. 2 (June 1, 2019): 139–60. See also Dunn, Sarah, John M. Quigley, and Larry A. Rosenthal. "The Effects of Prevailing Wage Requirements on the Cost of Low-Income Housing." *ILR Review* 59, no. 1 (October 1, 2005): 141–57; and Palm, Matthew, and Deb Niemeier. "Does Placing Affordable Housing Near Rail Raise Development Costs? Evidence From California's Four Largest Metropolitan Planning Organizations." *Housing Policy Debate* 28, no. 2 (March 4, 2018): 180–98.
[12] Two types of federal tax credits are available and are generally referred to as nine percent (9%) and four percent (4%) LIHTCs. Each number refers to the approximate percentage that is multiplied against a project's requested "qualified basis" to determine the maximum amount of annual federal credits CTCAC may award the project.
[13] California's Tax Credit Allocation Committee's awarded project list for 2020 - 2023 includes 30 additional funded applications. However, the list includes projects that also applied for funding in earlier years, with similar project characteristics and tax credit amount requests. We removed these duplicates

from the dataset, retaining only data from the most recent application. Analysis on all applications, including duplicates, increases our estimates for the impact of prevailing wages on construction costs.

[14] In the tax credit application, developers indicate whether they plan to pay prevailing wages in a section where they calculate the threshold basis limit for the proposed project. We code projects that indicate that they will pay prevailing wages in this section as "prevailing wage." If there are other projects that plan to pay prevailing wages but have not indicated that on the application, we would be classifying them incorrectly.

[15] Average per unit development costs were $726,000 for applications indicating prevailing wages, compared to $515,000 for those that didn't.

[16] For a more detailed description of the limitations of regression models in the context of estimating the effect of prevailing wages on subsidized housing costs, see https://ternercenter.berkeley.edu/wp-content/uploads/2020/08/Technical_Appendix_March_2020.pdf.

[17] The Margins of Error here are presented at a 90 percent Confidence Interval.

[18] This represents the top and bottom 5 percent of the per unit construction cost distribution, excluding 85 projects from the sample.

[19] Kneebone, Elizabeth and Carolina Reid (April 2021). "The Complexity of Financing Low-Income Housing Tax Credit Housing in the United States," Berkeley, CA: Terner Center for Housing Innovation.

[20] Phillips, Shane, Carolina Reid, Dana Cuff, and Kenny Wong (March 2022). "California 100: Future of Housing and Community Development Issue Report and Facts, Origins, Trends Report," California 100 Initiative, UC Berkeley, California.

[21] Manji, Shazia, Pratish Patel, Carolina Reid, and Quinn Underriner (2023)."California Low-Income Housing Tax Credit Database, 2020 – 2023," Cal Poly, San Luis Obispo, and Terner Center for Housing Innovation, Berkeley, California.

[22] In general, adding more variables to the model increased the estimates for prevailing wage slightly.

About the Terner Center

The Terner Center for Housing Innovation at UC Berkeley formulates bold strategies to house families from all walks of life in vibrant, sustainable, and affordable homes and communities. Our focus is on generating constructive, practical strategies for public policy makers and innovative tools for private sector partners to achieve better results for families and communities. For more information visit: www.ternercenter.berkeley.edu

Acknowledgments

Thank you to Carolina Reid, Shazia Manji, Tiffany Tran, and Quinn Underriner for conducting the analysis for this report. We would also like to thank Pratish Patel, Associate Professor, Orfalea College of Business, Cal Poly for his ongoing collaboration in creating the LIHTC database. We are grateful to the early reviewers of this paper as well as the broader cost study work for their thoughtful and insightful comments and their assistance in interpreting the LIHTC application data.

This research does not represent the institutional views of UC Berkeley or of the Terner Center's funders. Funders do not determine research findings or recommendations in Terner Center's research and policy reports