Annex

JASON M. WARD, LUKE SCHLAKE

The High Cost of Producing Multifamily Housing in California

Evidence and Policy Recommendations—Annex

This publication has completed RAND's research quality-assurance process but was not professionally copyedited.

For more information on this publication, visit **www.rand.org/t/RRA3743-1**.

Published by the RAND Corporation, Santa Monica, Calif.

About This Annex

This annex contains supplementary tables from our analysis of cost data, a discussion of the relationship between production costs and rental prices, and summaries of design requirements and additional funding programs in Los Angeles. The main report presents analyses of a large sample of data on production costs for both privately funded, market rate apartments and publicly subsidized affordable apartments in three states: California, Colorado, and Texas. The goal of the research is to document production cost differences between these states and across regions within these states and to identify policy reforms that can lower production costs and increase housing affordability in California, the highest cost state in the sample.

The main report is available at www.rand.org/t/RRA3743-1.

This research was conducted by the RAND Center on Housing and Homelessness (CHH), part of the Community Health and Environmental Policy Program within RAND Social and Economic Well-Being. The RAND CHH is focused on providing policymakers and stakeholders with timely research and analysis addressing the dual crises of housing affordability and homelessness. For more information, visit www.rand.org/chh.

Community Health and Environmental Policy Program

RAND Social and Economic Well-Being is a division of RAND that seeks to actively improve the health and social and economic well-being of populations and communities throughout the world. This research was conducted in the Community Health and Environmental Policy Program within RAND Social and Economic Well-Being. The program focuses on such topics as infrastructure, science and technology, industrial policy, community design, community health promotion, migration and population dynamics, transportation, energy, and climate and the environment, as well as other policy concerns that are influenced by the natural and built environment, technology, and community organizations and institutions that affect well-being. For more information, email chep@rand.org.

Funding

Funding for this research was provided by a generous gift from Dennis Wong to the RAND Center on Housing and Homelessness.

Contents

Figures and Tables

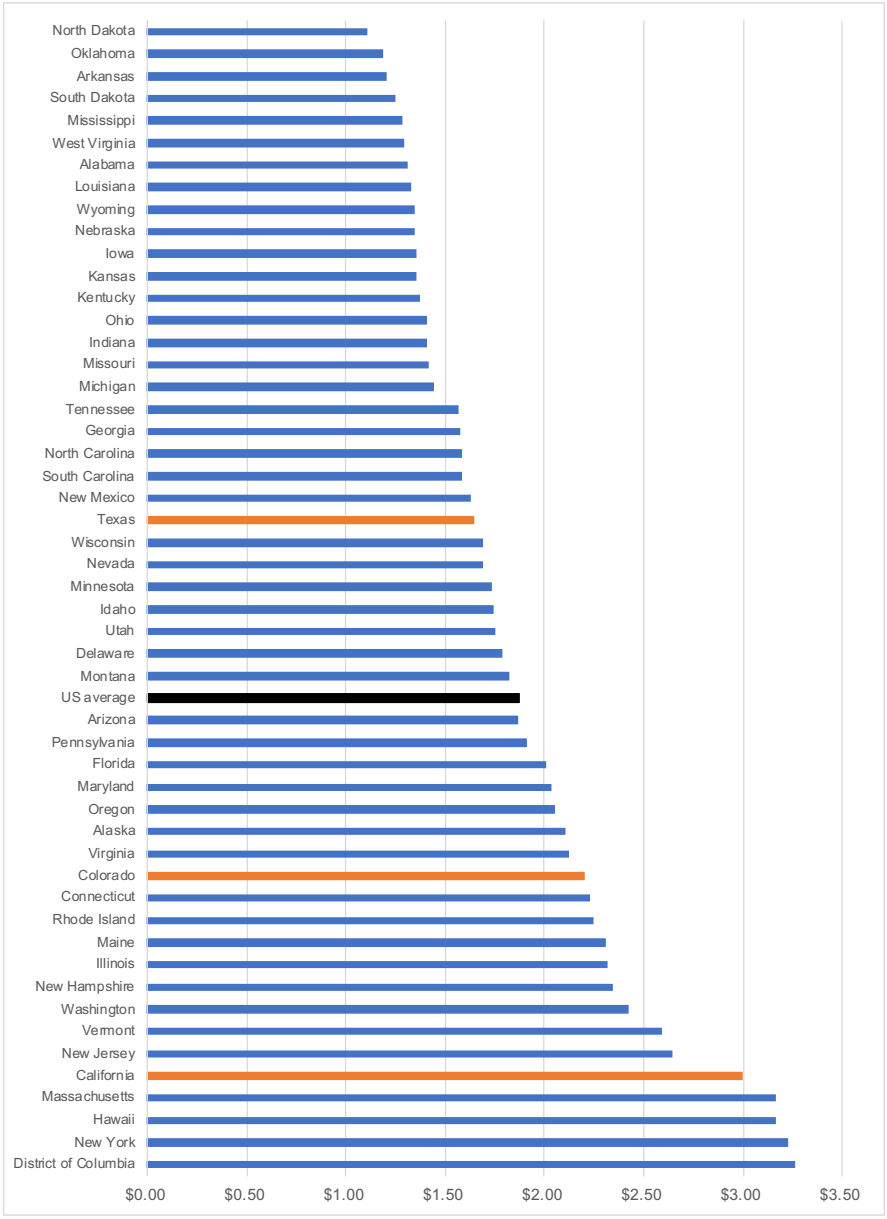
Figures

Tables

Appendix A. Additional Figures and Tables

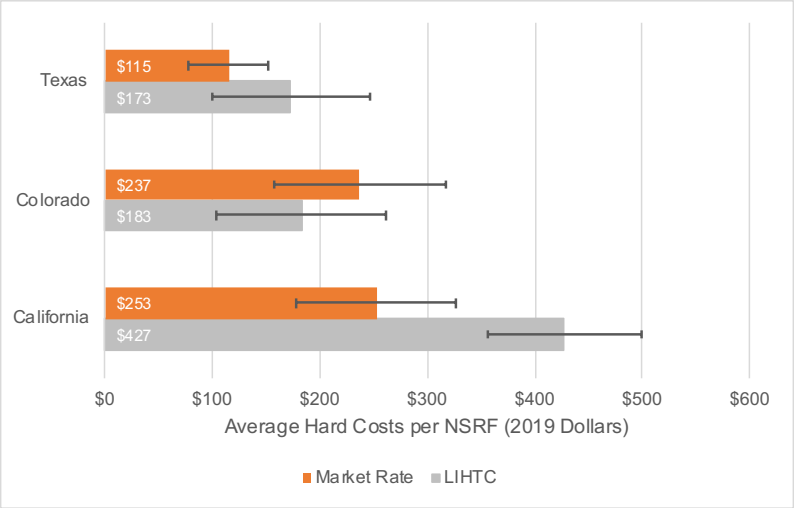
This figure presents the distribution of average rents at the state level from Summer of 2024 using data from RentCafe.

Figure A.1. Rent Price per Square Foot by State



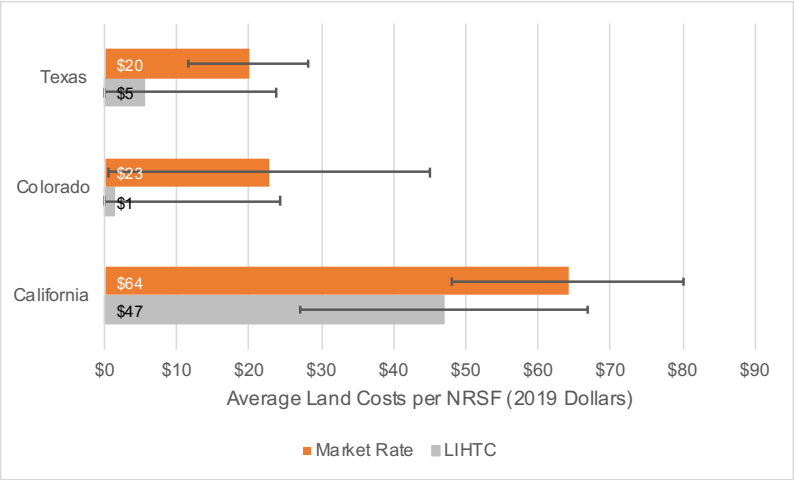
SOURCE: Author calculations from RentCafe data on state-level average rent for July 2024.

Figure A.2. State-Level Estimates of Hard Construction Costs with Confidence Intervals



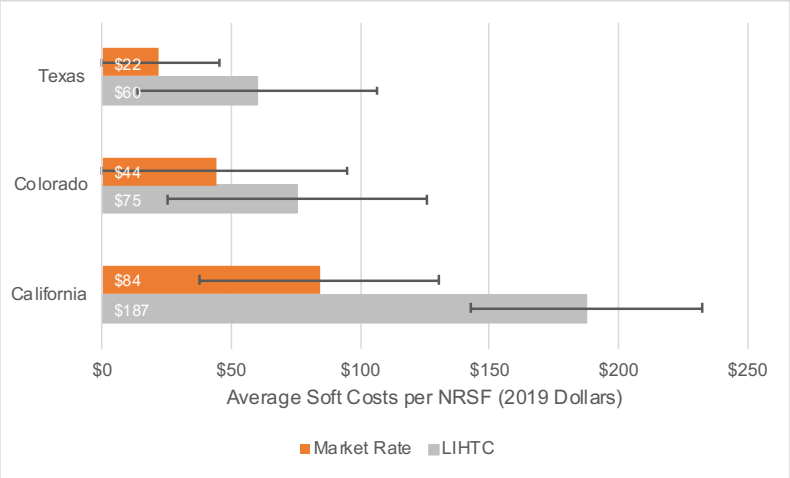
SOURCE: Author calculations.
NOTE: N=115. Costs are adjusted to be in terms of 2019 dollars using the approach described in the main report and appendix. Bars indicate mean costs per NRSF. Capped whiskers indicate 95 percent confidence intervals of the mean cost estimate. Tables with the regression results and cell-specific sample sizes are in the appendix.

Figure A.3. State-Level Differences in Land Costs with Confidence Intervals



SOURCE: Author calculations.
NOTE: N=129. Costs are adjusted to be in terms of 2019 dollars using the approach described in the main report and appendix. Bars indicate mean costs per NRSF. Capped whiskers indicate 95 percent confidence intervals of the mean cost estimate. In cases where these bounds include a negative cost value, we truncate the lower bound at zero. Tables with the regression results and cell-specific sample sizes are in the appendix.

Figure A.4. State-Level Differences in Soft Costs with Confidence Intervals



SOURCE: Author calculations.
NOTE: N=115. Costs are adjusted to be in terms of 2019 dollars using the approach described in the main report and appendix. Bars indicate mean costs per NRSF. Capped whiskers indicate 95 percent confidence intervals of the mean cost estimate. In cases where these bounds include a negative cost value, we truncate the lower bound at zero. Tables with the regression results and cell-specific sample sizes are in the appendix.

Details on Cost Adjustments

We adjusted hard costs using a composite index comprising a producer price index (PPI) measure of net inputs to residential multifamily construction that excludes labor, and a second index of construction worker earnings. We adjusted soft costs with another composite index made up of a producer price index for residential real estate loans and an employment cost index for private industry workers in professional and business services. Finally, we adjusted land costs by a chained personal consumption index. We calibrated these indexes and how they were applied to the data through feedback from multiple key personnel from the firm that provided our market rate construction data on their experiences with cost increases over the period from 2019 to 2024 and were satisfied that our approach was consistent with the experience of these subject matter experts.

Our hard cost adjustment uses two Bureau of Labor Statistics (BLS) indexes:

- U.S. Bureau of Labor Statistics, Average Hourly Earnings of All Employees, Construction [CES2000000003], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CES2000000003, October 7, 2024.
- U.S. Bureau of Labor Statistics, Producer Price Index by Commodity: Inputs to Industries: Net Inputs to Multifamily Residential Construction, Excluding Capital Investment, Labor, and Imports [WPUIP231120], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/WPUIP231120, October 24, 2024.

These were combined into a weighted average with the values reproduced in Table A.1. Soft costs were adjusted with a similar index using the three following components:

- U.S. Bureau of Labor Statistics, Producer Price Index by Industry: Commercial Banking: Residential Real Estate Loans, Except Home Equity [PCU522110522110101], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PCU522110522110101, October 24, 2024.
- U.S. Bureau of Labor Statistics, Employment Cost Index: Total compensation for Private industry workers in Professional and business services [CIS201540A000000I], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CIS201540A000000I, October 24, 2024.

These were combined into a weighted average with the values listed in Table A.2. below.

Finally, as mentioned above, land costs were adjusted using the following chained PCE index.

- U.S. Bureau of Economic Analysis, Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index) [PCEPILFE], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PCEPILFE, October 25, 2024.

Table A.1. Hard Cost Price Adjustment Index

Time series of index values	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Labor	89	91.4	93.9	97.2	100	102.9	106.9	112.9	118.7	123.9
Other	90.3	90.5	93.6	99.2	100	103.3	122.6	136.8	133.2	136.4
Revised Hybrid Weight (40 labor / 60 other)	89.78	90.86	93.72	98.4	100	103.14	116.32	127.24	127.4	131.4

SOURCE: Author calculations from BLS data.

Table A.2. Soft Cost Price Adjustment Index

Time series of index values	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Commercial banking real estate loans index	106	103	102.3	104.9	100	99.3	105.2	104.5	93.7	111.2
Total compensation for private industry workers	91.4	92.9	95	97.5	100	102.7	105.9	111.1	116	120.4
Revised Hybrid Weight (25 finance / 50 other / 25 unadjusted)	97.2	97.2	98.075	99.975	100	101.175	104.25	106.675	106.425	113

SOURCE: Author calculations from BLS data.

Table A.3. Land Cost Price Adjustment Index

Time series of index values	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
PCE	93.5	95	96.6	98.4	100	101.3	105	111.06	115.2	118.1
Hybrid weight (at 50% Hard, 30%	92.75	93.59	95.6025	98.8725	100	102.183	110.435	117.835	118.668	123.22

SOURCE: Author calculations from BLS data.

Data Details, Regression Results, and Cell-Specific Sample Size Tables

This section contains tables with details on the analysis data, sample sizes, and regression results corresponding to all figures and tables in the main report that used the regression-model-based approach to estimate costs described in the body of the report.

Table A.4. Projects in Market Rate Housing Data Sample by State

State	Total Projects	Total Units	Projects with Detailed Cost Data
California	17	5,559	10
Colorado	7	1,769	7
Texas	31	10,365	10
Total	55	17,693	27

SOURCE: Author calculations.

Table A.5. Projects in Affordable Housing Data Sample by State

State	Total Projects	Total Units	Projects with Detailed Cost Data
California	38	3,664	38
Colorado	16	1,752	16
Texas	35	4,988	35
Total	89	10,404	89

SOURCE: Author calculations. Prior to excluding projects with important missing data or projects serving special populations (primarily seniors or people with a history of chronic homelessness) we had 116 projects in California, 23 projects in Colorado, and 48 projects in Texas.

Table A.6. Sample Sizes by Cell for Metro Region-Level Analyses

Region	Sample Size when N=115	Sample Size when N=129
California		
Los Angeles region	Market Rate n=6 LIHTC n=12	Market Rate n=11 LIHTC n=11
San Diego metro area	Market Rate n=2 LIHTC n=6	Market Rate n=4 LIHTC n=4
San Francisco Bay area	Market Rate n=2 LIHTC n=20	Market Rate n=2 LIHTC n=14
Colorado	Market Rate n=7 LIHTC n=16	Market Rate n=7 LIHTC n=12
Texas	Market Rate n=10 LIHTC n=34	Market Rate n=30 LIHTC n=34
Totals:	Market Rate n=27 LIHTC n=88	Market Rate n=54 LIHTC n=75

SOURCE: Author calculations.

Table A.7. State-level TDC per NRSF Model

	TDC per NRSF
CO market rate	146.3*
	(66.37)
CA market rate	258.7***
	(56.95)
LIHTC (TX)	71.77
	(58.65)
CA LIHTC (diff)	153.0*
	(67.56)
CO LIHTC (diff)	-125.3
	(79.37)
High Rise	229.1***
	(57.72)
Podium	132.9***
	(32.19)
Wrap	132.1*
	(62.76)
Units	-0.122
	(0.165)
Constant	163.9*
	(66.88)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.8. State-Level TDC per Unit Model

	TDC per Unit
CO market rate	70782.8
	(49964.1)
CA market rate	220730.5***
	(42872.0)
LIHTC (TX)	-37496.9
	(44154.7)
CA LIHTC (diff)	95226.7
	(50863.5)
CO LIHTC (diff)	-61704.9
	(59750.7)
Units	-413.0**
	(123.9)
High Rise	96786.4*
	(43455.7)
Podium	98453.4***
	(24235.7)
Wrap	64066.8
	(47248.9)
Constant	294191.0***
	(50348.8)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.9. State-Level Hard Costs per NRSF Model

	(1) Hard Cost per NRSF
CO market rate	121.8*
	(48.69)
CA market rate	137.2**
	(41.78)
LIHTC (TX)	57.47
	(43.03)
CA LIHTC (diff)	117.0*
	(49.57)
CO LIHTC (diff)	-112.0
	(58.23)
Units	-0.0131
	(0.121)
High Rise	183.4***
	(42.35)
Podium	116.9***
	(23.62)
Wrap	96.76*
	(46.05)
Constant	81.66
	(49.07)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.10. State-Level Soft Costs per NRSF Model

	Soft Costs per NRSF
CO market rate	22.33
	(30.73)
CA market rate	61.94*
	(26.37)
LIHTC (TX)	37.86
	(27.16)
CA LIHTC (diff)	65.60*
	(31.28)
CO LIHTC (diff)	-6.893
	(36.75)
Units	-0.0439
	(0.0762)
High Rise	34.55
	(26.73)
Podium	19.70
	(14.91)
Wrap	19.80
	(29.06)
Constant	29.83
	(30.96)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.11. State-Level Land Costs per NRSF Model

	Land Cost per NRSF
CO market rate	2.787
	(12.46)
CA market rate	44.26***
	(8.946)
LIHTC (TX)	-14.41
	(9.298)
CA LIHTC (diff)	-2.795
	(11.36)
CO LIHTC (diff)	-6.808
	(15.44)
Units	-0.0539
	(0.0310)
High Rise	25.84*
	(11.89)
Podium	4.043
	(6.861)
Wrap	29.03**
	(9.809)
Constant	41.43***
	(11.70)
Observations	129

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.12. Metro Region-Level TDC per NRSF Model

	(1) TDC per NRSF
SA/Aus market rate	-53.12
	(77.72)
Dallas market rate	-39.12
	(37.72)
CO market rate	110.0
	(67.62)
LA market rate	226.1**
	(70.34)
SD market rate	136.8
	(97.63)
SF market rate	327.9**
	(98.27)
LIHTC (TX)	61.18
	(56.24)
CO LIHTC (diff)	-98.67
	(74.40)
LA LIHTC (diff)	140.4
	(77.46)
SD LIHTC (diff)	84.22
	(110.5)
SF LIHTC (diff)	143.6
	(99.86)
Units	-0.0939
	(0.162)
High Rise	253.2***
	(55.04)
Podium	116.9***
	(31.78)
Wrap	119.2
	(61.65)
Constant	193.1**
	(70.33)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.13. Metro Region-Level TDC per Unit Model

	(1) TDC per Unit
SA/Aus market rate	-57004.1
	(85839.7)
Dallas market rate	22273.6
	(74039.6)
CO market rate	67417.6
	(67774.3)
LA market rate	218083.7**
	(73380.2)
SD market rate	130024.1
	(84814.9)
SF market rate	349932.1***
	(89399.6)
LIHTC (Houston)	-36079.3
	(68001.6)
SA/Aus LIHTC (diff)	97696.1
	(125936.2)
Dallas LIHTC (diff)	-27224.6
	(79259.3)
CO LIHTC (diff)	-48961.1
	(74944.2)
LA LIHTC (diff)	81021.7
	(79251.8)
SD LIHTC (diff)	28114.3
	(94801.8)
SF LIHTC (diff)	37370.3
	(93333.3)
Units	-371.4**
	(121.2)
High Rise	111082.4**
	(39872.9)
Podium	85605.8***
	(22424.8)
Wrap	41537.5
	(46371.7)
Constant	288483.3***
	(73649.0)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.14. Metro Region-Level Land Costs per Unit Model

	Soft Costs per NRSF
SA/Aus market rate	-3.890
	(39.79)
Dallas market rate	-5.002
	(19.31)
CO market rate	18.66
	(34.61)
LA market rate	57.27
	(36.01)
SD market rate	53.59
	(49.98)
SF market rate	71.04
	(50.31)
LIHTC (TX)	47.09
	(28.79)
CO LIHTC (diff)	-10.77
	(38.08)
LA LIHTC (diff)	88.46*
	(39.65)
SD LIHTC (diff)	38.63
	(56.58)
SF LIHTC (diff)	44.00
	(51.12)
Units	-0.00833
	(0.0832)
High Rise	44.99
	(28.18)
Podium	28.17
	(16.27)
Wrap	22.94
	(31.56)
Constant	17.90
	(36.00)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.15. Metro Region-Level Hard Costs per Unit Model

	(1) Hard Cost per NRSF
SA/Aus market rate	-38.28
	(48.65)
Dallas market rate	-23.31
	(23.61)
CO market rate	100.00*
	(42.33)
LA market rate	118.4**
	(44.03)
SD market rate	73.37
	(61.11)
SF market rate	151.6*
	(61.51)
LIHTC (TX)	28.37
	(35.20)
CO LIHTC (diff)	-81.49
	(46.57)
LA LIHTC (diff)	49.02
	(48.49)
SD LIHTC (diff)	46.58
	(69.19)
SF LIHTC (diff)	200.5**
	(62.51)
Units	-0.0790
	(0.102)
High Rise	183.1***
	(34.46)
Podium	82.84***
	(19.89)
Wrap	84.48*
	(38.59)
Constant	134.9**
	(44.03)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.16. Metro Region-Level Architectural/Engineering Fees per Unit Model

	Arch/Eng Fee per Unit
SA/Aus market rate	2966.8
	(4996.9)
Dallas market rate	1035.3
	(2360.1)
CO market rate	3183.3
	(4248.9)
LA market rate	7689.8
	(4403.8)
SD market rate	6685.3
	(6100.0)
SF market rate	13492.9*
	(6435.1)
LIHTC (TX)	3467.8
	(5732.6)
CO LIHTC (diff)	714.6
	(4695.4)
LA LIHTC (diff)	12951.3*
	(4946.9)
SD LIHTC (diff)	1131.1
	(6906.3)
SF LIHTC (diff)	8974.8
	(6604.5)
Units	-16.52
	(14.60)
Units (LIHTC)	-27.04
	(20.29)
High Rise	8065.4*
	(3464.3)
Podium	2286.5
	(1986.7)
Wrap	2974.2
	(3944.9)
Constant	6883.0
	(5431.7)
Observations	115

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.17. Metro Region-Level Land Costs per Unit Model (Market Rate Projects Only)

	Land Cost per Unit
SA/Aus market rate	-1716.0
	(13483.9)
Dallas market rate	-10661.3
	(8468.3)
CO market rate	-11987.5
	(9977.3)
LA market rate	21146.5*
	(7929.7)
SD market rate	13534.7
	(11205.9)
SF market rate	111269.7***
	(15287.1)
Units	8.064
	(28.06)
High Rise	30027.9**
	(9944.2)
Podium	27463.3**
	(8146.4)
Wrap	27143.0***
	(7578.4)
Constant	20227.4
	(10724.5)
Observations	50

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.18. Hard Cost Differences per NRSF from Subcontractor Bids for Two Concurrent "Wrap" Apartment Projects in California and Texas

Cost Category	California	Texas	CA/TX Cost Ratio
Woods & Plastics	$51.14	$35.58	1.4
Mechanical	$48.14	$21.73	2.2
Finishes	$47.28	$18.27	2.6
Electrical	$39.54	$17.39	2.3
Sitework	$36.19	$17.07	2.1
Concrete	$32.79	$21.68	1.5
General Conditions	$23.89	$9.80	2.4
Thermal & Moisture	$11.39	$8.27	1.4
Doors & Windows	$9.37	$4.61	2.0
Specialties	$8.24	$3.52	2.3
Metals	$5.36	$2.46	2.2
Equipment	$5.23	$3.16	1.7
Conveying Systems	$4.94	$1.98	2.5
Special Construction	$3.95	$1.96	2.0
Masonry	$3.66	$1.75	2.1

SOURCE: TCR & author calculations

Table A.19. State-Level Predevelopment Time Model (Market Rate Projects Only)

	Predevelopment Time (Months)
California	14.82***
	(3.572)
Colorado	7.836
	(4.932)
Units	0.0432**
	(0.0150)
High Rise	-2.339
	(5.149)
Podium	4.126
	(4.317)
Wrap	-0.450
	(3.937)
Constant	-3.006
	(5.540)
Observations	55

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.20. State-Level Construction Time Model (Market Rate Projects Only)

	Construction Time (Months)
California	7.023***
	(1.440)
Colorado	2.013
	(1.985)
Units	0.0102
	(0.00604)
High Rise	8.216***
	(2.084)
Podium	12.13***
	(1.753)
Wrap	7.119***
	(1.619)
Constant	14.28***
	(2.254)
Observations	50

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.21. Association Between Production Time and TDC per Unit

	(1) TDC (Unit)	(2) TDC (Unit)
Production time	833.4	-1355.6
	(738.5)	(1752.8)
California	121551.2***	17335.6
	(26074.4)	(77346.1)
Colorado	73596.3*	74101.3
	(28467.8)	(169130.1)
High Rise	92889.5**	112956.7**
	(29370.6)	(32560.2)
Podium	92962.8***	107365.7***
	(26220.6)	(28208.4)
Wrap	31642.2	43403.4
	(23754.3)	(25080.7)
Units	-268.9**	-286.2**
	(92.65)	(93.67)
Prod. time x California	-	2639.3 (1868.4)
Prod. time x Colorado	-	341.1 (3980.7)
Constant	169726.2***	241686.4***
	(32479.8)	(62331.1)
Observations	50	50

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.22. Association Between Production Time and TDC per NRSF

	(1) TDC (NRSF)	(2) TDC (NRSF)
Production time	0.821	-1.668
	(0.619)	(1.395)
California	134.4***	9.264
	(21.86)	(61.54)
Colorado	129.7***	248.3
	(23.86)	(134.6)
High Rise	116.4***	145.8***
	(24.62)	(25.91)
Podium	106.0***	122.3***
	(21.98)	(22.44)
Wrap	54.96**	69.15**
	(19.91)	(19.96)
Units	-0.114	-0.130
	(0.0777)	(0.0745)
Prod. time x California		3.107* (1.487)
Prod. time x Colorado		-2.360 (3.167)
Constant	122.7***	202.7***
	(27.23)	(49.60)
Observations	50	50

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.23. Association Between Production Costs and Regional Rental Prices

	(1) Log(Rent)	(2) Log(Rent)	(3) Log(Rent)	(4) Log(Rent)
Log(Cost/NRSF)	0.416***		0.459***	
	(0.0221)		(0.0830)	
Log(Cost/Unit)		0.450***		0.443***
		(0.0228)		(0.0796)
Constant	5.132***	1.878***	4.890***	1.974
	(0.132)	(0.290)	(0.488)	(1.008)
Observations	111	111	26	26

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix B. Additional Discussion of Relationship Between Production Costs and Rental Prices

As mentioned in the main text for this report, there is very little empirical evidence on the direct relationship between multifamily housing production costs and rental prices. One notable example is recent research by Eriksen and Orlando (2024) that uses cost estimating software for multifamily construction to model the relationship between increases in both land costs (historically a focus of more research) and construction costs over the 9-year period of 2012-2020 on "break even" rents, or the minimum rent that could support the production of two generic apartment building types—a three-story wood framed building and a 12-story steel framed building. They find that land cost appreciation continues to be an important contributor to break even rents but that the importance of construction costs has increased over time as these costs have risen.

Table B.1. Break-Even Rents for 3-Story Wood Framed Building from 2012-2020

City	Annual Break-Even Rent per Square Foot in 2020	Increase in Break-Even Rent 2012-2020	Ratio of Break-Even Rents Relative to Houston	Ratio of TDC per NRSF for Market Rate Projects Relative to Houston
San Francisco, CA	$31.90	37.5%	2.7	2.8
Los Angeles, CA	$23.73	58.6%	2.0	2.2
San Diego, CA	$17.44	29.0%	1.5	1.8
Denver, CO	$15.47	26.6%	1.3	1.6
Dallas, TX	$13.05	11.2%	1.1	0.8
Houston, TX	$11.99	-0.4%	-	
San Antonio, TX	$11.01	-6.5%	0.9	0.7

SOURCE: Eriksen and Orlando (2024) and author calculations.

In Table B.1 we reproduce the main results from Eriksen and Orlando (2024) showing the level of annual break-even rent per square foot they calculate based on estimated construction costs in the cities shown as well as the change over time of these rents based on increases in land and construction costs. We then calculate the ratio of these break even rents relative to Houston, TX, mirroring the primary statistic we have used throughout this report. In the final column, we reproduce the regional TDC per NRSF ratios for market rate projects in our analysis sample. As can be seen, the rank order of these ratios is identical and the magnitudes for California cities relative to our metro regions are nearly identical.

The striking similarity between these measures is remarkable given that Eriksen and Orlando use simulated development costs, while we use actual costs. The implied elasticity of break-even rents to production costs is 0.5, meaning a 10 percent reduction in production costs translates into a 5 percent reduction in break-even rents. A simple back-of-the-envelope calculation using these results suggests that if California could reduce the production cost gap for market rate apartments with Texas by half, break-even rent levels could decline by roughly 25 percent. This similarity between careful modeling and real data highlights the very direct relationship between production costs and rental housing costs and the importance of seeking to lower production costs as a path to greater affordability.

Appendix C. Summaries of Design Requirements for LIHTC and Common Additional Funding Programs in Los Angeles

This section is a summary of the design review and building requirements for three common funding mechanisms used in building the necessary capital stack for affordable housing production in the Los Angeles area. The first section summarizes State of California building requirements for the Low Income Housing Tax Credit (LIHTC) program. The second summarizes building requirements for funding from the Los Angeles Housing Department (LAHD) and the third section summarizes, first, design review requirements and, second, building requirements for the Los Angeles County Development Authority.

These summaries were extracted from source documents using an AI chatbot and a series of prompts to assure that the output captured the appropriate level of detail. The results were checked for accuracy and further edited by authors.

Program/Agency: California Tax Credit Allocation Committee[1]

Summary of Minimum Construction Standards

1. **Energy Efficiency**:
    - Rehabilitated buildings must demonstrate a minimum 10% improvement in energy efficiency post-rehabilitation, with 5% for scattered site projects.
    - Compliance with the California Energy Code (Title 24) is mandatory.
    - Use of the Sustainable Building Method Workbook for documentation, unless alternative green certifications (e.g., LEED, Passive House) are pursued.
2. **Landscaping**:
    - Landscaping must utilize low water use plant species.
    - Compliance with the Model Water Efficient Landscape Ordinance is required unless a stricter local ordinance is in place.
3. **Roofing**:
    - New roofs must carry a three-year subcontractor guarantee and a minimum 20-year manufacturer's warranty.

[1] State of California Tax Credit Allocation Committee, Attachment 10: Minimum Construction Standards, Regulation Section 10325(f)(7), January 2021.

4. **Exterior Doors**:

    - Must be insulated or solid core, made of metal clad, hardwood, or fiberglass, with a one-year guarantee.

5. **Appliances**:

    - Low-Income Units must include:
        - A refrigerator.
        - A range (cooktop and oven) for non-SRO units.
        - A cooking facility (at least a cooktop or microwave) for SRO units, unless waived.
    - All appliances (refrigerators, dishwashers, washers, dryers) must be ENERGY STAR rated, unless waived by the Executive Director.

6. **Window Coverings**:

    - Must include fire retardant drapes or blinds.

7. **Water Heaters**:

    - Minimum capacities:
        - 28 gallons for one- and two-bedroom units.
        - 38 gallons for three-bedroom units or larger.

8. **Floor Coverings**:

    - Kitchen and bath areas must have hard, water-resistant, cleanable surfaces.
    - Any carpet must comply with HUD/FHA UM44D standards.

9. **Insulation**:

    - All fiberglass insulation must meet Greenguard Gold Certification.

10. **On-Site Management**:

    - Projects with 16 or more units must have at least one on-site manager's unit.
    - Additional units are required based on the total number of units.
    - Equivalent staffing can substitute for manager units under certain conditions.

11. **Accessibility**:

    - New construction must provide 15% of Low-Income Units with mobility features and 10% with communication features.
    - Rehabilitation projects must provide 10% mobility and 4% communication features.

Program/Agency: Los Angeles County Development Authority[2]

Summary of Funding Application Requirements

A. NOFA Application Phase: Threshold Review/Evaluation of Schematic Design

1. Threshold Review:
    - Applications are evaluated to determine if they meet the NOFA program and threshold requirements for architectural design.
    - Successful applications proceed to the Design Compliance Review.
2. Technical Review:
    - Architectural design is not scored but must satisfy minimum requirements for consideration.

Required NOFA Application Submittals

To be considered for funding, the following documentation is required:

3. Title Sheet:
    - Index of drawings.
    - Project description (construction type, lot coverage, density, unit breakdown, zoning analysis).
4. Vicinity Map.
5. Site Survey:
    - Details on setbacks, parking requirements, and accessible parking spaces.
    - Electric vehicle (EV) requirements.
6. Site Plan (minimum scale of 1/16”):
    - Property line, adjacent streets, and building locations.
7. Landscape Plan:
    - Minimum of 75% drought-tolerant plants.
8. Floor Plans (minimum scale of 1/8”):
    - Major project amenities, unit types, accessibility features, and required paths of travel.
9. Unit Plans (minimum scale of 1/4”):
    - Interior dimensions, furniture layout, and required amenities.

[2] Los Angeles County Development Authority, Supplemental Document 8: Architectural Design Requirements, undated.

10. Exterior Elevations (minimum scale of 1/8”):
    - Elevations of all sides of the building.
11. Major Sections (minimum scale of 1/8”).
12. Construction Cost Estimate (signed and dated).
13. Rehabilitation Projects:
    - Description of scope, Property Needs Assessment, Schedule of Values, and a conceptual energy model.

B. Loan Committee Phase: Review of Drawings and Specifications

1. Design Compliance Review:
    - Projects must demonstrate compliance with architectural design requirements, building codes, and accessibility standards (e.g., California Building Code, ADA standards).
    - Documentation is required throughout the project using the Design Compliance Review Report.
2. Required Submittals:
    - Title Sheet (includes project data, vicinity map, and accessibility summary).
    - Site Survey.
    - Site Plan (scaled with setbacks and easements).
    - Foundation Plans and Floor Plans (detailed dimensions, storage, accessibility).
    - Roof Plan (with mechanical equipment).
    - Unit Plans (scaled with dimensions).
    - Exterior Elevations (all sides).
    - Sections (building and site).
    - Landscape Plan (prepared by a licensed landscape architect).
    - Crime Prevention Through Environmental Design (CPTED) Documentation.
    - Title 24 Energy Compliance Reporting (for rehabilitation projects).
    - Accessibility Reporting by a third-party CASp.
    - Other Documentation (project specifications, detailed cost estimates).
3. Modifications to Design:
    - LACDA must be notified of material changes to the design.
    - Changes may trigger re-evaluation by LACDA and could affect funding commitments.

General Requirements:

1. Design Intent:
    - Ensure high-quality affordable housing that matches the quality of market-rate units.

- Encourage innovative and creative design solutions while ensuring cost-effectiveness.

2. Design Review Process:

    - Involves multiple phases: NOFA Application, Design Review Meeting, Loan Committee Approval, and Pre-Construction Completion.
    - Requires compliance with architectural design requirements throughout the process.

Summary of Design Requirements:

1. Site Planning:

    - Consider neighborhood characteristics, density, surroundings, noise levels, and access to public transit.
    - Ensure functional habitable units and usable common areas.

2. Building Design (Exterior):

    - Setbacks, height, and scale should align with neighborhood standards.
    - Use materials that require low maintenance and reinforce the residential character.
    - Incorporate architectural styles that enhance neighborhood cohesion.

3. Building Design (Interior):

    - Provide secure entry systems and common laundry facilities.
    - Recreation rooms should foster community and provide flexible space.
    - Minimize corridor lengths and provide natural lighting and ventilation.

4. Unit Design:

    - Maximize usable space and ensure appropriate room proportions.
    - Kitchens should be fully equipped and appropriately sized for household needs.
    - Use durable, low-maintenance materials for finishes and flooring.

5. Crime Prevention Through Environmental Design (CPTED):

    - Implement strategies for access control, surveillance, and territorial reinforcement to enhance safety.

Accessibility Requirements:

1. Mandatory Accessibility:

    - Ensure compliance with all applicable accessibility standards, including ADA and Fair Housing Act requirements.

2. Universal Design:

- Integrate features that accommodate a wide range of resident preferences and abilities, allowing residents to age in place.

Senior Housing Requirements:

1. Design should address mobility, clarity, and inclusiveness, considering the specific needs of senior residents.

Sustainable Building Methods:

1. Energy Efficiency:
    - Projects must meet minimum energy efficiency standards as defined by TCAC regulations.
2. Water Conservation:
    - Use drought-tolerant plants and high-efficiency irrigation systems.
3. Waste Management:
    - Divert at least 70% of non-hazardous construction debris from landfills.

Application and Compliance:

1. NOFA Application Phase:
    - Submit detailed architectural drawings and plans at the schematic design level.
    - Include a comprehensive design narrative addressing architectural design requirements.
2. Loan Committee Phase:
    - Provide comprehensive design compliance documentation, including accessibility and sustainability certifications.

Summary of Design Requirements

B. Building Design (Exterior)

1. Setbacks:
    - Align with prevailing setbacks.
    - Vary yard depths for visual interest.
2. Height/Scale:
    - New construction should relate to the neighborhood's existing height and scale.
    - Narrative descriptions are required to demonstrate compliance.
3. Massing:
    - Break up building mass with varied shapes and setbacks.

4. Materials and Colors:
    - Use low-maintenance materials that reinforce residential character.
5. Architectural Style:
    - Identify and incorporate the dominant architectural style of the neighborhood.
    - Use architectural embellishments for human scale and visual interest.
6. Building/Street Connection:
    - Avoid elevating buildings excessively above grade to prevent blank walls facing the street.
7. Outdoor Recreation Area:
    - Design secure outdoor spaces for tenants, including play areas for children.
8. Landscape/Hardscape:
    - Use drought-tolerant plants (minimum 75%).
    - Design for low maintenance and durability.
9. Trash Collection:
    - Conveniently located, screened trash areas with durable enclosures.
10. Ease of Maintenance:
    - Avoid materials requiring excessive maintenance.
11. Environmentally Responsive Design:
    - Incorporate renewable and low-energy-consuming materials.
    - Utilize passive solar design principles.
12. Value Engineering:
    - Integrate value engineering from the design stage to avoid costly modifications later.
13. Parking:
    - Locate parking towards the rear and minimize visual impact.
    - Ensure safety and security in parking areas.
14. Roofs:
    - Require a three-year subcontractor guarantee and a minimum 20-year manufacturer's warranty.

C. Building Design (Interior)

1. Entry Condition:

- Safe, well-defined entryways with transitional elements.

2. Common Laundry:
    - One washer and dryer for every ten units, with adequate ventilation and natural light.
3. Recreation Room:
    - Flexible space for community activities, with visibility to circulation areas.
4. Unit Access / Corridors:
    - Minimize unbroken corridor lengths and ensure natural lighting.
5. Building Entrance Areas:
    - Prominent and visible entries with adequate space and lighting.
6. Manager's Unit and Office:
    - Centrally located for enhanced security.
7. Unit Mix:
    - Large family units should be located at building corners.
8. Unit Sizes and Standards:
    - Comply with California Tax Credit Allocation Committee standards.
9. Unit/Room Adjacencies:
    - Avoid incompatible adjacencies; ensure soundproofing where necessary.
10. Elevators:
    - Required for buildings with more than three floors or for senior housing.
11. Community Room:
    - Minimum size requirements based on unit count.

D. Unit Design

1. Room Relationships:
    - Design circulation to minimize crossing through spaces.
2. Light and Ventilation:
    - Maximize natural lighting and ventilation in units.
3. Exterior Unit Doors:

- Use insulated or solid core doors.

4. Windows/Window Coverings:
   - All windows must have NFRC labels; screens required.
5. Kitchens:
   - Must include essential appliances and proper ventilation.
6. Appliances:
   - ENERGY STAR appliances required.
7. Floor Coverings:
   - Specific thickness requirements based on traffic.
8. Storage/Closet Space:
   - Minimum closet sizes and configurations specified.
9. Furniture Layout:
   - Ensure rooms accommodate intended furnishings.
10. Finish Materials:
    - Use low-maintenance, durable materials.
11. Heating and Air Conditioning:
    - Central systems encouraged; wall heaters discouraged.
12. Water Heater:
    - Minimum capacities specified based on unit size.
13. Communication Wiring:
    - Provide telephone and broadband infrastructure.
14. Cable Television:
    - Minimum jack requirements based on unit size.
    - Provide free basic cable.

E. Crime Prevention Through Environmental Design (CPTED)

1. Incorporate CPTED principles to enhance safety and reduce crime.
2. Strategies include access control, surveillance, and territorial reinforcement.

III. Standard Accessibility Requirements

1. Adherence to all applicable accessibility requirements is mandatory.
2. Universal Design principles should be integrated to accommodate diverse resident needs.

IV. Senior Housing Requirements

1. Projects must meet specific needs for senior residents, promoting mobility, clarity, and inclusiveness.

V. Sustainable Building Methods

1. Incorporate sustainable practices and technologies to reduce energy and water use.

2. Certification of sustainability measures is required in the initial application.

Program/Agency: Los Angeles Housing Department[3]

Design Review Criteria

Site Planning

1. Neighborhood/Site Characteristics:

    - Analyze and relate the proposed project to neighborhood characteristics, including land use, height, scale, and massing.
    - Mitigate adverse impacts from adjacent uses.
    - Design landscaping to integrate with adjacent uses and views.

2. Density:

    - Ensure habitable units are functional and comfortable, with usable indoor common areas and open spaces.
    - Modulate building footprint and mass for visual relief.
    - Maintain or improve the neighborhood's building pattern.

3. Surroundings:

    - Consider traffic safety, noise, and circulation when planning building placement, landscaping, and walkways.
    - Ensure clear separation between pedestrian and vehicle traffic.
    - Implement safety measures for children.

4. Noise Levels:

    - Comply with state and city noise insulation standards.
    - Use landscape and architectural features to minimize noise impact.

5. Lot Configuration and Topography:

    - Consider property size, slope, and shape for optimal building placement and density.

6. Neighborhood Amenities:

[3] Los Angeles Housing Department, *Architectural Requirements*, July 14, 2022.

- Consider proximity to cultural facilities and preserve existing assets like mature landscaping and views.

7. Access to Public Transit:

    - Plan pedestrian routes to public transportation.
    - Locate senior housing within 1,500 feet of public transportation where possible.

8. Neighborhood Preservation:

    - Respect the historic nature of the community and ensure compatibility with surrounding buildings' historical character.

Building Design (Exterior)

1. Setbacks:

    - Align with prevailing street setbacks and vary yard depths for visual interest.

2. Height and Scale:

    - Relate new construction height and scale to existing neighborhood buildings.
    - Reflect human scale and integrate with the neighborhood.

3. Massing:

    - Break up building mass using various shapes.
    - Consider stepping back facades for varied building heights.

4. Neighborhood Compatibility:

    - Complement existing structures to unify the streetscape.
    - Relate facade design, roof shapes, and materials to nearby buildings.

5. Materials and Colors:

    - Use low-maintenance materials that reinforce residential character.

6. Architectural Style:

    - Incorporate the dominant neighborhood architectural style for cohesion.
    - Use embellishments to enhance human scale and design interest.

7. Building/Street Connection:

    - Maintain pedestrian-friendly connections and avoid elevating buildings above parking levels.

Outdoor Recreation Area

Design:

- Accommodate residents' needs with secure outdoor spaces and play areas.
- Ensure good visual connections with other building areas.
- Address adolescent needs with safe environments.

Landscape/Hardscape

Design:

- Use drought-tolerant and native plants.
- Design for low maintenance, durability, and security.
- Set back walls from sidewalks to allow for landscaping.

Trash Collection

Design:

- Ensure trash collection is unobtrusive and convenient.
- Consider trash chutes or compactors for larger buildings.
- Provide adequate recycling space per guidelines.

Ease of Maintenance

Design:

- Allow for easy routine maintenance by residents.
- Avoid materials and construction types that require excessive maintenance.

Environmentally Responsive Design

Principles:

- Use renewable materials and energy-efficient systems.
- Utilize passive solar design to reduce costs.
- Maximize solar access in winter and minimize summer gain.

Disabled Access

Compliance:

- Conform to all applicable disabled access regulations, ensuring a percentage of units are accessible.

Value Engineering

Process:

- Integrate value engineering early to avoid costly designs and long-term issues.

Parking Area

Design:

- Minimize streetscape impact by placing parking at the rear or side.
- Use landscaping to soften parking areas.
- Ensure well-lit, safe paths from parking areas to building entries.

Building Design (Interior)

1. Entry Condition:

    - Provide safe, well-defined entries with security features.
    - Include transitional elements like steps and porches.

2. Common Laundry:

    - Locate conveniently and ensure supervision opportunities for children.
    - Provide adequate washers and dryers.

3. Recreation Room:

    - Design to accommodate various resident needs and foster community ownership.

4. Unit Access/Corridors:

    - Provide natural light and ventilation in corridors.
    - Avoid long, double-loaded corridors.

5. Unit Entrance Areas:

    - Ensure entries are prominent and secure.
    - Consider privacy and security in design transitions.

6. Unit Mix:

    - Locate large family units at building corners for better exposure.

7. Manager's Unit and Office:

    - Centrally locate for enhanced security.
    - Provide additional amenities to attract quality managers.

Unit Sizes and Standards

Minimum Sizes:

- SROs: 200-500 sq. ft.
- 1-Bedroom: 450 sq. ft.
- 2-Bedroom: 700 sq. ft.
- 3-Bedroom: 900 sq. ft.
- 4-Bedroom: 1,100 sq. ft.

Unit Design

1. Plan Relationships:

    - Design circulation to minimize space use and delineate public/private areas.
    - Ensure kitchens and bathrooms are appropriately located and equipped.

2. Light and Ventilation:

- Provide operable windows and generous natural lighting.
- Ensure efficient ventilation systems.

3. Storage/Closet Space:

   - Provide adequate closet space and full base kitchen cabinets.

4. Furniture Layout:

   - Ensure rooms are reasonably furnishable.
   - Provide fully furnished units for PSHP projects.

5. Finish Materials:

   - Use low-maintenance, durable materials.

6. Appliances:

   - Require stovetop ovens and low-maintenance appliances.

7. Heating and Air Conditioning:

   - Encourage central systems and provide air conditioning throughout.

Construction Standards

1. Statement of Intent:

   - Applicants must provide a statement indicating that landscaping and construction materials are compatible with the neighborhood, ensuring low maintenance and durability, and are suited to environmental conditions.

2. Minimum Specifications:

   - **Landscaping**: Use a variety of low water use plants, preferably California native species, in sufficient quantities for low maintenance.
   - **Roofs**: Must have a three-year subcontractor guarantee and a 20-year manufacturer's warranty.
   - **Exterior Doors**: Insulated or solid core, made of metal clad or hardwood, with a one-year guarantee and factory primed on all sides.
   - **Appliances**: Install Energy Star rated appliances, including refrigerators, dishwashers, and clothes washers in Low-Income Units and community facilities.
   - **Window Coverings**: Provide coverings such as fire retardant drapes or blinds.
   - **Water Heaters**: Minimum capacities of 30 gallons for one- and two-bedroom units, and 40 gallons for three-bedroom units or larger.
   - **Floor Coverings**: Vinyl or linoleum must be at least 3/32" thick for light/medium traffic areas and 1/8" thick for heavy traffic areas; hard surfaces required in kitchens and baths.
   - **Low VOC Paints**: Use low-VOC paints and stains for all interior surfaces.

3. Exemptions for Rehabilitation Projects:

- Projects rehabilitating existing structures may be exempt from certain appliance and floor covering requirements if existing items remain, but must justify this in a Capital Needs Assessment.

Sustainable Building Methods

Sustainability Scoring System:

- Projects must achieve at least 8 points from the following sustainable methods:
  - **Energy Standards**: New construction or adaptive reuse should exceed Title 24 energy standards by 10%. Rehabilitation projects should reduce energy use by 25%.
  - **Lighting**: Use fluorescent or energy-efficient lighting for at least 75% of fixtures in rehabilitation projects.
  - **HVAC Systems**: Install Energy Star ceiling fans, whole house fans, or economizer cycles on HVAC systems.
  - **Water-Saving Fixtures**: Use flow restrictors in kitchens and bathrooms.
  - **High Efficiency Toilets**: Install at least one high-efficiency or dual-flush toilet per unit.
  - **Low-VOC Materials**: Use materials free of added formaldehyde and low-VOC paints and adhesives.
  - **Bathroom Ventilation**: Install bathroom fans with humidistat sensors or timers.
  - **Recycled Materials**: Use recycled content in concrete, carpet, or landscape amendments.
  - **Rainwater Management**: Design to manage the first half-inch of rainfall on-site.
  - **Indoor Air Quality Management**: Implement plans to protect construction materials, cap ducts, and clean ducts upon completion.
  - **Universal Design**: Incorporate Universal Design principles in at least half of the units, ensuring accessibility features.
  - **Nonsmoking Buildings**: Designate at least half the units as nonsmoking, with contiguous placement.

Accessibility Report Requirements & Procedures

Certified Access Specialist (CASp) Consultant Requirements

1. CASp Consultant Role:

- A State of California licensed design professional (Architect or Engineer) who is also a Certified Access Specialist (CASp) must be hired by the developer and included as part of the development team.
- The CASp consultant must be an independent third party, not the architect-of-record, even if the architect possesses CASp credentials.

Access Compliance Requirements During Project Phases

A. Project Application (Conceptual Phase)

Access Compliance Certification:

- The developer must submit a signed Access Compliance Certification, ensuring the project will comply with applicable accessibility standards related to the funding sources and government requirements.

B. Plan Check Submission

1. Accessibility Design Review Report:

    - The CASp consultant must provide an Accessibility Design Review Report to LAHD at or before plans are submitted to the Department of Building & Safety. This must include an electronic PDF of the construction documents.

2. Plan Documentation:

    - The cover sheet of plans must list all applicable accessibility codes and standards, including federal, state, and local codes, and note the project as a publicly funded housing project.

3. Revisions:

    - If substantial changes affecting accessibility are required, revised plans must be submitted for review before the "Ready To Issue" plans are stamped.

4. Accessible Units Matrix:

    - The architect-of-record must include an "Accessible Units Matrix" in the construction documents, detailing the number and types of accessible units.

C. Construction Phase

1. Rough Framing Accessibility Report:

    - The CASp consultant must provide a report post-framing inspection, reviewing wall reinforcements, placement of switches and outlets, and layouts of kitchens and bathrooms, among other items. The report must be submitted to LAHD within 10 business days of the visit.

2. Final Accessibility Report:

    - A final inspection report must be submitted after construction completion, reviewing finished units, accessible routes, and public areas. This report is required before retention payment, TCO, or certificate of occupancy can be issued.

Note: LAHD will conduct site inspections after receiving both the Rough Framing and Final Accessibility Reports to confirm compliance.

Information Required in Accessibility Reports

1. Property Details:

- Name and address of the property, dates of reviews and inspections, and applicable accessibility codes and standards.

2. Developer and CASp Consultant Information:

   - Contact details and signatures, including CASp number.

3. Project Details:

   - Types of funding, detailed scope of work, and any requests for technical infeasibilities or code modifications.

4. Accessible Units and Parking Space Matrices:

   - Detailed matrices indicating the distribution and specifics of accessible units and parking spaces, including the number of mobility and hearing/vision accessible units, and details on parking and electric vehicle charging stations.

Summary of Minimum Construction Standards

1. Energy Efficiency:

   - Rehabilitated buildings must demonstrate a **minimum 10% improvement** in energy efficiency post-rehabilitation, with **5% for scattered site projects**.
   - Compliance with the **California Energy Code** (Title 24) is mandatory.
   - Use of the **Sustainable Building Method Workbook** for documentation, unless alternative green certifications (e.g., LEED, Passive House) are pursued.

2. Landscaping:

   - Landscaping must utilize **low water use** plant species.
   - Compliance with the **Model Water Efficient Landscape Ordinance** is required unless a stricter local ordinance is in place.

3. Roofing:

   - New roofs must carry a three-year subcontractor guarantee and a minimum 20-year manufacturer's warranty.

4. Exterior Doors:

   - Must be **insulated or solid core**, made of metal clad, hardwood, or fiberglass, with a **one-year guarantee**.

5. Appliances:

   - Low-Income Units must include:
     - A refrigerator.
     - A range (cooktop and oven) for non-SRO units.
     - A cooking facility (at least a cooktop or microwave) for SRO units, unless waived.

- All appliances (refrigerators, dishwashers, washers, dryers) must be **ENERGY STAR rated**, unless waived by the Executive Director.

6. Window Coverings:

   - Must include fire retardant drapes or blinds.

7. Water Heaters:

   - Minimum capacities:
     - **28 gallons** for one- and two-bedroom units.
     - **38 gallons** for three-bedroom units or larger.

8. Floor Coverings:

   - Kitchen and bath areas must have hard, water-resistant, cleanable surfaces.
   - Any carpet must comply with **HUD/FHA UM44D** standards.

9. Insulation:

   - All fiberglass insulation must meet **Greenguard Gold Certification**.

10. On-Site Management:

    - Projects with **16 or more units** must have at least one on-site manager's unit.
    - Additional units are required based on the total number of units.
    - Equivalent staffing can substitute for manager units under certain conditions.

11. Accessibility:

    - New construction must provide **15% of Low-Income Units** with mobility features and **10% with communication features**.
    - Rehabilitation projects must provide **10% mobility** and **4% communication features**.

Abbreviations

BLS	Bureau of Labor Statistics
CA	California
CO	Colorado
CTCAC	California Tax Credit Allocation Committee
LACDA	Los Angeles County Development Authority
LAHD	Los Angeles Housing Department
LIHTC	Low Income Housing Tax Credit Program
NRSF	net rentable square foot
PCE	Personal Consumption Index
PPI	Producer Price Index
TDC	Total development cost
TX	Texas

References

Los Angeles County Development Authority, *Supplemental Document 8: Architectural Design Requirements*, notice of funding availability round 27, undated. As of March 7, 2025: https://www.lacda.org/docs/librariesprovider25/affordable-housing-programs/multifamily-rental-housing---nofa/round-27-documents/supplemental-document-8---architectural-design-requirements.pdf

Los Angeles Housing Department, *Architectural Requirements*, July 14, 2022. As of March 7, 2025: https://housing.lacity.gov/wp-content/uploads/2022/09/Exh_01_LAHD-Arch-Req-2022.pdf

State of California Tax Credit Allocation Committee, Attachment 10: Minimum Construction Standards, Regulation Section 10325(f)(7), January 2021. As of March 7, 2025: https://www.treasurer.ca.gov/ctcac/2021/attachments/attachment-10.pdf