

Comparing the Costs of New Construction and Acquisition-Rehab In Affordable Multifamily Rental Housing: Applying a New Methodology for Estimating Lifecycle Costs

by Maya Brennan, Amy Deora, Anker Heegaard,
Albert Lee, Jeffrey Lubell, and Charlie Wilkins

Working Paper
February 2013

In Partnership with



COMPASS GROUP



Executive Summary

This working paper describes a new approach for estimating the costs of affordable multifamily rental housing over the course of a property's lifecycle and applies this methodology to compare the costs of two alternative approaches for developing properties—new construction and acquisition-rehab. Applying this methodology to a convenience sample of more than 200 affordable multifamily rental properties, and adjusting for other factors that might influence costs, we found that the lifecycle costs of new construction were approximately \$40,000 to \$71,000 (25 to 45 percent) higher per unit than those of acquisition-rehab properties. Since our sample is not necessarily representative of the full universe of affordable multifamily rental properties, these findings should not be understood as providing a definitive assessment of the relative costs of the two production approaches. Nevertheless, our findings are consistent with other data suggesting that acquiring and rehabilitating existing multifamily rental housing may be significantly more cost-effective than new construction.

Rather than looking solely at the initial development costs of affordable rental housing, this new approach – which we call “lifecycle cost analysis” or “lifecycle underwriting” – estimates the costs of both developing a property and maintaining it in decent condition over a full 50-year lifecycle. Applying this methodology to our convenience sample, we found that around half of the properties appeared to be capable of meeting projected capital needs for a full 50 years by using cash flow and refinancing without an infusion of new equity or soft debt, while the balance required additional funds to cover those costs. For properties in need of an infusion of funds at some point in the lifecycle, we estimated the amount of additional funds that would need to be deposited into the replacement reserves at the time of development in order to avoid a negative balance in the reserve over a 50-year period; we call this amount the “lifecycle cost adjustment.”

Adding the lifecycle cost adjustment to a property's total development costs (TDC) produced an adjusted TDC that we used to compare the costs of new construction with the costs of acquisition-rehab. We found that, for the properties in the sample, acquisition-rehab is a lower-cost method of developing and maintaining affordable multifamily rental housing than new construction. This relationship holds true after controlling for various factors such as property location, size, and building type.

The lifecycle cost analysis methodology developed for this report will be helpful both for comparing the costs of different forms of development and for understanding the viability of specific projects over their full lifecycle. A separate technical paper provides more details about the methodology. For those who want to apply lifecycle underwriting to a specific property, the Compass Group¹ has developed a web application that allows users to evaluate the likely adequacy of the replacement reserve over a 50-year lifecycle for specific properties using data the users supply. This web tool is available at www.HousingPolicy.org/Lcycle.

¹ The Compass Group is a member of the study team along with the Center for Housing Policy and Summit Group. Compass provided expertise on multifamily housing finance. The Summit Group provided statistical support.

Introduction

This working paper presents a new methodology for estimating the costs of developing affordable multifamily rental housing and applies the methodology to compare the costs of constructing new multifamily developments (new construction) with the costs of acquiring existing multifamily developments and rehabilitating them (acquisition-rehab). In addition to describing this new approach – which we call “lifecycle cost analysis” or “lifecycle underwriting” – the paper tests the hypothesis that acquisition-rehab is a lower-cost method of developing and maintaining affordable multifamily rental housing than new construction.

Prior research comparing the costs of new construction and acquisition-rehab has generally found that the initial development costs (land and construction) for an acquisition-rehab project are lower than the costs of new construction.² However, these studies have not accounted for differences in initial unit quality. If, for example, a property developed through acquisition-rehab is of substantially lower quality than a new construction project, the costs to maintain the rehabbed project in acceptable condition over the long term may be higher than for the new construction project. Our research addresses this problem by adjusting the initial development costs to account for these and other differences that may affect expenses over a property’s lifecycle.

Rather than looking solely at the initial development costs of affordable housing, we estimated the costs of both developing a property and maintaining it in decent condition over a full lifecycle (i.e., 50 years³). To determine lifecycle costs, we developed a cash-flow model that estimates whether a housing development will be able to meet its capital needs over a specified lifecycle, and if not, how much additional initial deposit to the replacement reserve at the time of construction or rehab would be required to maintain financial viability throughout the lifecycle. We refer to the needed additional deposit in the replacement reserve as a “lifecycle cost adjustment.” The sum of the lifecycle cost adjustment and the funds actually expended during the construction or acquisition-rehab equals the “adjusted total development costs” (Adjusted TDC or ATDC). ATDC allows a fair cost comparison of two different development types—new construction and acquisition-rehab—despite differences in initial unit quality and financing structure.

Our study used a convenience sample of 269 multifamily affordable properties collected from a mix of non-profit developers and two large syndicators. Because our sample was not statistically representative of the overall universe of affordable housing properties, the cost comparison presented here should not be understood as a definitive assessment of the relative costs of new construction versus acquisition-rehab. However, we believe the analysis demonstrates the potential of this new methodology to

² See, e.g., Bever, Thomas D. 1983. "Economic Benefits of Historic Preservation." Pp. 79-81 in *Readings in Historic Preservation: Why? What? How?* edited by Norman Williams, Jr., Edmund H. Kellogg, and Frank B. Gilbert. New Brunswick, N.J.: Center for Urban Policy Research.

³ Our financial model allows consideration of property useful lives as short as 20 years or as long as 50 years. In our baseline approach, we use a 50-year analysis period because that is our best estimate for the typical useful life of an apartment property before redevelopment may be required.

facilitate an apples-to-apples comparison and provides some suggestive results that reinforce the conclusion that acquisition-rehab may be significantly more cost-effective than new construction.⁴

In addition to facilitating comparisons of properties, lifecycle underwriting can be used as a stand-alone lifecycle cost estimation method. Developers, lenders, syndicators, and regulators may all find the methodology helpful in predicting whether a property will be able to meet its projected capital needs for the intended affordability period or over a full lifecycle. For example, when a Low-Income Housing Tax Credit (LIHTC) developer elects to provide affordability for the 30-year extended affordability period—or when a state elects to require a longer affordability period, such as 50 years—the developer, investor, and regulator might want to provide adequate reserve funding for capital needs likely to be incurred over that 30- or 50-year affordability period. Similarly, a HOME participating jurisdiction might want to require that reserve funding be adequate to cover the required HOME affordability period (at least 20 years for new construction projects, although jurisdictions have the option to extend it). A similar analysis could be useful when evaluating proposals to preserve a LIHTC property that is approaching the end of its affordability period; the methodology would be helpful in determining the level of replacement reserve funding that will likely be needed over the new (extended) affordability period.

This paper is one component of a suite of products that focus on the costs of developing and maintaining affordable multifamily rental properties. It provides a summary of our research approach and findings with a brief exploration of the policy questions our research raises; more detailed discussions are reserved for companion papers. The full suite of products includes:

- A technical paper describing how the lifecycle cost adjustment works and its impact on total development costs;
- An online lifecycle cost modeling tool (L-Cycle, available at www.housingpolicy.org/lcycle), which allows users to input financial data on a property and obtain a quick estimate of the project’s ability to meet its long-term capital needs
- A policy paper discussing the implications of lifecycle underwriting for policy and practice; and
- A detailed research paper, to be submitted for publication to a journal, documenting the full methodology and results of our research.

The Adjusted Total Development Costs Concept

The primary innovation of this project is the concept of adjusting total development costs to fully cover properties’ estimated capital needs over a specified lifecycle (e.g., 50 years). The Compass Group created the ATDC concept to meet the need for a single outcome measure that would allow an apples-to-apples comparison of the cost of developing different types of multifamily affordable properties. The

⁴ It is important to recognize that acquisition-rehab is not always available as a strategy and that a sound affordable rental housing policy will need to use both new construction and acquisition-rehab approaches. See the section titled “A Broader Perspective” starting on page 12.

adjustment accounts for differences in initial unit quality—for example, between an acquisition-rehab project that did not update all of the building systems and one that did—as well as differences in financial structure, such as initial and ongoing reserve deposits, that affect how well properties can meet their ongoing capital needs.

ATDC is the sum of a property's total development costs and a lifecycle cost adjustment calculated through our model. Total development costs include land, construction, developer fee, lease-up, and other soft costs such as construction-period interest, architectural fees, engineering fees, legal fees, and permit costs. If a property does not have sufficient resources (in the replacement reserve, cash flow, and potential refinancing proceeds) to meet its estimated long-term capital needs, we calculate a lifecycle cost adjustment. The adjustment is equal to the additional initial reserve deposit needed to allow a property to meet its expected capital needs over a full lifecycle. Adding the lifecycle cost adjustment to a property's total development costs provides a more complete picture of the total costs of developing and maintaining an affordable multifamily rental property in good condition over a full lifecycle.

Each property's long-term capital needs are estimated based on the age of the building systems⁵ and the anticipated costs of replacing building components during the specified lifecycle.⁶ Estimates of each property's resources are based on the initial and annual deposits into the replacement reserve⁷ and a project's ability to generate cash flow or refinancing proceeds to fund any replacement costs that cannot be funded from the reserve. The ATDC methodology and assumptions are described in more detail in a companion technical paper.⁸

In applying this methodology to a convenience sample of 269 properties (discussed in more detail in the following section), we found that around half of all properties did not require a lifecycle cost adjustment (see Table 1). That is to say, about half the studied projects had enough in reserves, generated sufficient reserve deposits or cash flow, or had sufficient ability to refinance to cover expected capital costs over

⁵ For acquisition-rehab projects, systems not replaced during rehab are assumed to have been replaced at the end of their useful lives. For example, for a property originally constructed 20 years prior to the time of rehab, air conditioners (15-year theoretical useful life) were assumed to have been replaced after 15 years, and the replacement air conditioners were assumed to have been 5 years old at the time of rehab. If a system was not replaced during rehab but its useful life would have ended in the first five years after rehab, it is assumed to have been replaced two years prior to the year of rehab (on the theory that the lender and/or LIHTC investor would not have gone forward with the project had there been an anticipated major replacement that early in the life of the project).

⁶ Assumptions for the estimated useful life and replacement cost for each major building system were based on information from On-Site Insight, a capital planning firm specializing in analysis of affordable rental housing. The model includes three separate sets of cost assumptions, for properties located in low-, medium-, and high-cost areas. All costs are reported in 2009 dollars.

⁷ We also included interest earnings at a passbook rate.

⁸ See *The Lifecycle Cost Adjustment Methodology: An Exploration of the Baseline and Alternative Assumptions*. Available at: www.nhc.org/media/files/LifecycleCostAdjustmentMethodology.pdf

the 50-year analysis period, while the balance (127 properties) required additional funds to cover those costs. Among the properties that required an adjustment, the median lifecycle cost adjustment was \$5,412 per unit. The median ATDC per unit for all properties was \$138,596.

Note: In all of the tables in this paper, AR refers to acquisition-rehab and NC refers to new construction. All costs are expressed in 2009 dollars.

Table 1: Median Initial and Adjusted Total Development Costs Per Unit

	All	AR	NC
Number of Projects	269	125	144
Initial Total Development Costs Per Unit	\$136,235	\$120,884	\$159,022
Number/Percent Requiring a Lifecycle Cost Adjustment	127 (47%)	56 (45%)	71 (49%)
Median Lifecycle Cost Adjustment Per Unit (excluding zeroes)	\$5,412	\$5,107	\$6,022
Median Adjusted Total Development Costs Per Unit	\$138,596	\$122,051	\$161,489

Using the ATDC measure places all projects on a level playing field—regardless of how a property was produced or how its finances were structured—allowing us to evaluate the true cost differences between acquisition-rehab and new construction over the course of the study period.

Before controlling for any other factors that may affect ATDC, we saw higher costs for new construction compared with acquisition-rehab. In our sample, the median ATDC per unit for new construction was \$161,489—around \$40,000 more than the median ATDC per unit for acquisition-rehab of \$122,051. The means were \$182,897 for new construction and \$135,962 for acquisition-rehab.

The Sample Properties

We used a convenience sample of 269 properties to test the lifecycle cost analysis methodology and compare the costs of acquisition-rehab and new construction. This section provides basic information on the properties in the sample, their geographic distribution, the rehabilitation done on the acquisition-rehab properties, and the financial characteristics of the full set of properties.

Overall Description of the Sample

The sample included 125 acquisition-rehab properties and 144 new construction properties. The data on these properties came from nine non-profit affordable housing developers (103 properties) and two syndicators of low-income housing tax credits (166 properties). The dates of construction or rehab for the properties in the sample ranged from 1999 to 2010, with approximately half (48 percent) constructed or rehabbed between 2005 and 2007.

The states and Census Regions included in the sample represent significant geographic diversity. The sample included properties from 35 states and the District of Columbia. The median number of properties in any state was 5. The states with the largest representation in the sample were: California – 49; Virginia – 28; Ohio – 26; Illinois – 18; Washington – 18; New York – 11; Colorado – 10; and Maryland – 10. Table 2 shows the distribution of properties by Census Region.

Census Region	Number	Percent
West	98	36%
South	75	28%
Midwest	67	25%
Northeast	29	11%
All	269	100%

As can be seen in Table 3, the overwhelming majority of properties in our sample received some form of LIHTC, mainly in the form of 9 percent credits. Just 20 properties in the sample had no LIHTC financing.

	Number	Percent
4% LIHTC	69	26%
9% LIHTC	180	67%
Not LIHTC	20	7%
Total	269	100%

Sample Properties Compared with the LIHTC Database

Although our sample is not intended to be representative of any larger population, the major property characteristics of the properties bear certain similarities to the overall population of properties financed by the LIHTC program, the largest national program for developing affordable rental housing. We compared our population to the overall population of LIHTC properties using data in the HUD LIHTC database on properties put into service between 2005 and 2007, and we found the sample had specific characteristics in common with the LIHTC units put into service in this period (see Table 4). The sample dataset contained a smaller percentage of small properties and more acquisition-rehab properties, but its distribution was otherwise fairly similar to that of the LIHTC properties.

Table 4: The Distribution of Sample Properties Compared to the LIHTC Database

Project Characteristic	Percentage of Total LIHTC Database	Percentage of Convenience Sample
Less than 30 units	22%	3%
30 to 99 units	52%	67%
100 to 199 units	19%	24%
Over 200 units	7%	6%
In an MSA	75%	77%
New Construction	66%	54%

Extent of Rehabilitation

For most of the acquisition-rehab properties in our convenience sample, the level of rehab was significant. Of the 21 building systems for which we collected data, 14 or more were replaced during acquisition-rehab in at least 74 percent of the acquisition-rehab properties. The only systems that were excluded from the majority of the rehabs were: sealing and striping the parking lot (completed in 34 percent); resurfacing asphalt (34 percent); replacing exterior wood doors and frames (27 percent); replacing exterior wood stairs (18 percent); and replacing balconies (18 percent).

One way to assess the extent of a rehab is to look at the accrued costs of the systems not replaced as a proportion of the cost of replacing all systems. In our sample, the costs of the un-replaced systems as a percent of the cost of replacing all systems averaged only 10 percent (in other words, the rehabs covered approximately 90 percent of building systems by value). This suggests the acquisition-rehab properties in the sample underwent fairly comprehensive rehabilitation.

As a result of the relatively significant level of rehab among the acquisition-rehab properties in our sample, we projected that the costs of meeting capital needs over time would not differ dramatically between the acquisition-rehab and new construction properties (see Table 5). The projected median

per-unit cost of meeting capital needs was slightly higher in the first two decades for acquisition-rehab properties, due in part to the fact that some systems were not replaced in acquisition-rehab transactions and replacement costs were thus incurred earlier than in new construction projects. Projected capital needs were slightly higher for new construction properties in the third decade because some costly systems were replaced between years 21 and 30, and all new construction properties were on the same system replacement schedule, by default.

Table 5: Median Projected Capital Needs Per Unit by Decade

	All	AR	NC
Years 1-10	\$1,597	\$1,902	\$1,380
Years 11-20	\$5,741	\$6,603	\$5,045
Years 21-30	\$17,667	\$16,874	\$18,583
Years 31-40	\$4,010	\$4,013	\$3,983
Years 41-50	\$12,226	\$12,062	\$12,728

Financial Characteristics

There were significant differences between the acquisition-rehab and new construction projects in our sample with respect to financing. As illustrated in Table 6, the acquisition-rehab projects in the sample were more reliant on hard debt, and new construction projects were more likely to utilize soft debt.⁹ Both types relied heavily on LIHTC equity, but new construction projects relied on it more so.

Table 6: Average Financing by Source

	All	AR	NC
% LIHTC Equity	42%	38%	45%
% Hard Debt	22%	31%	15%
% Soft Debt	31%	24%	36%
% Other	5%	7%	4%
Total	100%	100%	100%

⁹ The term “hard debt” refers to mortgage debt with monthly payments that must be made without regard to project cash flow; “soft debt” refers to other mortgage debt in which payments may be contingent on cash flow, deferred, or both.

Two other financial characteristics that may influence a property’s ability to meet its capital needs are the initial and annual deposits to the replacement reserve. As Table 7 suggests, acquisition-rehab properties in the sample were much more likely to receive an initial deposit to their replacement reserves, and median values for both the initial and annual deposits favored acquisition-rehab properties (11 percent higher and 6 percent higher, respectively), if only slightly.

Table 7: Initial and Annual Deposits to Replacement Reserve¹⁰

	All	AR	NC
% with Initial Deposit	45%	73%	21%
Median Initial Deposit	\$1,124	\$1,131	\$1,021
Median Annual Deposit to RR	\$293	\$300	\$283

Note: Medians exclude properties with zero values.

Factors that May Affect Adjusted Total Development Costs

To test the hypothesis that acquisition-rehab is a lower-cost development method than new construction, we measured the impact of the development method on ATDC and controlled for a variety of factors that might affect costs.¹¹ In this section, we describe factors that may affect ATDC and were therefore included in our controls. These include location, project size, and building type. We describe each control in greater depth in a longer version of this paper that will be submitted to a journal.

Location. Location may affect adjusted total development costs in multiple ways, including at least the following:

- Construction costs may vary from location to location based on differences in wage rates for the contractors that work on the project and, to a lesser extent, differences in material costs.

¹⁰ Acquisition-rehab properties were more likely to have other initial non-replacement reserves than new construction properties (98 percent versus 86 percent), and the median level of other reserves for properties that had them was substantially higher for acquisition rehab than new construction (\$4,632 versus \$3,166). In our baseline methodology, initial reserves not specifically set aside for capital needs did not factor into the calculation of the lifecycle cost adjustment. However, non-replacement reserves were included in total development costs and adjusted total development costs.

¹¹ The analysis described here uses an Ordinary Least Squares (OLS) Regression model. We also carried out an alternative analysis using an instrumental variable (IV) approach to evaluate whether other factors actually influence both development costs and the choice of construction type. The results of the alternative analysis did not materially differ from the conclusions presented here.

- The costs of acquiring properties or land for development may vary both *between* one metropolitan area and another and *within* metropolitan areas, based on proximity to amenities such as public transit and job centers.
- Rent levels may vary both between and within metropolitan areas; this affects the Net Operating Income and thus the potential cash flow of properties over time. Higher rents could also allow developers to access higher debt levels and thus potentially lead to higher total development costs.

Average unit size. All else equal, developments with a larger average unit size may have higher adjusted total development costs. Unit size may be measured by average square footage, average number of bedrooms per unit, or by using a variable to differentiate between family units and the typically smaller units built in elderly properties.

Project size. Larger projects (e.g., above 100 units) could have lower adjusted total development costs per unit than smaller projects (e.g., below 30 units) as a result of economies of scale.

Building type. Building type (e.g., elevator 7+ stories, elevator 2-6 stories, garden flats, townhouses, etc.) may have an effect on development costs. For our controls, we focused on the hypothesis that elevator buildings could have higher total development costs than non-elevator buildings.

Year of project completion. The year of construction or rehab may have an influence on adjusted total development costs. For example, the housing boom around 2005 to 2007 may have pushed development costs upward and the subsequent collapse may have lowered development costs as a result of increased competition among contractors for less work.

Subsidy type. We focused on LIHTC participation since it is the most common method of producing affordable multifamily properties. LIHTC funding might affect total development costs due to specific requirements, such as syndication, that are unique to this subsidy program. LIHTC's relationship to costs is complex, however, since the choice of a 4 percent or 9 percent credit may itself be a function of the extent of expected development costs, with 4 percent credits used for less expensive projects and 9 percent credits used for more expensive projects.

Results

We used a regression to understand the relationship between the development type (new construction or acquisition-rehab) and properties' ATDC after controlling for other factors that may have affected the sample properties' adjusted total development costs.¹² Because all but two of the properties for which

¹² The results presented in this paper are from a regression conducted using an OLS regression with state and year fixed effects to account for any systematic differences between states or across different years. In case development costs influenced the choice of new construction or acquisition-rehab, we also estimated the results using an IV method. The full results will be included in a forthcoming journal submission. Readers who wish to see

we had complete data were LIHTC properties, and because the costs of LIHTC properties may differ in important respects from those of other properties, we focused our analysis on the LIHTC portion of our sample only. In all, our sample had 231 LIHTC properties with sufficient data to be included in this analysis.

As shown in Table 8, our analysis found that new construction adds approximately \$56,033 per unit to the costs of producing and maintaining an affordable multifamily LIHTC development over a 50-year period relative to acquisition-rehab, all other things being equal. To adjust for the margin of error, we prefer to focus on the 90 percent confidence interval around this point estimate, which indicates that the additional costs of new construction are approximately \$40,000 to \$71,000 per unit. This result takes into account the location, project size, average unit size, building type, year of development, and other factors that independently affect the cost of developing affordable multifamily rental housing. On a percentage basis, our model estimates that new construction increases the marginal ATDC of LIHTC properties by 25 to 45 percent, all else being equal.¹³

Table 8: Regression Results—Are the Adjusted Total Development Costs for New Construction Higher than for Acquisition-Rehab?¹⁴

Variable	Effect on ATDC ¹⁵
New Construction	\$56,033**
Location (MSA Cost of Living Index)	\$442**
Average number of bedrooms	\$19,382**
Total number of units	-\$169*
Elevator Building	-\$197

Notes: OLS regression results for LIHTC properties; N=231; Adj. R²=0.54; Year of Tax Credit Allocation and state included as dummy variables. * $p < 0.05$; ** $p < 0.01$

The results described in Table 8 also showed factors beyond the development type (new construction or acquisition-rehab) that were related to ATDC:

the results in the interim may find them described here:

www.nhc.org/media/files/Statistical_Memo_Summit_Feb2013.pdf

¹³ This percentage cost premium is based on the 90% confidence interval around the average marginal effect of the new construction indicator in an OLS regression.

¹⁴ The full regression can be seen at www.nhc.org/media/files/Statistical_Memo_Summit_Feb2013.pdf.

¹⁵ This column shows the regression coefficient, a measure of each variable's effect on ATDC. It shows the estimated size and direction of the effect. Positive numbers indicate that ATDC is higher when that variable's value is higher. Negative numbers indicate a lowering of ATDC with lower variable values. Note, however, that if there are no asterisks in the margin of error column, the effect is not statistically meaningful.

- *Location.* As expected, properties in locations with a higher cost of living (as measured by the Cost of Living Index¹⁶) had higher ATDC per unit. In our statistical analysis, there was a high level of confidence that the cost of living in an area related to ATDC.
- *Average unit size.* Larger unit sizes (measured as the average number of bedrooms) were also associated with higher ATDC. This finding is quite intuitive since a three-bedroom apartment should be more costly to develop than a one-bedroom unit.
- *Project size.* Projects with more units in total had lower ATDC per unit, reflecting the likely economies of scale that a larger development can access to reduce per unit costs.
- *Building type.* With respect to building type, we found that the presence of an elevator did not have a statistically significant relationship with ATDC. In our testing, elevators did not appear to have a strong independent relationship with a development's per unit ATDC.

The results for the factors listed above may not reflect the actual direct dollar impact of each of these factors. Readers can view them, however, as evidence of whether a particular variable is meaningfully connected with a development's ATDC. Our analysis indicated that each factor we studied, with the exception of elevator buildings, had a statistically meaningful relationship with ATDC.

Since our analysis used a convenience sample of properties gathered from a variety of sources, the results described above may not be representative of the full universe of affordable multifamily rental properties. Nevertheless, our findings are consistent with the position that acquiring and rehabilitating existing multifamily rental housing may have significantly lower costs than new construction. The ATDC approach allowed us to make a fair comparison of the full development and capital needs costs of affordable multifamily rental properties regardless of differences in the type of development or their financial structures and initial quality.

A Broader Perspective on Development Choices

The analysis in this working paper focuses on the costs of new construction and acquisition-rehab. But cost differences are not the only reason for choosing a particular development approach. There are a variety of reasons why a developer might accept higher costs in order to develop housing that meets

¹⁶ The Cost of Living Index (COLI) provides a comparison of key consumer costs in 344 metropolitan areas. We chose to use COLI to control for location because we did not have access directly to variations in construction costs for all areas covered by our analysis and we assumed that regional differences in consumer costs might be related to regional differences in construction-related costs. We tested this assumption in the cities for which construction data were available through RS Means and found a strong correlation, suggesting that the more broadly available COLI can be used as a proxy for differences in construction-related costs by city.

local needs.¹⁷ This section describes some non-cost-based criteria that can influence whether housing is developed as new construction or acquisition-rehab.

The clearest non-cost-based reason that might influence the choice of new construction or acquisition-rehab is that acquisition-rehab projects must start with a suitable building for acquisition. In growing areas, finding a building to rehab may not be possible, so new construction is the only realistic choice. Conversely, in an area that is completely built-out, acquisition-rehab may deliver the bulk of affordable housing stock.

Public policy incentives and funding availability may also influence development choice. LIHTC allocating agencies may prioritize new construction over acquisition-rehab (or vice versa) for a variety of reasons. The priority of the LIHTC allocating agency will strongly affect the choice of development approach in developers' proposals.

Some developers may specialize in new construction transactions, and others may specialize in acquisition-rehab transactions. These specialties may reflect the developers' missions, or they may simply emerge from their history of work. Regardless of the reason for the specialty, it is fairly unlikely that an acquisition-rehab specialist would undertake a new construction approach and vice versa.

A desire for particular neighborhood features can also influence the development choice. Securing a developable parcel that has transit access or is located near a major employment center may be more expensive than property in other areas, but many believe that well-located housing can improve long-run outcomes for low- and moderate-income households. Commonly, there are few if any vacant parcels in transportation-efficient locations, which would make an acquisition-rehab transaction more likely there.

A mission-oriented developer may want to reduce the mismatch between supply and demand by adding to the overall affordable housing stock. By engaging in both acquisition-rehab (to preserve existing units) and new construction (to add to the overall affordable supply), a developer can address the shortage of affordable housing for low- and moderate-income households.

Another relevant factor is the ability to secure modern development features through new construction. Modern development features and community types may be difficult to fit into older structures. For example, buildings that are suitable for acquisition-rehab may not easily accommodate community space for on-site services. Finding a way to use acquisition-rehab to develop mixed-income communities may also prove to be challenging, particularly in areas where market-rate renters have a choice of more modern developments. Other issues related to mixed-income housing include the possibility that available buildings may be in areas of concentrated poverty (and thus less desirable to market-rate renters), or a developer's desire to avoid further reducing the existing affordable housing stock by setting aside some of the preserved units for market-rent occupants.

¹⁷ This section draws heavily from interviews conducted by the Compass Group with affordable housing practitioners.

A cost comparison does not, on its own, provide answers about what type of development should be pursued when developing affordable housing. However, it does provide important information of great relevance to policymakers and practitioners seeking to maximize the number of units produced with limited funds.

Potential Policy Implications of This Research

This research has a number of policy implications. First and foremost, it provides additional evidence for the cost advantage of acquisition-rehab as a strategy for developing multifamily affordable housing. As noted above, cost is not the only factor that should be considered in determining which development method to pursue, but it is certainly a relevant one and it is important for policymakers to have the best available evidence on this subject. At the same time, we would caution against using the results of this paper to shift development priorities to focus solely on acquisition-rehab, as that approach may not be available or appropriate in all circumstances.

Second, we believe the methodology we have developed for estimating lifecycle costs will be useful to developers, lenders, regulators, and investors as they seek to determine whether properties will have sufficient funds to meet their capital needs over a full lifecycle. There are pros and cons to underwriting properties to fully fund expected capital needs over a 50-year lifecycle which we plan to explore in greater detail in a subsequent analysis. Among other considerations:

- Underwriting properties so they will be less likely to require a subsequent recapitalization with tax credits midway through their lifecycle may help to reduce the overall costs of maintaining a property in adequate condition over its full lifecycle by eliminating the substantial soft costs (lawyers, accountants, etc.) associated with that recapitalization.
- Allocation of additional public funds for augmenting reserves to levels sufficient to cover expected capital costs over the full lifecycle could leave less funding available for other projects, reducing the number of developments that can be funded in any given year.
- Large property-level reserves could provide attractive targets for those seeking to quickly find funds for other purposes, such as deficit reduction.¹⁸

In determining whether (and if so, how) to increase reserves to levels reasonably likely to cover all capital needs for an extended period such as 30 years (the standard LIHTC extended compliance period) or 50 years (a full lifecycle), lenders, investors, and regulators may wish to consider the following questions:

¹⁸ And of course, projections are just that and any number of issues can arise that will cause actual results to differ. Any use of this methodology should take into account the possibility of unexpected events that may cause actual results to depart from projected results.

1. How likely is it that a typical property would need to increase its reserve funding, either over time or up front, and how much more funding would an affected property need? Are there particular types of properties that would be more affected than others, such as properties in weaker rental markets with less ability to generate revenue to cover capital needs?
2. Who should bear the cost of financially strengthening a property to fund its capital needs over a longer term: government, the property owner, other sources? If existing public-sector resources fund the necessary capital needs, how many fewer affordable units would be produced in a given year?
3. Would it be better to require that the reserve be adequate on a stand-alone basis (i.e., without considering the property's ability to utilize cash flow or refinancing), or would it be better to include available cash flow and refinancing opportunities as part of the reserve forecast? How would tax and regulatory policy have to change to effectively allow use of cash flow and refinancing for capital needs? What factors would need to be considered in that decision?
4. Should greater capital reserve funding come in up-front through an increased initial deposit, an increased annual deposit, a combination of both, or perhaps some other approach?
5. If, as our research results suggest, the reserve adequacy problems occur almost exclusively later in a property's affordability period or lifecycle, what are the risks or costs of having large reserve balances in the early years that will not be needed until later? What financial strategies might make the increased funding available only in a property's later years, thereby removing (or at least reducing) the temptation to utilize the funding for other purposes earlier?

This analysis may also help to inform the policy debate regarding the duration of affordability covenants for developments produced through LIHTC and other sources. While there are as many caveats for this policy application as for the other ones, it is nevertheless relevant to this debate that our analysis found that a substantial number of multifamily assisted properties—about half of our convenience sample—were already underwritten in a manner likely to allow the properties to meet their capital needs over a 50-year period, provided they had access to cash flow and refinancing proceeds.

Public agencies such as LIHTC allocators may also find lifecycle cost analysis useful for their portfolio management and allocation decisions. Many decisions allocators make require an evaluation of whether a property will be financially viable on a long-term basis—be it after a sale to a new owner, an allocation of tax credits, commitment to a new loan, or monitoring of the portfolio.

We see research applications for the lifecycle costs methodology as well. Researchers could use this methodology to compare the lifecycle costs of different types of multifamily housing—for example, light rehabs versus substantial rehab—or to further study the cost differences between acquisition-rehab and new construction using larger or different samples.

For a fuller discussion of these and other policy and practical implications of lifecycle underwriting, please see the accompanying policy paper.¹⁹ We invite readers to consider these issues and to use the online lifecycle costs calculator and let us know how the approach and calculator could be further refined to meet your needs.

¹⁹ See *Lifecycle Underwriting: Potential Policy and Practical Implications*. Available at: www.nhc.org/media/files/LifecycleUnderwriting_PolicyPaper.pdf

Study Team

Center for Housing Policy (Jeffrey Lubell and Maya Brennan; former staff Keith Wardrip and Laura Williams.)

Compass Group (Charlie Wilkins and Anker Heegaard)

Summit Consulting (Albert Lee and Amy Deora)

Acknowledgements

We gratefully acknowledge the financial support of the John D. and Catherine T. MacArthur Foundation for this research. However, any opinions expressed in this paper are those of the authors alone, and do not reflect the official position of the Foundation.

We would also like to express our gratitude to the individuals (listed below) who contributed to this project by serving on our project advisory panel:

- Eric Belsky, Harvard Joint Center for Housing Studies
- Michael Bodaken, National Housing Trust
- Pam Bower, The Richman Group
- Steve Gimilaro, Enterprise Community Investments
- Ethan Handelman, National Housing Conference
- Laurel Hart, Georgia Department of Community Affairs
- Jill Khadduri, Abt Associates
- Harold Nassau, NeighborWorks America
- Armando Perez, Boston Financial Investment Management
- Michael Stegman, formerly with The John D. and Catherine T. MacArthur Foundation
- Jennifer Stoloff, HUD PD&R
- Kevin Tatreau, Florida Housing Finance Agency
- Paul Weech, Housing Partnership Network
- John Weicher, Hudson Institute

We very much appreciate the input of the advisory panel. However, any opinions, errors, or omissions in this working paper are those of the study team alone. In addition to serving on the advisory panel, Ethan Handelman provided valuable input on the policy implications of this research and co-authored a separate paper exploring these issues in greater detail.

About the Authors

The **Center for Housing Policy** is the research affiliate of the **National Housing Conference** (NHC) and specializes in developing solutions through research. In partnership with NHC members, the Center works to broaden understanding of the nation's housing challenges and to examine the impact of policies and programs developed to address these needs. Combining research and practical, real-world

expertise, the Center helps to develop effective policy solutions at the national, state and local levels that increase the availability of affordable homes.

The **Compass Group, LLC**, provides direct advisory services related to affordable housing finance, asset management, and public policy. Compass has specialized expertise in the design of funding mechanisms, green building issues, multifamily data, federal housing programs and their regulatory requirements, and disaster recovery issues. Their perspective contributes a balanced understanding of financial, operational and public policy considerations that drive affordable housing, and of the ways they interact.

Summit Consulting, LLC, is a boutique analytics advisory firm that guides federal agencies, financial institutions, and litigators as they decode their most complex analytical challenges. Summit's staff of economists, econometricians, and research scientists use quantitative techniques to assist clients as they model risk, evaluate program performance, and predict future performance.