

Industrial Revolution

Every home that is built is a representation of compromises made between different and often competing goals: comfort, convenience, durability, energy consumption, maintenance, construction costs, appearance, strength, community acceptance, and resale value. Consumers and developers tend to make tradeoffs among these goals with incomplete information which increases risks and slows the process of innovation in the housing industry. The slowing of innovation, in turn, negatively affects productivity, quality, performance, and value. This department piece features a few promising improvements to the U.S. housing stock, illustrating how advancements in housing technologies can play a vital role in transforming the industry in important ways.

Hiding in Plain Sight: How Reconsideration of Codes for Existing and Historic Buildings Can Expand Affordable Housing

Marilyn E. Kaplan

Fellow, Association for Preservation Technology International
Preservation Architecture

Mike Jackson

Fellow, American Institute of Architects
Fellow, Association for Preservation Technology International

Abstract

Current policy conversations regarding the critical need to increase the availability of affordable housing rarely include discussions regarding the reuse of existing and historic buildings, including the thousands of vacant housing units on Main Streets across the United States. Recapturing these spaces has many advantages, including carbon-reduction, expanded use of existing infrastructure, and building or strengthening communities. Nearly 50 years ago, the U.S. Department of Housing and Urban Development (HUD) led many of the efforts to identify barriers to building reuse that were embedded in the building codes, resulting in the framework that is now the basis of the widely adopted model for existing building code(s). A half-century after these initial efforts, many factors have contributed to the reemergence of codes as a barrier to greater reuse of existing buildings. An updated assessment and strategy to address current code barriers can make an unparalleled contribution to meeting the nation's current and projected housing needs.



Introduction

The nation's shortage of affordable housing—estimated at 3.8 million housing units according to a 2021 Freddie Mac estimate—is widely recognized and critical to the health, safety, and welfare of the public and the social and economic well-being of families and communities. Although no precise estimate exists quantifying the number of vacant housing units and other underutilized real estate, it is common sense to envision that vacant buildings have tremendous potential to ameliorate the housing shortage. Many efforts to address the housing shortage focus on new construction, often undertaken by larger developers.

In the late decades of the 20th century, many factors contributed to the public's acceptance of reusing existing buildings. Federal policy, state and federal tax credits for the rehabilitation of qualified historic structures, and a rediscovered appreciation of walkable communities created opportunities throughout the United States to reuse buildings. Although this back-to-the-city trend has continued, it has been affected by code requirements for fire and life safety and other societal goals such as accessibility and resiliency. In many respects, it appears that the advances which brought forth the nation's first existing building codes 25 years ago have been thwarted by advancing codes for all new and existing buildings and state and federal housing policies favoring new construction. Reliance on new buildings may have become widespread due to the ready ability to replicate standard designs and eliminate the problems created by the nuances and unique conditions presented by existing buildings, including environmental concerns and the difficulties encountered when trying to meet construction standards written for new construction.

Communities throughout the United States share the dual challenges of the inability to meet their housing needs and the underutilization of vacant buildings in their traditional community cores. Some vacancies can be attributed to the long-term effects of urban renewal and the expansion of the suburbs; others can be considered the result of building and fire codes that are unevenly punitive to older structures. Although not all buildings are candidates for reuse, the codes' devaluing of existing buildings in favor of new construction that is easier to standardize and codify has been shortsighted, often creating conditions where projects are unaffordable or technically infeasible.

The primary building types discussed in this article—small two-, three-, and four-story buildings along Main Street, as illustrated in Exhibit 1—are among those that are underutilized but present great opportunity for addressing housing needs. The recent recession, pandemic, and changing patterns in retail and the workplace have created high vacancy and underutilization rates in large retail malls and downtown offices, ranging from high-to low-rise construction and buildings with large to small floor plates. For all these building types, retrofits and adaptive reuse for new occupancies will require new and creative approaches to the construction codes that govern their rehabilitation. For larger buildings, reuse for residential purposes will need to address requirements such as those for natural light, ventilation, and exit travel. Some of these requirements create barriers shared with the smaller Main Street buildings, whereas others are unique to the building or occupancy types. To unlock the opportunities and benefits of the reuse of these structures, a broad and fresh look, as supported by HUD nearly 50 years ago, is required.

On Main Street, the opportunity to create housing on vacant upper floors is obvious. In some buildings, new units will be added or reinstated above existing businesses and offices; in other buildings that have no first-floor use, additional opportunities exist to create nonresidential occupancies that support or enhance the residential use. Unfortunately, code requirements seeking to have existing buildings function like new construction can present insurmountable challenges, with the greatest penalty paid when the code classifies the rehabilitation effort as a Change of Occupancy. Based on the framework of earlier efforts to encourage building rehabilitation through improved building codes, this article presents an updated approach to removing code barriers to meet the current critical housing needs within existing buildings.

How Building Codes Work

Until the 1997 forming of the International Code Council (ICC), model building codes adopted by jurisdictions were published by one of three model code organizations: the Building Officials and Code Administrators International (BOCA), formed in 1915; the International Conference of Building Officials (ICBO), founded in 1922; and the Southern Building Code Congress International, formed in 1941. Created to standardize the construction industry via a national mode, the ICC now publishes 15 model codes (the I-codes), updated at 3-year cycles. The next family of codes to be published will be the 2024 edition.

A model code only becomes law once adopted by the jurisdiction. A jurisdiction can adopt one, many, or all of the model codes and is free to update to current editions when desired. Adoption most often includes modifications to the administrative procedures of Chapter 1 of each model code to reflect local policy, but it can also include modifications to any other code sections. Great

variety is possible in adoption across the nation. States may adopt recent editions of the I-codes for all construction. Alternatively, states or smaller jurisdictions might adopt select codes applicable only to particular building or occupancy types. In addition, codes and reference standards available for adoption may be published by other organizations, such as the National Fire Protection Association; focus on particular priorities of a jurisdiction, such as energy conservation or wildfire; or be in place as a requirement of the funding source, as is typical for state or federally funded housing or hospitals.

The first full model code intended for the rehabilitation of existing buildings, the International Existing Building Code (IEBC), was published in 2003 by the ICC. The IEBC was created by merging and enhancing the codes or provisions for existing and historic buildings previously published by the regional model code organizations. The IEBC applies to existing and historic buildings of all occupancy and construction types, whether otherwise governed by the International Building Code (IBC) or the International Residential Code (IRC).

Application of the IEBC requires interaction with the IBC, International Energy Conservation Code (IECC), and ICC 117.1 Accessible and Usable Buildings and Facilities. Chapter 11 of the International Fire Code (IFC), “Construction Requirements for Existing Buildings,” provides limited retroactive requirements for building rehabilitation. In contrast, the simpler format of the IRC is applicable to new one- and two-family dwellings and townhouses up to three stories in height, with separate entrances and accessory structures, and it is largely a stand-alone document. Although the IRC is easier to use, the only provisions for rehabilitation of an existing building are included in an appendix that must be independently adopted by the jurisdiction.

Compliance with building-related requirements established under other federal policies is required by reference in the code and/or other program requirements. Achieving the safety objectives of these policies is integral to the approval and construction processes. However, difficulties in addressing issues such as asbestos and lead paint have resulted in policy shifts that, in contrast to the earliest objectives, resulted in the unintended consequences of reduction or abandonment of rehabilitation programs.

HUD’s Nationally Applicable Recommended Rehabilitation Provisions (NARRP)

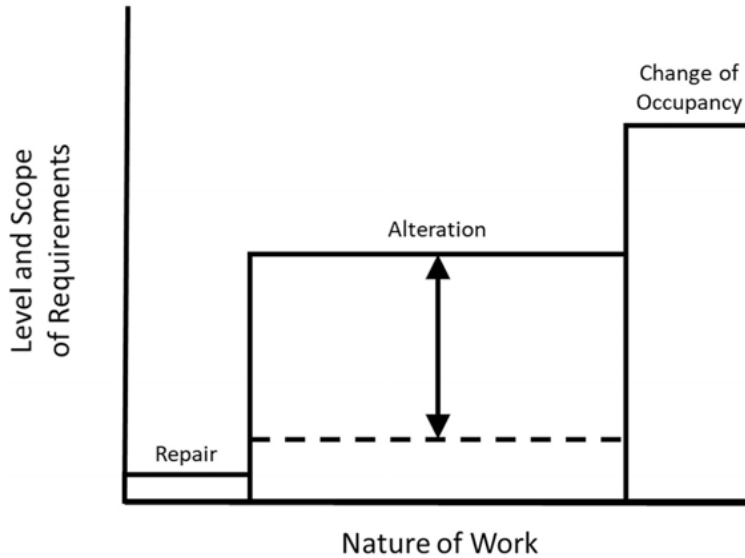
Prior to the IEBC, the near-insurmountable challenges of bringing existing buildings to comply with new construction standards were widely recognized, particularly for historic buildings undergoing restoration. The 1968 Kerner and Douglas Commissions addressed the deplorable conditions of existing housing and urban neighborhoods abandoned by urban renewal and other federal housing programs. HUD’s initiatives included the publication of a series of Rehabilitation Guidelines, including those addressing code administration and enforcement of housing and property maintenance codes. HUD also supported research and code development, culminating in the 1997 publication of a model rehabilitation code, the Nationally Applicable Recommended Rehabilitation Provisions (NARRP).¹ The NARRP served as the basis of the IEBC, and with

¹ <https://www.huduser.gov/Publications/pdf/HUD-7842.pdf>

modifications to format, New Jersey and Maryland were among the early adopters of rehabilitation codes based on NARRP (exhibits 1 and 2).

Exhibit 1

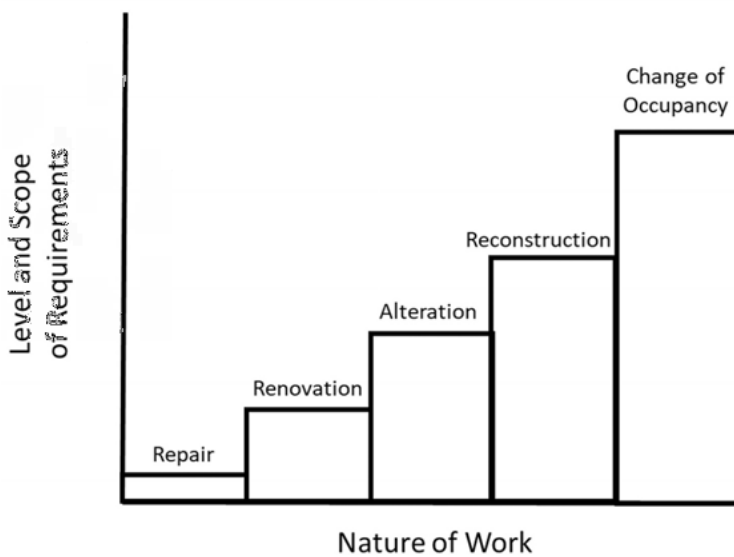
Rehabilitation Building Code Requirements Prior to NARRP



Source: <https://www.huduser.gov/Publications/pdf/HUD-7842.pdf>

Exhibit 2

Rehabilitation Building Code Requirements After NARRP



Source: <https://www.huduser.gov/Publications/pdf/HUD-7842.pdf>

The IEBC intended to provide predictability to the code and design process, consider the unique conditions presented by existing buildings, and establish a graduated basis for the imposition of required improvements to address safety and building performance. This graduated basis was achieved by an approach generally based on the footprint, or “Work Area,” of the property owner’s proposed work. This approach contrasted with the widely accepted pre-IEBC “50 percent rule,” wherein the imposed requirements were a function of comparing the cost of rehabilitation against the value of the building. Only projects where the rehabilitation expense exceeded 50 percent of a building’s value were required to meet the current code (i.e., the code for new construction).

Conceptually, little has changed in the IEBC since its original publication. However, like all codes and standards, the minimum thresholds for safety and building performance have increased, diminishing the overall intent of the IEBC and its NARRP predecessor of encouraging building rehabilitation via the removal of code barriers. Unfortunately, as HUD’s active role in the maintenance of its model rehabilitation code has neither continued nor been assumed by others, code changes during the past 20-plus years have created new barriers to building rehabilitation.

Barriers Reemerged

Although the IEBC achieved its goal of removing many of the barriers to rehabilitation, its utility as a tool to encourage rehabilitation has been hampered by 2 decades of increasing code stringency, paralleling the trajectory of the codes written for new construction. Since the publication of the 2003 IEBC, the scope of both new and rehabilitation codes has also expanded to regulate newly prioritized or emerging topics such as resiliency, energy efficiency, and rural fire protection. During this 20-year period, it is arguable that the acceptable disparity in performance between existing buildings and new construction has shrunk.

These reemerged code barriers stifle the opportunity to use existing vacant or underutilized buildings to meet current housing needs. Some barriers are rooted in the complexity of the codes and their administration. Others are associated with particular building types, such as the two- and three-story Main Street buildings, which, by nature of their smaller scale, should be the easiest to address with solutions that are widely applicable.

The Main Street Building

Nearly every older community has a core of empty and underutilized buildings that originally contained housing units above a nonresidential first floor. Common code barriers to the rehabilitation of these buildings have already been identified:

- Inadequate egress.
- Lack of a fire separation between occupancies, sprinklers, or elevator access to upper floors.
- Potential building science issues affecting long-term building durability when required to meet new construction energy standards.

- The code's inflexibility to accept even those minimal dimensional variations which could have an insignificant impact on safety and building performance.

Perhaps most problematic is the penalizing of projects classified as a "Change of Occupancy," whereby rehabilitation projects must essentially meet or exceed standards for new construction.

Knowledge and Technical Expertise

Other barriers include the lack of awareness by many code officials and design professionals of the three optional code compliance methods included in the IEBC: Prescriptive, Work Area, and Performance. Although the ability to choose the compliance path most advantageous to a project is beneficial to the existing and historic building project, this added complication to an already complex process is one reason the IEBC is not recognized or adopted. This situation is most common in smaller and rural communities where there may be little support for code official training, a hesitancy to adopt additional codes or the most current codes, and few design professionals with knowledge of the IEBC.

Leadership

In contrast with the commercial marketplace's current focus on larger office buildings and malls, no broad unified effort to study barriers and opportunities has been undertaken for the smaller-scale commercial buildings of Main Street. Since the founding of the ICC, ready opportunities to influence code have shifted upstream from localities to a national forum, and jurisdictions are often reluctant to introduce innovative provisions that vary from the national model. Thus, the codes' lack of focus on expanding opportunities to create housing is best understood by noting the ICC's much broader mission of developing a single set of model codes that provide minimum safeguards for people at home, the workplace, and other places of commerce and assembly. The ICC has not led the charge to address the gap between the little-used International Property Maintenance Code and the IEBC. Housing advocates and others outside the ICC community are often reluctant or unsuccessful in engaging in the highly organized ICC code development process.

Moving Forward

Twenty years of experience with the IEBC has demonstrated its great value and the barriers still faced by existing buildings. This experience is particularly important now because vacant buildings and vacant upper floors of smaller-scale structures on Main Street present unequalled opportunities for addressing climate change and the nation's housing shortages. The infrastructure and building shells exist, and the time required for planning approvals may be significantly shorter than for new construction projects. Other benefits include the creation and strengthening of walkable communities and the transformation of vacant, underutilized, and unsafe structures to viable community resources.

Although the impetus of the earliest rehabilitation codes was to address urban blight and substandard housing conditions, much of the current conversation focuses on the insufficient

number of housing units available and their affordability. These current needs can be partially met through many of the benefits associated with an expanded use of existing and historic buildings:

- Adjacency to existing urban infrastructure, including public transportation, community amenities, etc.
- Increased neighborhood safety results from increased occupancy.
- Many have demonstrated their inherent resiliency and construction with durable materials.
- Shortened time periods for planning, review processes, and construction processes.
- Smaller-scale projects can create ownership and wealth for individuals.
- Ability to couple with financial incentives such as state and historic tax credits for the rehabilitation of historic buildings. Between 1976 and 2021, this federal program, administered by the National Park Service, rehabilitated 302,506 housing units, created 334,367 new housing units, and resulted in a total estimated expenditure of \$116.34 billion.
- Reductions in demolition costs, landfill, and carbon production.
- Durability. Current construction practices accept the use of less durable materials than those present in existing and historic buildings.

To support greater use of these buildings, a reevaluation is needed that mirrors the investigative and creative process that began nearly 50 years ago and was responsible for the 1980s' Rehabilitation Guidelines and the publication of the NARRP.

Research is needed to evaluate current code barriers and performance criteria for existing versus new buildings. Researchers must identify unique solutions adopted by jurisdictions, with the long-term goal of influencing the model code(s). A comparison of the relative level of safety and building performance provided by each code compliance method of the IEBC should occur, and a similar study evaluating the continuum bookended by housing and other minimum property maintenance codes and the IEBC. The dissemination of research findings and incorporation into the codes may be most valuable for smaller Main Street buildings least likely to benefit from the engagement of design professionals and code officials familiar with code options for rehabilitation projects.

Examples of unique solutions adopted by jurisdictions are listed below. Although these concepts are not universally appropriate or adoptable, many merit serious consideration.

- Provisions permitting any documented previous use to be considered when determining whether a project will be classified as a Change of (California State Historical Building Code).
- Greater acceptance of smaller housing units, including accessory dwelling units.
- Sprinklers as compensation for other code deficiencies, or alternate fire protection systems as compensation for lack of sprinklers.

- For mixed-use Main Street buildings, expanded use of sprinkler systems that have lower cost alternate materials and coverage, including those installed with plastic piping and connected to the domestic water supply system.
- Expanded acceptance of the single-stair building.
- Use of the Residential Code for up to six-unit buildings or, in smaller Main Street buildings, for upper-floor units above certain nonresidential occupancies.
- A jurisdiction's greater commitment to the training of code officials and design professionals, with a more proactive role in determining the optimum code path and permitting efficiency.

Finally, research should examine and disseminate current approaches and new technologies and programs available to protect existing vulnerable housing, including monitoring and maintaining existing housing units. Equally critical is the spectrum and interaction of minimum standards from housing and property maintenance codes through new construction standards. Minimum housing or property maintenance codes, applicable when public funds are involved, set a particular mark in the continuum. Clearer definitions and an understanding of the relative performance requirements are warranted.

The Role of Collaboration

The goals of rehabilitation are broad and require numerous champions and resources. Among these resources, the National Main Street Center, a subsidiary of the National Trust for Historic Preservation, has worked with more than 2,000 communities, encouraging them to prioritize housing in their downtowns, including the recreation of the traditional mix of housing above retail or business occupancies that decreased during the second half of the 20th century. Greater use of these buildings can replace or complement current models for mixed-use development, such as the ubiquitous five-plus-one housing block built beyond a community's downtown. These smaller-scale projects present accessible opportunities for smaller projects that may be more easily achieved and are more financially feasible than large-scale housing projects. These projects can still benefit from state and federal historic credits designed to encourage building rehabilitation.

The Association for Preservation Technology International (APTI) Technical Committee on Codes and Standards is seeking support for a second Rehabilitation Code Summit, which will follow the summit that occurred in 2019 that set the agenda for APTI's most recent code-related efforts. These initiatives included a 3-day training session on applying codes on Main Street buildings and proposing code changes to the IEBC. The aims are to coordinate better with state and national federal preservation programs and to codify alternatives to sprinkler systems in smaller buildings. Additionally, early discussions have begun on a followup to APTI's 2022 virtual conference *Building Codes on Main Street*, albeit with a particular focus on housing.

One approach is for HUD and other federal entities engaged in housing research and policy to join forces with organizations such as the National Main Street Center and APTI to advocate for better codes that encourage building reuse.

The yet unmet opportunity to recapture the vacant upper floors of buildings along Main Street and other redundant structures requires another reexamination of the codes to reshape them to help, rather than hinder, the achievement of housing and related urban policy goals.

Further Reading

National Trust for Historic Preservation and the National Preservation Partners Network. 2021. Issue Brief: Preservation Priority: Affordable Housing and Density, Fall 2021.

National Trust for Historic Preservation. 2014. Older, Smaller, Better: Measuring How the Character of Buildings and Blocks Influences Urban Vitality. Preservation Green Lab, May 2014.

Authors

Marilyn Kaplan is an Architect and Principal of Preservation/Architecture in Albany, New York. She is the co-chair of the Association for Preservation Technology International Technical Committee on Codes and Standards. Mike Jackson is a preservation architect in Springfield, Illinois. He is currently the co-chair of the Codes and Standards Technical Committee of the Association for Preservation Technology and coordinator of a committee task force on Building Codes on Main Street.