



## Excerpt From *Smart Codes in Your Community: A Guide to Building Rehabilitation Codes*

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by Building Technology Inc., August 2001

America's stock of existing buildings - both residential and non-residential - continues to age. This stock represents a vital national asset that can be used to meet the demand for housing and commercial development, consistent with state and local efforts to wisely manage continued growth.

In many cases, the demand for repairs, renovation and rehabilitation of existing buildings has outpaced the ability of state and local planners to develop effective building and maintenance codes that govern these activities.

This report, *Smart Codes in Your Community: A Guide to Building Rehabilitation Codes*, provides a broad overview of the general regulatory environment governing the use and reuse of existing buildings. It also provides examples of state and local efforts to reduce regulatory complexity and suggests possible strategies to help spur reinvestment in the existing building infrastructure.

### HOW CAN "SMART CODES" LIKE THE NARRP HELP YOU?

The age of the building stock in the U.S. - residential, commercial and industrial - is increasing. In 1995 the median age of the housing stock was nearly 30 years, and almost 30 percent of housing units were constructed before 1950. A similar situation applies to commercial buildings.

At the same time, urban development in most parts of the U.S. is typified by rapid suburban growth and expansion into the open areas adjacent to cities and towns. While each community is unique - the product of its particular locale and history - chances are that your community displays some form of these symptoms

- ♦ An older downtown with underutilized and deteriorating buildings.
- ♦ Commercial activity shifted from downtown to suburban hubs and malls.
- ♦ A decreased and decreasing downtown tax base.
- ♦ Urban and suburban sprawl at the peripheries.
- ♦ Gridlock on roads and highways, with citizens spending increasing amounts of time commuting.

While investment in existing buildings (remodeling, renovation, and adaptive re-use) has increased significantly nationwide in recent years, it has not reversed development patterns. Recent policy initiatives at the federal, state and local levels have been directed at managing uncontrolled urban growth. A central feature of these initiatives is the development of methods to encourage the revival and reuse of existing neighborhoods and buildings. These policy initiatives have come to be known as "smart growth." Your state or community may have such "smart growth" programs. "Smart growth" programs have produced an arsenal of tools to accomplish their goals. These have included:

- ♦ Zoning that encourages urban infill and re-use of sites and buildings.
- ♦ Enterprise zones that attract investment to inner cities.
- ♦ "Brown-fields" development that provides for the reuse of abandoned industrial sites.
- ♦ Mass transit and transportation planning.
- ♦ "Smart codes."

"Smart codes" is the term used to describe building and construction codes that encourage the alteration and reuse of existing buildings. It sometimes also refers to the other zoning and regulatory statutes that affect building, but for the sake of clarity this document discusses building codes only. "Smart codes" were developed because the building regulatory system in the U.S., including building codes, is a significant impediment to investments in the alteration and reuse of existing buildings. This has led to a complete rethinking of how existing buildings should be regulated. "Smart codes" are being developed with increasing frequency in states and local jurisdictions across the country: New Jersey, Maryland, Minnesota, and Rhode Island, Wilmington, Delaware, Wichita, Kansas and others. Benefits have already been demonstrated in New Jersey. Such codes can improve the rate of reuse of existing buildings in your community, too.



## THE CURRENT BUILDING REGULATORY SYSTEM

There are three categories of regulations that affect buildings in most communities in the U.S.:

- ◆ Zoning regulations, which control land use and often regulate the types of buildings that can be constructed at particular locations in the community.
- ◆ Building codes, which regulate the design and construction of buildings.
- ◆ Building maintenance and use codes and regulations, which regulate the use of buildings.

### What Are Building Codes?

Construction codes in a community are generally referred to as "the building code." They include a complete family of related codes that address different parts or aspects of a building:

- ◆ Building code
- ◆ Plumbing code
- ◆ Mechanical code
- ◆ Electrical code
- ◆ Specialty codes (boilers and pressure vessels, elevators etc.)

"Smart codes" relate to the latter two categories. To understand them, though, you need some background in how all building regulations work.

These codes are enforced to regulate health and safety through the issuance of construction permits and inspections. The codes' objective is to ensure a certain level of safety, health, welfare, and property protection for building occupants and for the general public. To accomplish this, they regulate many aspects of the design and construction of buildings and the systems within them. Some states adopt these codes and mandate their use by all jurisdictions in the state, while others leave it up to the local jurisdictions to adopt them.

While some states and jurisdictions have developed their own, most codes currently enforced in the U.S. are based on model codes developed by model code organizations. Recently, the three model code organizations have gotten together to develop a single set of model codes, first published in the year 2000, and referred to as the International

Codes: International Building Code, International Plumbing Code, International Mechanical Code, and others.

Still more recently, the National Fire Protection Association (NFPA) has begun to develop its own model building code, designated NFPA 5000.

All building codes refer to standards that control the quality of materials and the designs of systems used in buildings, the loads that building elements must resist, and other aspects of building design and construction. These standards are developed by a wide variety of organizations that have technical expertise in each subject.

The model codes, as well as the standards they reference, are modified and updated from time to time, depending on new materials, new technology, and improved information on building failures due to various causes such as natural disasters, environmental effects, and normal wear and tear. In addition to technical updates these modifications sometimes reflect shifts in priorities for public spending.

While traditionally the requirements in the codes were intended to meet goals of health, safety, welfare and property protection, they have been expanded in recent years to include other societal goals. Some of these goals are:

- ◆ Energy conservation
- ◆ Accessibility
- ◆ Disaster mitigation
- ◆ Historic preservation
- ◆ Affordability

One result of the periodic updating and expansion of the codes is that buildings built before the current building codes were enacted are probably not in full compliance. So, communities have had to develop special codes to deal with existing buildings for general safety.

### What Are Building Maintenance and Use Codes?

For general health and safety, the maintenance and use of existing buildings is regulated by a category of codes and regulations that vary from community to community. While building codes generally describe how a new building should be built, maintenance and use codes describe what needs to be done once people already live and work in a



building. They may include some or all of the following:

- ◆ Housing code, or property maintenance code
- ◆ Fire prevention code
- ◆ Health regulations
- ◆ Hazard abatement code
- ◆ Retroactive regulations

The first three codes regulate the uses of facilities that may be detrimental to health and safety, as well as the maintenance of facilities to continue to provide adequate health and safety. Some parts of these codes cover the same building items covered in the building code, but often the level of specified performance is lower. Generally speaking, older buildings do not have to perform like new ones.

A hazard abatement code provides the jurisdiction with the authority to condemn or raze an existing building that is an imminent hazard to its occupants or the public at large. If a community has a hazard abatement code, it represents that community considers to be a minimal acceptable level of building performance. In other words, the community will not allow its buildings to deteriorate below that level.

Retroactive regulations mandate improvements for existing buildings. Usually they apply to a class of buildings, such as high-rise buildings (where retroactive sprinklers or enclosure of open stairways may be required), housing (where retroactive smoke detectors may be required), or unreinforced masonry buildings (where retroactive seismic strengthening may be required). Retroactive regulations vary from one community to the next. They reflect a community's economic development environment and its political and social needs.

All these building maintenance and use codes can apply to any or all buildings in the community, regardless of whether construction work is going on in them. If some renovation or construction work is planned in an existing building, though, it may be that the building or construction codes (that is, the more stringent codes) apply in your community.

#### What about Construction Work in Existing Buildings?

HUD's 1998 study entitled *A National Survey of Rehabilitation Enforcement Practices* concluded that the application of design and construction in existing buildings in many communities in the U.S. is **non-uniform** (in that

requirements placed on similar projects differ from community to community, and in the same community over time), **unpredictable** (in that requirements are unknown to building owners in advance), and **arbitrary** (in that there is no apparent basis for requirements that are imposed).

As was mentioned, building or construction codes generally are oriented to the design and construction of new buildings. For example, of the 35 chapters and nearly 700 pages of the International Building Code 2000 (IBC), only Chapter 34 and its 14 pages address existing buildings. In many cases this disproportionate consideration of existing buildings forces building owners and builders to rely on the discretion and judgement of the code official. This results in a lack of predictability and in arbitrariness, both of which deter investment in existing buildings.

The model codes classify potential work in existing buildings into four categories:

- ◆ Repairs
- ◆ Alterations
- ◆ Additions
- ◆ Change of occupancy

Repairs in existing buildings are usually defined as minor projects with very minimal requirements specified in the code. Additions to existing buildings, both horizontal and vertical, are well defined, and the code requires that the addition comply with the requirements of the new building code, while requirements applicable to the existing part of the building are minimal.

It is in alterations and change of occupancy where the arbitrariness and lack of predictability show up the most. "Alteration" is defined in the IBC 2000 as "any reconstruction or renovation to an existing structure other than repair or addition." This definition covers a wide range of work, from the addition of plumbing fixtures or electrical circuits to "gut rehab." The code specifies that alterations must comply with the requirements of the code for new construction, and that alterations shall not cause the existing building "to be in violation of any provisions of this code."

While these requirements may seem clear and unambiguous, there is, great diversity among communities in the U.S. on how to apply them. Earlier model codes applied a so-called "25-50 percent rule" that related the extent of requirements to the ratio of the cost of the alteration to the value of



the existing building. When this ratio exceeded 50 percent, the entire building had to be brought into compliance with the code for new construction. While this requirement was dropped from the model codes in the 1980s, HUD reported in the 1998 study entitled *A National Survey of Rehabilitation Enforcement Practices* that 38 percent of surveyed jurisdictions still use such a trigger, and another 16.4 percent stated that while they do not have such triggers, they are useful rules-of-thumb. An owner of an existing building is likely to invest elsewhere, and leave the building as it is, when faced with this unpredictability and arbitrariness. The result is further deterioration of the building stock and, ultimately, its abandonment.

But recent changes and reforms offer much hope and serve as models for your community. These pioneering codes and code guidelines have been shown to support the rehabilitation and reuse of existing buildings across the country and can serve as a model for your community.

Building code classifies all buildings into specific categories called occupancy classifications. The adaptive re-use of existing buildings often involves changing from one occupancy classification to another. Earlier model codes required that an existing building in which the occupancy classification is changed should be brought into compliance with all provisions of the code for new construction, or with the "intent of the code" for new construction.

#### EARLIER APPROACHES TO REFORM

Some of the most significant approaches to reform of the building regulatory system applicable to work in existing buildings are summarized below.

##### Massachusetts

In June 1979 the State of Massachusetts, following a thorough study, deleted its building code sections applicable to existing buildings and substituted Article 22. Article 22 reformed the regulation of work in existing buildings, and with some changes and re-numbering, it continues in use to this day. It reduced the arbitrariness that had previously existed in the regulation of existing buildings. Perhaps the most significant innovation of Article 22 is its approach to the requirements for a change of occupancy. Rather than applying building code requirements to all changes of occupancy, requirements are applied only in relation to this hazard classification when the hazard is increased.

##### The Uniform Code for Building Conservation (UCBC)

The UCBC was first developed by the International Conference of Building Officials (ICBO) in 1985. It was intended to be a model code for design and construction in existing buildings and to reduce the previously prevalent arbitrariness in the enforcement of the UBC's provisions applicable to existing building. The UCBC has been updated periodically, with the last update occurring in the year 2000, but it has not been widely adopted by states or local jurisdictions. The major innovation of the UCBC over Massachusetts Article 22 was the recognition that hazards in buildings are multi-dimensional, and that they can best be addressed by multiple hazard scales, rather than the single scale used in Massachusetts.

##### The New Jersey Rehabilitation Subcode

The most significant recent reform in the regulation of work in existing buildings happened in New Jersey with the adoption of the New Jersey Uniform Construction Code-Rehabilitation Subcode in January 1998. Prior to that, New Jersey enforced an earlier edition of the Building Officials and Code Administrators International (BOCA) code that included the 25-50 percent rule, and the requirement that in any change of occupancy the building had to be brought up to compliance with the code for new construction. The new subcode was developed because it was recognized that the then current code was constraining the re-use of older buildings in New Jersey.

Three criteria were defined for the new system in New Jersey:

- ♦ Timeliness of processing and enforcement (i.e., most projects should be handled routinely rather than as special cases).
- ♦ Predictability (i.e., people should know the law applicable to them and be free from arbitrary treatment).
- ♦ Reasonableness (i.e., provide a reasonable level of safety without imposing excessive additional costs).



The Rehabilitation Subcode that was developed to meet these criteria reflected a true paradigm shift in the regulation of alteration work in existing buildings. It takes the rather broad building code definition of "alteration" and splits it into three well-defined categories of work in progressive increase of complexity:

- ♦ Renovation - defined in general as work involving no reconfiguration of spaces in the building.
- ♦ Alteration - defined in general as work involving reconfiguration of spaces.
- ♦ Reconstruction - defined as work so extensive that the work area cannot be occupied during the work.

Another element of the paradigm shift was the creation and definition of the term "work area." Both innovations go a long way toward achieving predictability and reasonableness. Progressively more complex rehabilitation work entails progressively more extensive additional required life safety improvements. Reasonableness is achieved by establishing proportionality between the voluntary work proposed by the owner and the additional work imposed by the regulatory system.

The Rehabilitation Subcode has been in place in New Jersey for about two years and is serving its purpose. The State reports that investment in building rehabilitation in cities such as Trenton, Newark, and Elizabeth has increased substantially [almost 60%] in the past two years due to the new code.

**WHAT IS THE NARRP?**

HUD published the Nationally Applicable Recommended Rehabilitation Provisions, or NARRP, in May 1997. The NARRP set out to adapt the innovations and principles of the New Jersey Rehabilitation Subcode into a model rehabilitation code that could be used by other states and local jurisdictions.


There are many similarities between the New Jersey Rehabilitation Subcode and the NARRP. The key paradigm shift happened in New Jersey, and the NARRP are beholden to New Jersey in adopting the concepts. The NARRP condensed New Jersey's three criteria into two: predictability and proportionality. It achieves predictability and proportionality by borrowing four concepts from New Jersey:

- ♦ Categories of work
- ♦ Work area
- ♦ Hazard category scales
- ♦ Supplemental requirements

**Categories of Work**

As previously noted, the model codes currently address work in existing buildings under four categories: repair, alteration, addition and change of occupancy. Following New Jersey, the NARRP expand "alteration" into three further categories, resulting in the following six categories:

- ♦ Repair
- ♦ Renovation-defined, as in New Jersey, as work involving no reconfiguration of spaces in the building
- ♦ Alteration-defined, as in New Jersey, as work involving reconfiguration of spaces or extension of plumbing, mechanical, or electrical systems
- ♦ Reconstruction-defined, unlike in New Jersey, as work involving reconfiguration of spaces including corridors and exits
- ♦ Addition
- ♦ Change of occupancy



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This categorization provides predictability, in that the respective requirements are known at the start. It provides proportionality, in that requirements are proportional to the extent of the intended work. Work in each category is addressed by a separate chapter of the NARRP.

**Work Area**

Work area is defined in the NARRP as "that portion of a building affected by any renovation, alteration or reconstruction work as initially intended by the owner..."

**Supplemental Requirements**

Supplemental requirements are triggered in the NARRP when reconstruction work is extensive. When the reconstruction work area exceeds 50 percent of the area of the floor, the NARRP extend some life safety improvements to the entire floor. When the total of reconstruction work areas in a building exceed 50 percent of the building area, the NARRP extend these life safety improvements to the entire building, up to the highest work area floor. When doing a reconstruction, sprinklers must be installed under certain conditions (e.g., in high-rise buildings). Their installation, however, is limited to the work area. If the work area exceeds 50 percent of the area of the floor on which it is located, the sprinklers must be installed throughout the floor. If the total reconstruction work areas in the building exceed 50 percent of the building area, the sprinklers must be installed throughout the building up to the highest floor on which there is a work area.

**Hazard Category Scales**

The NARRP establish four hazard category scales for classifying building occupancies. In this it differs from the UCBC, which has five, and the New Jersey Rehabilitation Subcode, which has six. These differences are not significant. The NARRP scales are as follows:

- ◆ Life Safety and Exits
- ◆ Heights and Areas
- ◆ Exposure of Exterior Walls
- ◆ Seismic

The NARRP hazard scales provide predictability by clearly relating specific requirements to specific increased hazards in existing buildings. The conversion of an office building to an apartment building may require significant upgrading of life safety and exits in the building, but no height and areas or exterior wall exposure improvements. The latter

may be required if the change was to a department store.

**Historic Buildings**

Chapter 9 of the NARRP, the last chapter, addresses historic buildings. Rehabilitation work in historic buildings is categorized as for other buildings: repair, renovation, alteration, reconstruction, and change of occupancy. Chapter 9 outlines an optional alternative procedure for regulating historic buildings and presents a series of exceptions to the requirements of the NARRP that may be applicable in historic buildings. These changes, then, make the requirements for historic building rehabilitation much more clear. For example, historic buildings in which there is a reconstruction are exempted from most of the improvements of stairway enclosures, stairway railings and exit signs applicable to other buildings.

**WORKING ON THE IN PAST LOCAL HISTORIC DISTRICTS**

LEARNING TOPICS INCLUDE  
 People Protecting Community Resources  
 Local Laws as Neighborhood Guardians  
 Creating and Using Design Guidelines  
 Fitting Your Work to Time and Place  
 Toolbox: In Answer to Your Questions About

Visit the National Park Service's new information program, *Working on the Past in Local Historic Districts*. Developed especially for historic property owners, new members of district commissions, community officials, and design professionals. It's easy to navigate to topic areas depending upon what you know, and what you want to find out

For example, do you know the strengths and benefits of local historic districts? What a local preservation ordinance is and how it can "hold the line" on inappropriate work in a historic community? What local design guidelines are and how they can help owners and reviewers alike? The major differences between preservation, rehabilitation, restoration, and reconstruction—and why it's so important to choose the most appropriate approach for your work? Choose a specific topic or read it all!

See "Chrisfield," a historical model of a property that changes over time; review projects in Oregon that illustrate four work approaches in the *Secretary of the Interior's Standards for the Treatment of Historic Properties*; and take a Quiz!



Cover Photo: Tongue Row, 1936 Ellisoff City, RS, HRBS Collection, NPS



## WHAT CAN YOU DO NOW?

If you are concerned about "smart growth," if there is a stock of under-utilized older buildings in your community, and if you have reason to believe that the building regulatory system in your community is contributing to the under-investment in these buildings, you should consider the development of a "smart code," a rehabilitation code based on the NARRP.

Here are some specific steps you should take:

### 1. Stakeholders committee

Create a committee of stakeholders who think this might be a problem, and want to do something about it. Be sure to include potential critics or opponents of a rehabilitation code. The committee should include building officials, fire officials, housing advocates, private-sector building owners or the associations representing them, historic preservation- accessibility advocates, architects and engineers, contractors, environmentalists, etc. The committee should articulate the problems that exist with the current regulatory approach relative to existing buildings and the objectives of a new "smart code."

### 2. Exploration of options

Review all of the different options and models that exist, including HUD's publications on building rehabilitation codes. Familiarize yourself with these so that you know which options suit your community best, and which are most feasible politically. Request that HUD provide your stakeholders committee with an expert presentation on the NARRP, the UCEB, the New Jersey Rehabilitation Subcode, and other related initiatives. Following the presentation there should be an open discussion of options available to you. These may include anything from the development of legislation and the drafting of a rehabilitation code (as in Maryland) to a decision to wait for the development of the International Existing Building Code or NFPA 5000 and to adopt one of them when it becomes available.

### 3. Comparative analysis

If you make the decision to move forward with the development of a rehabilitation code, then you should initiate a study that involves detailed comparison of the provisions of the NARRP (or the UCEB, or the New Jersey code) with all

current regulations in your state and community that may have impact on existing buildings. Such a study will lay the groundwork for the orderly development of the rehabilitation code that will mesh with the current regulatory system. Be sure to include your local building department and/or redevelopment agency in this analysis as well as inform the city council or relevant legislative bodies that you are considering various options. Have information on these options ready to present to any concerned citizens or public officials.

### 4. Develop or adopt a rehabilitation code

Use the comparative analysis study as the basis for development of your rehabilitation code. The stakeholders committee, or a similar body, should be involved in this process. Enlist the support of these stakeholders so that the process by which you propose code changes becomes easier and more productive.

### 5. Establish follow-up mechanisms

Consider developing the following activities to ensure the effectiveness of your new rehabilitation code:

- ◆ Developing a training curriculum and program intended for code enforcement officials, architects and engineers, and others who will use the new code.
- ◆ Creating an administrative body responsible for periodically reviewing and updating your rehabilitation code, including the option of adopting the International Existing Building Code or the NFPA 5000 when they become available.
- ◆ Evaluating the code's success (i.e., testing to see whether more existing buildings are being rehabilitated and re-used since the adoption) to gauge whether changes are needed.
- ◆ Spreading the word about your code adoption and of its use to other municipalities, other groups interested in existing building rehabilitation, and government agencies like HUD.



With the steps presented here and the information provided in this and other HUD publications about existing building rehabilitation, you now have the tools to consider advocating and developing a "smart code" in your own community. The benefits of the code for local builders, housing and commercial developers of all kinds and all target audiences, and for the maintenance and physical development of your whole community are clear. By drafting guides and model codes, HUD and the model code groups are making the adoption of the codes easier, too. As with all changes in local regulations and with local community interests, though, the first steps lie with interested citizens and governments like you.

HUD has been interested in building codes in general, and building rehabilitation codes in particular, for several years. In addition to codes, we also provide a variety of design and technology tools to help you with rehabilitation work. For a sample of this work, please visit the HUDUSER web- at <http://www.huduser.org>.

*This Guide to Building Rehabilitation Codes was produced by Building Technology Inc. (BTI). It was authored by David B. Hattis of BTI, and is based on his experience, as well as that of William E. Koffel of Koffel Associates, Inc., and Melvyn Green of Melvyn Green & Associates, Inc., in applying the NARRP to the development of rehabilitation codes. The entire article [Smart Codes in Your Community: A Guide to Building Rehabilitation Codes (August 2001, 24 p.)] can be found at <http://www.huduser.org/publications/destech/smartcodes.html>.*

## Applying the NARRP

To test the provisions of the NARRP, HUD documented the remodeling of the 1747 "Stone Lodge" residence in Chester, New Jersey. While the actual rehabilitation code used was New Jersey's, it and the NARRP are extremely similar, and the project was an opportunity for HUD to analyze the NARRP while comparing it to the state's former building code (the 1993 BOCA Code).

During the project, officials from the New Jersey Department of Community Affairs analyzed the project scope under both the old and new codes, and determined that a great deal of additional work would have been required under the old code. Significant changes would have been required for some the building's most significant architectural features, including the foundation (stone), egress windows (small, unique casement windows), corridor width (narrow), stair geometry (narrow), and ceiling heights (low).

The final project led HUD to conclude that the NARRP/New Jersey Rehabilitation Code allowed for a more cost-effective remodeling of the residence than the older building code; that the predictability of the regulations allowed for the code to be applied consistently; that the reduced need for variances translated into substantial time-savings; and, importantly, it promoted the continued use of older buildings - therefore preserving the past.

The entire report, including pictures, project budget and cost comparison tables can be found at:

<http://www.huduser.org/publications/destech/rehabpr.html>