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Eric Damian Kelly
FAIR HOUSING, GOOD HOUSING OR EXPENSIVE HOUSING? ARE BUILDING CODES PART OF THE PROBLEM OR PART OF THE SOLUTION?

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INTRODUCTION

At a time when “average” housing prices in many areas exceed $100,000 and when the “average” family in many areas cannot afford that “average” home, we need to reexamine housing costs. Relative housing price increases are attributable in part to increases in input costs and in part to increases in the size and the quality of homes built. In some communities, price increases are also attributable to market limitations created by local regulations. Inextricably intertwined in this are the building codes used across the United States to regulate the construction of new housing. These codes clearly account for a measurable portion of housing cost increases. This Article considers the question of whether those portions are justified.

Building codes in the United States date to the earliest settlements, which had restrictions on wooden chimneys. They have evolved from earlier rules that constituted a few sentences, to complex sets of documents that fill hundreds of pages. The basic goal of these codes is to ensure that buildings used for housing (and other purposes) in the United States are safe, sanitary, and increasingly, convenient and efficient.

The basic purpose of codes is sound, but their operational effect must also be sound. In many areas, the availability of affordable housing is a much greater problem than issues of safety and sanitation. If attempts to make all housing safe, sanitary, efficient and convenient have significantly contributed to limiting the availability of housing to people who need it, perhaps society needs to rethink the codes. This rethinking does not require sacrificing basic notions of safety and health. However, it does require reexamining the requirements that go far beyond the early codes in specifying design, construction and even living plans for housing.

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This Article examines building codes and whether their cost upon homeowners unduly impairs housing opportunities. Part I will give a general understanding of the development, adoption and implementation of building codes. Part II will briefly describe the other elements of the regulatory scheme besides building codes. Part III will discuss how regulation affects housing costs and prices. Part IV will then discuss the problems with building codes and the added costs these codes add to housing. Part V will examine how adjustments in building codes might have affected the evolution of houses. Finally, Part VI will describe adjustments to building codes that would allow innovation in the building industry.

I. THE BUILDING CODES IN CONTEXT

Building codes are only one part of a complex regulatory structure that affects housing and other land development in the United States. Although building codes have existed for centuries, most of the evolution of the codes has occurred in the last century. Two major periods of expansion of the scope and complexity of the codes included the early part of the century, when reformers in the tenement house movement pushed for basic sanitation in dwellings, and the New Deal era, when the federal government led a major restructuring of the entire U.S. housing system and model codes became a significant factor in regulation.2

Building codes exist in most areas of the United States where significant construction occurs. The last comprehensive studies of building codes occurred in the late 1960s and 1970s and found a wide adoption of building codes.3 One of those studies found that by 1970 virtually all cities involved in the study had adopted some form of building code.4 Significantly, the cities that didn't have codes had populations of less than 10,000.5 Many of those were undoubtedly rural communities with little growth and development. Although counties will less likely have building codes than cities, anecdotal evidence indicates that increasing numbers of counties, particularly in metropolitan areas, have also adopted building codes.

There are four national model building codes: the Uniform Building Code, developed by the International Congress of Building Officials (ICBO); the Basic Building Code (often called the

2. Id.
3. Id. at 33-45; NATIONAL COMMISSION ON URBAN PROBLEMS, BUILDING THE AMERICAN CITY 235-56 (1968) [hereinafter THE DOUGLAS COMMISSION].
4. FIELD & RIVKIN, supra note 1, at 42.
5. Id.
Building Codes

BOCA Code), developed by the Building Officials Conference of America; the Southern Standard Building Code, prepared by the Southern Building Code Congress; and the National Building Code, offered by the American Insurance Association. Widely used supplemental codes include: the National Electric Code, prepared by the National Fire Protection Association; the ASHRAE documents for heating, ventilating and air conditioning, named for its sponsor, the American Society of Heating, Refrigeration and Air Conditioning Engineers; and the National Plumbing Code, developed by the American Society of Mechanical Engineers.

Due to the complexity of building regulation, only the largest jurisdictions attempt to develop their own building codes. Most jurisdictions adopt one or more model codes, in whole or in part, by reference. In a few states, a statewide code has preempted local authority, but those codes depend heavily on the national models. In most states, individual local governments select one of the versions of the model codes.

Trade groups, including both representatives of business and labor, play a significant role in the increasing scope and complexity of the codes. Members of the code groups vote on revisions and updates, a process that is cumbersome at best. Members of interested business and labor groups often lobby actively on particular issues. The continued evolution of the codes often involves battles between rival trade groups, which sometimes receive support from labor groups. In the case of the switch from conduit to flexible electrical cable (commonly called by the brand name Romex) or from cast iron to plastic pipe, labor groups had a significant stake in the old technology because of the more complicated installation involved. Although conduit and cast iron pipe require skilled labor and special tools, a homeowner with reasonable care but minimal skill can easily run flexible electrical cable or plastic pipe using only simple hand tools. The consumer perspective is often lost in such industry competitions.

Although the associations that develop the model codes also update them periodically, local governments do not always adopt the updated versions of the codes. Furthermore, different local governments in a metropolitan area might adopt the same updates at different times. Adding further to metropolitan confusion, the update processes for the model codes are independent of one another. Thus, approval of a new technology or design under one of the national codes does not assure its approval by the other code groups, nor does it ensure prompt adoption by all of the local governments relying on that model code.

6. An example includes the one representing cast iron pipe makers which represented them in their battle to prevent the use of ABS plastic pipe in drain and waste applications.

7. *The Douglas Commission*, supra note 3, at 488; *Field & Rivkin*, supra
The last important piece of the building code puzzle is local administration. In every jurisdiction with a building code, a “chief building official,” “building code administrator” or someone with a similar title exists who implements the code. Most building inspectors have construction backgrounds and deal with construction daily. Many building inspectors are under significant time pressures to conduct many different types of inspections on an average day. This background and context for administration does not encourage innovative or even flexible interpretation of regulations. Thus, just building a little flexibility into a national code is no guarantee that the builder in the field will actually have the flexibility to innovate.

II. THE BROADER REGULATORY CONTEXT OF HOUSING

This section will discuss other regulations besides building codes that affect housing. First, this section will describe zoning and subdivision regulations and discuss the problems with them. Second, this section will discuss the need for supplemental codes to building codes and how they act. Finally, this section will discuss the regulation of manufactured homes.

A. Zoning and Subdivision Regulation

Building codes are only one part of a complex regulatory system that affects housing. Another, and perhaps the most visible, regulation of housing occurs through zoning. Through zoning, most local governments in the United States divide their jurisdictions into districts (or zones), and within those districts, they regulate the use of land, the intensity of that use and the bulk of the buildings in which uses occur. Common land use classifications are residential, commercial, industrial and agricultural. Communities regulate intensity through minimum lot sizes, limits on residential density and limits on the total floor area of commercial or industrial space permitted for each square foot of land. Bulk regulations typically address yards, setbacks and building heights. Developed in part to protect residential neighborhoods, zoning now restricts the amount and nature of development in neighborhoods, which limits the range of housing opportunities. This limitation would not come as a total surprise to the U.S. Supreme Court which, in the case that first upheld zoning, compared the concept of allowing apartment houses into single-family resi-

note 1, at 45.
8. See generally THE DOUGLAS COMMISSION, supra note 3 (finding that a background in construction often does not encourage innovative or flexible interpretation of regulations).
Building Codes

Some communities have abused the zoning power to restrict the housing market that courts have termed their zoning ordinances unacceptably "exclusionary." Paired with zoning in most communities is a subdivision ordinance that regulates the development of land. Through subdivision regulation, local governments specify the widths and alignments of new streets, the arrangement of lots and blocks and plans for such infrastructure as storm drainage systems. From the tradition of requiring that developers install necessary public improvements in subdivisions has evolved the concept of imposing "exactions" on developers for public improvements outside the subdivision, but which are somehow related to the development. Such improvements may range from an off-site drainage way or access road directly serving that subdivision, to a school or park site that will indirectly serve dozens of subdivisions in the same part of the community. A recent and growing form of exactions on new housing are impact fees, which provide a relatively simple way of apportioning exaction costs among multiple users.

One of the problems with zoning and subdivision regulations is that neither directly addresses the ability of a community to absorb the impact of new development. Zoning typically contains no timing element whatsoever, but simply specifies how a person may use the land if and when it is developed. A person cannot tell from a zoning map whether a parcel of land zoned "residential" was developed in the last century, was developed last year, is currently being developed or is still a pasture. Subdivision regulations address the improvements within the subdivision and, in some cases, some off-site improvements. Such regulations do not, however, ensure that the larger street or sewer network has adequate capacity to absorb the additional demand from the new development. A few communities have, thus, adopted growth management programs to regulate the timing and/or location of growth. Through such programs, developments undergo an additional stage of review where officials determine whether the larger community systems will have adequate capacity to serve the project at the time of development. Growth management programs, however, are still relatively rare and found typically in the most rapidly growing suburbs or exurbs of major metropolitan areas.

B. Building Codes and Supplemental Codes

Building codes control the construction of buildings. Narrowly defined, "building" codes address the structure of buildings. Supplemental codes address such issues as plumbing and electrical systems. Most people who deal with the codes only occasionally refer to the entire package of related codes as "building codes." One should understand that building codes only affect buildings at the time of construction or remodeling. Thus, adoption of a new building code requirement has no effect on existing buildings in the community. Most codes require that related remodeling projects include certain improvements. For example, a new bathroom must meet current plumbing code requirements even if the rest of the building does not.

Most areas of the United States currently have building codes. Some states have adopted statewide building codes. In others, the local governments have the discretion to adopt the state code, but most have adopted the state codes. The few areas lacking building codes are typically rural areas, where residents have resisted interference with their activities. Although some local governments have adopted codes with exemptions for agricultural buildings, some rural jurisdictions have simply refused to adopt such codes.

Some communities use housing codes to address the problems of older housing stock. These codes, always adopted as supplements to building codes, address almost entirely basic health and sanitation issues. Some communities use them largely in response to complaints, but other communities require a housing code inspection every time tenants change in a rental property.

C. Regulation of Manufactured Homes

Adding to the complexity of the regulatory structure affecting housing is the treatment of manufactured homes. Local zoning and building codes have discouraged "mobile homes" in many areas for a variety of reasons. Older mobile homes that were moved several times or were not maintained often became eyesores. Some of these older mobile homes also became available at a very low cost and thus attracted inhabitants that many communities deemed undesirable. Further, early mobile homes were sometimes dangerous, containing flammable materials that burned so rapidly that residents had little hope of escaping a fire once it started.

Clearly, today's manufactured home is a far different product. For the last twenty years, most new manufactured homes have met standards established by the U.S. Department of Hous-
ing and Urban Development (HUD) that preempt local regulation. Those homes are built with technology much like that of stick-built homes, although the building takes place in factories. Most mobile homes today have relatively standard exterior finishes and many are designed as "double-wide" units containing 1,400 or more square feet. Nonetheless, the box shape and low roof pitch that still characterize many of the units identify them as manufactured homes.

In the face of continued limitations on such units, the industry has successfully lobbied for a variety of exemptions and waivers for the units under state law. A typical version of the law sought by the industry provides that a manufactured home meeting the HUD standards must be treated exactly like a stick-built home under zoning regulations. Most of these laws allow the reasonable imposition of appearance standards (addressing roof pitch, gloss on the siding, overhangs and other aesthetic items).

Good reasons exist to support each of these regulations, but the combination of them has created a regulatory web that clearly serves to limit the supply of housing in some areas and to increase its cost in most. The next section will examine the effects of these regulations on the cost of housing.

III. HOW REGULATIONS AFFECT HOUSING COSTS

Before discussing the impacts of building codes on housing costs, it is important to understand generally how regulation affects housing costs and prices. Government regulation of all types affects housing costs in several ways. These effects include: requiring improvements in the quality of dwelling units; shifting of costs of community expansions from the community at large to housing consumers; delaying development approvals; restricting housing or land supply; and stifling innovation.

Quality improvements are probably the most justifiable of the regulatory-driven increases in housing costs. Quality improvements in the early days of codes included the availability of light and air in all living areas and the addition of indoor plumbing to all dwelling units. More recently, quality improvement regulation includes smoke alarms and additional insulation. These regulations are arguably the most justifiable because the consumer who pays an increased price for the improvements also receives a better product. The public policy argument against these cost increases is that mandating insulation and smoke detectors is somewhat paternalistic. Given anecdotal evidence of fire deaths in older units that lack smoke detectors and the apparent lack of concern of many consumers with society's next energy crisis,

public policy is still, however, on the side of these regulations.\(^{12}\)

Cost-shifting is not as easily justified, although public entities clearly may establish some supporting public policy. A half century ago, the post-war suburban boom occurred in areas largely served by existing streets, parks, schools, drainage systems and other public facilities. Many of these facilities resulted from long-range planning by local governments and school boards. The New Deal public works efforts through the Civilian Conservation Corps and the Works Progress Administration produced many of the other facilities. In the early years of the suburban boom, most communities continued to expand their public facilities, although sometimes not at a rate adequate to satisfy increasing demand. As growth continued or accelerated into the 1960s and 1970s, many communities failed to build adequate public facilities to serve their growing populations. At first, new residents, and sometimes existing residents, paid the costs of inadequate facilities through a decreased quality of life, such as living farther from parks, driving on more crowded streets or seeing their children learning in "portable classrooms" or on double-sessions. As conditions deteriorated or as residents simply tired of the conditions, the residents sought both explanations and help from local governments.

Although the real explanations why they did not have the proper conditions would have been fairly simple,\(^{13}\) the local governments offered quite different explanations. In most communities, public officials blamed developers, growth or both. Clearly, the remedies that such public officials proposed placed the burden on developers, growth or both. Although developers are frequently influential in particular communities, they ultimately account for fewer votes than angry residents. Even the most pro-growth public officials may choose to "tax developers" in the face of angry taxpayers. The easier approach is simply to "tax growth," which has neither votes nor a constituency, but also does not have a pocketbook.

New taxes on "growth" or "developers" have typically taken the form of exactions — requirements for dedication of land for parks and schools, payment of fees in lieu of dedication, payment of substantial connection fees for sewer and water, and, more recently, payment of impact fees. The amounts involved are significant. An Urban Land Institute study from the early 1990s found

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13. They could have easily said, "We didn't plan," "We planned poorly" or "We guessed wrong."
cash impact fees that ranged from a low of $1,200 to $1,400 in most jurisdictions around Nashville, to the $5,000 range in communities around Orlando, to many totals in excess of $10,000 in communities around Sacramento.\textsuperscript{14}

Taxing growth creates a problem because it ultimately represents real people. To the extent that new homes are the focus of anti-growth efforts (as they most typically are), the consumers of those new homes pay most or all of any tax imposed. Although developers are more tangible and more taxable than growth, developers will likely pass the costs of new taxes and fees levied against them down to the consumers.\textsuperscript{15}

Ultimately someone must pay the costs of expanding public facilities to meet expanding community needs. Assuming that external funds are not available, communities have three basic choices: (1) make existing taxpayers pay; (2) make new taxpayers pay; or (3) make users pay. Most communities use a combination of all three, but in the last twenty years communities have tended to rely increasingly on fees and taxes that affect new taxpayers the most. In one sense, a perfectly legitimate public policy reason supports this decision by public officials.

There are two problems with this approach. First, few local governments have been honest about the impact of the new fees and taxes. Most local governments have told their constituents that this taxes "growth" or "developers." Many public officials have probably believed this. Arguably, that they have not made a legitimate public policy choice when they are less than honest with their constituents and, perhaps, with themselves, about the choice that they make — to tax the consumers of new housing.

Second, this form of tax is particularly pernicious, because in many communities the impact on prices is far greater than the net revenue the local government collects. Assume that a particular developer has offered variations of an 1,800 square-foot house called the Palais for the last twenty years. As the local government required the developer to add such features as smoke detectors, insulated windows and increased ceiling and wall insulation to the house, the developer passed those costs down to the consumers. Assuming reasonably knowledgeable consumers, the market impact of those price increases is presumably minimal, because the buyers acquire houses with more value in them.

Assume further, however, that in the last five years the city has added a total of $2,000 in fees that apply to this type of new house. These fees add nothing directly to the value of the house,
but the buyer must pay more money. This effect will force a rational buyer to pay more for a five-year-old Palais model with the same features — perhaps not a full $2,000 more, but certainly $1,000 or $1,500 more. This essentially shifts the price curve up, which allows price increases across the housing spectrum. In fact, this phenomenon exactly explains the above-cost-of-living increases in housing prices in most communities. The bottom line of this fee system causes a ripple effect where for every $1,000 in new fees that a local government collects, it may increase total, cumulative housing prices in the community by $5,000, $10,000 or even more. Although current homeowners may overwhelmingly approve such cost-driven price increases, the increased prices make it much more difficult for non-homeowners to enter the market.

Delays in development approval beyond some reasonable period of a few months are almost impossible to justify. The only people who “gain” from such delays are those who would prefer not to see development occur, and ultimately their gain may be illusory. A community facing growth-induced problems needs to plan for solutions and not plan to stop the growth. Although most people would agree that “unreasonable” delays are unacceptable, some people cloud discussions of delay in development approvals with innuendo and short facts. Many “delayed” development applications are incomplete applications that the city should return to the applicant, or applications that do not meet minimum standards and that should be rejected outright rather than reviewed in depth. Nonetheless, some local governments, by design or default, create incredibly complex and slow development review procedures. Tough regulations efficiently administered, rather than vague regulations characterized by delays in administration, would better serve local governments, the constituents that they serve and the developers who are the proponents of projects under such systems.\textsuperscript{16}

Although delay costs are inexcusable, these costs do not account for a large portion of the increase in housing costs in most markets. A finished lot rarely accounts for more than twenty percent of the house price. Land cost may be only one-fourth of that amount. Assume, however, that raw land cost amounts to a full ten percent of the value of a new house. Moreover, assume that the developer has unnecessary delays for a full year and that the developer pays an exorbitant fifteen percent per annum in interest on the land loan. The carrying costs for that year ultimately amounts to only one and one-half percent of the price of the house. Although this amount of money is significant with today’s average housing prices in the hundred thousand dollar

\textsuperscript{16} See, e.g., id. at 48-53.
range, it is a much smaller part of the housing cost increase even in the slowest-acting communities than the effects of requirements for quality improvements and new exactions. Certainly local governments should strive to improve the efficiency of the development review process, but they should not count on that action to help housing prices.

Although not common, local regulations that restrict the supply of developable land or the supply of housing can radically affect prices in a market. A handful of communities have directly limited the supply of housing by limiting the approval of building permits for new housing. Regulations that directly or indirectly limit the supply of developable land have become more common, thus increasing the cost of an essential component of new housing. The studies cited here indicate that such controls can have a dramatic effect on the price of housing in a particular market. Obviously, if only one ordinary suburb out of a dozen adopts such controls, these controls will not have a dramatic effect because the housing market is larger than the community. Where a freestanding community, a particularly-attractive community (such as Boulder), or an entire metropolitan area (such as Portland) adopts such regulations, the effects can be significant indeed. An Urban Land Institute comparison of three metropolitan areas found that land cost for residential development more than doubled in a community that significantly restricted the land supply, while the cost decreased in another metropolitan area and increased only about ten percent in a community that imposed modest limits on developable land.\(^7\)

Perhaps the most devastating impacts of government regulation, however, happen through stifling innovation. Remarkably, builders in the United States today offer the families of the twenty-first century a product developed and refined in the nineteenth century.\(^8\) Indeed, the basic house has changed little since that time. Although families today may appreciate such touches as dishwashers and trash compactors, those items hardly represent the type of technological revolutions that have taken transportation from horses and buggies to a variety of automobiles, aircraft and spaceships, or that have taken communications from the telegraph to Marconi’s wireless to the box-like radios of the 1930s, to television, two-way radios and cellular phones. The changes in housing appear trivial to these innovations that have

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18. Indeed, most families will be in the houses that they now own or soon buy well into the next century.
evolved in other areas.

Why is this true? It is impossible to say why something did not happen. Examining the housing market, however, one would expect innovation. Housing is nationally as competitive a business as one can find. Competitive industries are classically efficient and typically innovative. The housing industry has been neither. Examining some of the abandoned proposals for innovative housing construction and design, one cannot conclude that the lack of innovation results from a lack of ideas. In fact, the best explanation is apparently the limiting factors of building codes, as administered by local governments.19

IV. ARE WE TILTING AT WINDMILLS? AN ARGUMENT FOR REFORM

The building codes in use today have evolved directly from codes that came from the tenement house movement and from the reform efforts to ensure that all dwelling units had access to light and air. The housing context today is different though. Indoor plumbing is almost universal. Zoning ensures access to light and air in most communities. The codes have gone far beyond protection of basic life-safety issues. A technical manual developed for HUD as part of the “Joint Venture for Affordable Housing” included such recommendations as placing closet doors to avoid creating short wall sections of twenty-four inches or more and thus “avoiding code-required outlets” on a twenty-four inch wall section and keeping short sections of counter less than twelve inches to avoid “code-required outlets” over counter sections of twelve inches or more.20

Also, the Douglas Commission noted that roughly half of the surveyed jurisdictions prohibited items as simple as preassembled plumbing and drain pipe systems.21 Should builders really design around such silly provisions? A simpler approach would require specifications of a reasonable number of outlets per square foot of floor area with some minimal number per room by type. Another, less paternalistic approach would assume that consumers will notice the convenience of things like outlets and that the market will thus address such issues.

Certainly the issues have changed. Defenders of the system can undoubtedly say that communities have eliminated many of the least defensible restrictions identified in these major studies. Also, the fact that the last comprehensive studies occurred roughly a quarter of a century ago puts critics at a disadvantage. The

19. FIELD & RIVKIN, supra note 1, at 56-68.
20. NAHB RESEARCH FOUNDATION, JOINT VENTURE FOR AFFORDABLE HOUSING COST SAVING TECHNIQUES 32 (1982).
fact remains, however, that a problem exists with a system that has restricted such simple cost-savers on the alleged grounds of protecting health and safety. Is the affordable housing problem in this nation so bad that we should allow the construction of new dwelling units without indoor plumbing or adequate egress routes? Of course not. The housing problem has become so bad, however, that we should rethink whether we allow the use of plumbing and wiring harnesses created in factories or, better yet, the use of entirely new building designs and construction technologies.

In adopting such an approach, local governments may usefully treat one- and two-family dwellings differently from high-rise apartments. They could easily make this distinction because the building codes already address these separately, and even the plumbing and electrical codes allow some additional flexibility in these low-intensity, low-rise units. Clearly, the life-safety issues are quite different for someone on the tenth floor of a building than someone in a typical one- or two-family residence. As the codes reflect, the basic philosophy with low-rise buildings aims to provide residents with warnings (smoke alarms) and multiple escape routes (egress windows as well as doors). With basic requirements for such safety features, indoor plumbing and some other basic features, the local governments could waive or downgrade other code restrictions on room size, design, plumbing fixtures and a multiplicity of other factors addressed in the thick documents that regulate these simple, low-rise housing structures.

The goal in all of this is to create a competitive climate in which innovation is encouraged. Building inspectors and others who defend the system argue that the “equivalency” provisions in the codes today offer innovators the opportunity to do things differently. Also, building code administrators argue against reform, because the national codes include performance-based “equivalency” provisions. In other words, if a builder can show that he or she has an alternative technology that is the equivalent of that required by code, substitution may be allowed.

Although in theory this seems like a perfectly satisfactory approach, in practice it does not address the real issues. The most basic problem is that the builder has the burden of proof in the face of intimidating presumptions against the alternative. Major national organizations with expertise in the field have developed the codes. The local administrator works with the technical aspects of the code every day. The poor builder simply wants to build houses. Although some local code administrators are undoubtedly flexible and enthusiastic about new ideas, the thought of challenging a provision of this highly technical document must frighten someone who makes a living working with two by fours, levels, hammers and carpenter’s pencils. Furthermore, many
local administrators are traditionalists who have risen through the building trades and who will enthusiastically dampen a builder’s desire to innovate.

The real problems, however, are more fundamental. The equivalency provisions really address materials, not design. One can easily understand how the equivalence provision applies to the substitution of steel studs for wooden ones. Less clear is how one demonstrates that a formed concrete dome is the substantial equivalent of a stick-built house. Of less interest to the individual homebuilders, but of great practical interest to the market, proving “equivalency” to one code administrator in one community basically creates an exception to a particular provision of the code in that community. It does not help builders in the next suburb north, nor does it help other builders in other communities.

Ideally, one would want changes in the model codes, which is not easily achieved. One detailed study documented the history of ABS pipe, which is now widely used in all types of construction.22 After the invention of ABS pipe in 1948, the government in 1960 finally approved ABS pipe for use in houses with Federal Housing Authority (FHA) guaranteed loans.23 Yet, all of the national model codes prohibited ABS pipe until 1966, when the Southern Building Code first allowed it.24 By 1976, one-third of the local governments surveyed for that study still prohibited it, as did some model codes.25 For those who doubt that the FHA was adequately protecting the public health when it approved the material twelve years after its invention, they should realize that builders use this material for plumbing waste and vents and not for water supplies. The previous story is more one of bureaucracy (or artificial trade restrictions) run amuck than of a successful regulatory procedure for appropriate substitutions of equivalent materials.

Although obtaining approval of new technologies under the building codes may not be as cumbersome as getting a new drug approved by the Food and Drug Administration (FDA), it undoubtedly appears that complicated to the average homebuilders.26 Simply obtaining approval, however, is not nearly as useful as the approval of the FDA. Upon reception of approval by the FDA, a manufacturer may immediately sell a drug anywhere in the United States. A simple amendment to a model code does not become law anywhere automatically. As the Douglas Com-

22. SEIDEL, supra note 12, at 90-91.
23. Id. at 90.
24. Id.
25. Id.
26. Many homebuilders function with just one bookkeeper for office staff and only deal with lawyers when absolutely necessary.
mission\textsuperscript{27} and Field and Rivkin\textsuperscript{28} documented, local governments sometimes take several years to adopt updates to the model codes, which does not always include all of the updated provisions. Thus, obtaining the approval for new technology under one code is only the first step in a complex process that involves other national code-writing organizations and a plethora of local governments that may or may not adopt the innovation-encouraging provisions.

Also, many of the real opportunities for innovation come from the manufacturing of larger components of housing units for installation in site-built housing. Ideas such as a pre-manufactured bathroom or factory-made wiring and plumbing harnesses offer the potential for significant cost savings only if factories can produce them for a national market with a consistent set of regulations. Even minor differences among the model codes can preclude mass-production techniques that manufacturers might use to reduce component costs of housing. This system simply does not encourage innovation.

V. HOUSING IDEAS THAT MIGHT HAVE BEEN

An adjustment in the codes could have allowed houses to change dramatically. Buckminster Fuller proposed a “Dymaxion Dwelling Machine,” a hexagonal house suspended from a central mast. Designed to have a crane set it in place, the house featured an elevator, insulating walls made from a vegetable-based material, full climate control, built-in furniture, pneumatic and sound-dampening floors, and storage units with automated shelves that revolved into view and accessibility. Designed as a machine for living, the house included built-in waste disposal facilities and a laundry chute that led directly to an automatic laundry machine. Although the Dymaxion house unfortunately debuted in 1929 and remained a prototype not seriously considered for production, it led to the development of the “Dymaxion bathroom.”\textsuperscript{29} Made of die-stamped and coated copper, the bathroom included all bath fixtures, walls and floor in one factory-made unit.\textsuperscript{30} Installation involved only a few plumbing connections to fixtures already included in the unit.\textsuperscript{31} Although developed for a major manufacturer (American Radiator Company), manufacturers abandoned the idea in the face of opposition by the plumbers’ union.\textsuperscript{32}

\textsuperscript{27} THE DOUGLAS COMMISSION, supra note 3, at 88.
\textsuperscript{28} FIELD & RIVKIN, supra note 1, at 45.
\textsuperscript{30} Id.
\textsuperscript{31} Id.
\textsuperscript{32} See id. at 83-100 (containing a good description of this and several other innovative proposals).
Frank Lloyd Wright developed an approach to affordable housing that he called “the Usonian house.”
Developed initially for a journalist-client, Wright pursued the model through a couple of dozen editions in the 1930s. The houses were simple wooden boxes built on a concrete slab that included radiant heating, which eliminated radiators and air ducts. Walls were masonry and unfinished wood, which eliminated plastering and painting. The houses included carports rather than garages.
Wright made relatively tight spaces efficient with extensive built-ins, including storage and seating, as well as closets. Other innovative but abandoned proposals included the “Motohome,” a panelized, pre-fabricated home with a pre-fabricated mechanical room called the “moto-unit,” and the “Lustron,” an all-steel, pre-fabricated home that pre-saged many of the features in today’s manufactured homes.

The “Dymaxion Dwelling Machine” was different from each of the other proposals because it represented a fundamental rethinking of what a house ought to be. Authors like Dolores Hayden urge that sort of rethinking today, more than half a century after it first appeared, although she does not like the Fuller unit any better than the other alternatives. The point, however, is not whether the concept was sound then or now. The point is that it represented the type of qualitative innovation that one hopes to see in a truly competitive market. The Lustron and Motohome experiments applied mass-production techniques to homebuilding and experimented with the use of new materials. The Usonian house involved traditional materials used in different, less costly ways than other houses.

The Dymaxion bathroom, however, represented the application of new technology and factory building to a unit designed to fit in an ordinary floor plan. Thus, it represents the sort of innovation one might expect the market to accept most easily. Whether a production Dymaxion house would ultimately be the minivan or the Edsel of the housing industry may be too difficult to predict. Acceptance of a Dymaxion bathroom in a standard floor plan is easy, particularly if it results in cost-savings. In a sense, the use of non-metallic electrical cable, ABS pipe for drain and waste

33. Id. at 117.
34. Id.
35. Id. at 120.
36. Id. at 119.
37. Id.
38. Id.
39. FIELD & RIVKIN, supra note 1, at 18-20; see also JANDL, supra note 29, at 141-55 (giving a description of the Motohome as well as the Lustron Project).
applications, and PVC pipe for potable water, represent similar innovations, although they have the advantage of being invisible to the typical consumer.

One wonders about the potential of other such innovations stifled by current codes, such as the operation of house lighting on low-voltage circuits that permit wiring of most of the house with the equivalent of doorbell wire, and only requiring significant electrical work for major appliances and other areas that will likely involve the operation of motors. Successful demonstrations of in-house gray water recycling systems that take the waste from sinks and laundry, and use it to flush toilets have occurred. The residual nitrates found in such water actually help to cleanse the toilet. Although eminently sensible, cost effective and perfectly safe, such systems do not meet the standard codes and are thus not practical for the typical builder.

Even if one adheres to rather traditional design and construction methods, rethinking the housing unit requires a rethinking of today’s living arrangements and needs. Although there are a number of successful examples of “co-housing” which involve the sharing of kitchens and other common areas by two or more independent residents, many local codes still prohibit such arrangements or limit them to areas permitting “boarding houses” and other relatively undesirable uses. Zoning codes that define dwelling units based on the availability of separate kitchen facilities compound the regulatory muddle in which such planning innovations often fall. Building and housing codes continue to specify minimum sizes for bedrooms and other living areas without any real basis. If one family chooses very small bedrooms as a trade-off to allow larger common areas and another family chooses to have large bedrooms and small common areas, does the city really need to side with one or the other? If a public health issue is at stake, the decision undoubtedly revolves around the number of square feet of living space available for each occupant. Local housing codes, not building codes, typically address this matter. Although such occupancy standards are difficult to enforce, these standards are less troublesome from a housing-cost perspective because they do not interfere with innovations in housing but simply limit who occupies the housing that results.

One of the great needs of society is smaller houses. Studies comparing “average housing prices then and now” are typically misleading because they compare the prices of available housing at two different times, and with two different types of available housing. The 840 square-foot home that provided the starter home for many families under the GI bill is no longer built in most areas. An average new home today in most markets is in the range of 1,500 square feet or more. The smallest homes in most markets are 1,100 or 1,200 square feet. Thus, the fact that an
average new home costs X times as much today as it did thirty years ago reflects partly an increase in land costs and production costs, partly an increase in regulatory mandates, and partly an increase in house size.

Why are there no small homes? Some local governments prohibit them. Some state and federal “affordable” housing projects establish minimums of 1,000 square feet or more. Part of the problem, however, is that the increases in production costs and regulatory-driven costs are so great that builders have difficulty placing a small home in the market. Builders can more easily disguise $5,000 in new regulatory fees in the price of a 1,500 square-foot home than in the price of an 840 square-foot home. In most communities, the regulatory fees on the two would be the same. By increasing the fixed costs involved in offering a house, local governments provide a context in which builders will likely increase house size and variable costs.

When thinking about innovations in housing, however, one would hope that more creative thinking would happen. A few communities now allow “granny flats,” which are accessory apartments tied to the main dwelling unit. Perhaps society needs to think about allowing freestanding dependent dwelling units, units without kitchen and laundry facilities, to permit independent but shared living among family members. More radical concepts might lead to consideration of lightweight housing that may lack some of the structural strength of today’s units, but also offers little threat to its occupants if it collapses. Fuller proposed to deal with security aspects of his lightweight Dymaxion Dwelling Machine by tying it down, as most communities require with mobile homes. Is it reasonable to consider making even lighter-weight housing? It might be durable, made of lightweight plastics or metals, or it might even be non-durable, designed to last only ten or twenty years. Communities can address increased risks to safety in such units in the same way that codes address safety risks in current units — with smoke alarms and alternate exits.

Are the ideas in the previous paragraph viable? Maybe. Probably not. Should we be talking about such alternatives? Absolutely. Through dialogues about non-viable alternatives, we can evolve to viable ones.

How do such approaches help the urban dweller? We must be more cautious about safety issues in environments that separate people from the ground by a substantial distance which makes the issue of escape more complex. Nonetheless, innovations in single-family and two-family dwellings can lead to innovations in multi-family living. Certainly efforts to rethink living programs will benefit all forms of housing. Builders could use technological innovations that reduce the cost of operating systems such as plumbing, electrical and heating at almost any scale. Builders could also
use material innovations that relate to the skin of the building, non-bearing interior walls, roofs and interior finishes in high-rise as well as low-rise buildings. Only elements affecting structural issues and escape routes force builders to treat high-rise units differently.

VI. IT IS TIME TO ALLOW INNOVATION

Competition and a modest relaxation of regulations should produce innovation. Comparing the housing market to the automobile market produces interesting results. Although government regulation has brought about such improvement in automobiles as airbags and emissions controls, the biggest improvements in American made automobiles have occurred from the increased competition resulting from aggressive efforts by Japanese automakers to conquer the U.S. market. This competition has caused a dramatic improvement in quality, an increase in the variety of models (including the mini-van, developed in the United States), improvements in gas mileage beyond those mandated by the government and such additional safety features as anti-lock brakes and automatic traction controls. In its structure, the homebuilding market looks more competitive than the auto market. The results, however, look more like the U.S. auto industry of the 1960s, with "improvements" amounting to the equivalent of growing tail fins on the same old product. The explanation for that clearly is not that the housing product is perfect and thus cannot be improved. The stifling effect of regulation on innovation appears to be a more rational explanation.

The automobile industry is a regulated industry, but the structure of its regulation is far simpler than the building industry. The federal government establishes standards for active and passive restraints; front, rear and side impact absorption; a handful of other safety items; emissions controls; and gasoline mileage performance of the fleet of each manufacturer. State regulations, other than the supplemental emissions controls in California, address the maintenance of vehicle safety and emissions control systems. This system is a far simpler set of regulations than that imposed on the building industry, and it is uniform nationally. These regulations are also performance based. Rather than requiring manufacturers to make every car energy-efficient, federal regulations simply establish average performance standards for the fleet. Similar performance-based and averaging standards in the building industry might encourage a good deal of experimentation with new technology for heating and cooling as well as with new techniques of insulation.

Making residential building codes more flexible will not result in immediate innovations in housing. If the codes were changed tomorrow, the people building houses would be people
who have built under the codes for years. Also, they would build from plans designed to meet those codes. Major innovations, however, will take time. Initiatives by housing advocacy groups and the National Association of Homebuilders could facilitate that process, but it will take time.

Increased flexibility in codes will likely have a variety of results. Some builders will use the opportunity to deliver more affordable housing. Some will undoubtedly use it simply to deliver different housing. Others may see the opportunity to deliver a more user-friendly product at the same price. Although in some markets land development is an oligopoly, or even a monopoly, homebuilding remains a classically competitive small business. Thus, given the opportunity to compete, one could reasonably expect some innovation. In that context, it makes sense to focus public regulations on ensuring a competitive market and addressing the most basic life-safety and health issues.

Society has two apparent choices. It can continue to make housing one of the most heavily regulated industries in the country and try to accomplish accessibility, affordability, livability and durability through prescriptive design standards, or it can establish some simple basic performance standards and encourage designers and builders to join together with consumers to take us from the dream houses of the nineteenth century to homes suitable for the twenty-first century and the people who will populate it. That amounts to only one real choice. Communities should now allow and encourage the building industry to develop the twenty-first century house. To accomplish this goal, local governments need to unwind some of the twentieth century regulatory structure that has kept this industry in the nineteenth century while such sister industries as transportation and communication have raced to meet the future. I have no idea what the housing equivalent of the cellular phone or mini-van will look like, but it is time to find out.