Facing Subdivision Regulations*

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This study gauges the impacts of subdivision regulations on the design of residential developments and the practices of developers in rapidly growing regions of the country. Through a nationwide survey of jurisdictions which are experiencing rapid development growth and developers who are working in these areas, the study assesses the attitudes and perceptions and identifies the issues within subdivision regulations that members of the housing industry and the regulatory agencies feel are affecting housing development. The study also partially replicates similar research done in 1976 to gain an understanding of changing practices within the last 25 years.

Urban development is dependent on sets of standards and regulations that dictate the shape and form of our built environment. Whether it is street layout and width, or the placement and configuration of utilities and infrastructure, place making can rarely escape the framework imposed by codes and design regulations. Although there is a general agreement that some form of control is necessary to warrant the adequacy of public services and to ensure guided growth, there is little agreement about the degree of restriction and the type of requirements placed on development. The private-sector, professional consultants, as well as some public officials, are often apprehensive about the extent and affect of development related regulations imposed on their practice. To them some regulations are seen as costly, inconsistent, and superfluous. They often blame regulations as a barrier to housing affordability and innovative design solutions.

Numerous federal commissions, state committees and private studies agree with these assertions, indicating that development regulations often discourage efficiency, are costly, and increase housing costs. As recently as 2002, a Congressional Millennial Housing Commission stated that "the nation faces a widening gap between the demand for affordable housing and the supply of it. The causes are varied—rising housing production costs in relation to family incomes, inadequate public subsidies, restrictive zoning practices, adoption of local regulations that discourage housing development, and loss of units from the supply of federally subsidized housing" (Millennial Housing Commission 2002, 9). Similarly a study by the Pioneer Institute for Public Policy Research and the Rappaport Institute for Greater Boston concludes that in Massachusetts "Excessive regulation by agencies and boards at both the state and local level has gotten to the point of frustrating the development of housing in Massachusetts. Both level of government need to prune back the

sprawling regulations and improve coordination among the different regulatory player" (Euchner 2003, 42). Another statement by the Advisory Commission on Regulatory Barriers to Affordable Housing declares that: "The cost of housing is being driven up by in increasingly expensive and time-consuming permit approval process, by exclusionary zoning, and by well intentioned laws aimed at protecting the environment and other features of modern-day life." (in Luger, and Temki, 2000, xiii).

Such debates are not new. As early as 1910, when addressing the Second National Conference on City Planning and the Problem of Congestion in New York, Frederick Law Olmsted Jr. stated: "There has been a decided tendency on the part of official planners to insist with quite needless and undesirable rigidity upon certain fixed standards of width and arrangement in regard to purely local streets, leading inevitably in many cases to the formation of blocks and lots of a size and shape ill adapted to the local uses to which they need to be put. Another instance is that of fixing a minimum width of street and minimum requirements as to the cross section and construction there of which make the cost needlessly high for purely local streets, and thus inflicts a wholly needless and wasteful burden of annual cost upon the people." (Proceedings of 1910, 22-23) Another author, writing in 1934, asserted that "compliance with minimum standards with respect to street grading and the installation of water mains and sanitary sewers often may increase the total home cost as much as 20 percent." (in Seidel, 1978, 119)

Calls for regulation overhauls have often met with reluctance by planning authorities. As early as 1954 the American Society of Planning Officials warned planners about the home builders "campaign to break municipal subdivision regulations and controls" and their intent to pressure municipalities "to abandon or weaken subdivision control ordinances, financial regulations and control." (American Society of Planning Officials 1954) Traditionally planning authorities have been the avid promoter and protectors of regulations. From their perspective, regulations, particularly subdivision controls, are a central instrument in planning practice and the primary mechanism in ensuring minimal quality in the provision of the residential built environment. As suggested by the US Housing and Home Finance Agency in 1952: "The regulation of land subdivision for residential and other uses is widely accepted as a function of municipal and county government in the United States. It has become widely recognized as a method of insuring sound community growth and the safeguarding of the interests of the homeowner, the subdivider, and the local government." (Manual of Suggested Land Subdivision regulations, 1952, 1)

Although contentions regarding development regulation are widely expressed, few studies have attempted to further understand and gage these contentions with regard to the design and planning processes of residential subdivisions. Most studies, such as those by Field and Rivkin (1975), Seidel (1978), Rosen and Katz (1981), Fischel (1990), Luger, and Temki (2000), and Pendall (2000) address the impacts of various land-use regulations on housing costs, affordability and exclusions. Other studies, such as those by Wheaton and Schussheim (1955), Urban Land Institute (1958), Real Estate Research Corporation (1974), Duncan (1989), Gordon and Richardson (1997); Sierra Club (1998) and Burchell et al. (1998, 2000), attempt to calculate and compare development costs related to neighborhood patterns. Few studies have concentrated on subdivision's codes and regulations which shape the physical aspects of development.

Scope and Purpose

This study attempts to further understand the universe of regulations as manifested in the practices and attitudes of subdivision controls. By obtaining an in-depth view of existing regulatory procedures in those regions of the

country that are experiencing rapid urbanization, issues that might otherwise be unattainable by reading the regulations themselves can be identified. What are the problems and contentions with regard to subdivision controls? What are the attitudes and perceptions of public officials and developers representing the housing industry? What are the most common mechanisms of the enactment of these regulations, and how are they being perceived, challenged and implemented?

Another important intention of this study is to gain an understanding of changing practices, trends and attitudes over the last decades. The study therefore utilizes and compares findings from a similar research completed in 1976 by Stephen Seidel and the Center for Urban Policy Research in Rutgers, NJ.

Stephen Seidel's survey of regulations and housing costs (published 1978) is based on interviews with key informants involved in developing local regulations, as well as information provided by home builders. Although the Seidel study looked at various types of government regulations on housing, its subdivision regulation section is one of the most comprehensive analysis of subdivision requirements and their effect on housing development. It showed that by 1976, (the date of the study), subdivision regulations had become more complex, and in the eyes of developers, much more onerous. While initially, simple subdivision regulations were put into place to transform undeveloped land into parcels suitable for development, by the time of the survey in 1976, subdivision requirements had begun to include detailed stipulations such as on-site and off-site improvements developers had to provide. According to Seidel, these improvement standards required many developers to provide amenities that were often unnecessary and costly, and, in doing so reduced the supply of affordable housing in newly constructed subdivisions. As stated by Seidel: "Far and away the area of regulation cited as containing the most unnecessary costs was subdivision controls. Over 72 percent of the respondents estimated that unnecessary aspect of subdivision controls were responsible for more than 5 percent of the total price of the unit." (Seidel, 1978, 37)

Methodology

Similar to Seidel's 1976 work, this study is composed of a two related efforts:

- A nationwide survey of public officials in jurisdictions which are experiencing rapid development growth in single family housing.
- A nationwide survey of developers who are developing in these areas.

In the summer of 2002, 500 developers and 500 public officials were mailed a questionnaire soliciting response for a written questionnaire. The sample selection was based on the U.S. Census Manufacturing and Construction Division (MCD) building permits data of four years (1996-2000), and divided according to the MCD four regions: Northeast, Midwest, South and West. (For detailed description of the case selection, and the sampling steps as well as various data on the jurisdiction selected see Appendix A).

Residential Subdivision Controls

The justification for government imposition of subdivision controls is rooted in the police power - the right of political entities to regulate in order to promote for the health, safety and general welfare of the community. As such three general goals can be seen in the establishment of such regulations:

- preventing premature partial subdivisions which are poorly linked to the broader community
- preventing poor quality substandard subdivisions with inadequate public facilities and infrastructure

- reducing financial uncertainty and risk to the investor, buyer and the community

Seidel (1978) also points to two important factors that resulted from these noble goals:

- the exclusionary implications of subdivision regulations
- the hidden increase of cost due to a prolonged approval process

With regard to the exclusionary aspect Seidel writes: “The desire to ensure high-quality subdivisions is sometimes synonymous, in effect if not always in intent, with the exclusion of those people who can afford only low-cost housing. Thus any rationale for extensive subdivision requirements justified on the basis of avoiding "blight" demands more than superficial inspection. The level of public improvements required must be scrutinized to determine whether or not the regulations are actually designed to erect an economic barrier to keep out the poor and, increasingly, those with a moderate income as well.” (Seidel 1978, 125)

Prolonged administrative and approval process required in the administration of subdivision regulations does not only increase the financial risk for the investor/developer but also increase the cost to the home buyer. According to Seidel, for every additional month added to the completion date, there is a 1-2 percent increase in the final selling price of the unit. (Seidel 1978, 32) With our survey indicating a steady increase over the last 25 years in the average time it takes to receive subdivision approval the increase in cost has undoubtedly been transferred to the consumer.

With subdivision regulations controlling and shaping so much of planning and construction, what are their current impacts on housing developments? How are they being practiced and enforced? How are they being viewed by those who administer them and those who must abide by them?

Procedures for subdivision approval have been largely based on standards established by the Federal Housing Administration (FHA) in the late 1930s and early 1940s (Housing and Home Finance Agency 1952). These are based on three main stages: pre-application, conditional approval of preliminary plat, and final plat approval. In the pre-application stage, the subdivider gathers the information and data on existing conditions, studies the site suitability, and with the help of professionals, develops a preliminary plan in sketch form to be submitted to the planning commission for advice and assistance. The planning commission reviews the plan in relation to a master plan, design standards, and improvement requirements, and notifies the subdivider of their issues and concerns if any.

In the second stage, the subdivider, if opting to develop, submits a revised preliminary plat for conditional approval by the planning commission. Once the plan is approved, the subdivider stakes out the plat according to the approved preliminary plan, and either installs improvements or posts bonds to guarantee completion of improvements. Final plat is then submitted for final approval. Once the planning commission approves the final plat, recording of the new plats as well as actual development begins.

While the original FHA guidelines seem simple and straight forward, the realities of the last decades are those of growing complexity and frustration of those involved in the process. Indicative of these frustrations is the following statement by the Urban Land Institute: “American developers of housing must deal with an expanding array of regulations at every level of government. Unreasonable regulations on development inevitably inflate paperwork required for a project and intensify the complexity of data, analysis, and review procedures for both public and private sector. Ultimately, the delay caused by the regulatory

maze produces higher cost housing through uncertainty, overhead, and inflated cost of labor and materials, and other more hidden costs." (In Listokin an Walker 1989, 177)

As a result, various task forces offered solutions and recommended models to expedite the approval process. Most suggests an informal stage, where the nature of the development is discussed and the procedure for application is clarified. Another common suggestion is the classification of development according to the type of impact it carries. Those developments that are less "problematic" would go through an expedited process. Figure 1 is an illustration of such a procedure as suggested by Listokin and Walker (1989).

Unfortunately the majority of these models do not specifically describe how to quantify the type of development or its impact, nor do they enforce an "informal" pre- application step. Since no exact typology is given as to the impact of each development, interpretation remains a subjective exercise by the local planning officials or the abutters.

Indeed, only 60 percent of the jurisdictions surveyed required some kind of a sketch or concept plan phased before a preliminary plat is to be submitted. Almost all public officials surveyed (97 percent), lay the blame for approval delays on the developers. In their judgment developers are not providing sufficient holding costs, increased expenses due to risk, information about proposed developments, and are often changing plans. This type of assessment provides a clear indication that good coordination and lack of communication between developers and public officials are major problems. These attitudes are also reflected in the frequently repeat comments offered by the developers:

- "The biggest problem we face is when regulations/fees are changed after a project has been approved. I would like to see a process that 'rests' the developer at the time the preliminary plat is approved. We can deal with just about anything if it is known. What hurt us are the inconsistent approval times and regulation changes after the approval of the preliminary plat."
- "Regulatory agencies exceed their authority to practice social engineering, architecture, and micro-management"
- "The biggest problem that we see with regulations is not the regulations themselves, but the various interpretations by staff and zoning officials."

Some of the blame can also be attributed to the approval process itself. More than half of the public officials surveyed lay the blame for delays on inefficient management and lengthy approval processed by other agencies and commissions. (Figure 2)

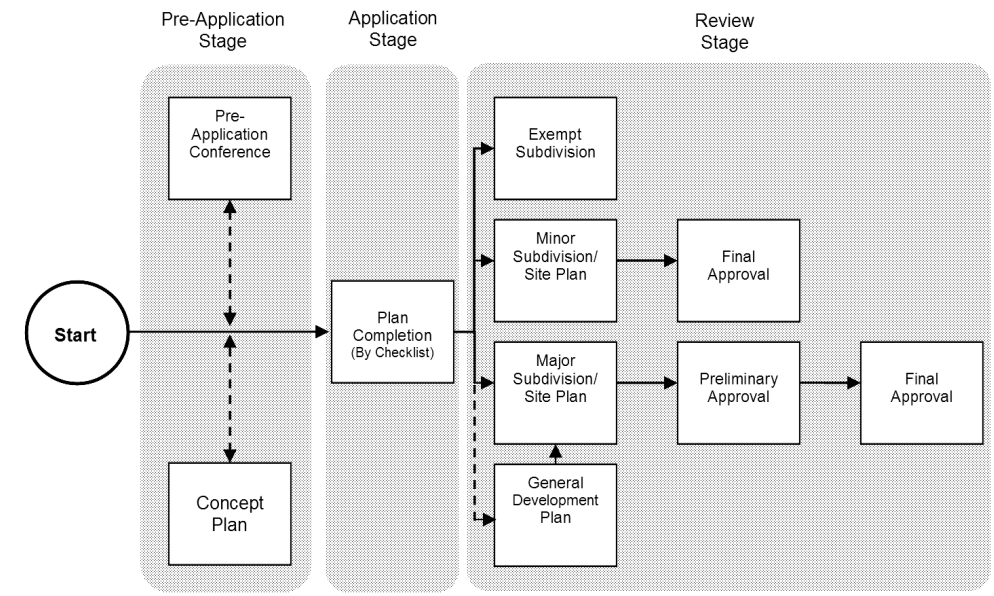

Figure 1
Model Ordinance Subdivision and Site Plan Approval Procedure (After Listokin And Walker 1989)

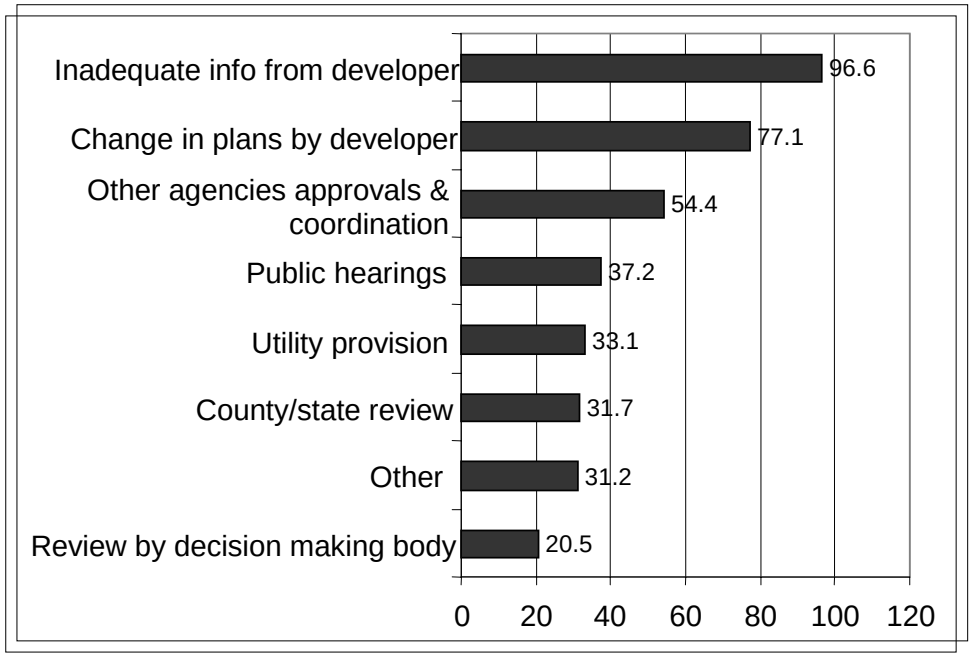

Figure 2
Reasons for Delays in the Subdivision Approval Process
(Percentage of Jurisdictions)
(n=159)

The proliferation of various agencies involved in the subdivision approval process is another indication for increased bureaucracy and red tape. Public officials surveyed indicated that in more than 40 percent of the cases at least 10 other agencies (beside the planning commission) took part in the approval process. Topping the list were municipal sewage and health departments, as well as higher level government groups such as the county, and state transportation agencies.

Delays and prolonged approval process are not only prohibitive to a developer, but also carry consequences of cost to the consumer. In most jurisdictions surveyed (42 percent), the average time period between initial submission of a (typical) subdivision application and tentative (or preliminary) approval is 2 to 4 months. In 34 percent of the cases, approval takes less than two months. Although these numbers indicate an efficient turnaround, it should be noted that overall there is some decline in efficiency as compare to the 1976 survey. For example, in 1976 half of the jurisdictions surveyed approved preliminary plat in less than 2 months, 47 percent approved rezoning in less than two months, and 33 percent approved variances or special relief in less than one month. In 2002 only 27 percent of the jurisdictions surveyed were able to grant rezoning in less than two months and only 14 percent allow for variances. (Table 1)

Procedure	*Time Required*	*Percent of Municipalities 1976*	*Percent of Municipalities 2002*
Preliminary Approval	Less than 2 months	50.0	33.9
	2-4 months	38.3	41.7
	5-7 months	6.4	14.9
	more than 7 months	5.3	9.5
	Total	100.0	100.0
		(n=78)	(n=158)
Variance or special exception	Less than one month	32.9	14.2
	1-2 months	57.0	60.8
	3-4 months	7.6	20.3
	more than 4 months	2.5	4.7
	Total	100.0	100.0
		(n=74)	(n=157)
Rezoning	Less than one month	10.0	2.8
	1-2 months	36.7	24.4
	3-4 months	40.0	41.4
	more than 4 months	13.3	31.4
	Total	100.0	100.0
		(n=74)	(n=157)

Table 1
Estimate of Approval Time by Public Officials
(1976 Data from Seidel)

When analyzed by region, the majority of jurisdictions in the South (54 percent) and the Midwest (47 percent) approve preliminary plats in less than 2 months. In the West the majority of jurisdictions (34 percent) and in the Northeast (47 percent) of the jurisdictions approve preliminary plats within 2-4 months.

Unlike the public officials, developers reported very different estimates on the time it takes to obtain approvals. According to the developers surveyed, it took on average 17 months in 2002 to obtain all the required permits. This lengthy approval time is consistent with the findings from Seidel in 1976. In both 1976 and 2002 the majority of the developers surveyed, 47 and 45 percent respectively, received all approvals for development between 13 to 24 months. The percentage of developers indicating that they received all approvals in less than 7 months declined in 2002 by almost half in comparison to 1976. Furthermore the number of those reporting it took over two years to get approvals, doubled in 2002 to 20.5 percent.

Discrepancies can also be seen in the estimated time required for granting variances and zoning relief. According to the majority of the developers surveyed, it took more than 4 months to obtain variances, special exceptions or rezoning. The majority of public officials, on the other hand, indicated an average of one to two months for variances, and three to four months for rezoning.

The discrepancy in time estimations between public officials and developers may be explained by their subjective and different views of the development process. While public officials see timely approval as a yardstick for measuring public performance and service, developers see each delay as unnecessary bureaucratic process. Another explanation may be attributed to the frequency and length of time by which special variances and zoning relief are being processed and approved. As noted previously, most public officials indicated that when such measures have to be taken, approval of the relief itself can take on average between 3 to 4 months.

Interestingly, the time it takes to get an approval is much shorter in low and moderate income communities. Above 80 percent of these jurisdictions approve subdivisions in less than 5 months as compare to 60 percent of the higher income jurisdictions. Although a lengthier approval process in middle and higher median income communities may indicate a more detailed and comprehensive approval process, it can also indicate that delays and length may be used as a tactic to exclude development. (Table 2)

Jurisdiction by income	*less than 5 month*	*5-10 month*	*more than 10*	*Total*
Low (n=11)	81%	19%	0%	100%
Moderate (n=78)	87%	13%	0%	100%
Middle (n=55)	67%	21%	12%	100%
High (n=14)	60%	40%	0%	100%

Table 2
Time Required For Subdivision Approval by Median Income of Jurisdiction
(See explanation of income grouping in the Appendix)

Relief from Regulations

Relief from regulations in the form of rezoning or design variances is seen by developers as a major undertaking in subdivision approval process. Administrative delays associated with such adjustments, and the need to face various local boards and planning commissions does not only point to possible costly delays but also to the inadequacy of existing regulations.

More than half (52 percent) of the surveyed developers indicated that they had to apply for some sort of relief in at least half of their projects, while 37 percent applied at least ¾th of the time. These numbers are striking particularly in comparison to 1976, where almost half of those surveyed (43 percent) indicated that they have almost never applied for such relief.

Furthermore, when asked to point to the type of changes they apply for, many developers indicate they want to build higher density single family areas and more multifamily units, and would create more varied site and structural plans if they had the opportunity. Tables 4 and 5 show that in the majority of cases developers applied for more dense development and that an overwhelming majority (72 percent) had to design lower density developments because of existing regulations. These affects have remained consistent in the last 25 years.

Such findings should alarm individuals dealing with housing reforms, and those who as early as the 1970s, warned of consequences of various exclusionary devices. Restrictions against higher density developments, multiple housing types, minimum lot sizes and floor areas are still impacting the housing industry. Developers in both 1976 and 2002 felt subdivision standards and zoning regulations increased the cost of the homes they built and decreased densities. In many instances these regulations pushed developers to build in green-fields location, away from major urban areas, where restrictions and abutters' objections may be less restrictive.

Type of Relief	*Percent Developers Responding (n=86)*
More dense single family	42%
Variation in lot size	40%
Introduce multi-family housing	32%

Table 4
Type and Distribution of Relief Sought by Developers
in More Than 10 Percent of their Applications

Affect	*1976 Percent developers responding (n=378)*	*2002 Percent developers responding (n=86)*
Build in less populated Areas	41%	39%
Build more expensive units	61%	61%
Build less dense development	63%	72%

Table 5
The Affect of Subdivision Standards & Zoning Regulations on Development
1976 and 2002

Negotiations

Negotiations between developers and local jurisdictions can result in delays and increases in costs, as well as improved design and suitability. Although public officials view negotiation as a way to amend existing specifications to suit unique situations, the overwhelming majority (76 percent) of surveyed jurisdictions reported that either none or less than 10 percent of their requirements were negotiated. Only 3 percent reported negotiating more than 25 percent of their specifications and none reported negotiating more than half.

The greatest amount of negotiation seems to involve matters in which the developer may not see an immediate gain in value of investment and in matters that may be perceived as adding to the "public good" rather than to the specific development itself. Some of these include off site improvements (28 percent), streetscape design (25 percent) and dedication of land for recreation or open space (13 percent). On the other hand, issues with direct impact on the development site, such as infrastructure, tend to be less contended by developers.

Developers are generally discontent over negotiation and the general attitudes toward their intentions. These sentiments are reflected in a typical comment provided by one of the respondents: "City and county offices have no sense of fairness. They only consider exactions that make them appear more successful in protecting the community from the 'evil' developer that may be trying to be profitable."

Fees and Improvement Guaranties

Fees are one of the tools by which municipalities recover their operating costs and generate revenues. While most fees are directly associated with various steps in the approval and construction process, improvement guarantees are a widely used as an assurance that all enhancements will be made as a precondition for approving the final plat.

Almost all jurisdictions surveyed (90 percent) impose fees on the submission of preliminary and final plat. Only 40 percent of those surveyed believe that these fees adequately cover administrative costs. Out of the 60 percent who replied such fees are not sufficient, 80 percent

indicated fees only cover up to 75% of administrative costs.

The majority of jurisdictions surveyed (81 percent) require some form of improvement guarantees. Only 16 percent (24 jurisdictions) do not allow for bonding, requiring all improvements be installed before final approval. Such requirements may be detrimental to small scale developers who can not provide up-front money for all improvements and in essence limit development proposals to large scale companies.

Types of guarantees include: surety bonds, escrow accounts, property escrow, sequential approval of subdivision, maintenance guarantee, and letter of credit. Although many jurisdictions use a multitude of guarantee types, the most widely employed are:

1. Surety bonds
   80% of the cases
2. Maintenance guarantee
   74% of the cases
3. Escrow account (cash or note)
   71% of the cases

Out of the 80 percent jurisdictions which require bonding, 72 percent have a provision allowing for the reduction of the bond amount as improvements are completed. On average, it takes 5-7 weeks between completion of improvements and release of the performance guarantees.

The multitude of performance guarantee options offered by municipalities, and the provision for release of bonds as improvements are completed is encouraging. Choice allows various type of developers to be involved in housing construction. For example, a small scale developer may be viewed as high risk to many surety companies and would either be charged high premiums or denied bonding. For such a developer, an escrow account, or even better, sequential approval of segments of the subdivision as improvements are completed, may be the only way for them to participate in housing development.

An interesting picture emerges when development guarantees are distributed according to the median income level of the jurisdictions. Table 6 shows that low and moderate income jurisdictions tend to offer more options in the type of guarantees offered than middle and high income communities. Greater selection of guarantees may encourage more developers to do business in those communities that offer them, and allow for greater housing variety and affordability. On the other hand, placing limits and lack of options by higher income communities may raise the question if indeed such practices point to exclusionary tactics.

Type of Jurisdiction	*Few or no Guarantees offered*	*Some Guarantees Offered*	*Most Guarantees Offered*
low income n=11	0%	29%	71%
Moderate income n=71	11%	70%	19%
Middle Income n=45	25%	56%	19%
High Income n=14	9%	55%	36%

Table 6
Level of Guarantees by Median Income of Jurisdiction

Similarly the distribution of reimbursable provisions according to median income level, shows 72 percent of low income communities grant such reimbursements. On the other hand, only 43 percent of the high income jurisdictions incorporate such provisions, ultimately overburdening the developer and the potential homeowner with the cost of over design.

Physical Improvements and Site Development Standards

Obviously when a development is put into place, basic site improvements and infrastructure must be provided. It is widely accepted that grading, basic utilities such as water and sewer lines, and streets and sidewalks will be provided by the developer. Indeed the survey shows that in almost all jurisdictions (with percentage rate of over 90% for all categories) on-site improvements such as streets, storm water systems, sewer and water, and fire hydrants are required. In many instances, the local jurisdiction may require from the developer to carry improvements off-site in other parts of the community or more typically in adjacent area that may be impacted by the new construction. The excessive and often unwarranted nature of physical improvements and standards associated with subdivision development are clearly expressed by the developers we surveyed. When asked to indicate which requirements present the greatest expense, in conforming to regulations, an overwhelming majority (80 percent) pointed to requirements associated with site design and only half with codes and requirements for buildings. (Table 7) When asked to provide more specific details as to which requirements they perceived as excessive 52 percent of the respondents indicated requirements related to street construction, with 45 percent indicating land dedication and 43.1 percent storm sewer (underground piping for stormwater mitigation). (Table 8)

Type of Regulation	*Percent Developers see an increase of unit cost by more than 5% (n=83)*
Subdivision Regulations	59%
Building Codes	52%
Zoning	46%
State Development laws	42%
Floodplain Restrictions	32%
Energy Codes	31%
Costal Zone Regulations	24.5%
Mortgage and Financing	3%

(*The definition of necessary is that which is essential to health, safety, and public welfare.)

Table 7
Unnecessary Cost of Regulations
Indicating More Than 5% Increase to Cost

Type of Requirement	*Percent of developers see as excessive*
Streets	52%
Land Dedication	45%
Storm water piping	43%
Landscaping	31%
Water mains	30%
Sanitary Sewer	26%
Sidewalks	26%
Underground utilities (electric, etc)	14.5%

Table 8
Type of Requirement Seen as Excessive (n=83)

When asked to indicate more specifically which physical standards within each category are excessive, the top choices were:

1. Street widths (75 percent of the respondents)
2. Street Right-of-Way (73 percent)
3. Land for open space (73 percent)
4. Street Trees (73 percent)

Not surprisingly most developers indicated that fees associated with physical improvements were also excessive, with the top being:

1. Sewer hook up fees (90 percent of the respondents)
2. Water hook up fees (85 percent of the respondents)
3. Fees in lieu of land dedication (79 percent)

While some may indicate that these perceptions are common to developers, it should be noted that many developers found certain standards to be reasonable and accommodating. For example the majority of those surveyed did not find various pavement thicknesses for streets and sidewalks as being excessive. The majority (83 percent) did not deem the requirement for curbs, sewer pipe diameter (72 percent) or land devoted to schools (65 percent) as being excessive. One of the main questions with such findings is how many of these attributes translate to higher costs for the developers and thus the home buyer? (Table 9)

Land Dedication

With growing concerns over sprawl and the consumption of open space, developers are often required to reserve or dedicate a portion of their land for public purposes such as open space, recreation, or for future public buildings such as schools. The popularity of this form of regulation can be seen in the steady growth and implementation since the 1976 study. In 1976, 63 percent of municipalities surveyed had some form of land dedication requirements (both mandatory and permissive). In 2002 the rate increased to 81 percent with half, imposing dedication as mandatory in ordinance, and 32 percent as permissive, at the discretion of a decision-making body. Nineteen percent have no open space requirement at all. When an open space dedication is called for, the majority of the jurisdictions (52 percent) require 6 to 25 percent of the total land area to be left open. Almost all jurisdictions allow for some form of fees in lieu of land dedication.

When the jurisdictions that require the dedication of land are distributed regionally, the Northeast has the highest requirements with an average of 15 percent of the total land to be developed devoted to open space. The West, on the other hand, has the lowest requirements with an average of 9 percent open space dedication. These results may be partly attributed to the lack

Requirement	*Percent responding as Excessive*	*Percent responding as Not excessive*
Street width	75%	
Street ROW	73%	
Pavement thickness		62%
Curbs		83%
Sidewalk width	56%	
Sidewalk thickness		70%
Water pipe diameter		55%
Water pipe material		80%
Water pipe depth		93%
Water pipe Hook-up fees	85%	
Sewer pipe diameter		72%
Sewer pip material		75%
Sewer pip depth		70%
Sewer hook up fees	90%	
Sewer system lay out		56%
Stormwater pipe diameter	62%	
Stormwater pipe material		50%
Stormwater pipe depth		45%
Stormwater pipe hook up	57%	
Stormwater system layout	73%	
Street trees	73%	
Street lighting		52%
Telephone lines		53%
Electric lines	60%	
Cable/TV lines		64%
Land for recreation	52%	
Land for open space	73%	
Land for schools		65%
Fee in lieu of land	79%	

Table 9
Developers' Assessment of Various Requirements (n=84)

of open space and natural areas in the developed Northeast. Communities in this region may see a need to amend this shortage by requiring larger percent of developable land to be dedicated for public use. (Table 10)

Although the West has the lowest average land dedication requirements, it has the highest percentage of jurisdictions (61 percent) regulating dedication as a mandatory legislation. The Midwest is the region with the lowest percentage of jurisdictions (47 percent) requiring some form of land dedication.

An interesting observation can be made when distributing the land dedication requirement according to the family median income of the jurisdictions. Both middle and high income communities show higher levels of land dedication requirements. In the case of high

income communities, all are requiring some form of land dedication for open space, while low and moderate income communities are allowing more development to occur without asking for open space dedication. Do such trends point to an exclusionary tactics by higher income communities? Do the lessening of land dedication requirements, attract more development in lower and moderate income communities? Further research in this area would be valuable in answering some of these questions? (Table 11)

Region	*Average Percent of development to be dedicated for recreational or open space*
Northeast (n=29)	15%
South (n=36)	12%
Midwest (n=20)	9.5%
West (n=30)	9.3%

Table 10
Regional Average Percentage of Total Land Area of a Subdivision Required to Be Dedicated For Recreational or Open Space Purposes

Median Income	*Mandatory or permissive*	*None required*
Low (n=11)	65%	35%
Moderate (n=67)	53%	47%
Middle (n=49)	91%	9%
High (n=14)	100%	0%

Table 11
Land dedication by median income of Jurisdiction

Modifying Subdivisions

Most public officials indicate that altering subdivision design by introducing new specifications, changing requirements, and introducing changes to the approval processes are common activities in their professional work. However the survey also indicates that the overall number of jurisdictions reducing and amending standards is relatively small. The majority of jurisdictions maintain their existing standards, while others even choose to increase them.

Table 12 lists the most common amendments introduced between 1997 and 2002. Of particular interest are amendments to regulations that may reduce the cost of construction and support alternative development patterns. Of the jurisdictions surveyed, 17 (16 percent) have reduced their street width requirements, 26 (25 percent) have introduced more multifamily zones, and 25 (26 percent) are allowing more choices in housing types. (Table 13) It is interesting to note that when distributed regionally, the West and South are leading in the numbers of jurisdictions implementing such amendments. Almost half of the total jurisdictions that have reduced their street widths and introduced multi-family zone are in the West. It can only be hoped that experience gained by those communities which are reducing land consumption for streets and allowing higher densities will prove beneficial and pave the way for others to follow.

increased Specifications and New requirements	*Decreased specifications*
Increase in minimum house size (sq. ft.)	Reduce street widths
Increase set backs	Reduce lot depth
Increase in lot size	
Introduce Architectural review	
Introduce Design Guidelines	
Introduce Traffic impact studies	
Introduce Stormwater plan	
Introduce Wetland mitigation	
Introduce Landscape and open space plan	
Introduce Tree preservation	
Introduce conservation easements	
Introduce Grading and erosion plan	
Introduce Sidewalks requirements	
Introduce architectural review board	
Introduce economic development review board	
Introduce school agencies review	

Table 12
Common New Subdivision Regulations Amendment Introduce 1997-2002
(Mentioned by at Least 10% of Jurisdictions)

New Specification	*Percent of Jurisdictions increasing*	*Percent of jurisdictions Decreasing*
Minimum house size (sqf) (n=102)	11%	9%
Street width (n=105)	5%	16%
Building setbacks (n=102)	23%	16%
Minimum lot size (n=106)	26%	22%
House types (n=102)	26%	1%
Multi-family zones (n=103)	25%	9%

Table 13
Distribution of New Specifications

Growth and Environment Control Measures

Consequences of urban growth and environmental degradation have been at the center of the political and professional agenda for the last three decades. From the national to the local level various measures and mechanisms have been introduced and implemented to control and amend growth's undesired consequences. Although such measures address a wider aspect of urban development, many have a direct impact on subdivision design and construction.

An overwhelming majority of the surveyed jurisdictions (93 percent) indicated that growth concerns are an issue in their community. When asked to list the major issues with regard to growth, 48 percent indicated the concern over the ability to control and provide municipal services, 44.5 percent mentioned apprehension over the ability to maintain the existing character of the community, and 18 percent indicated the worry over environmental degradation.

Surprisingly, amplified concerns over the impact of urban growth do not necessarily translate to actions. As mentioned by one respondent: "There is no political support for real planning. The politicians believe planning is issuing permits. They continue to approve everything, especially huge subdivisions on two lane county roads. We are the poster boy of sprawl."

Only 28 percent (42 jurisdictions) have enacted at least one growth control measure. Out of a variety of these measures, the most widely used is the adequate public facilities ordinance. Under this regulation, development cannot be approved if existing public facilities such as schools, police, fire services, or infrastructure, are deemed insufficient to serve the increased demands.

When distributed according to the level of median family income for each municipality, none of the low income communities had a growth control measure in place, while almost 40% of both middle and high income communities implemented at least one growth control apparatus. (Table 14)

Median Income of Jurisdiction	*Percent of Jurisdictions implementing Growth Control Measures (at least one)*	*Percent of Jurisdictions implementing No Growth Control Measures*
Low (n=10)	0%	100%
Moderate (n=74)	24%	76%
Middle (n=51)	41%	59%
High (n=14)	21%	79%

Table 14
Growth control Measures by income of jurisdiction

Conclusion

The mazes of codes, regulations and design requirements placed on residential developments have often been at the center of contention between developers and public officials. At the core of this friction may be the simple fact that many subdivision requirements imposed today have little to do with the rationale that shaped them at the turn of the 20th century. Health and safety concerns caused by inadequate building and infrastructure construction, premature subdivision of the land resulting in conflicting property lines and neighborhood layouts, and builders who were not concerned about their reputation, have hardly any bearing on present day reality.

Regardless of the numerous calls for regulatory reform, changes to subdivision controls have been slow. Standards and codes that dictate the shape and form of our public built environment have remained almost unaffected. As seen in our survey as well as in Seidel's of 1976, Government imposed regulations, particularly subdivision controls, have been a central and growing problem for the housing industry.

Developers in both 1976 and 2002 felt that subdivision standards and zoning regulations increased the cost of the homes they built and decreased densities. In many instances these regulations pushed developers to build in green-field location, away from major urban areas, where restrictions and abutters' objections may be less restrictive. When asked to point as to the type of changes in regulations they apply for, many developers indicate that they want to build higher density single family areas and more multi-family units, and would create more varied site and structural plans if they had the opportunity. These trends have remained consistent in the last 25 years.

In the instances when our study examined the universe of various regulations according to the median income of the communities surveyed, results show that in higher income communities, approval of development takes longer than in those with lower income, higher income communities provide less options for

performance guarantees, require higher dedication of open space from the developer, and generally are the ones to implement growth control measures. Although the sample is relatively small, such indications suggest exclusionary tactics in these higher income communities may be more prevalent than what is often assumed. Interestingly, a recent study by Euchner (2003) shows two progressive Massachusetts' laws, Chapter 40B—the Comprehensive Permit Law or "anti-snob zoning" law, and the Community Preservation Act, both of which should give developers and communities tools to build affordable housing, have actually become instrument for anti-housing sentiments and actions.

With such conditions, change is unlikely to happen through traditional means but rather by outliers and renegades. Indeed, in the last decade almost all innovation in subdivision design has evolved within the private domain and under the governance of community associations. Two such innovations, New Urbanism and Conservation (or green) subdivisions would not have been possible if it were not for early prototypes such as Seaside, Fl and Prairie Crossing, Ill. Communities that were built as common interest development privately owned and maintained by Home Owners Associations.

Renegades such as these often serve as serve as catalysts in changing subdivision standards and regulations. At the national level several professional associations have endorsed local adjustment of fixed national standards. The Institute of Transportation Engineers (ITE), for example, has gone through a reexamination of their street standards and recently even endorsed design practices that are not rooted in prescriptive numerical specifications.[1] The American Planning Association, in a major effort to provide new direction, has recently published its *Growing Smart Legislative Guidebook: Model Statutes for Planning and the Management of Change* (2002). Its executive director acknowledges that "it's time we develop new and more flexible codes that can serve all citizens far more effectively than their 20th century predecessors," (Pierce, 2003)

In order to defuse innovation and incite change in subdivisions' design and planning, public officials together with agents of the housing industry must move beyond confrontation into joint association. Based on the study the following recommendations may be of potential interest to both sectors:

- It is essential to continue studying and documenting the impact of engineering standards and codes, such as those relating to streets' widths, ROW and building setbacks, on residential developments forms and housing costs.
- Public officials should evaluate federal land use policies, such as those associated with environmental regulations that hinder design changes to subdivisions' patterns, form and density.
- It is necessary for states to address and provide mechanisms that effectively address regional needs such as schools, open land and infrastructure, to allow development in one area to rely on development in another, and avoid unnecessary duplication. Such measures will help eliminate unnecessary and costly improvement requirements from the developers and reduce shifting the cost to the consumer.
- The red tape and bureaucratic procedures associated with development approval at the local level is also the result of multiple agencies and committees involved in the process. In order to eliminate delays and jurisdictional conflicts, localities can consider consolidating this process into the hands of one agency, and establishing a uniform structure for appeals to be reviewed and approved by this sole agency.

- Innovative elements of an application should be assessed in the same timeframe as standard applications.
- Streamlining the process can also be improved by introducing electronic permitting systems. As internet use is spreading and becoming more available, there is a growing expectation for conducting affairs from home or office with greater immediacy. From automatic approval of plans, to equipping inspectors with portable devices for recording and inspecting, electronic permitting systems can provide better and more timely information to decision makers, and experts alike. The possibility for electronic plan review is particularly encouraging for its potential to automatically analyze a plan, and compare it with codes and standard requirements. Alternatively, such systems can allow the plan reviewer to enter various descriptors, and benchmarks and let the software call up the applicable requirements that need to be considered. The process can ease the burden of subdivision planning and assure a certain consistency of performance for many towns with limited or no planning staff.
- In a climate of increased bureaucracy and complexity, decision making and legislative changes are slow to occur. However, actual examples of development best practices are an excellent catalyst for change. Best practices provide an immediate way to compare experiences and to evaluate projects based on actual performance. They are often the most effective tools to persuade skeptical decision-makers and the public. In an era of media and marketing, the ability to showcase achievements and alternative practices may prove to be the most important tool for change. Public agencies as well as developers could devote more time in the effort to disseminate their experiences and successes and make it readily available in tangible form.
- Public officials, representative of the housing industry, and planning related organizations could re focus on educating the public on the implications of continuation of existing practices and the benefits of planned development. Emphasis ought to be made on the benefits of alternative design schemes that focus on density.
- The difficulty to visualize the physical ramifications of land use and subdivision regulations is a barrier that has to be overcome on the road to better design and planning. Putting into use powerful yet readily available computational tools to introduce public officials and communities to the variety of choices available will help them visualize the potential effects that these choices produce, and will ultimately diversify the spatial paradigm of development.
- Simple, interactive and tangible representations that afford visualization of otherwise abstract standards can be integrated into the various coding procedures. Computerized three-dimensional visualization can help those who are unable to conceptualize the spatial consequences of two-dimensional proposals. Comparisons can be made to existing adjacent parcels like complimenting setback relationships and site design styles. Variance requests can be viewed and evaluated graphically as opposed to just a written application.
- Promising new venues can be seen in the application and adaptations of new technologies that are web based and do not require a high level computing. The Visual Interactive Code (VIC) ™, for example, is a computer-based internet system that enables local governments to convert land use regulations and planning data into a single visually based format using photographs, illustrations, and maps. By utilizing an easy and engaging graphic interface, (pictures and data that correlate to one another and are interchangeable), different effects of various

regulations can be shown. With a click of a mouse, end users can view the configurations and layouts of various developments, density measurements, street widths and setbacks as well as other related precedents.[2]

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Appendix

Case selection and sampling

Case selection was based on the U.S. Census Manufacturing and Construction Division (MCD) building permits data 1996-2000. For the purpose of the study only single-family building permits were used since they best represent subdivisions requirements. It is important to note that not all areas of the country require a building or zoning permit. The census statistics therefore, only represent those areas that do require a permit. The MCD data was collected according to four regions: Northeast, Midwest, South and West.

Jurisdiction Selection

The primary factor in selecting the jurisdiction samples was the number of building permits issued for single family housing. Our assumption was that jurisdictions that are issuing extensive building permits are the ones that deal the most with new subdivision construction and therefore face some of the greatest challenges posed by their regulations. We also assumed that this data would give us a reasonable indication of where most suburban growth is occurring.

Steps used:

1. U.S. Census data from 1996 to 2000 analyzed.
2. U.S. Census MSAs and CMSAs in the census' four geographical regions (Midwest, Northeast, West and South), were analyzed for the annual number of single family building permits issued.
3. The total number of permits issued for each jurisdiction in the five year period was tallied.
4. The top 125 jurisdictions in each region were selected.
5. A mail survey was sent on June 2002 to each jurisdiction asking the official responsible for administrating subdivision regulations to reply.

Selection of Developers

Two data bases were used in selecting the developers' sample. A list obtained from the Urban Land Institute provided the majority of the sample. This list was compared to data provided by Builder Magazine which lists each year the largest development corporations in the US. The Magazine's information was tallied for the years 1996-2000 for a master list of the 288 largest development corporations. This list was incorporated with the general list provided by ULI. Although many of these corporations tend to develop nation-wide the assumption was made that their viewpoint should be included.

Steps used:

1. Developers data was matched with the top jurisdictions for each geographical region as developed in phase 1.
2. 125 developers for each region were randomly selected, making sure that at least 25 of those were from the Builder Magazine list.
3. A mail survey was sent on July 2002 to each developer.

Survey distribution:

1. Public officials
   - 500 questionnaires mailed (125 for each region). Total Received- 159
   - Received per region:Midwest-30%, South-27%, Northeast- 22%, West- 21%
   - Response rate total = 31.8%

2. Developers

- 500 questionnaires mailed (125 for each region).
- Total Received- 86
- Received per region:Midwest-25%, South- 28%, Northeast- 23%, West- 24%
- Response rate- 17.2%

Characteristics of the Jurisdictions Surveyed

Region	*Average Population*	*Mean*
Northeast	45,191	32,500
Midwest	131,169	77,500
South	284,322	200,000
West	195,256	129,500
Overall	188,970	112,500

Size of Jurisdictions Surveyed
(Data based on returns)

Population	*Number of Jurisdictions*	*Percent of Total*
Up to 29,9990	21	13
30,00-74,999	45	28
75,000-149,999	28	18
150,000-299,999	40	25
300,000 and above	25	16
Total	159	100

Population Distribution of Jurisdictions
(Data based on returns)

- Lowest Population: 10,700
- Highest Population: 1,100,000
- Median Population: 93,500

Population	*Number of Jurisdictions*	*Percent of Total*
Low	12	8
Moderate	78	49
Middle	55	35
High	14	9
Total	159	100

Distribution of Jurisdictions by Median Family Income 2000
(Source US Census 2000)

- Low- up to $39,999
- Moderate – $40,000-S59,999
- Middle - $60,000 - $79,999
- High - $80,000 and above
- Lowest Median Family Income Jurisdiction: $26,009
- Highest Median Family Income Jurisdiction: $91,868
- Median Family Income Jurisdiction: $56,080

Endnotes

[1] For example in its 1999 *Traditional Neighborhood Development Street Design Guidelines* ITE instead of using dimensioning charts and specific design criteria, explains concepts and their underlying logic. For example, the guidelines do not specify a required street width or the number of travel lanes, but emphasize that: "A street should be no wider than the minimum width needed to accommodate the usual vehicular mix that street will serve . . ." This simple statement means that a particular traveled surface may be as narrow as ten, twelve, or fewer feet in width. In other cases, streets may be as broad as sixty or more feet. If the principles of design and the balance of these guidelines are read and properly applied, appropriate dimensions will follow as a normal part of the design process for the street under consideration." (ITE Transportation Planning Council Committee 5P-8 Traditional Neighborhood Development Street Design Guidelines- an ITE Recommended Practice. 1999 PP 5.) It is commendable to find such flexibility coming from an engineering discipline that often over-relies on prescriptive dimensions. The support and distribution of such a document will allow for variety in local street design that can only enhance this essential public domain and cater less to automobile use.

[2] For examples see: http://www.vicgroup.com/ and: http://urban-advantage.com

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