Dealing with Growth: Alternatives to Large Lot Zoning on the Urban Fringe

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Table of Contents

1. Introduction: Development Patterns and Processes 1
1.1 The Beginnings of Growth 1
1.2 Unregulated Development 2
2. Costs to the Local Taxpayer: The Problem with Large Lot Zoning 3
2.1 Large Lot Appeal 3
2.2 Costs for Roads 4
2.3 Costs for Schools 4
2.4 Costs of Water and Wastewater Infrastructure and Potential Contamination 5
2.5 Costs for Emergency Services 6
2.6 Costs and Conflicts Caused by Loss of Open Space and Farmland 7
3. Various Control Measures 7
3.1 Why Plan for Growth? 7
3.2 Basic Tools 8
3.2.1. Comprehensive Plans 8
3.2.2 Subdivision Regulations 9
3.2.3 Zoning 9
3.3 Alternative Land Use Options 9
3.3.1 Cluster Development 9
3.3.2 Planned Unit Development/Development of Regional Impact 11
3.3.3 Overlay Districts 12
3.3.4 Performance Zoning 13
3.3.5 Transfer of Development Rights 13
3.3.6 Open Space Purchases 14
4. Conclusion 15
References 16
Useful Resources: Web Sites 18

List of Tables

Table 1: Above Average and High Growth Counties in Southeast States 1990-2000 …… 4
Table 2: Bucks County, Pennsylvania School District Figures, 1994 and 1998 ……..... 6

1. Introduction: Development Patterns and Processes

1.1 The Beginnings of Growth

Communities often welcome the first signs of population growth. New homes mean more property tax revenue for a municipality. The first new residents may be grown children from the area, seeking to build homes in the same community as their parents. Initially, a community will see benefits in this growth in the form of increased property tax revenue. However, many small communities on the fringes of cities or metropolitan areas will find that too much growth in a short amount of time will have negative consequences.

Accommodating growth costs money. Many communities do not realize this at first. New houses spring up randomly along local two-lane roads, first one or two at a time, then in the form of large subdivision developments. Congestion and accidents become a problem as roads unaccustomed to high volumes of traffic must accommodate increasing numbers of cars each day. Local land owners begin to sell their property, and developers build subdivisions, then convenience stores and gas stations along the paths of commuters.

Traffic is only one of many problems. The fire, police and emergency response departments notice a dramatic increase in the number of calls, and find their response times longer than before. Urban schools close as new suburban ones open. Septic tank failures increase and the state environmental agency fines the municipality. People begin to realize that new residents and development–which once brought income to the municipality–now brings increased taxes to finance the new roads, sewers, schools and services. Long-time residents pay for the new development with taxes and bonds.

Municipal experience with the high maintenance costs of such growth and development teaches a telling lesson. The local county, township or city now has many new streets to maintain and more homes for which to provide garbage, emergency and utility services. Furthermore, these costs may pale in comparison to the taxes now required to support the growing school system.

This Practice Guide is intended for decision makers and residents in communities that have experienced, or are beginning to experience, significant growth. It is intended to help these individuals prepare adequately for the changes facing their communities. There are many ways to plan for, control, or even delay growth in a rural or urban fringe community. This guide offers an overview of various land control measures, as well as strategies to lessen major tax increases, fund improvements, expand services and preserve rural character. A community whose residents are interested in dealing constructively with growth can benefit from the more positive aspects of development, by learning both available action alternatives and the means of "selling" them politically.

1.2 Unregulated Development

Population growth in suburban and rural communities is a nationwide phenomenon that is increasingly seen as a problem at the local level. Inexpensive land and large lots homes have drawn residents increasingly further from urban centers. Reliance on the automobile and the network of highways have facilitated the move from urban to suburban, suburban to rural. Growth on the urban fringe begins innocently enough, but when a population multiplies rapidly in just a decade, once-rural communities can become outer-ring, sprawling suburbs. Throughout the United States and particularly in the Southeast region, many communities are facing unprecedented levels of growth.

Most rural or small communities are ill-equipped to deal with a doubling or tripling of their population. Unaccustomed to such growth, there are rarely detailed subdivision ordinances; there may or may not be a planning department. A community may already be facing poorly planned growth and its ensuing development before it begins to create adequate land control measures.

The Economic Research Service (ESR) of the U.S. Department of Agriculture tracks population growth in rural communities. ESR classifies counties as having "above average" growth if they experienced a positive population change between 13.1 and 28 percent from the years 1990-2000; counties considered "high" growth had a population increase greater than 28 percent. The following table shows the number of counties for each state in the Southeast Region that experienced above average or high growth from 1990-2000.

Table 1

Above Average and High Growth Counties in Southeast States, 1990-2000

State	Number of Above Average Growth Counties (13.1%-28 % population increase)	Number of High Growth Counties (above 28% population increase)	Total Number of Counties with Above Average or High Population Growth per State	Total Number of Counties Per State	Percent of Counties with Above Average to High Growth Per State
Alabama	6	10	16	67	24%
Florida	29	18	47	67	70%
Georgia	45	51	96	159	60%
Kentucky	12	25	37	120	31%
Mississippi	6	20	26	82	32%
North Carolina	15	47	62	100	62%
South Carolina	5	16	21	46	46%
Tennessee	16	51	67	95	71%

Sources: U.S. Bureau of the Census. Census of Population, 1990; 2000
U.S. Department of Agriculture, Economic Research Service, urban/rural data

As Table 1 illustrates, a high percentage of counties in nearly every Southeast state experienced substantial population growth between 1990 and 2000. Alabama had the fewest above average to high growth counties, with still nearly 25 percent of all counties experiencing high growth. Most of these counties surround metropolitan areas and are connected by major interstate or intrastate highways. Population growth alone does not necessarily equate to poor planning and increased costs to taxpayers, but it does signal that a community may wish to carefully consider and possibly plan ahead for the changes it will be facing.

This population inflow is causing many local governments to launch planning efforts. In Kentucky, development has sprawled far beyond the recognized metropolitan area of Louisville, Kentucky's largest city. Between 1995 and 2000, Jefferson County (now the combined Louisville-Jefferson County Metro area) lost 8,600 residents to rural Bullitt County alone. Other rural counties surrounding Jefferson County experienced similar population growth. While this growth suits those residents seeking to avoid the traffic and noise of a city, it eventually puts a strain on local resources (23). Concerned community members recently formed a panel in Bullitt County to discuss the strain new development has put upon local schools and services.

This growth shows few signs of slowing down throughout the Southeast. There are many reasons to plan for growth and enact land use controls, including loss of farmland and open space, depleted natural resources, water pollution and air quality concerns. At some point, communities may choose to explore ways to control and manage growth more effectively.

2. Costs to the Local Taxpayer: The Problem with Large Lot Zoning

2.1 Large Lot Appeal

Large lot zoning initially seems a natural approach to growth-related problems. Requiring every house to have three to five acres of land may initially maintain the appearance of a rural character in a community. Large lots mean fewer houses, which means fewer residents. Homes on large lots are likely to be expensive, so they contribute more in taxes than smaller units. By allowing houses to get by with a well and on-site septic treatment, large lots often avoid significant infrastructure costs.

Large lot subdivisions are often easier to develop. Governments that are under pressure to accommodate booming populations and development will find that zoning for large lots does not require months of deliberations with professional planners and attorneys. For developers, large-lot subdivisions are an easy sell and guaranteed to make a profit: most new residents are seeking a big house on a five acre, "rural" lot.

Unfortunately, the seeming advantages to large lots are short-lived when communities face a booming population and mass-scale development. While expensive homes have higher property taxes than inexpensive ones, they still do not merit the costs they bring. Service costs for schools, police and emergency services, roads, and government administration for a typical subdivision range from $1.04 to $2.00 for every dollar of tax revenue (12, 29). Existing residents in the community bear the brunt of these costs. Large lots cost the community more,

both in terms of greater expenditures per household served and in terms of revenue gained in taxes from each.

2.2 Costs for Roads

Rapid population growth eventually brings along infrastructure costs in the form of new roads, utility lines, and services for residents. In the long run, large lot zoning causes these costs to increase.

Building new streets is costly both for the developer, who generally pays for construction of the street, and the municipality, which pays to maintain the street. Thus, a rural landowner seeking to develop his acreage generally will want to sell parcels that front on an existing public road. Such new lots transform rural roads into streets with ribbons of driveway entrances, some of them hard to see. Many rural areas do not require traffic feasibility studies, and thus have no way of assessing the true impact such development has upon roads.

Housing development on the urban fringe often follows this pattern; however, this form of development leads to increases in traffic congestion and accidents. The community may not yet feel the significance of traffic problems these additional homes cause. Particularly in hilly rural areas, limited sight distance for speeding through traffic equals greater potential for accidents with vehicles entering from their driveways. However, internal streets cost far more than most landowners are willing to pay. Since they can get a quick return for little investment up front if they do not have to build streets, developers push for more liberal regulations. Developers' private costs savings thus become public maintenance costs.

As the community grows, outside developers will arrive to build on the fields with the best soils where septic tests are more promising, and site preparation costs are cheap. These subdivisions may be larger, with internal streets, but local officials must now assure the streets meet reasonable construction standards since they soon become a public responsibility. Developers will resist spending more on a project where streets will be their single largest expense, and carry a higher per-unit cost than for any other type of residential construction. Community officials may be reluctant at first to consider alternative development patterns, not yet realizing the costs of development.

2.3 Costs for Schools

Roads are the greatest single capital expense for developers, but schools top the list for communities. Numerous studies tabulate the costs of educating new children from families moving in and show that the new houses will cost much more than they contribute in educational "operating" costs. Not only do single family houses put more children in the system, but the gap between what it costs to educate the children and the taxes each household pays can become overwhelming (7).

Bucks County, Pennsylvania, a growing area with many large lot developments, illustrates this phenomenon. The school district compiled figures for 1994 and 1998 on public school costs per student and new house real estate tax revenues:

Table 2

Bucks County, Pennsylvania School District Figures, 1994 and 1998

Item Year:	1994	1998
Average # students per new home	1	N/A*
Average school cost per year per student	$7,300	$8,615^
Average new house real estate taxes	$2,300	$2,913▪
Average new house earned income taxes	$400	
Shortfall in revenue	***$4,600***	***$5,702***

Source: National Education Association, Rankings and Estimates: A Report of School Statistics Update, 2002.
* Only costs and revenues updated in 1998; number of children/home in 1998 assumed to remain at 1.
^ National Education Association statistics show $7,463 as the U.S. average expenditure per public school student for 2001-02, up 3.8% from 2000-01(30).
▪ Real estate and earned income tax combined (13)

For each new child in the school system, the county had a shortfall of $4,600 in revenue. The costs only increased to $5, 702 in 1998. The case in Bucks County is typical of other growing areas. Local government compensate for the shortfall in revenues by issuing bonds and raising taxes. Capital expenditures for new buildings and school quality reforms can further increase costs. (15).

Loudoun County, Virginia, located west of Washington, D.C., doubled of its population in the 1990s. In an effort to preserve the rural nature of the western part of the county, and to stop "having to build a classroom every week," county supervisors instituted rural development restrictions requiring one house per 10 acres, or 20 acres in some places. Increased tax revenues were anticipated from the expected larger homes on these lots. However, county planners found that a single-family home only generates enough in new revenues to cover the costs of services provided when it is worth $439,000 or more (29).

The data suggest that homes only pay the costs of education if they are extremely expensive. Figures for individual communities will vary, but given that the affordability of homes and land is often what draws residents to rural communities, high-end homes that contribute more in taxes than they do in school operating costs will be rare.

2.4 Costs of Water and Wastewater Infrastructure and Potential Contamination

A community rarely grows from scattered dwellings and large tracts of vacant land into an outer-ring suburb without providing public sewers and water in at least some areas. Even the best soil types for on-site septic systems reach limitations when there are hundreds of new homes. As with streets, utility costs are directly related to the length of installations. Thus, the fewer new units there are, the greater the cost for each individual unit to access utilities. What may be a reasonable project in a town center or suburb with one-quarter acre lots becomes a serious burden in more rural areas. The addition of a large lot development to a public water/sewer system can carry extraordinary per unit expense, both for construction and line maintenance (19).

Local government costs associated with on-site wastewater disposal systems include the inspection process for development of the lots, siting of the systems, installation, maintenance,

pump-outs, detecting and correcting failing systems, and the availability of trained personnel to carry out these inspections (16).

Environmental costs–many of which are immeasurable–are another consideration. In many states, regulations allow for on-site wells and septic systems to serve lots as small as one acre. Environmental organization lobby for tracts of 20 acres or more as a minimum size for onsite systems; 1000 Friends of Minnesota, an anti-sprawl group, lobbies for 20, 40 or 60 acre lots where there is no municipal service (19). The number of onsite wastewater systems in a given area has the potential to negatively impact the water table, but it is difficult to assess exactly how many is too many. The U.S. Environmental Protection Agency (USEPA) admits that documenting a specific on-site system's effect is difficult to measure (10).

According to the USEPA, onsite wastewater systems are in use in approximately 25 percent of the 100 million occupied homes in the U.S. Of that 25 percent, 95 percent use septic tank systems as the means of wastewater disposal. Septic system failure rates range from 1 to 5 percent per year and are the third most common source of ground water contamination. Septic systems can fail for a number of reasons; typically poor soil, siting, installation, and maintenance or use practices are at fault (16).

An improperly working septic system can discharge raw sewage, which finds its way into surface waters through leaching and runoff and can contaminate local water supply wells. All these factors can impose costs on already strained local government resources, as costs to assure adequate maintenance and monitoring of operations mount, even in the absence of such a dire event as a system failure, with all its possible costs in human health and limitations on local economic activities.

2.5 Costs for Emergency Services

Other community services do not escape cost increases. Higher populations create new demands and expectations on the community. At some point, an occasional patrol of an area by state police units becomes insufficient because they cannot respond quickly enough. New police officers, ambulance workers and fire workers may become needed. In 2001 the average annual salary for state police protection, ambulance workers and fire protection workers was $47,542 $30,036 and $27,742, respectively (2). Each new worker represents increased costs for the community: even with new workers the response times are often longer due to the distance between homes.

One of the inherent conflicts that developing communities face is that new residents are attracted by the semi-rural atmosphere, but are often unwilling to forsake the emergency response capacities that were available in the urban core. They expect professionally equipped police, fire and ambulance crews. The lower taxes rural in-migrants from urban centers pay do not necessarily translate into lower expectations for services. For long-time residents who have different perspectives on rural life, this can lead to a debate about raising taxes to improve emergency services. As the proportion of newcomers to long-time residents increases, taxes for everyone rise accordingly. These taxes will be dedicated to more expensive equipment for firefighters, satellite dispatch stations to lessen response times in widely dispersed communities, and eventually, the costs for around-the-clock police protection.

2.6 Costs and Conflicts Caused by Loss of Open Space and Farmland

Attempting to control growth through large lot zoning not only has dire consequences for taxpayers and the environment, but eventually this form of development permanently alters the rural character of a community. Fields and farms become subdivisions, eventually leading to adjacent commercial development.

Farmland and undeveloped open space are the defining elements of a rural community. However, the land that offers the best opportunity for agricultural production is also the easiest and least costly for a developer to build upon. The challenge facing developers and the local community is to accommodate for growth while retaining the features that originally made the community appealing to newcomers.

Somewhere in the transition from rural to rapidly developing, a community loses valuable landscape elements and natural resources. Unregulated development and large lot requirements quickly convert fields into residential parcels that are too big to mow and too small to plow. People destroy the very qualities they sought when they moved. Wildlife corridors are disrupted, and the landscape, despite the "green" color, becomes fragmented. One option available to local governments is to try and preserve as much open space and agricultural land as possible, to keep taxes low and retain the natural features of the area. Large lots may appear to serve this purpose, since a small proportion of the lots are paved or built upon, but they do not generate enough in taxes.

In a study of townships in Pennsylvania, results indicated that it was not residential land that contributed the most to the tax base. "Commercial, industrial, farm and open land contributed more to the local municipality and school district than they took, thus helping to subsidize the needs of residential land (13)."

Each community is unique, thus no one ratio of residential and nonresidential land exists that will stabilize taxes and spending. Instead, local officials must look at each of the major cost factors in turn, to determine how different conditions affect the needed balance. If growth is inevitable, caring citizens and community leaders must find and implement effective ways to protect a desirable quality of life. The remainder of this Guide suggests some possibilities.

3. Various Control Measures

3.1 Why Plan for Growth?

Facing dramatic rates of growth and development, local governments may be forced to examine the need for–and effectiveness of–local land use controls. A community may double its population before it can recognize the need for more aggressive land use planning–or even just the costs of failure to plan. Sometimes it is the new residents seeking to protect their new investments who are the first to demand restrictive development regulations, often in conflict with established local land users, such as farmers. Ironically, in raising such issues, the in-migrants may lead local officials to resist planning just when the community really needs to start trying to control changes in land use and occupancy patterns.

As local understanding of what zoning and subdivision controls can achieve increases, people may come to realize that growth is inevitable, but sprawl is not. They may grasp that efficient land use planning is a means to lower infrastructure costs and preserve the character of their community while permitting expansion of economic activities and the services they may enjoy.

Initiating land use controls can be a difficult first step for a community to take, particularly if there are few or no regulations already in effect. There will likely be resistance from a variety of sources to new development restrictions; however, creating a plan for the community and setting the policy framework early will lessen growth-related problems in the future. Aesthetic and environmental concerns rarely form the basis for enacting the first development regulation. For many communities, the inevitable increased taxes are sufficient alone to prompt new regulations. Usually, these and other fiscal concerns first lead local officials to explore land use planning.

As mentioned previously, large lot zoning consumes natural resources and generates high service costs. More importantly, it is not an effective means of preserving open space, nor does it achieve lower overall density. To effectively manage growth, a community must find a way to accommodate an increase in population while consuming minimal resources and keeping costs as low as possible. A variety of options are available for communities serious about changing a consumptive pattern of development.

Creating a new Comprehensive Plan with sweeping land use and subdivision regulations changes for the community may be an ideal goal, but not all communities have the time or financial and human resources to undertake such a task. Whereas, most communities are just looking for a policy "tool" or two to take out of the tool box and implement. Revising subdivision regulations, amending zoning codes, cluster development, planned unit developments (PUDs), impact fees, conservation easements, purchases or transfers of development rights, and fee-simple acquisition are some of the tools available to local officials to manage growth, control sprawl and preserve rural character. These alternatives can produce the same benefits as large lot developments, but with fewer negative consequences. The remainder of this section and the appendices to this guide offer examples of the alternatives and provides further resources for those trying to shape the patterns of change in their communities.

3.2 Basic Tools

3.2.1. Comprehensive Plans

Comprehensive land use plans are the fundamental policy statements upon which authorities base implementation tools, such as subdivision regulations and zoning ordinances. A plan is a good first step for a community experiencing significant growth. To begin, a community starts with a survey of the existing land use patterns, population trends, existing community services and facilities, and natural features that have the potential to affect future growth.

The second step is the statement of community goals and objectives–how the citizens envision the community in the future. From these two elements, a long-range plan (typically 10-20 years) for the future can be developed. However, the plan is only a statement of intentions: ordinances put the plan into effect and make it legally binding (20).

Most comprehensive plans include a mapping component that shows current land uses in the area, as well as intended future land uses. Changes in zoning and subdivision regulations may be part of the comprehensive plan. The plan itself is not legally enforceable: it is a guide that local authorities–such as a plan commission–take into account when making decisions.

3.2.2 Subdivision Regulations

The least demanding regulations are generally subdivision and land development ordinances. These regulations stop short of specifying the kinds of activities or the amount of land required (density) for each use. The ordinances do, however, dictate the quality of public improvements, such as the width of streets, whether storm sewers are necessary, whether public water and fire hydrants must be installed, and the design standards for each. This is important baseline protection for any locality, and difficult questions arise. The effectiveness of such regulations depends upon the municipality's willingness to enforce regulations and impose sanctions.

Land use regulations at the local level usually focus on residential development, though they can join with other techniques to create comprehensive land use controls for an entire region. Subdivision regulations specify the extent and quality of streets, stormwater facilities, necessary improvements and dedication requirements. These regulations often precede any attempts at zoning regulations that specify the use and density of new development. In the early stages of growth, these regulations address the most basic of development issues. Initially, there may be enough developable land that density and the relationships of uses to adjacent properties are not yet a concern.

3.2.3 Zoning

A zoning ordinance picks up where subdivision regulations leave off. Ideally, zoning ordinances follow the community's vision of future development as described in the comprehensive plan. A zoning ordinance typically designates appropriate areas or districts for each kind of land use. There are four basic of zoning districts: agricultural, residential, business/commercial and industrial, though some communities find subcategories within each land use to be a necessary distinction. The number of zoning districts in a given area depends on the mix of land use (20).

Zoning ordinances typically specify the density of development, whether in dwelling units per acre or square footage of commercial space per acre. The ordinance will require that all proposed uses conform to the set standards. Zoning can allow a community to specify that some areas be for high density use, while others remain largely undeveloped. A community can also slow growth in certain areas by changing the zoning to increase in the amount of agricultural and commercial land, and reduce residential land. It is thus possible to avoid the spotty, sprawling patterns of development that characterize many quickly growing regions.

3.3 Alternative Land Use Options

3.3.1 Cluster Development

Cluster developments are becoming increasingly popular in many areas. In a cluster development, lots are concentrated in selected portions of the parcel: the rest of the parcel remains as open space. The total overall density may be nearly the same as if the parcel were

covered with larger lots. One advantage is that cluster design does not require that a lot be platted in every corner of the land. This avoids potential environmental problems on some lots, and can avoid forcing roadways into areas that are difficult to build on or maintain later.

The large block of green space freed by the clustered housing actually enhances property values by providing a park amenity that is worth more than a larger individual lot could command. In addition, housing that backs up to open or protected space often has a higher market value for homeowners, and may generate more tax revenues for municipalities. A homeowners' association typically maintains ownership of the open space, unless the developer donates the land to the municipality as a park or wildlife refuge.

Often the advantages of cluster development lie in the site design. Smart design minimizes the length of streets and all other linear utilities, reducing the cost per unit. The developer has the opportunity to plan for construction only on those portions of the parcel that are most suitable. The payoff for the developer comes in lowered site preparation costs.

The payoff for the community comes in having fewer utility and road maintenance responsibilities, and fewer environmental problems. Because there are less roads and driveways, there are not as many impermeable surfaces than in a conventional subdivision. This reduces the level of water runoff, which often floods and pollutes local waterways.

Another advantage lies in access to coveted emergency services. People expecting immediate, professional response to calls for assistance will be better served when a reasonably nearby station can send a unit to a call. This is more practical when development has been concentrated in areas readily served instead of being spread across the entire service area at low densities, with long driveways and access roads.

For people seeking views of open land in a rural community, clustering homes maximizes the sense of open space and undeveloped land. It may be a stretch to claim that the "rural" quality has been preserved, but this technique obviously keeps more of a parcel in its natural state than a conventional subdivision would.

A clustered development may still have only single family houses, or a combination of single family, townhouses and patio houses on small lots, with densities of 4-12 units per acre. If there is an adequate market for garden apartments and other multi-family buildings, the higher number of units per acre may allow a developer to convert even more of the total parcel to open space. In the end, it is the community that must balance what they consider an appropriate mix of development and open space.

Cluster development works best for large tracts of land, as clustering on small tracts may create a sense of crowding even when total densities are relatively low. The issue of visual impacts should be a major part of the development decision equation, along with the savings in public services that each community facing major growth uses to calculate the costs and benefits of different development patterns (1, 4).

Unfortunately, almost all types of residential development cost more than the revenues they generate, especially because of added stress on the school system (7, 12, 13). Clustering by itself does not mean the development will provide more revenues in taxes and service charges than the public costs of facility construction and service; however, it does offer an option that can reduce required per capita for expanded services and facilities.

One good example of the issues offered by a decision to promote clustered development is that of a rural township faced with rapid growth. Located in Pennsylvania, Halfmoon Township is an agricultural community under siege. The township's boundary lies just eight miles from the urban center of State College, but it lies outside the regional growth boundary set by the 2000 Centre Region Comprehensive plan, and has no access to public sewer.

The borough of State College and its immediately adjacent neighbors have a total population of approximately 79,000. Halfmoon's population increased 300 percent between 1980 and 2000 (from 717 to 2,357 residents) as more of the people working in the State College area chose a rural living environment (8). With a 1972 zoning ordinance in place, along with numerous amendments, community leaders (planning commission, supervisors) met in the mid-1990s to discuss options for better land development.

Township leaders enacted an ordinance in 1999 that at least 35 percent of open land in a development remains undeveloped. One-half acre lots are now allowed (but not required) rather than the previous minimum lot size of one acre (8). While, both primary and secondary sewage treatment are required if the one-half acre lot size is used, unobtrusive systems may be placed in the designated open space (3).

One recent Halfmoon residential development, Trotter Farm, gets mixed reviews as a success story for clustered development. At build-out, there will be 57 one-acre lots on 90 acres of land. Approximately 35 percent of the property will remain as open space, primarily as buffer between backyard lots and preservation of existing hedgerows. While the Trotter development failed to incorporate all that the community's planners had hoped to achieve, it may be used as a model to encourage even bolder designs in the future.

What may be most significant is that it represents a step away from the land-devouring plans that have accommodated Halfmoon's growth to this point. If the development is successful in the market, and if there are no future problems with streets, wells, or septic systems, both the township officials and developers may be willing to further explore alternative development scenarios.

3.3.2 Planned Unit Development/Development of Regional Impact

Planned unit developments (PUDs) and developments of regional impact (DRIs) differ from cluster development since they can include both single and multi-family housing as well as commercial and industrial uses–and most often involve a creative mix of those land uses. PUDs are also pre-planned in their entirety, with controls over the whole project rather than on a lot-by-lot basis. They may be developed over hundreds or even thousands of acres, and over an extended period of time. Features may include preservation of open space, recreation facilities, architectural controls, creative land use patterns and clustered development. Developers are

afforded greater flexibility from strict adherence to traditional zoning and may gain opportunity for greater density of development in exchange for providing public benefits such as parks, trails, recreation facilities, open space, and the like in a single development project.

The success of such large scale planned developments for the community depends heavily on the capabilities and priorities of the individual developers. The burden for producing a quality PUD/DRI is usually placed on the developer and good developers will offer good plans. A well-crafted subdivision and land development ordinance will make the developer's options clear. Unfortunately, municipal ordinances cannot incorporate subjective criteria and must make the option of this type of development open to all who can meet the land planning criteria.

Some minimum quality control, however, may be generated by the common requirement that a PUD or DRI be subject to a site plan review involving the developers, public officials and the public. The site plan review will assess certain standards, required or discretionary (on the part of the community) such as the amount and placement of open space, types or combinations of development, grading of parcels, number of structures, and preservation of the environment or unique scenic features (21).

Abacoa is a DRI within the town of Jupiter, Florida. It began in 1996 and covers more than 2,000 acres. The mixed uses within the development include single-family lots, multi-family housing units, commercial acreage, institutional acreage (there are three schools and a branch college campus) and acreage devoted to parks and open space. Abacoa contains part of the Loxahatchee Greenway (300 acres) within its boundaries. Approximately 600 acres in total are dedicated to open/natural space.

Abacoa was the first attempt to create a complete, mixed use development in this area of Florida. It has a town center with retail space; retail space that was under construction as the same time as the residential components of the development, something that typically does not happen. At the present time, about 400 acres of single-family lots and nine acres of commercial land remain to be developed. This DRI has received favorable marks from local planners due to the mix of housing types and retail space, and the sensitive development to meet the greenway's purpose as a wildlife corridor and a link between the people who live there and the environment (12).

3.3.3 Overlay Districts

Development can be planned through the use of an overlay district, whether or not zoning exists in a community. Overlay districts are areas with specific borders that can follow a natural feature, superimpose over an already-zoned area, or follow some other pre-existing parcel boundary. Overlays have been used to define environmentally sensitive areas, protect a water supply, define a transit corridor, outline a historic preservation district, restrict high-occupancies, and provide sound buffers. Their uses are many and varied.

For example, the town of Jupiter, Florida, created the Indiantown Overlay District "to encourage property development along an existing commercial corridor." Among the features of this overlay are architecture design guidelines, special landscape enhancement guidelines, and

clustering of similar land uses (26). Overlay districts can direct development toward already urbanized areas.

3.3.4 Performance Zoning

Performance zoning is also called "flexible zoning." Rather than defining permitted uses, performance zoning seeks to develop a set of criteria that assesses the impact (or intensity) a particular use or type of development will have on the environment, infrastructure and services. For example, a small office building would probably have the same impact on the land as a multi-story apartment building. But a high-rise office building would have a different impact. Points are assigned based on objective and subjective criteria, such as open space ratios, impervious surface ratios, and the number of dwellings (density).

Flexibility comes from allowing a wider range of land uses to the developer and to the municipality which can be more effective than rigid requirements in protecting natural resources and open space. Reliance on performance criteria can also reduce the segregation of distinct land uses and their associated costs in longer travel distances to shopping, work and recreation. The disadvantages of performance zoning are associated with a perceived steep learning curve due to the number of calculations made on sometimes subjective criteria. Environmental and economic impacts may be difficult to quantify (24).

The case of Hardin County, Kentucky, is an example of performance zoning (24). The County enacted its Development Guidance System in 1984. Much of the county was zoned as "planned growth" with few prohibited uses. Site developments were evaluated on three components: a growth guidance assessment (soils and amenities), a compatibility assessment (the developer worked with neighboring landowners and conditions agreed upon were incorporated into a conditional use permit) and finally, a plan assessment (the site plan was evaluated for conformance to county basic development guidelines for streets, sewers, etc.). Despite awards for innovation and a speedy approval process, the system was revamped in 1993-94 due to a perceived need to respond to heavy growth pressures. Currently development occurs under a mixed system of traditional zoning and performance zoning (24).

3.3.5 Transfer of Development Rights

Transfer of development rights (TDR) occurs when a landowner faced with restrictions on the development of his/her property "transfers" the development rights to another property that has been identified by the local municipality as a "growth" area. TDR is a planning tool that is perceived as being complex, and rightly so. There are several issues a municipality must address, such as identifying the areas of restrictions and the areas of growth, establishing a maximum density for the area of growth, ensuring that needed infrastructure is available, and allocating special staff to execute the new administrative functions required.

TDR requires not only a zoning ordinance to specify uses and allowable densities, it also necessitates a carefully designed "bookkeeping" system to track which development rights were moved from one parcel to another, and whether the appropriate number have been granted on the new parcel (6, 14). An attorney who fully appreciates property rights must write the controls,

and planners and managers who can provide an adequate level of attention to audit-proof transactions must administer them.

The Pine Barrens in southern New Jersey is a well-known environmentally sensitive and profitable agriculture area. The New Jersey Pinelands Commission was created in 1979 to protect both an aquifer and approximately one million acres of prime pine forest and agricultural land (cranberry and blueberry farming) from development. A TDR program, regional in nature, was created by the state with cooperation from the local governments. *Central receiving* (i.e. growth) districts can have development rights transferred to them by developers who buy development credits from the *sending* (i.e. protected/preserved open space) districts. The commission awards credits to the landowners and a development rights bank purchases the landowners credits and sells them to a developer (22). A total of 5,750 credits are potentially available, with quarter-credits the smallest unit available (11, 25).

The Pinelands TDR has been most successful protecting land in sending areas where land was zoned for one housing unit per 40 acres. As of June 1995, 12,538 acres had been preserved (17). On the negative side, when the program began there was an assumption that receiving areas would reap the benefit of additional development and revenues, and thereby be able to add to their infrastructure (water and sewer service in particular) as necessary (25). But some receiving areas are having difficulty keeping up with the growth-driven services and facilities demand that the transferred development brings (17).

3.3.6 Open Space Purchases

A community may wish to entirely prevent development on some land. Historic properties, farms, or areas with particular scenic or natural features may warrant preservation. Preserving land also lowers costs for a community. The costs of development often outweigh the tax revenue it brings. The possibilities cover a range from outright purchase, obtaining easements to restrict development while allowing the original owner to retain use of the property, to less effective (and less popular) restrictions enacted by regulation.

Every community facing substantial growth should seriously consider setting funds aside to purchase large tracts in strategic locations. It may be difficult to appreciate the long-term benefits if the growth pressures have just begun, but that is when land is most affordable. Using long-term debt means that the repayment can be partly deferred until the community has a larger tax base.

A conservation easement is a legal agreement that restricts or prohibits development on a piece of property. The agreement is made between the property owner and a buyer of the development rights (often land trusts or local governments). The agreement is binding for as long as is specified within the agreement–for a specified number of years, or forever. The easement passes from current to future owners, and is individually drafted for each property, to suit the needs of the current property owner (the grantor) and the purchase of the development rights (grantee). The grantee is responsible for monitoring and restricting future development on the site.

There are over 1,200 nonprofit land trusts in America. These trusts and conservancies have varying missions, from the Southeastern Cave Conservancy in Chattanooga, Tennessee, which

seeks to protect and provide access to the many caves in Alabama, Florida, Georgia, Kentucky, and Tennessee, to the Nature Conservancy, a global organization that exists to protect natural habitats (17). These are organizations and conservancies that oversee the terms of the easements, and in some cases, purchase the easements.

Public sector easements also exist: New York City, for example, purchased conservation easements to safeguard its reservoirs in the Catskill Mountains, saving city taxpayers an estimated $5 billion in water treatment plant construction costs (29). Easements are voluntary, landowners retain ownership, adjacent property values increase, and the conservation is usually perpetual.

4. Conclusion

This guide offers an overview of several strategies a community can utilize to manage growth. Strategies must be specific to the needs of a community, but almost all growing areas will find that subdivision regulation and careful zoning will alleviate some of the problems of mass residential development. By directing development toward some areas and diverting it from others, a community can more easily provide transportation, emergency services, and infrastructure improvements for its residents. Careful land use planning saves money to current and future residents, and protects valuable natural resources. By exploring the various land use tools early in the development process, a community ensures a high quality of life for current and future generations.

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Useful Resources: Web Sites

1. www.planning.org
   www.planning.org/aicp
   Website for the American Planning Association and the American Institute of Certified Planners

2. www.farmland.org
   www.farmlandinfo.org
   Website for the American Farmland Trust, and the Farmland Trust Library Information page.

3. www.lincolninst.edu
   Website for the Lincoln Institute of Land Use Policy, an educational institute that through its Department of Planning and Development seeks to share information and knowledge on land use policy.

4. www.PLANetizen.com/sites
   This site contains an award-winning list of the "50 most important websites" for urban planners and developers. The links are divided into seven different directories: Directories, Professional and Industry Associations, Publications, Research and Data, Government, Special Focus, Regional/Local Sites, International, and Outside the Box. The site is run by Urban Insight, and internet consulting and web development firm.

5. www.saveourcountryside.org
   A Program of Sustainable Alachua County, FL. A website for Alachua County's Comprehensive Plan that explains how the county grows and allows for future economic development that maintains quality of life. The plan's mission is to curb urban sprawl and offer real benefits to city dwellers and rural land owners.

6. www.smartgrowth.org
   Website developed and run by the Smart Growth Network, a consortium non-profit and governmental organizations (including environmental groups, historic preservation organizations, professional organizations, real estate developers, and local and state governments) that joined with the U.S. Environmental Protection Agency to address the growing concern over sprawl. See also www.sustainable.org

7. www.sustainable.doe.gov/landuse/civic.html
   The "Smart Communities Network" is a project of the United States Department of Energy. This particular link is entitled: Civic Participation in Land Use Planning.

8. www.1000friends.org
   www.10000friends.org
   www.friends.org
   These are different websites with similar addresses. They are maintained by non-profit, advocacy groups for different states involved in raising public awareness on smart growth and citizen involvement.