12-19-2008

The Impact of Growth Management Policies on Urban Form: Evidence from U.S. Metropolitan Areas with Growth Management Policies

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The Impact of Growth Management Policies on Urban Form: Evidence from U.S. Metropolitan Areas with Growth Management Policies

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Science
in
Urban Studies

by

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December, 2008

Acknowledgement

I would like to express my deepest appreciation to the Chairman of my thesis committee, Dr. John Renne for his persistent guidance and continuous support. He was always there to listen, to give advice, and help me think through the research problem.

I am greatly indebted to my thesis committee members Professor Steve Villavaso and Dr. Patrick Haughey for their valuable comments, suggestions, and encouragements. Their valuable suggestions and feedbacks helped me to shape this thesis.

I would like to thank the Department of Planning and Urban Studies for its support to me. In this occasion, I would like to thank Dr. David Gladstone for his encouragement. I am grateful to former Associate Dean Tim Joder and Paulette Simon for their kind helps. I am indebted to David Lambour for his support and help with the paperwork and timely reminders of deadlines.

Finally, I would like to thank many friends I have come across who have helped me through advice and moral support.

Table of Contents

List of Tables

List of Figures

Abstract

The contemporary urban development pattern in the United States is characterized by land consumptive nature of development, such as a sprawled development pattern. Out of concern that the social and environmental costs of this development pattern outweigh their benefits, cities, counties and states have created a wide range of policy instruments designed to manage urban growth and to protect open spaces from development. The present research deals with such strategies in three study areas namely Portland Metropolitan Area, OR; Montgomery County, MD; and Orange County, FL in order to find out if growth management strategies have been able to reduce sprawl and promote a compact form of development. Based mainly on secondary sources of information, the research evaluates the characteristics, effectiveness, strengths and weaknesses of selected growth management strategies employed in each of these areas and analyses their implications for promoting a compact form of development.

Keywords: Urban Sprawl, Growth Management, Urban Growth Boundary, Sustainable Development, Compact City

Chapter 1: Introduction

1.1 Problem statement

Growth management in the United States has originated in response to population growth and development patterns that have been deemed less desirable, such as a sprawled pattern of development. The process of suburbanization – the main engine behind sprawl in the U.S. – dates back to the nineteenth century but widespread concerns of its impacts did not emerge until after WWII, when suburban growth started booming (Jackson, 1985) and social and environmental costs of this development pattern started to be recognized (DeGrove, 1992). Out of concern that these social and environmental costs are harmful for the community, cities, counties and states started to create a wide range of policy instruments designed to manage urban growth and to protect open spaces from development (Bengston, et al, 2004). These policies have been termed as growth management policies and defined as government policies "to influence the rate, amount, type, location, and/or cost of development" (Brower, Godschalk, and Porter, 1989) or government actions "to guide the location, quality and timing of development" (Porter, 1997).

While guiding urban growth towards a desirable direction by affecting a range of parameters is the expected outcome of growth management, central to these policies is the goal to achieve an urban form that can minimize social and environmental costs stemming from urban growth and development. This view is an application of the theory that the physical form of a community influences the quality of life in that community (Alexander, Ishikawa, and Silversten, 1977; Lynch, 1981; Calthrope, 1993; Jacobs, 1961). A number of studies have looked into urban form and its link with economic, social, and environmental conditions in an urban area. Findings show

that urban forms directly affect land consumption, travel behavior, and energy use. Low-density, sprawling development result in the loss of farmland, open spaces, air, and soil and water pollution (Jabareen, 2006, Burchell et al., 2005). A compact urban form has been credited by researchers with reducing travel demands because people are able to live within close proximity to their jobs and make use of local services and facilities. Such forms are also able to create a population density high enough to support public transport services and can encourage walking and biking (Williams, et al. 2000).

While there is a general agreement among researchers that a compact urban form can reduce many social and environmental ills that stem from a sprawled pattern of development, there is, however, less agreement about whether or not growth management policies are and have been effective in making an urban form compact. The present research deals with this issue. Analyzing evidence from various US urban areas, this research tries to answer the question whether or not growth management policies are able to reduce sprawl and establish a more compact form of development.

1.2 Research Questions

The broad research question for this study is: what are the contributions of growth management policies towards achieving a compact urban form? In order to answer this question two aspects of development are considered: first, what contributions have growth management policies made towards developments in newly developed areas? The specific issues in this regard are whether or not growth management policies have been able to reduce sprawl, over time, and whether or not they have been successful in containing growth within designated areas. Second, what are the

contributions of growth management policies in existing developed areas? The specific issues in this regard are that whether or not growth management policies have been able to encourage infill development, small lot sizes, and high-rise development. Both in theory and empirical research there have been various ideas with regard to what it means to be a sprawled pattern of development and how to measure the degree of sprawl. Various techniques and a wide range of indicators have been used to measure the degree of sprawl. For the purpose of this study, I will resort to simple measurements such as density.

The specific research questions for this study are as follows:

1) Have selected U.S. urban areas with growth management policies been able to increase density over time – both in terms of population and housing densities?
2) To what extent have the selected urban areas been able to contain development within designated growth areas?
3) To what extent have the urban areas been able to increase density through infill development, small lot sizes, or high-rise development?

The research will focus on a few U.S. urban areas with reputations of having growth management policies such as Portland, OR, Montgomery County, MD, and Orange County, FL. It will use secondary sources of information such as books, reports, and papers to review the effects of growth management policies on urban form.

1.3 Research design and methods

1.3.1 Selection of study areas

The purpose of this study is to determine the contribution of growth management policies towards achieving a compact urban form. Keeping in mind this purpose and also to compare and contrast the contribution of various growth management techniques, two counties and a city have been selected based on the consideration that they all have rigorous growth management policies but at the same time they are different in their purposes and growth control strategies. The name of city and counties and the reasons for their inclusion in this study are outlined below:

Table 1.1: Study areas and the principal considerations for their selection

Study area	**Principal considerations for selection**
City of Portland, Oregon	For its urban growth boundary (UGB), light rail transit system, and a directly elected regional government, also called metro
Montgomery County, MD	For its programs such as Priority Funding Areas (PFA), Adequate Public Facilities (APF) and techniques/instruments such as Transfer of Development Rights (TDRs), and Purchase of Development Rights (PDRs)
Orange County, Florida	State level – Florida Growth Management Act (GMA) concentrating on consistency, concurrency, and compactness County level – comprehensive policy plan, Urban Service Area (USA), Adequate Public Facilities (APF)

1.3.2 Data collection

The research will be mainly based on secondary sources of information. Some of the sources are as follows:

- Previous studies done on the selected study areas and published in books, journal articles, and reports
- City and county data book of U.S. Census Bureau
- Department of Housing and Urban Development
- Individual websites of the selected study areas with data and links to various studies

1.3.3 Data analysis

The purpose of data analysis is to establish an idea of the implications of various growth management strategies on reducing sprawl, on infill development and for transit oriented development. As the study will be conducted based only on secondarily available data, the specific technique to achieve this may vary from one study area to another. However, some descriptive statistical methods and matrices will be used to compare and contrast various implications of growth management strategies.

Chapter 2: Literature Review

The literature for this study is divided into following sections: i) Urban sprawl versus compact urban form, ii) growth management policies and their implications, and iii) new urbanism and smart growth literature. In addition to the theory and empirical studies in each of the sections, I will also consider the methodological studies.

2.1 Urban sprawl versus compact urban form

Various scholars have tried to define urban form in various ways. However, a common theme in most of the definitions is the recognition of a spatial pattern that results from the convergence of a number of elements, such as street network, block size and form, layout of parks, public spaces, and so on. Kevin Lynch in his book *A Theory of Good City Form* defines urban form as "Urban form is the spatial pattern of the large, inert, permanent physical objects in a city" (Lynch, 1981:47). Another definition by Handy (1996: 152) views urban form as a composite of characteristics related to land use patterns, transportation systems and urban design.

There is a lively debate in planning literature concerning which urban form and land use characteristics promote a sustainable society. There are two dominant discourses in this regard: compact city and the dispersed city (Holden and Norland, 2005). However, most literature overwhelmingly takes side of the compact city discourse as an example of sustainable urban form. Researchers supporting this discourse favor compact over sprawled pattern of development for its ability to reduce fuel consumption (ECOTECH, 1993; Newman and Kenworthy, 1989; Hillman, 1996), efficient transportation system (Duncan and Hartman, 2002; Jordan and Horan, 1997), mix of uses (Elkin, McLaren, and Hillman, 1991) among other issues. A small group of

researchers however challenges the compact city's desirability (Gordon and Richardson, 1997; Williams, Burton and Jenks, 1996). In this section the main streams of thoughts on the rise of urban sprawl in the U.S. and its consequences are highlighted. Debates on the desirability of compact city from both the proponents' and opponents' perspectives are also discussed.

2.1.1 The rise of urban sprawl in the U.S.

The main vehicle through which urban sprawl advanced in the U.S. is the process of suburbanization. Jackson (1985) provides a detailed history of suburbanization in the United States. He argues that although throughout the history of the US people have lived on the periphery of central cities, what differentiate the recent phenomena from previous ones are the proportion of people living in suburbs, the characteristics of suburban dwellers, and the functional use of suburbs. According to 1990 census, more Americans lived in suburbs than in the central cities although in the nineteenth century the picture was completely opposite. In the 1800s, an overwhelming majority of Americans used to live in cities or on farms. While this situation started to change gradually in later years, the absolute size of the suburban population remained relatively small. Jackson (1985) argues that transportation was the principal limiting factor on suburban growth during the nineteenth century, since commuting was expensive and sometimes unreliable. However, suburbs started to flourish with the advent of the automobile and the demise of public transportation. This was coupled with massive state and local road building projects and the creation of the federal interstate highway system, which facilitated consumers' choice of the automobile as the preferred way to commute by drastically reducing commuting time.

Besides transportation, the principal factors that contributed to the development of modern suburbs in the US are: a) the emergence of an anti-urban tradition in American thought, b) government housing and mortgage programs – especially GI bill after WWII -- that encouraged the building of single-family homes on the urban fringes, and c) population changes caused by the post-war baby boom. He recounts that this process contributed to a significant loss of community in American metropolitan areas since social lives became much more privatized and less oriented towards community (Jackson, 1985).

In his detailed historical analyses of American suburbanization, Jackson captures four major factors that he believes occurred and reoccurred throughout the last two centuries that encouraged people to abandon central cities and find sanctuary in suburbia. *First*, middle-class Americans formed a cultural image of the countryside that sparked a desire to live beyond the ugliness of central business districts. Jackson believes that the factors behind this image were a Romantic Movement in art and literature, the religious notion of the presence of God in nature, and the primacy of the Victorian ideology of domesticity and gender role. *Second*, the massive pace of urban growth created crowding, which consequently caused problems of noise, disease, waste, and pollution in cities. Adding to these were increasingly intrusive poverty, ethnic tensions, machine politics, and rioting, which all together made the city unattractive to many middle-class Americans. Jackson's *third* causal factor is closely related to the second one: as racial tension increased in the decades after the Great Migration, suburbia became appealing to many white Americans who left the city to avoid interaction with blacks. The *fourth* causal factor has to do with physical and economic feasibility. Jackson argues that the relatively low cost of building and purchasing new homes on the periphery made suburbia physically possible. The

components of economic feasibility include comparatively high wages and salaries that allowed people to shoulder the cost of moving to the suburbs; the abundance of cheap land in the fringe; new methods of construction; transportation innovation; and the capitalist nature of land development.

Jackson's first causal factor of suburban evolution is supported by Muller's argument that suburban form is intimately linked to values and beliefs deeply rooted in American's national character. Muller (1981:20-21) argues that national life in preurban America was strongly associated with a *rural ideal*, a belief that "the rural life is best for the soul, as it minimizes opportunity for individual sin", and was expressed through the democratic structuring of the small agrarian community that allows for face-to-face interaction, equal participation, and control over the functions of local government. Muller terms this a "romantic suburban movement", arguing that this rural ideal was directly superimposed on urban life. Americans' perceive their country "to truly stand for life in the fruits of the soil, in green growing things, in the healthy human family, and in the freedom from arbitrary political and social constraints" (Muller, 1981:21).

While the work by Jackson (1985) gives a detailed historical account of suburban evolution, Fishman (1987) provides some perspectives on contemporary suburban development. In his book *Bourgeois Utopias: The Rise and Fall of Suburbia*, Fishman argues that a new kind of city, what he calls the "technoburb", has been emerging. It is not only distinguishable from the city, but also from the typical suburban development of the 1960s and 1970s. He asserts that this new economic cores are based primarily on the extension of technology-based businesses into

communities on the fringes of larger urban centers. Due to technological invasion, the suburban regions have been changed to such an extent that there are very few similarities between the technoburb and their ancestral suburbs.

> In complete contrast to the residential or industrial suburbs of the past, these new cities contain along their superhighways all the specialized functions of a great metropolis – industry, shopping malls, hospitals, universities, cultural centers and parks. With its highways and advanced communications technology, the new premier city can generate urban diversity without urban concentration.

(Fishman, 1996:33). Hartshron and Muller (1989) supports this view of Fishman and suggests that the basic structure of the suburb as a segment of an urban center has clearly changed, and suburbs have been reshaped in the process of striving for their own autonomy. Garreau (1991) terms this new kind of cities “edge cities” as they grow at the geographical, ecological or commercial edges of the old municipal centers possessing all of the functions of a traditional urban center.

In many scholarly writings racism and urban flight has been identified as one of the principal reasons behind the inner city decline. Sugrue’s (1996) book “The Origins of the Urban Crisis” presents a clear link between central city decline and suburbanization. In searching for the reasons behind the decline of central city Detroit, Sugrue comes across a number of factors that were instrumental in the whole process of decline. The factors he identifies are: flight of jobs away from the city, persistent racial discrimination in labor markets and intense residential segregation which was manifested in the division of the metropolitan Detroit into two areas:

Black and White Detroit. Sugrue argues that these three forces juxtaposing and interacting with each other not only caused inner-city decline but also encouraged suburbanization. Sugrue recounts that despite the economic opportunities during World War II, an undercurrent of racial tension was in place as he finds the sprawl of small houses of working class population were already segregated by race. This tension was manifested in devising different strategies by the black Detroiters to manage their community's expansion while white Detroiters considered these tactics as threats to their own economic and social stability. Housing became the conduit of racial discrimination as Detroit's population continues to grow in the postwar era.

This view of Sugrue is supported by Anyon (1997). Her analysis of inner-city educational decline reveals that one of the main reasons behind the educational deterioration in ghetto schools were the flights of the whites from the central city to suburbs reducing the revenue income to support the schools.

Overall, a set of interwoven factors are associated with people's choice of suburban area as dwelling places. Economics, in conjunction with market, racism, psychology, and government policies – altogether gave way for the suburbs to flourish.

2.1.2 Urban sprawl and its sustainability

Over the past twenty years sustainable development has emerged as a popular concept. Although the use of this term and the application of this concept in academic and professional arena in today's world are relatively new, the origin of this concept can be traced back to the environmental movements in the 1960s and 70s. The first influential piece of work where this

term had been used was a 1972 study of global resource use by Meadows et al entitled *The Limits to Growth*. Investigating global trends of growth and resource use, the authors of this work predicted that a catastrophic collapse of global systems would occur midway through the twenty-first century if current rate of growth and resource consumption continues. They suggested that the only way out from this looming disaster would be to alter the current growth trends to establish a condition of ecological and economic stability that is sustainable far into the future (Meadows, et al, 1972).

A decade and a half after the publication of Limits to Growth was another influential publication, this time by the World Commission on Environment and Development (WCED) titled *Our Common Future* (1987). This publication -- where the first widely accepted definition of sustainable development was used -- reinvigorated the sustainability discussion and helped make the concept of sustainability increasingly accepted among professionals and general people. The commission defined sustainable development as follow:

> Sustainable development is development which meets the needs of the present without compromising the ability of the future generations to meet their own needs (WCED, 1987:43).

Soon after WCED publication, in the beginning of the 90s the world saw a major conference that gave the development community some very comprehensive sets of policy directions and guidelines on improving the quality of human lives and of making human settlements livable, equitable and sustainable. The Rio summit in 1992, also known as earth summit, brought the global attention to the understanding that the planet's environmental problems were intimately linked to economic conditions and problems of social justice. This idea had been captured in the

term “sustainable development,” which was designed to meet economic development as well as environmental protection as integral parts of the national development process.

Now, despite sustainable development’s existence in the academic literature for over three decades now, there has not been a consensus on its definition. Whereas one group defines sustainable development in economic terms alone, other groups believe that in order to achieve sustainability, it is necessary to fulfill a number of socially and environmentally desirable goals. However, most scholars and practitioners agree on the three major dimensions of sustainability, which are: economic, social, and environmental dimensions. World Bank economist Harman Daly (1996) in his book *Beyond Growth: The Economics of Sustainable Development* agrees with this three dimensions of sustainability and explains how to achieve them. He asserts that economic sustainability requires that either the value of aggregate capital stock be maintained or at least the value of one of its components, natural capital, be maintained indefinitely. It also requires that all external costs be internalized, including environmental ones. Environmental sustainability requires that renewable resources be exploited on a sustainable yield basis and non-renewable resources should be considered as a class to which sustainable yield concept could be applied. Social sustainability deals with social capital that includes the moral, cultural, organizational, and political stock of society.

Whether or not a sprawled pattern of development is sustainable has been in the center of debates in some academic literature. Here some of the principal arguments in those debates are highlighted from the perspectives of economic, environmental, and social sustainability.

From economic sustainability perspective, many economists argue that compact cities provide unique agglomeration economies that define an important role for these cities to the regional and national economy whereas a sprawled pattern of development cannot accrue the benefits of agglomeration. In discussing the role of agglomeration in city's growth, Beeson (1992) argues that agglomeration causes increase in the scale of economic activities generating externalities, which after being internalized increase the productivity growth of a city. Another definition has been provided by Nicholas Kaldor (1970), who states that:

> These are not just the economies of large-scale production, commonly considered, but the cumulative advantages accruing from the growth of industry itself – the development of skill and know-how; the opportunities for easy communication of ideas and experience; the opportunity of ever-increasing differentiation of processes and of specialization in human activities. (Kaldor, 1970:340)

Agglomeration economies are generally divided into two interrelated groups: localization economies and urbanization economies. Localization economies refer to the positive externalities in the form of production cost savings accrued to firms locating close to other firms in the same, or a related industry. These economies result in a specialization of function, such as microelectronics in Silicon Valley. Urbanization economies occur when the production cost of firms decline with the increase of overall economic activities within an area. The difference between these two is that urbanization economies generate benefits for all firms, not only those in a particular industry (Ihlanfeldt, 1995).

Economists argue that because of their more compact development, central cities have an advantage over suburban areas in both localization and urbanization economies. This advantage might occur in several forms. Because of the compact nature of development of central cities, cost savings might occur in the face-to-face contacts where distances between firms are shortest (Ihlanfeldt, 1995:128). Cost savings can also occur in infrastructure development and the production of intermediate input because of the presence of scale economy associated with the compactness of central cities.

Another economic sustainability debate concerning the patterns of development accompanied by suburbanization focuses on the economics of sprawl, or in other words, it determines whether a sprawled pattern of development is viable or not by comparing the costs between compact and sprawl patterns of development. While many researchers argue that sprawl is more costly form of development than its compact alternatives (Banfield et al, 1999; Burchell et al, 2000), there are, however, differing (Calthrope and Fulton, 2001; Ewing, 1997) and somewhat opposite viewpoints (Gordon and Richardson, 1997). Oliver Gilham (2002) in his book *Limitless City* summarizes some important studies taking issues of both sides of the debate and presents them for comparative infrastructure costs, hidden subsidies, cost of inefficient development pattern and tax issues.

Various analyses on the infrastructure costs of sprawl versus compact development support the argument that sprawl is a more costly form of development than its compact alternatives. A compilation of studies by Banfield et al (1999) show that per unit cost of infrastructure – including roadways, sidewalks, water and sewer – is higher in suburban areas than in denser

communities. Their study cites a study conducted by Duncan and Associates in Florida which shows that the cost of providing roadways, utilities, schools, and emergency services on per dwelling unit basis is twice as much higher in scattered areas compared to compact downtown areas. Another study by Burchell et al (2000) assesses the relative costs for providing infrastructure facilities such as schools, roads, water, and sewer facilities in the state of New Jersey under two scenarios: a continuing suburbanization scenario versus a scenario where new growths are planned and directed towards the existing urban centers. Their study finds that the planned scenario saves about nine percent or $2 billion in infrastructure costs over the suburbanization scenario. A more recent multi-year study by Burchell et al (2005) entitled *Sprawl Costs: Economic Impacts of Unchecked Development* examines sprawl's economic costs for the entire nation. In this study they analyze the extent of sprawl, define alternative growth scenario, which is more compact form of development, project the magnitude of future growth and compare the would-be costs of these two forms of growth if they were applied nationwide. They find that the more compact form of growth would have saved $225 billions in government expenditure over 25 years of time. It would also have reduced the cost of an average new house by $16,000 (Burchell, et al, 2005).

There is, however, study that does not fully support or reject this argument. Calthrope and Fulton (2001) in their book *The Regional City* present a case study of Utah, where four alternative growth scenarios for the future of the Salt Lake City were developed and estimated for infrastructure cost to accommodate the next one million people. Two of the scenarios were based on traditional post-war development pattern whereas other two were based on more compact, walkable forms of development. Their study shows that up to a certain density, the compact form

of development has a cost advantage over the scattered pattern, but this cost eventually goes up and surpasses that of scattered pattern when the compact form gets too dense in terms of per capita infrastructure. This finding, however, is consistent with the condition of scale-economy in urban infrastructure, where the argument is that the infrastructure cost starts raising once the economies of scale in infrastructure gets exhausted because of over-densification.

Gordon and Richardson (1997) argue that the economic and resource efficiency of compact development has never been adequately demonstrated. They point to various studies that show that the infrastructure cost savings from compact development are very small or nonexistent and that public service cost can actually increase with higher density. Summarizing various studies, Gilham (2002) asserts that there may be an unidentified level of density lying between the sprawl and dense high-rise pattern of development that is optimal in terms of infrastructure costs.

With regards to environmental sustainability, the major arguments have been that the suburbanization in the US accompanies a low-density and land consumptive pattern of urban growth, and that sprawled pattern of development causes more air pollution due to its high reliance on automobile (Newman and Kenworthy, 1989; Anderson, et. al., 1996; Rusk, 1993; Duany, et al., 2000). Duany, et al. (2000) and Rusk (1993), among many others have documented current and past urban growth patterns and evaluated those patterns in environmental and quality of life terms. Both authors blame suburban sprawl and misguided planning by narrow disciplinary specialists for a broad range of social and environmental ills – from the loss of green fields to the proliferation of big-box retail development. While Rusk's arguments are mostly from the perspective of regional growth and equity, Duany brings in a

wide range of issues to assess sprawl's costs to society from various perspectives, including ecological, aesthetic and social. However, Duany and Rusk do not represent a consensus regarding suburban sprawl. Presenting an opposing viewpoint, Gordon and Richardson (1997) argue that compact cities are not a solution to suburban sprawl because they do not bring about the desired social, economic and environmental effects.

Duany et al. (2000) note that there is a stronger demand for well-kept houses in older neighborhoods than for similar-size homogeneous houses in suburban areas. They argue that traditional neighborhoods -- represented by mixed-use, pedestrian-friendly communities of varied population – has proved to be a desirable form of growth. They blame suburban sprawl for ignoring historical precedence and human experience, instead substituting an artificial system that is an outgrowth of modern problem-solving techniques. They view suburban sprawl as self-destructive, and hence unsustainable. In support of their argument they say that even at relatively low population densities, sprawl tends not to pay for itself financially, and consumes land at an alarming rate, while producing insurmountable traffic problems as well as social inequity and isolation.

Mike Davis (1998) supports Duany's notion that suburban sprawl is self-destructive. In his book *Ecology of Fear: Los Angeles and the Imagination of Disaster*, Davis makes a potent argument on the self destructive nature of Southern Californian sprawl, which he believes has spread on the foundation of an enormous ecological denial. According to Davis, people were lured to this region by land speculators and chambers of commerce, who offered them geologically stable and climatically predictable places when in fact these were no less than merely disaster zones. He

blames city's leaders for their monomaniacal pursuance of development schemes and zoning strategies that eventually led the city to experience more frequent and severe natural disasters.

> Paranoia about nature, of course distracts attention from the obvious fact that Los Angeles has deliberately put itself in harm's way. For generations, market-driven urbanization has transgressed environmental common sense. Historic wildfire corridors have been turned into view-lot suburbs, wetland liquefaction zones into marinas, and floodplains into industrial districts and housing tracts. Monolithic public works have been substituted for regional planning and a responsible land ethic. As a result, Southern California has reaped flood, fire, and earthquake tragedies that were as avoidable, as unnatural as the beating of Rodney King and the subsequent explosion in the streets. (Davis, 1998:9)

The argument Davis makes here is that the suburban sprawl has brought this natural and environmental wrath upon itself, since the ecological logic does not allow these settlements to be built in a place where they have been built in the first place. He also argues that the collective failure of social and political agencies have intermingled with the nature in shaping and managing these disasters.

While Duany et al. (2000) directly attacks suburban sprawl for numerous social and environmental ills, Rusk's (1993) criticism of sprawl is indirect. He identifies lack of unification of inner cities with the suburbs as a primary cause for the ailments of both entities. He argues that annexation and/or consolidation is an important characteristic of a healthy city and that it can create a wider sense of community. He notes that cities that are not consolidated or annexed with their suburbs have been unable to escape poverty and segregation despite numerous redevelopment projects, enterprise zones and neighborhood empowerment programs.

Gordon and Richardson (1997) take issue with all of this. After evaluating compact cities from such perspectives as land use, residential density, transit, energy resource, social equity, and competition, they come to the conclusion that the promotion of compact cities cannot be a desirable planning goal. Some of their arguments can be summarized as: 1) low-density settlement is the overwhelming choice for residential living in the US, 2) the traffic consequences of suburbanization are benign, 3) the economic and resource efficiency of compact development has never been adequately demonstrated, 4) concentrated settlement is costly and only worthwhile if transport or communications costs are high, 5) the equity case for compact cities is weak.

With regards to equity, Gillham (2002) suggests that the continued spread of suburbanization has exacerbated the nation's social divisions, leaving diversity and poverty behind in older city centers. He cites some studies based on recent US census data that suggest that: i) in US metropolis areas, almost 64 percent of each region's black people lived in the central city, while more than 72 percent whites lived outside in 1999, ii) almost 55 percent of the nation's citizens living in poverty dwelt in the inner city in 1998, iii) nearly 87 percent of the population living outside the census-bureau defined poverty area are white, while only 7 percent are black.

2.1.3 The compact city

The main principles in the compact city theory are the high density development with mixed use and an efficient public transport system and dimensions that encourage walking and cycling (Burton, 2000). This implies dense and concentrated housing development mostly composed of lesser number of single family detached houses and more semi-detached and multi-family houses. Apart from density, two other principles of compact city are contiguity and intensification (Jabareen, 2006). Contiguity refers to the principle that future urban development should occur adjacent to the existing ones (Wheeler, 2000). On the other hand, intensification – an upshot of density – refers to the increase of density by more efficient use of existing developed land, infill development, redevelopment of existing buildings, subdivisions and conversions, and additions and extensions (Williams, et al., 2000).

Through an extensive review of literature, Jabareen (2006) identifies four major themes that are argued in favor of compactness as an important strategy for achieving a sustainable urban form. They are as follows: i) a contained and compact city has a corollary of rural protection (McLaren, 1992), ii) the compact city improves quality of life through social interactions and ready access to services and facilities, iii) the compact city reduces household energy consumption through building densities capable of supporting district heating and transport energy consumption by lessening the number of trips and VMT, and iv) the compact city reduces the greenhouse gas emissions by minimizing the number and length of trips.

The main argument of the proponents of the compact city is that through intensification of development within the city the use of private vehicles can be reduced and the loss of open

countryside can be minimized. Proponents also argue that higher density settlements are more likely to be able to maintain local services and facilities due to enough service population and thus able to provide better accessibility to goods and services through more equal geographical distribution of services (Williams, 1999). From a socio-cultural perspective, the argument is that high-density urban living can bring in vitality, vibrancy, cultural activities, and social interaction. It can also rejuvenate local economies, especially the downtown areas of problem-plagued central cities.

While there is a broad consensus among the proponents of the compact city regarding the benefits of compactness – especially its multitude solutions to the problems associated with sprawl, questions abound with regards to how compact a compact city should be and what other elements extend into the compact city framework other than density. According to Burton (2002), there are three aspects of a city worth considering while measuring a city's compactness: a higher density, a mix of uses, and intensification. He argues that the first two aspects define a city's form while the third aspect focuses on the process of making a city more compact. The importance of the third aspect cannot be ignored as in today's world there are few opportunities to build a city from scratch and as Williams et. al. (1996) suggest that the goal of achieving a compact city can only be accomplished through the process of making existing cities denser by encouraging more people to live in urban areas, and by building at higher densities.

Thus, given the principal objective of a compact city model to reduce the impact of urban development upon the countryside, there is a general agreement that most future urban growth needs to be occurred within the existing urbanized area and an increase in the current density

level may be necessary (Williams, 1999). The ideal for many planners in this regard at least from an urban design perspective is the densely developed core of old European cities. In order to replicate this supposedly desirable development pattern, many different methods of intensification have been proposed, such as: the development of previously undeveloped urban land, redevelopment at higher densities of existing buildings or previously developed sites, sub-division and conversion and additions, and extensions (Williams, 1999).

Apart from higher-density and intensification, the aspect that has been frequently identified to be a characteristic of the compact city model is mixed-use development. The basic idea behind promoting a mixed-use development is that through putting commercial and residential developments together, a city can reduce the aggregate travel distance and time. In a mixed-use setting, people will need to travel less to perform daily business activities, can walk and bike and thus can promote a healthy environment and lifestyle. A mix of uses can also increase the economic viability for local businesses as they will be within close proximity of service population. This, in a sense can promote equity as the businesses will be accessible to people who don't own cars. Burton (2002) identifies two types of mixes that are dominant in mixed use developments: horizontal and vertical mixes. In a horizontal mix, individual developments of various uses sit side-by-side while in vertical mix, a variety of uses are put within an individual building. Williams et. al. (1996) argue that by mixing uses in either or both ways, the activity density of an area can be increased as there will be increased use of buildings or sites, changes of uses, and increased circulation of people who will be living in, walking in and traveling through the area.

2.2 Growth management policies and their implications

While growth management policies have been adopted and implemented in the U.S. since the early 1960s and there have been a remarkable growth in number of state and local referenda on growth management in recent years (Bengston, et al., 2003), there are very few studies evaluating the effectiveness of such policies. A recent publication of the Brookings Institute concluded that the growth management literature tend to focus on describing the policies and programs rather than evaluating their impacts (Hollis and Fulton, 2002). Bengston, et al. (2003) identify some key reasons behind the lack of such evaluations, such as: i) presence of many interrelated factors which might have the same effects as growth management itself and which might be difficult to control because of the lack of identification of all relevant factors and lack of appropriate data, ii) as it takes time for policies to show desired results, researchers may be ambivalent in conducting short-term evaluations, iii) many growth management programs do not include explicit goals or targets, which might make policy evaluations difficult. Despite these setbacks, nevertheless, there have been several studies that have attempted to determine the implications of growth management for various aspects of urban development which include, but not limited to, land value, affordable housing, open space and farmland preservation, sprawl reduction, transportation and urban infrastructure. In this section some of those key studies will be discussed.

2.2.1 Implications for land value and affordable housing

A significant part of the literature on growth management's implications deal with how growth management changes land and housing prices within the growth managed areas. Anthony (2003), in a study on the impacts of Florida's growth management act on housing affordability, sums up

four reasons why growth management can potentially increase housing prices and reduce affordability. He entails that growth management may increase housing prices: a) by decreasing the supply of non-urban lands for urban conversion thus increasing the price of new land available for urbanization, b) by imposing impact fees for new developments resulting in the increase in development costs, c) by imposing higher standards for development, thereby raising development costs, and d) by requiring additional scrutiny in the building permit process and thus increasing the required time and efforts for the permit process.

A study by Gleeson (1979) shows that growth management creates segmentation within the urban land market by creating two submarkets: developable and un-developable portions of land. Comparing the land price changes between the developable and undevelopbale land in a three-city study, he shows that the land prices for the developable portion of the market increase significantly.

Several studies conducted to investigate growth management's effects on housing markets show that due to the presence of growth management policies, housing availability has decreased while housing prices have increased (Fischel, 1990; Lillydahl & Singell, 1987; Staley & Gilory, 2001; Rosen and Katz, 1981). Rosen and Katz (1981) conduct a study on the housing market of San Francisco Bay area and found that local growth management regulations have significantly diminished the availability of development opportunities in the region and have helped lead to a significantly increased house prices as a result. Study by Staley and Gilory (2001) supports this view as they find that in the States of Florida, Oregon, and Washington – all of which have reputations of having rigorous growth management policies – housing prices have increased at a

significantly higher rate than personal income during the 1990s suggesting that housing affordability has decreased. Anthony (2003) cites several studies concentrating on two sets of geographical locations – one on the State of California and the other on locations other than California. He finds that in studies concentrating on California, the authors (Dowall, 1979; Dowall and Landis, 1982; Landis, 1986) overwhelmingly found/supported the notion that growth control regulations in California have indeed increased housing prices. On the other set of studies concentrating on locations other than California, the authors found that growth control regulations increased the home price by $2,000 between 1970 and 1975 (Real Estate Research Corp., 1978), raised residential property prices by 10 to 28% (Beaton, 1991), and caused a housing price inflation of about 40% (Segal and Srinivasan, 1985). In his own study on Florida, using two indices of housing affordability and using data for all 67 counties over a 16-year period, Anthony (2003) found that there is a statistically significant decline in affordability of single-family homes due to the growth management act.

There are, however, studies that do not support the hypothesis that growth management measures increase housing prices. Landis (1992), in an analysis of seven Californian mid-sized communities with growth control, found that between 1980 and 1987 the median home price in the growth-regulated communities did not increase at a faster rate than the communities where growth management measures were not present. In fact, his study shows that the growth-regulated communities exhibit a slower rate of housing price increase than the non-growth regulated communities. In a comparative cross-sectional study in several California communities, Glickfield and Levine (1992) did not find a negative effect of growth management policies on the production of affordable housing.

Wassmer and Baass (2006) studied the issue of whether a more centralized urban form raised housing prices. Their study confronts the conventional assumption that an effort to centralize the urban area may increase home prices. After controlling for differences across United States urbanized areas in several parameters such as residents' economic status and demographics, number and type of households, household growth, non-residential land uses, and the structural characteristics of houses, they come to the conclusion that a more centralized urban area has actually exhibited a decline in home prices over the years. Downs (2004) suggests that growth management policies may increase housing prices if such policies are adopted locally but housing will be more affordable if the policies are applied regionally.

2.2.2 Open space and farmland preservation

Most researchers generally agree that growth management policies preserve prime farm and forest lands from urban encroachment (e.g., Degrove, 1984; Daniels and Nelson, 1986; Nelson, 1992). A study by The American Farmland Trust (1999) shows that urban containment policies in order to preserve farmland, forest land, and open spaces in effect can save costs for locally produced and delivered goods and services. Nelson (1992) shows that urban containment policies can improve agricultural productivity in the metropolitan area. While growth management policies like urban growth boundary or urban containment have been associated with an increased land and housing price, farm, forest land, and open space preservation have been associated with a decreased tax base in the community. A study in New Hampshire by TPL-NH (2005) investigating the relationship between growth management policies aiming at

protecting and/or conserving land found that in general the tax base in a community goes down for the protected and conserved land.

2.2.3 On sprawl reduction

Urban sprawl reduction is an area that had frequently been considered by researchers while investigating the efficacy of growth management policies. Most researchers generally agree that the implementation of growth management policies reduce sprawl (e.g., Nelson, 1999; Kline, 2000; Anthony, 2004; Yin and Sun, 2007). A recent study by Yin and Sun (2007) examine the effectiveness of state growth management policies on containing sprawl by creating sprawl indices for 294 metropolitan areas in 1990 and 2000. Their investigation involves two variables involving whether a state growth management policy exists and the degree of state involvement in local growth management and another three variables measuring three major attributes of state growth management policies. Their analyses showed that state growth management policies have effectively been able to contain sprawl and promote compact development with more land use mixture. Another differently designed study on the effectiveness of state growth management policies on sprawl by Anthony (2004) shows that states with growth management policies have experienced a lesser degree of density decline over a 15-year period than the states that don't have such policies.

While most researches indicate that sprawl has indeed been contained – although the degree varies – through the implementation of growth management policies, there are a number of studies that suggest that in doing so growth management policies may have caused unintended consequences, such as spillover of development and sprawl outside the growth-managed areas. A

study by Shen (1996) examining the cumulative impact of growth regulations in the San Francisco Bay area finds that the regulations had caused spillovers of urban growth from the areas where such regulations were present to the surrounding region. His findings have been supported by other researchers such as Nelson (1993), Kelly (2004), and Robinson, et al. (2005) among others. While investigating the consequences of Oregon's statewide land use planning program Nelson (1993) and Kelly (2004) agreed that the principal objectives of the program had been achieved, but both pointed out some unintended consequences of the program, such as, leap-frog land use development outside the urban growth boundaries (UGBs). Robinson, et al. (2005) find similar results while studying the effects of growth management efforts on urban fringe areas in Washington State's Puget Sound region. His study shows that although growth management efforts have increased housing density within UGBs, they also have increased sprawling low-density housing in the surrounding areas.

2.3 Conclusion

The literature in this chapter attempts to highlight the debates surrounding the desirability of sprawl versus compact form of development. It recounts a brief history of urban sprawl in the U.S., highlights the arguments relating to the sustainability of a sprawled pattern of development and discusses the streams of thoughts for and against an alternative form of development – that is compact development. It then discusses the growth management policies and their implications for a compact form of development. While the discussion in this chapter covers a range of issues regarding various aspects of urban development, one of the key aspects is how various researchers view the contemporary suburban development in the U.S. and what they suggest with respect to the desirability of that type of development. As can be seen from this discussion, most

researchers view the contemporary suburban development in the U.S. to be unsustainable for its land and energy consumptive nature and thus sought for a policy that would consume less land, reduce energy use and promote a healthy lifestyle. This group of researchers mostly advocate for a compact form of development that would ensure a higher population and housing density. On the other hand, researchers who don't view suburban development unsustainable, tend to oppose the measures to restrict or manage urban growth. From the discussion on various growth management techniques and their implications, we can see that most of the strategies are aimed at curbing urban sprawl, preserving farmland and open spaces and reducing energy uses. The success or failure of a particular strategy is often times a matter of debate but the presence of the strategy can change the current course of development even though it may not fulfill all the objectives set forth before adopting the strategy.

Chapter 3: Growth management in selected US urban areas: their problems, responses, and implications for a compact urban form

In order to understand the extent to which growth management strategies are able to make an impact on an urban area in terms of increasing the density of the area, and of containing growth within a designated area, first, it is necessary to understand the growth trend in selected urban areas and how the strategies employed to manage growth work in a particular urban setting. Keeping this view in mind, this chapter discusses urban growth in three study areas – Orange County, FL; Montgomery County, MD; and Portland Metropolitan Area, OR. First section of the chapter lays out a brief history of growth in each of these areas. It then discusses the broader aspects of growth management strategies employed at various levels – state, regional and local -- for each of the states where the study city and counties are located. The purpose of this discussion is to provide an idea of the interactions of various acts, legislations and strategies at various levels that implicate a particular growth management strategy put in place in a particular area. Then a discussion follows regarding the growth management strategies specific to each of the study areas. Finally, it concludes with a critique of the growth management strategies employed in the study areas.

3.1 A brief history of growth in the study area

In this section a brief history of urban growth and development in three study areas, i.e., Portland Metropolitan Area, OR, Montgomery County, MD and Orange County, FL are discussed.

3.1.1 Portland metropolitan area, Oregon

Oregon's largest metropolitan area, Portland is well reputed for its growth management policies. Strategically located at the confluence of Willamette and Columbia rivers, this city flourished on trade, food and lumber supplies to the surrounding regions. It hosted the west coast's first World Fair and Exposition in 1905. The City experienced a rapid rise of population in the late 19th and the early 20th century with population of 17,000 in 1880, surging to 90,000 in 1900, to more than 200,000 in 1910 (Gibson and Abbott, 2002).

Portland was able to significantly profit from shipbuilding during WWI and WWII. During WWII the City built more than 1,000 cargo ships and small naval vessels which created a staggering 130,000 + jobs in the shipyard industry. The City had been able to amass a quiet wealth because of its jobs and businesses and a cautious politics (Peirce, 1972). It was also discrete in its culture largely due to a mixed population attracted by the jobs in shipping and agro-processing industry. However, the growth of the City was not planned and it had a decaying downtown. But during the period between 1970s and 1990s, the City had experienced a substantial change – a substantial revitalization, preservation of the older neighborhoods, beginning of a light rail system and an urban growth boundary that is designed to contain new urban development within the boundary.

The Portland metropolitan area is composed of 24 cities and parts of three counties, namely Clackamas, Multnomah, and Washington. Over the years the area's industrial base has changed from shipbuilding and agro- and food processing to more sophisticated and high-tech industries. In recent times, the metro area's industrial base has changed to a mixture of manufacturing,

business and personal services. The manufacturing sector comprises of products such as computers, machine parts, instruments, transportation equipments, electrical, and non-electrical equipments (Nelson and Moore, 1993). Apart from the manufacturing sector, Metropolitan Portland also renders medical, financial, and business services to the rest of the country. Since 1985 the area has seen an employment growth of over 4% annually (Nelson and Moore, 1993).

3.1.2 Orange County, Florida

Located in the State of Florida, Orange County is part of the Orlando-Kissimmee Metropolitan Statistical Area (MSA). As of 2006 census bureau estimates, the county had a population of 1,043,500. Orlando is the largest city in this county.

Prior to Florida becoming a state in 1845, the present area of Orange County was known as Mosquito County, which was located to the south of St. Johns County – one of only two counties that comprised Florida at that time. Orange County was renamed from Mosquito County mainly due to the fruit it grew. At the height of its citrus plantation, according to an estimate in 1970, some 80,000 acres were planted in citrus in this county. In subsequent years the number of acres planted, however, declined. In the early 1980s, the citrus industry saw a major setback since many of the groves were destroyed due to several bouts of freezing temperature. Facing major financial problems, many farmers abandoned the citrus industry and since then only few growers remained in the area.

With the decline in citrus growth in the County, however, came another phenomenon. Local population has been expanding rapidly since 1970 thanks to thriving area businesses such as

Universal Studios and Walt Disney World theme parks. Encouraged by the successes of these big businesses, the County's former citrus producing areas have been replaced with higher opportunity cost projects. With a strong population growth in the State of Florida in general and Orange County in particular, the County also started to experience booming housing and commercial developments and suburban sprawl became a major problem.

3.1.3 Montgomery County, Maryland

Located just north of the District of Columbia, Montgomery County, Maryland encompasses an area of 497 square miles. This is one of the earlier counties in the U.S. that had been established by elected representatives. Established in 1776, the County thrived on tobacco production in its early days. It was largely possible because of its close proximity to the port of Georgetown. Served by the port, the County was able to distinguish itself as one of the leading tobacco producing regions in the country. Over time, its agricultural base, however, changed. By the time the civil war began, the County had largely shifted from tobacco to the production of rice, corn, wheat, oats and dairy products.

With the advent of the electric trolley at the end of the nineteenth century, Montgomery County rose to prominence and its purely rural and agricultural character started to fade away. Being very close to the nation's capitol, it was chosen by many white collar employees working at the capitol as a preferred place of residence. Largely fueled by the people who work there, the part of the County that is closer to the capitol (down-county) gradually took the character of a "bedroom community". With a rising in-migration and an educated population, the down-county subscribed to more liberal views whereas the agricultural up-county remained relatively

conservative. This gave rise to tension between these two groups of population. The last decades of twentieth century saw a significant growth in population for the County with the total number of residents rising from 522,500 in 1970 to 867,000 in 2000 representing a growth of approximately 65%.

3.2 Growth management strategies in the study areas

Whereas Portland Metropolitan Area and each of the two counties in this study have their own growth management strategies, they are nevertheless influenced by the growth management programs at the state and the regional level. Therefore, it is necessary to discuss growth management strategies at the state level and to a certain extent at the regional and local level. This section of the thesis provides a broad overview of growth management programs and strategies at all three levels. It then discusses the strategies specific to each of the study metropolitan area and counties.

3.2.1 An overview of growth management strategies at state, regional and local level

Tables 3.1 and 3.2 compile various aspects of growth management programs at the state, regional and local levels for the States of Oregon, Maryland, and Florida. The purpose of this compilation is to provide a broader picture of an umbrella of various acts, legislations, and regulations at different levels that relate to growth management and within which a specific growth management strategy operates. Some important elements of these tables are discussed below.

Table 3.1 indicates that with regards to the approach to growth management planning, the States of Florida and Oregon have 'top-down' approach where the states lay out their growth management policy and then take an active role in the review and approval of plans at the local level in order to make sure that they are consistent with the policy. The State of Maryland's approach in this regard can be said more of a 'bottom-up' as the state prepares its 'state growth policy' keeping into consideration the visions set forth in the local comprehensive plans.

With regards to the regulatory power, the State of Maryland does not have regulatory oversight on local plans. The State can merely review and comment on the plans. On the other hand, both the States of Florida and Oregon have regulatory authorities. The State of Florida oversees the local plans and makes sure that they meet the minimum requirements of state laws and administrative rules, whereas the State of Oregon has the authority to evaluate the compatibility of the local plans with the state growth management policy and force the local planning body to make amendments if they are found incompatible.

Maryland's approach to growth management is more supportive of economic incentives rather than regulatory enforcements. One core element in their strategy is Priority Funding Areas (PFA), which is tied to the Capital Improvement Program (CIP). The State may use funding as an instrument to guide the location and timing of state public works, transportation and major capital improvement projects. Oregon and Florida, on the other hand, employ regulatory instruments. In its land use planning system, Oregon has the provision of a quasi-court that can appeal the decisions made by local agencies and force them to amend or reverse these decisions.

With regards to regional planning, as indicated in Table 3.2, States of Oregon and Florida have a system of regional planning whereas the State of Maryland does not have any such system. Florida's regional planning system is run and monitored by the Regional Planning Council (RPC), whose responsibilities include the preparation of regional plans and review regional impacts of development. On the other hand, Oregon has the most robust regional planning agency in the U.S. Its regional planning body, Metro, is directly elected and has the authority to plan and manage the urban growth boundary, regional land use plans and transportation plans.

At the local planning level, local planning bodies at all three States rely on local comprehensive plans, which are usually accompanied by a land use plan and zoning regulations. The focus on the plans with regards to their relationship with the state plan, however, varies. The local planning in Florida emphasizes on 'concurrency', where the local government is required to provide infrastructure expansion concurrent with the impacts of new development. Local governments in the States of Maryland and Oregon, on the other hand, focus on 'consistency', where the emphasis is on making local plans consistent with the statewide planning goals.

Table 3.1: An overview of growth management strategies at state level for the study regions

County or metropolitan area / State	State planning	State role
Orange County / Florida	- State Comprehensive Plan (SCP), which is a direction-setting document that provides long-range policy guidance for the social, economic, and physical growth of Florida - SCP represents an uncommon "top-down" planning structure in which the state takes an active regulatory role in the review and approval of local comprehensive plans. - The State and Regional Planning Act of 1984 requires the preparation of state land development plan which provides a policy framework for state agencies in conducting their planning programs and for regional planning councils in developing and updating regional plans. - In 1985, Florida legislature adopted Growth Management Act concentrating on issues of consistency, concurrency, and compactness.	- The Department of Community Affairs is in charge of reviewing the local comprehensive plans and plan amendments and making sure that they are consistent with the regional plans and state comprehensive plans. - The review process of local comprehensive plans and plan amendments also makes sure that they meet the minimum requirements of state laws and administrative rules. - The agency also reviews plan evaluation and appraisal reports as well as related amendments.
Montgomery County / Maryland	- The State is currently in the process of developing a state policy plan - The State's 1997 Smart Growth Areas Act was aimed at directing new developments to Priority Funding Areas (PFAs). - According to the act, annexation by municipalities is only considered when there is community sewer facility in place and they meet the minimum density standards set forth to qualify as PFAs.	- The State requires the local governments to assess their comprehensive plans every six years. State's role is largely limited to review and comments only. Usually the State of Maryland does not have regulatory oversight on local plans unless any critical area law has been violated. - The State is responsible for formulating State Growth Policy, which should be consistent with the visions adopted at the local plans.

Table 3.1, Contd…

	- The State has implemented several smart growth initiatives such as Brownfield, live near your work program, jobs creation tax credit, main street Maryland and low-interest mortgage loans.	The State may refuse funding of state public works, transportation or major capital improvement projects if it is not consistent with state's economic growth, resource protection and planning policy.
Portland Metropolitan Area / Oregon	- Through its land use program, the State of Oregon controls all uses, functions and activities occurring in the state that also include water and sewer, transportation, recreation, natural resources, and air and water quality. - Local Comprehensive Plans must be consistent with the statewide goals and should be applicable not only to the local government but also to special district and state agencies. - The State Land Use Planning System has the provision of a quasi-court, which is mandated to appeal the decisions made by cities, counties, and regional planning agencies.	- Under Oregon's land use act, all cities and counties are required to adopt comprehensive plan that meets mandatory state standard and state goals. - Plan review and monitoring watchdog State Land Conservation and Development Commission reviews each proposed city and county plan and modification of any such plan to ensure that they properly implements state goals. The commission can either certify the plan or require that it be revised and resubmitted based on the compatibility of the plan. - The State encourages communities to locate development in cities or areas with full urban services in order to make the optimal use of existing services, combine activities such as commercial, retail, education or recreation with housing, encourage transportation choices that afford safe, convenient, and interesting networks of paths, and use detailed human scale design.

Sources: Compiled from a) the report by Department of Community Affairs (2000). "Growth Management Programs: A comparison of selected States", b) individual websites of Orange County, FL; Montgomery County, MD; and Portland Metro.

Table 3.2: An overview of growth management strategies at the local and regional levels for the study regions

County or metropolitan area /State	Regional planning	Local planning
Orange County / Florida	- The State and Regional Planning Act of 1984 increased the roles and responsibilities of Regional Planning Council (RPC) by authorizing them to be the primary organization to deal with issues that are greater than local concern. RPCs are required to prepare regional plans, review regional impacts of development. - The Regional Planning Council prepares reports and recommends on the regional impacts of a proposed development. The criteria that are used in recommendations are based on the issues such as development's impact on the environment, affordable housing, public facilities, and jobs/housing balance.	- Florida's growth management system requires local governments to develop comprehensive plans that conform to the state comprehensive plan. - Local governments are required to demarcate facility service areas to indicate the areas intended for urban facilities and services. - A key provision of the law is called "concurrency", where local governments are required to provide infrastructure expansion concurrent with the impacts of new development. They may not issue building permits unless they can demonstrate that during the time for new development, key infrastructures provision will be in place or necessary infrastructure improvements can be funded and constructed.
Montgomery County / Maryland	The State of Maryland does not have a system of regional planning.	- The 1992 Economic Growth, Resource Protection and Planning Act requires cities and counties to adopt comprehensive plans with following elements: land use, transportation, community facility, mineral resources, sensitive areas, implementation. - There are two consistency requirements for the communities: a) local regulations must be consistent with the comprehensive plan, and b) projects receiving state and federal funding are consistent with the plan.

Table 3.2, Contd…

		- Counties and cities are required to report their progress annually to a state economic growth, resource protection and planning commission. - After the amendment of the local comprehensive plans, zoning laws and subdivision regulations must also be amended.
Portland metropolitan area / Oregon	- The country's only directly elected regional government, Metro, oversights regional land use planning and transportation planning over 460 sq. miles areas within 24 cities that includes Portland. - Being the area's designated metropolitan planning organization, Metro is also responsible for management and maintenance of urban growth boundary and data management.	- The main vehicle through which planning at the local level is achieved is local comprehensive plan. Oregon's state law requires each county and city to have a comprehensive plan. These plans guide land use, conservation of natural resources, and economic development. - Each local comprehensive plan is accompanied by implementation measures such as zoning and land-division ordinances. - The local comprehensive plans must be consistent with the statewide planning goals.

Sources: Compiled from a) the report by Department of Community Affairs (2000). "Growth Management Programs: A comparison of selected states", b) individual websites of Orange County, FL; Montgomery County, MD; and Portland Metro.

3.2.2 Growth management strategies in study metropolitan areas and Counties

Communities with growth management policies hope that by making the footprint of development denser, they can reduce scattered, unplanned development, and can afford timely expenditure on new capital facilities such as water, road, sewer, parks, etc. For homeowners this means that land would become more valuable. Researchers have found varying results studying the impacts of growth management on the form of a community. For many researchers the growth management policies have been able to change a sprawled pattern of development into a more compact pattern. But others have found that growth management increased housing prices and spilled development into adjacent areas.

Each of the regions in this study – Portland metropolitan area, Orange County, and Montgomery County – has its own set of growth management instruments to manage urban growth. One common purpose for employing the growth management tools in each of these areas is to curb urban sprawl. This section provides a brief overview of the principal growth management strategies employed in each of the study areas, discusses their implications on urban form, and highlights the criticisms of the strategies.

a) Portland metropolitan area, Oregon

i) Growth management strategy

The principal instrument for managing urban growth in Portland is Urban Growth Boundary (UGB). The UGB in Portland was first established in 1979 and was expanded very little since then. The boundary encompasses 24 cities and parts of three counties and serves more than 1.3

million people (Song and Knaap, 2004). Banfield et al. (1999) describes Portland as a living laboratory for efficient urban planning and living.

As has been mentioned in the previous table that the State of Oregon controls all land uses, functions, and activities through its land use statutes. Under Oregon law, each city or metropolitan area in the state needs to establish an urban growth boundary to separate urban land from rural land (Metro website, 2008). The main purpose of establishing an urban growth boundary is to allow the area inside the boundary to have a higher density urban development at the same time preventing the agricultural and rural land outside the boundary from being encroached by low-density sprawled pattern of development. Apart from preventing sprawl, other benefits of establishing an urban growth boundary in Portland are:

- Developing and redeveloping land and buildings in the urban core, thus preserving the core "downtowns" in business.
- Providing business and local governments guidelines about where to place infrastructure for future urban development.
- Establish an efficient system of infrastructure spending.

(Metro Website, 2008)

Under the state land use law, all land outside the UGB is designated for resource use (a few exceptions apply, however) and prohibited from urban development. The appropriate city and county is required to plan all land inside and outside the growth boundary. The plans are then reviewed and approved by the State Land Conservation and Development Commission (LCDC). All plans are required to have a zoning component.

Implementing the idea of UGB and the planning and growth management inside UGB at a metropolitan and regional scale are said to be Portland area's greatest policy accomplishments (Abbott, 2002). While the initial boundary was drawn generously in 1979 ensuring a 20-year supply of developable land in different categories, during the 1990s the expansion of the boundary became a major issue as the land supply inside the boundary became increasingly scarce. The Metro – the regional government body in charge of the UGB – meticulously engaged in systematic planning to ensure the needed expansion of the boundary (Abbott, 2002).

In order for the urban growth boundary to work properly, the Portland Metropolitan Area has also created a unique regional planning body which in short is called 'the Metro'. Formerly known as Metropolitan Service District, the Metro is the only directly elected regional government in the U.S. The roles of Metro include, among others, management of the urban growth boundary, regional land use planning, and transportation planning (Song and Knapp, 2004). In 1991, Metro started working on a 50-year metropolitan development plan called "Region 2040 Growth Concept" (Abbott, 2002, Song and Knapp, 2004) in order to accommodate projected 720,000 new residents and 350,000 additional jobs in the area. Some of the salient features of this growth concept relating to the urban growth boundary are as follows:

- The concept encourages redevelopment within the UGB, especially in designated urban centers and transportation corridors.

- Following the principles of New Urbanism, the concept has set some binding targets for the development inside the growth boundary, such as small-lot subdivisions and minimum housing densities.

(Song and Knapp, 2004; Abbott, 2002)

In order to encourage transit-oriented development, Portland introduced light rail transit system in 1986 with a major extension completed in 1998. To ensure the system operates efficiently with enough ridership and to increase and accommodate growth within the UGB, a number of policies have been adopted. One such policy is transit area overlay zones with minimum density requirements. Several private-public partnerships have also been established to increase housing and employment density around the station area (Song and Knaap, 2004).

ii) Implications of the strategy on urban form

Abbott (2002) documents several implications of Portland UGB relating to the form of the city. He argues that the boundary has clearly demonstrated the increase in the density of the city. Citing Metro (2000) as the source of his data he entails that before the implementation of the UGB, between 1950 and 1980, the area of urbanized land increased significantly whereas the population density fell by a third. But since the implementation of the UGB, the increase in the developed land area has been progressing slowly, the downward trend in the average residential density reversed, and population density increased. Some of the findings in his study are as follows:

- From 1980 to 1994, the metropolitan population increased by 25%, whereas the land developed for urban uses increased only 16%.

- In 1994 the Portland area was building new housing at a density of five dwelling units per acre, but this number rose to eight dwelling units per acre in 1998.
- The average new lot size went down from 12,800 sq. feet in 1978 to 6,200 sq. feet in 1998.

A study by Song and Knapp (2004) conducted several quantitative measures of urban form for neighborhoods in Washington County, OR, which is located in the western portion of the Portland Metropolitan Area. Their study found systematic changes in the neighborhoods over time in terms of density and internal connectivity. Some of the findings of their study are as follows:

- The study neighborhoods have increased in single-family dwelling unit density since 1960s but the increase is more significant since 1990.
- The study neighborhoods have also shown better internal connectivity and pedestrian access since 1990.
- The indicators on external connectivity showed that the external connectivity did not improve. At the same time, the land-use mix indicators suggested that the neighborhoods remained fairly homogeneous.

iii) Critiques of the strategy

Portland's Urban Growth Boundary has been much cherished for its success in containing urban sprawl, protection of natural resources, and minimization of public service costs (Nelson, 1994). But it has also been maligned as opponents argue that housing prices rose inside the UGB due to less available land and a tight housing market. They also argue that the UGB has helped stifle

urban growth inside UGB, whereas has also created a spillover effect leading to leapfrogging. Many people support the light rail transit claiming that the system has been effective in creating a less auto-dependent urban development pattern (1000 Friends of Oregon, 1997) and thus has been able to promote transit-oriented development.

b) Orange County, Florida

i) Growth management strategies

In order to comply with the State of Florida's Growth Management Law, Orange County adopted 2000-2020 Comprehensive Policy Plan (CPP) in 1991. Over the next few years the county developed the Development Framework Guidebook, Poster Plan, and Orange County Land Development Code in order to set forth strategies that can curb urban sprawl and manage growth. (Knaap and Song, 2004)

One key instrument that Orange County employs in order to manage growth and to achieve a more compact and contiguous development pattern are Urban Service Area Boundary (USAB). The idea behind USAB is that public utilities and other urban services that are necessary to support urban growth are provided only within the boundary and for a time span of 20 years. The boundary is expandable upon review. The concept of USAB has some similarities with the concept of UGB in Portland, Oregon in the sense that both strategies rely on a geographical boundary that defines where future growth should occur.

The other growth management strategy Orange County adopts is Adequate Public Facilities (APF) program. The idea behind this strategy is that proposed development projects are

evaluated based on their concurrency capability – meaning compatibility with the existing infrastructure. In other words, a development project is approved only when adequate public facilities such as roads, waste disposal, potable water, sewer, parks and recreation etc. facilities are in place.

As has been discussed previously, growth in Orange County, FL is regulated at two levels. One is Florida State's Growth Management Act that was enacted in 1985 under the State and Regional Planning Act of 1984. The other is local government comprehensive planning act that is subject to state review and approval. One vital requirement in the growth management act is the concurrency requirement, which entails that the development be approved only if adequate public facilities are available concurrent with the impacts of the development. (Knaap and Song, 2004)

Within the broader framework of these acts, various parts of Orange County are subject to various regulations and tools for growth management. One, The Reedy Creek Improvement District (RCID), which comprises of 25,000 acres of land that is mostly owned by Disney, is subject to Special Act Chapter 67-764 (Song, 2005). Under this special act the RCID is granted power to construct, operate, and maintain public utilities as well as issue bonds. The district is also exempt from the zoning and other regulations in Orange and Osceola Counties. Development outside the RCID but within the incorporated cities of Orange County (e.g. Orlando, Apopka) is subject to local land development regulations. Three, Development outside the RCID but within unincorporated areas is subject to county zoning and subdivision regulations and concurrency requirements. (Song, 2005)

ii) Implications of the strategy

A study conducted by Knaap and Song (2004) of National Center for Smart Growth Research looks into the patterns of urban form in Orange County and their relationship with the growth management. They however do not attempt to evaluate any specific policy, rather, focus on the measurements of urban from for each neighborhood of the county. Some of their findings are as follows:

- The results are mixed. They do not depict a clear picture of whether the development pattern represents compactness of urban centers over time.
- They analyzed which types of neighborhoods are attracting new developments. The analyses find that over half of all new developments in Orange County are taking place in outer ring neighborhoods characterized by large lots, curvilinear streets, cul-de-sacs, wide streets, or a typical suburban neighborhood. The next dominant groups of houses are being built in the inner ring neighborhood – characterized by infill and better transit access. The least number of houses are being built in the rural and Greenfield neighborhoods. They characterize their findings to be mixed and not clear in terms of sprawl reduction.

- Their final analyses of trends depict that over the post-war period the lot sizes in Orange County have fallen whereas house sizes have risen. In recent periods the neighborhoods have become more internally connected but less regionally connected. But on the other side, neighborhoods have become more homogeneous with fewer homes within walking distance of commercial uses.

c) Montgomery County, Maryland

i) Growth management strategy

The central component of Montgomery County's growth management initiative is the Priority Funding Area (PFA). The policy of PFA allows state funding to be available for projects that are located in areas that are already developed or designated for future growth. There are a few criteria for a location to be designated as a PFA. These are: a) the location must meet intended use guideline, b) have plans for water and sewer, c) meet a density requirement of 3.5 units per acre, and d) have minimum sprawl effect. (Montgomery County, 1987).

In general, one common feature of growth management instruments in US urban areas is the dominance of regulatory instruments such as zoning laws, subdivision regulations, etc. However, over the past two decades Montgomery County has shown robustness in its use of economic or incentive-based instruments. Since 1980, Montgomery County has protected over 45,000 acres of farmland from urban encroachment through the use of Transfer of Development Rights (TDRs), Purchase of Development Rights (PDRs), and conservation easements.

Like Orange County, FL, Montgomery County has also implemented Adequate Public Facilities program since 1973. In order to better implement this program, since 1986, the County has been publishing an annual growth policy report that documents the capacity of public facilities in various areas of the County to accommodate new development. The report acts as a source of advanced information to the developers highlighting the areas of the County where new projects are likely to be approved. One consideration in determining the capacity ratings of different localities of the County is the Capital Improvement Program (CIP). As it is tied with CIP, the

ratings change annually to reflect new investments in public facilities (Montgomery County, 1987).

This section will discuss the implications of growth management policies on urban form in Montgomery County, MD. Here the main consideration is two key growth management strategies that have been implemented in the county over the last four decades. The strategies are: a) Wedges and Corridors Plan and b) Adequate Public Facilities Ordinances (APFOs).

a) The Plan for Wedges and Corridors

The Wedges and Corridors Plan that Maryland County, MD adopted in 1964, set forth a vision of preserving open spaces in wedges at the same time channeling new developments into urban centers along transportation corridors. Some of the transportation corridors were also proposed to be mass transit lines.

Some general findings:

with respect to wedges and corridors plan, the development of green wedges had been a success since the beginning of the implementation of the plan until 2002, some 93,000 acres – which accounts for more than a quarter of the county's total of 324,000 acres of farmland – have been declared as agricultural reserves through various programs such as easement programs and zoning techniques. (Harrigan and Hoffman, 2002)

- The county has acquired land for parks and as a result as of 1998, it had more than 56,000 acres of land designated as parks and open spaces. The breakdown of lands by the controlling entities are as follows:

- County, state, and federal parks – 44,000 acres
- Sanitary commission, towns and private individuals – 12,000 acres

  (Data from M-NCPPC, 1998)
- Contrary to the apparent success of the green wedges plan, the corridor plan proved to be more difficult to implement and took longer period to implement. But the overall outcome supports the vision that was set forth in the general plan of 1964. The main objective in the corridor plan is to direct growth into a series of urban centers along transportation corridors (Harrington and Hoffman, 2002). The overall results show:

  i. Commercial and residential developments occurred along the transportation corridors served by the Metro Subway System and the North-South US Hwy, Interstate 270, and Interstate 95. The development pattern has been able to contain sprawl to some extent. (M-NCPPC, 1998)

  ii. The County has adopted various planning techniques to encourage concentrated development. Some of the techniques are: i) providing public amenities in exchange for allowing developers to build at increased densities, and ii) fostering public/private partnerships to enhance commercial areas with landscaping, public events and other attractions. The overall outcomes show that at most of the metro stations, particularly in the older communities, there is a concentration of shopping, office and high rise residential development. (M-NCPPC, 1998)

The planning process

Montgomery county implements the Wedges and Corridors Plan through a comprehensive land use planning process. Central to this process is the adoption of a master plan for the seven

designated planning areas in the county. The master planning process began with the creation of a citizen advisory committee, whose main task was to arrange meetings to discuss the issues and trends of development with the citizens in the designated planning area. Through the incorporation of views of the citizens and discussion, the planning staff then prepared a preliminary draft plan along with a report. The draft plan was then used for public hearings and in work sessions before a planning board. The planning board then makes recommendation and the recommended plan goes to the county council. The county council then held its own public hearings and finalized the recommendations. The final recommendations were then converted into planning documents and zoning regulations that usually go with a map amendment.
The following section discusses the implications of two separate dimensions of wedges and corridor plan – preserving the wedges and creating corridor cities.

Preserving the Wedges

Through the Wedges and Corridor Plan, Montgomery County has had successes in preserving open spaces and agricultural land – which in turn has been able to curb sprawl and guide development into specific urban centers. The County has implemented this through two specific tools – the agricultural reserve and land acquisition policy.

With regards to land acquisition policy, the County has adopted an aggressive policy to acquire park land and open spaces since the 1960s. The County's population grew dramatically between 1940 and 1960 from 84,000 to 341,000 with an increase of about 300 percent. In response to this population increase, a Commission had been set up to implement the land acquisition policy and it had been able to acquire over 12,000 acres of parkland between 1962 and 1971. The total

acreage of acquisition has increased over time and in 2002 it stands over 56,000 acres of park land and open spaces for the entire County. The following table shows the amount of parkland acquired through land acquisition policy.

Table 3.3: Amount of Parkland Acquired Through Land Acquisition Policy in Montgomery County, MD

	1962-1971	1972 - 1990	2002
Acquired and controlled by the county itself	12,000 acres	23,5000 acres	28,000 acres
Total parkland controlled by federal, state and county entities			56,000 acres
Data Source: M-NCPPC, 1998			

Apart from the land acquisition policy, the other growth management tool under the Wedges and Corridor Plan that Montgomery County has employed is agricultural reserve. The reserve has been favorably supported by citizens of the county and long been viewed as a success story of growth management in the face of strong population and economic pressure of development. As of 2002, the reserve stands 93,000 acres of land area with 526 farms and 350 horticultural enterprises. The land area in the reserve stands as approximately 29% of the total land in the county. The agricultural reserve has been able to raise farm output as well as curb the proliferation of sprawled pattern of development into the farm area. (Harrigan and Hoffman, 2002)

Although successful overall, the agriculture reserve has encountered a few setbacks. Some of the setbacks are as follows:

- Transfer of Development Rights (TDR) was a robust program after its launch in early 1980s with a lively market and a growing demand. The price was estimated as $15,000 at that time. But gradually over time the price fluctuated and stood at $11,000 in 1996 and only $6,000 in 2002. Because of the price drop developers are no longer interested in buying or banking TDRs.
- Farmers complain about the need to go through the special exception process for the processing of their farm products.
- Proliferation of state, county, and private programs for easement and open space preservation created a coordination problem.

Source : Harrington and Hoffman (2002)

Creating Development Corridors

Besides preserving the wedges, the other growth management measure under the Plan for Wedges and Corridors in Montgomery County, MD is to create corridor cities while promoting a transit-oriented development. Reviews of this measure show that it worked differently for different urban areas within the Montgomery County. Harrigan and Hoffman (2002) conduct a review of the impacts of this particular policy on two different towns – Bethesda, located in the southernmost corner of Montgomery County and Germantown, located approximately 25 miles northwest of Washington, D.C. boundary. In their research they find contrasting pictures of transit-oriented development, citizen participation, sprawl reduction, and preservation of existing communities.

With regards to transit-oriented development, they find that the Town of Bethesda had been able to fully realize the benefits of Metro – a subway system that was planned in 1966 and fully opened in 1983. With the opening of the Bethesda Metro subway station in 1984, the town saw a rapid growth, especially in its CBD. But the Bethesda city council was very cautious in its approach to deal with the rapid growth so that growth does not create unwanted consequences on the community. With the participation of the citizens of mostly single family residential districts surrounding the CBD, the Council was able to draw and implement a plan that effectively limited the size of the central business district resulting in a compact core and protecting the surrounding communities. (M-NCPPC, 1994)

In contrast, Germantown, which was identified as one of the original corridor cities in the 1964 Plan for the Wedges and Corridors or the general plan, had not been able to accrue the benefits of transit-oriented development. The main reason behind this is that the rapid rail Metro system did not connect this town as it was originally planned due to cost constraint. As a result the Town developed into a coreless suburban-style community with low density residential areas. Although a 1974 master plan for Germantown envisioned the town to develop into a "new community" similar to community such as Columbia, Maryland, the plan did not adequately materialize as the land ownership in Germantown was fragmented among many owners and it was difficult for a single developer to plan a cohesive community. (Harrington and Hoffman, 2002)

b) Adequate Public Facilities Ordinance (APFO)

Montgomery County is the first county in Maryland to adopt the Adequate Public Facilities Ordinance, which was adopted in 1973 in order to make sure that new developments take place

only in areas where adequate infrastructure and community facilities are available. The main objective behind the ordinance is to restrict haphazard, piecemeal growth in absence of infrastructure and thus enabling an equitable sharing of infrastructure and civic costs among its beneficiaries.

After seeing a building boom in the mid-80's and afraid that it might be uncontrollable, the Montgomery County Council adopted an annual growth policy (AGP), which became an implementation vehicle for APFOs as well. An annual growth policy provides directions for the synchronization of new development and the provision of public facilities. It is also responsible for identifying areas where public facilities are inadequate and possibly pausing development until those facilities are adequately made through the capital improvement program (CIP). Between 1984 and July of 2004, AGP guided the APF for roads and schools. In 1986 the county council took control of the determination of adequacy for transportation networks and schools. Until 2004 the APFO was being implemented by case-by-case evaluation but from July 2004 a moratoria approach had been introduced. (Harrington and Hoffman, 2002)

ii) Critiques of the strategy

Montgomery County's Transfer of Development Rights (TDR) program has been celebrated for its ability to preserve farmland (Hirschhorn, 2001). It has also been exemplified as a successful economic instrument in fight against urban sprawl. Opponents, however, argue that growth has spilled into the adjacent regions. As with the County's Adequate Public Facilities (AFP) program, supporters argue that the program has been successful in cutting public service costs and thus save valuable financial resources that could be used for other important purposes.

Opponents are not satisfied with the rating system that is tied to the Capital Improvement Program (CIP). They argue that due to the lack of political resolve, many projects did not follow the schedule of improvement laid out in the CIP and thus cannot give an accurate estimation of future public facilities capacity.

Chapter 4: Lessons Learned From the Case Studies

The three study areas – Orange County, FL, Montgomery County, MD, and Portland Metropolitan Area – all have different approaches to growth management but as much as they are different in context and implementation strategies, they are similar in their principal objective – reducing sprawl. Table 4.1 summarizes the key lessons learned from the case studies in light of the research questions for this study. As we can see from the table that several studies have confirmed that Portland's urban growth boundary has been able to contain sprawl and increase the density within the designated growth areas. Studies by Nelson (1994), Song and Knaap (2004) and Abbott (2002) all confirm that both population and housing density indeed have increased after the implementation of the urban growth boundary. While Abbott's study gives unqualified praise for the success of the UGB for sprawl reduction, Song and Knapp are somewhat reserved in their conclusion mentioning that it will take more time for Portland to win the war against sprawl. They point to two of the key indicators in their study that have produced a mixed result: one, the external connectivity of the study neighborhoods has decreased over time meaning that neighborhoods are more isolated now than before. Two, the mix of land use has remained unchanged meaning that heterogeneity in the neighborhoods has not increased. Both of these factors have influence on creating a compact urban form as we know a compact city is not only about increased density but also about mix of uses and transit-oriented development.

The study by Song and Knaap (2005) on Orange County, FL does not find any concrete evidence of sprawl reduction due to the growth management strategies. Their longitudinal study over a period of time indicates that the majority of the new house construction is still occurring in the

typical suburban style neighborhoods indicating that the effort to lower sprawl has not yet been successful. The two encouraging results from this study are that the average lot size has decreased and the internal connectivity among neighborhoods has increased. In relation to my research question, it can be said that the housing density in Orange County has increased but growth management strategies have not been able to contain urban sprawl.

The results of the studies on Montgomery County, MD indicate that while the Wedges and Corridors Plan employed there have been successful in preserving agricultural land, their success in creating a compact urban core has not been clearly demonstrated. The Green Wedges Plan has comparatively fared better in terms of taking some concrete measures to create an agricultural reserve, but the Corridors Plan has been less successful in increasing the density of the existing urban areas or containing development within designated areas.

Table 4.1: Key lessons learned from the implementation of growth management strategies

County or Metro Area / State	Major growth management strategy	Supporting GM instruments	Key lessons learned in light of the research questions
Portland Metropolitan area / Oregon	Urban Growth Boundary (UGB)	Light rail – transit area overlay zones with minimum density Public – private partnerships	The urban growth boundary has increased density of the city (Abbott, 2002) ▪ Before the implementation of the UGB – significant increase in the area of urbanized land and significant decline in population density ▪ After the implementation of the UGB – progression of developed land increase slowed down and upward trend in both residential and population density The urban growth boundary has increased density but has produced a mixed result in the measurement of contiguity (Song and Knapp, 2004) ▪ Neighborhoods have shown density increase for the single family dwelling units and a better internal connectivity ▪ External connectivity did not improve and the neighborhoods remain homogeneous in terms of land use mix The UGB has successfully served to contain sprawl (Nelson, 1994) The UGB has spilled urban growth into adjacent areas
Orange County / Florida	Urban Service Area Boundary (USAB) Adequate Public Facilities Program (APF)	Development framework guidebook Poster plan Land development code Urban design Element – provides aesthetic guidelines	Growth management strategies have produced mixed results (Song and Knapp, 2004) ▪ Study of neighborhoods shows that most new developments are occurring in the typical suburban neighborhoods followed by inner ring neighborhoods

Table 4.1, Contd…

		for public buildings, parks, streets, and neighborhoods	▪ Lot sizes have fallen but house sizes have risen ▪ Neighborhoods are more internally connected but less regionally connected
Montgomery County / Maryland	Wedges and Corridors Plan Priority Funding Areas (PFAs) Adequate Public Facilities (APF)	Transfer of development rights (TDRs) Purchase of Development Rights (PDRs) Conservation easements	The development of green wedges plan has been able to put 93,000 acres of farmland as agricultural reserve until 2002 and thus has curbed the proliferation of sprawl. (Harrigan and Hoffman, 2002) The development corridor plan has produced mixed results: has been able to produce a compact core for one community at the same time coreless development for the other. (Harrigan and Hoffman, 2002) APF program has been credited with cutting public service costs, thus creating an efficient infrastructure financing system that discourages sprawl (Song and Knaap, 2005)

4.1 Similarities and dissimilarities between growth management strategies

Table 4.2 compares the similarities and dissimilarities between growth management strategies employed in the study areas. As can be seen from the table that while sprawl reduction is an objective of the growth management strategies in all three study areas, each of the study areas also try to promote a secondary objective, such as, for Portland, OR, it is the containment of growth within a specific geographic boundary and thus preventing the non-urban areas from being encroached by urban development or in other words preserving the farmland outside the growth boundary. On the other hand, Montgomery County's primary objective is to preserve the farmland and open spaces but by doing so it has been able to concentrate development in some specific areas or in other words has been successful in sprawl reduction. Orange County has a combination of both policies and their objectives cut across both of the issues of farmland preservation and sprawl reduction.

As has been discussed in the previous Chapter, both Portland Metropolitan Area and Orange County, FL emphasize on regulatory approach to growth management. However, their approaches have dissimilarities in terms of contexts, comprehensiveness, and effectiveness. Portland's urban growth boundary has been proven to be much more comprehensive and effective than the urban service area boundary of Orange County. One reason is that urban service area boundary sometimes creates confusion in terms of which type of development should be encouraged within the service area and might end up discouraging development.

Both Portland and Orange County have regional planning system but this system in Portland is much more robust than Orange County as their regional government is elected. An elected body

works better in an environment where citizen participation and consensus building play important roles as citizens are less skeptical on elected officials than the non-elected ones and are better aware of the planning and growth management issues that impact their lives and the city.

Table 4.2: Similarities and dissimilarities between growth management strategies

Study Area	Objective of GM strategy	Approach to GM planning	Regional planning	Emphasis on geographical boundary
Portland, OR	▪ Sprawl reduction ▪ Contain development	Regulatory	▪ Emphasizes on regional planning system ▪ Elected regional government	Very strong emphasis
Montgomery County, MD	▪ Sprawl reduction ▪ Preserving farmland and open spaces	Market-based incentives	No regional planning system	No such emphasis
Orange County, FL	▪ Sprawl reduction ▪ Contain development	regulatory	▪ Encourages regional planning ▪ Non-elected regional planning body	Reasonable emphasis

4.2 Strengths and weaknesses of growth management strategies

Table 4.2 summarizes the strengths and weaknesses of growth management strategies employed in each of the study areas. Of the strategies in all three areas, urban growth boundary in Portland has produced the best result in terms of containing sprawl and promoting a compact development. The strength of this strategy lays in the fact that it defines a specific geographical area where urban growth should be concentrated and then formulates plans and strategies to achieve that objective. However, in researching this issue, I observe that this strategy in Portland worked better than in any other place because of the metropolitan area's unique regional planning system. The regional government -- Metro -- has been very instrumental in shaping and implementing the growth management strategies for the region and can be credited for the difference in impact between Portland and any other metropolitan area in the U.S. with an urban growth boundary.

The weakness of urban growth boundary in Portland, Oregon may be attributed to the fact that it hinders market forces from working freely and as a result might artificially increase the land and housing prices. Several studies have confirmed this assumption. The mechanism that works behind this price increase is that UGB creates segmentation in urban land market by dividing the land market into developable and non-developable portions. Because of the perception that the supply of developable land is limited, it creates a higher demand for the existing developable land as well as the housing stock. This problem of land and housing price increase could be offset by timely expansion of the growth boundary, if necessary, and by appropriate planning for infill and high-rise development.

Another documented weakness of urban growth boundary is that it might create spillover of growth to the adjacent areas. This might, however, be a related phenomenon of the land and housing price increase where the potential developers might seek an area with less restrictions and a lower price.

The principal strengths of growth management strategies in Orange County, FL are that the state level planning is relatively stronger here compared to Oregon and Maryland and that the state-local coordination is very robust. In terms of the specific strategy, urban service area boundary has been able to regulate the location and magnitude of growth to a certain extent but the strength of the county's growth management strategy comes from the concurrency requirement, where future development must occur in an area where urban services are present. This strategy allows for growth to be concentrated around existing or future planned urban services and through appropriate planning could increase the density of urban areas. The weakness of urban service area boundary will be similar to UGB, where it may encourage spillover of development to adjacent areas. The studies that have been reviewed to determine the impacts of Orange County's growth management strategies on urban form has not, however, found any conclusive evidence that these strategies have been able to increase density over time.

The principal strength of Montgomery County's growth management strategies is their reliance on market-based approaches, which are easier to implement than the regulatory approaches. The present research shows that the approach like Transfer of Development Rights (TDRs) has worked very well for the County as the County has been able to preserve a significant amount of farmland and open spaces through this strategy. In order to implement TDRs, it is necessary to

downzone an area where development would be discouraged at the same time defining a receiving area where the development would be concentrated. In order for this to work properly, public awareness and citizen participation are two vital components of growth management strategy and in my opinion is one of the drawbacks of the program as sometimes ensuring citizen participation takes long time and discourage planned development. Other weakness of TDR program is that its demand may fluctuate based on the existing price levels of the TDRs and if the market price is too low, the sellers may not be encouraged to sell their development rights, which might adversely affect the planned development concentration in the receiving area.

The strength of the corridors plan of Montgomery County, MD is that through encouraging development along the major transportation corridors, it encourages transit-oriented development. Studies have shown that the corridor plan worked very well for the urban areas that have been connected through public transport network -- subway network in this specific case -- and have sufficient number of stations in the urban area where the plan is being implemented.

Table 4.3: Strengths and Weaknesses of the Growth Management Strategies Employed in Study Areas

County or Metro Area / State	Growth management strategies	Strengths	Weaknesses
Portland Metropolitan area / Oregon	Urban Growth Boundary (UGB)	▪ Specific geographic boundary ▪ Regional planning system ▪ Regulatory approach backed by appropriate agency to implement the regulations	▪ Increases the land and housing prices ▪ Encourages spillover of growth to adjacent areas
Orange County / Florida	Urban Service Area Boundary (USAB) Adequate Public Facilities Program (APF)	▪ A combination of regulatory instruments and economic incentives ▪ A combination of state level planning and local planning	▪ Has not been able to demonstrate adequately that the strategies have been successful in reducing sprawl and promoting a compact development
Montgomery County / Maryland	Wedges and Corridors Plan Priority Funding Areas (PFAs) Adequate Public Facilities (APF) with Transfer of Development Rights, Purchase of Development Rights and Conservation Easement	▪ Incentive based approach ▪ Let the market forces play freely ▪ Has been successful in preserving open spaces and agricultural lands	▪ The demands for TDRs fluctuate based on the market price ▪ Needs public awareness ▪ The corridor plan has not been very successful in directing development into development corridors

4.3 Conclusion

Comparing the growth management strategies in three study areas and their implications for a compact pattern of development, it is apparent that the strategy in Portland, OR has worked the best both in curbing sprawl and increasing the density of the existing urban areas. If we take a look at the possible causes of their success, we will see that it is not only the establishment of the urban growth boundary itself but also the effective involvement of various levels of planning entities in implementing this strategy that has led to their desired outcomes. The role of the regional government has been discussed before but what apparently is also an important strength in Portland is the robustness of the state involvement as the state land use planning policy creates the basis for the regional and local comprehensive plans to operate.

Parallel to the state role in growth management, there are other important issues a state can deal with while promoting a compact city model. In order to have a glimpse of this, we can resort to the recent experience in California. We know that a compact city model has been central to the strategy for curbing urban sprawl and preserving farmland and open spaces, but the increase of density, encouragement of mix-uses, and a transit oriented development under the compact city model can also fight global warming by cutting vehicular emissions and thus greenhouse gases. Of course, the compact city model theoretically recognizes the fact that through sufficient concentration of population and services and by putting a mix of uses side by side, an urban area can reduce the need for automobile travels, hence reduce carbon dioxide emission. This hypothesis has been incorporated into primary policy objectives for growth management in some European cities but has so far been either ignored or incorporated as a secondary objective in the U.S. growth management or land use planning policies. But a recent phenomenon has raised the

hopes among planners and city managers that the fight against sprawl can be used as an instrument to fight global warming. California legislature has very recently passed a law that will reduce greenhouse gas emission by curbing urban sprawl and reducing travel time. Studies have shown that over the years the vehicle miles traveled by Californians have increased 50% faster than the population increase in the state suggesting that the Californians have been traveling further out due to the sprawled pattern of development (NY Times, 2008). The recent legislation gives the State's Air Resources Board the authority to set the emission level standard for each of the 17 Metropolitan Planning Areas for the years 2020 and 2035 thus giving the local governments the basis for devising housing development strategies, road building and other land uses to keep the travel distances and vehicular emissions into a permissible limit (NY Times, 2008). In other words, the legislation uses the compact city model as a strategy to fight not only urban sprawl but also global warming.

As can be seen from the timely adoption of the California law, a compact city model has the potential to not only reduce sprawl, preserve farmland and open spaces, and reduce energy uses but also fight a problem as big as global warming. Through adopting the reduction of vehicular emission as one of the objectives for growth management strategies, the urban areas in the U.S. can find one more justification for a compact, mixed-use, and transit oriented development. Learning from the examples of effective growth management strategies, cities can fine-tune their own GM strategies in a way that can address broader issue like global warming and sustainable development while solving local land use and transportation problems.

GLOSSARY OF IMPORTANT TERMS

APF

APF stands for Adequate Public Facilities. The idea behind this strategy is that proposed development projects are evaluated based on their concurrency capability – meaning compatibility with the existing infrastructure. In other words, a development project is approved only when adequate public facilities such as roads, waste disposal, potable water, sewer, parks and recreation etc. facilities are in place.

Bedroom community

A bedroom community, also known as commuter town or exurb, is usually a small town located far away from a city, usually located close to a major highway, and usually resided by people who commute to and from the city. The economic base of a typical bedroom community is generally housing sales and general retail sales, not heavy industry or technology.

Capital Improvement Program (CIP)

A Capital Improvement Program is a short range plan that identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. The duration of the plan is usually for four to six years. It provides a link between a municipality, school district, parks and recreation department, and/or other local government entity and a comprehensive plan and the entity's annual budget.

Comprehensive Planning Policy (CPP), Montgomery County, MD

The Comprehensive Planning Policy (CPP) is used as a growth management tool in Montgomery County, MD. The planning board of the Montgomery County Council adopted its first CPP report in 1982. The CPP adopted a new set of guidelines for the board to follow in administering the Adequate Public Facilities (APF) program. After adopting these guidelines, the interrelationship between various County programs and plans, particularly in terms of the provision of the public facilities, have become clearer. The planning board reviews and updates it annually, thus providing the opportunity to re-evaluate whether the proposed public facilities are sufficient to serve anticipated development.

Florida’s Growth Management Act (GMA)

Florida’s Growth Management Act (GMA) was adopted by the 1985 Legislature and is generally known as The Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163, Part II, Florida Statutes). This legislation requires all of Florida's 67 counties and 410 municipalities to adopt Local Government Comprehensive Plans that guide future growth and development. Comprehensive plans contain elements that address future land use, housing, transportation, infrastructure, coastal management, conservation, recreation and open space, intergovernmental coordination, and capital improvements. A key component of the Act is its "concurrency" provision that requires facilities and services to be available concurrent with the impacts of development.

Land Conservation and Development Commission (LCDC) in Oregon

Oregon´s seven-member Land Conservation and Development Commission (LCDC), adopts state land-use goals and implements rules, assures local plan compliance with the goals, coordinates state and local planning, and manages the coastal zone program. The Commissioners are unpaid citizen volunteers appointed by the Governor and confirmed by the Senate. The statute that established the Commission (ORS 197.030) requires that the members be representative of certain regions of the state, and that there be a current or former elected official of a city and a county.

Metropolitan Service District

Metropolitan Service District, currently known as Metro, is the regional governmental agency for the Oregon portion of the Portland metropolitan area. It is the only directly-elected metropolitan planning organization in the United States. At present it serves 24 cities and parts of three counties of Oregon. The organization is responsible for managing urban growth boundaries, land use planning, and transportation planning.

Purchase of Development Rights (PDR)

Purchase of Development Rights (PDR) is an important tool used for protecting farmland and other resources from development. Under a PDR program, a landowner voluntarily sells the development rights of a parcel of land to a public agency or to a charitable organization, such as

a local land trust, local unit of government or state government. Once the development right is sold, a landowner is permanently relinquished from developing or subdividing his/her parcel of land. However, the landowner still retains all other rights and responsibilities associated with that land, i.e. the right to farm that property and to post it as private property, as well as paying property taxes. The landowner is compensated for the value of the development rights to the property.

PFA

Priority Funding Area. A policy used for state funding to be available for projects that are located in already designated or future would-be designated growth areas.

Quasi-court

A court where decisions are made by specialized professionals instead of a judge. This kind of court is set up when it is deemed that the judge in a regular court is not educated enough to deal with a highly specialized issue, such as land use planning in Oregon. Oregon's land use planning system allows decisions made by cities, counties and regional planning bodies to be appealed before a land use quasi-court comprised of three attorneys. The Land Use Board of Appeals, which is based in Salem, OR, has a mandate to reverse or remand decisions that violate proper procedure, a local comprehensive plan or the state goals.

Reedy Creek Improvement District (RCID), Orange County, FL

Named after a natural waterway, The Reedy Creek Improvement District (RCID) is the immediate governing jurisdiction for the land on the Walt Disney World Resort. As of the late 1990s, it comprised an area of 38.6 sq. mi. (100 km^2) within the outer limits of Orange and Osceola counties in Florida. The RCID includes the cities of Bay Lake and Lake Buena Vista, and unincorporated RCID land. The district is governed by its own administration and own sets of land use regulations.

Regional Planning Councils (RPCs) in Florida

The State of Florida has a number of regional planning councils that divide the state into 11 regions and carry out regional planning activities in each of the regions. Membership of the council is usually comprised of the counties and the metropolitan areas located in that particular region. A part of the council representatives is typically appointed by the Governor, whereas the other part is local-elected officials appointed by the local governments. In addition to the regional planning and review activities, the Council provides a large variety of services to benefit its local governments. These services include: technical planning assistance, grant and loan planning assistance including grant administration services, transportation planning assistance, hazardous waste monitoring, emergency response planning assistance, and economic development activities.

TDR

TDR stands for Transfer of Development Rights. This is a market based approach where the development right of a designated area (usually the area to be preserved) is foregone (by selling or being compensated) which then can be used for development in a receiving area (an area usually zoned for higher density)

Trust for Public Land (TPL)

The Trust for Public Land (TPL) is a national, nonprofit, land conservation organization that conserves land for people to enjoy as parks, community gardens, historic sites, rural lands, and other natural places, ensuring livable communities for generations to come. Since 1972, TPL, with the help of the landowners, community groups, and national, state, and local agencies has completed more than 3,500 land conservation projects in 47 states, protecting 2.5 million acres.

UGB

Urban Growth Boundary. A geographical boundary, which is usually implemented at a regional scale for the purpose of containing most of urban development within that boundary. The area inside the boundary is usually zoned for high density urban development, whereas the area outside is designated for agricultural and resource use.

USAB

Urban Service Area Boundary. Public utilities and other urban services that are necessary to support urban growth are provided only within the boundary.

VMT

VMT stands for Vehicles Miles Traveled. This is an indicator used in transportation research to determine the extent of vehicular trips in an area in a given period of time. VMT is calculated using the following formula:

VMT = average trips per person X average miles per trip

World Commission on Environment and Development (WCED)

The World Commission on Environment and Development, also known as Brundtland Commission, was created by the United Nations in 1983 and named after its Chair Gro Harlem Brundtland. The objective behind creating this commission was to deal with "accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development". The commission recognized that the environmental problems are global in nature and that it is in the best interest of all nations to work together towards a common goal of "sustainable development". The concept of sustainable development was outlined and popularized by the publication of their report *Our Common Future* by Oxford University Press in 1987.

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Appendices

Figure A1: Urban Growth Boundary, Portland, OR

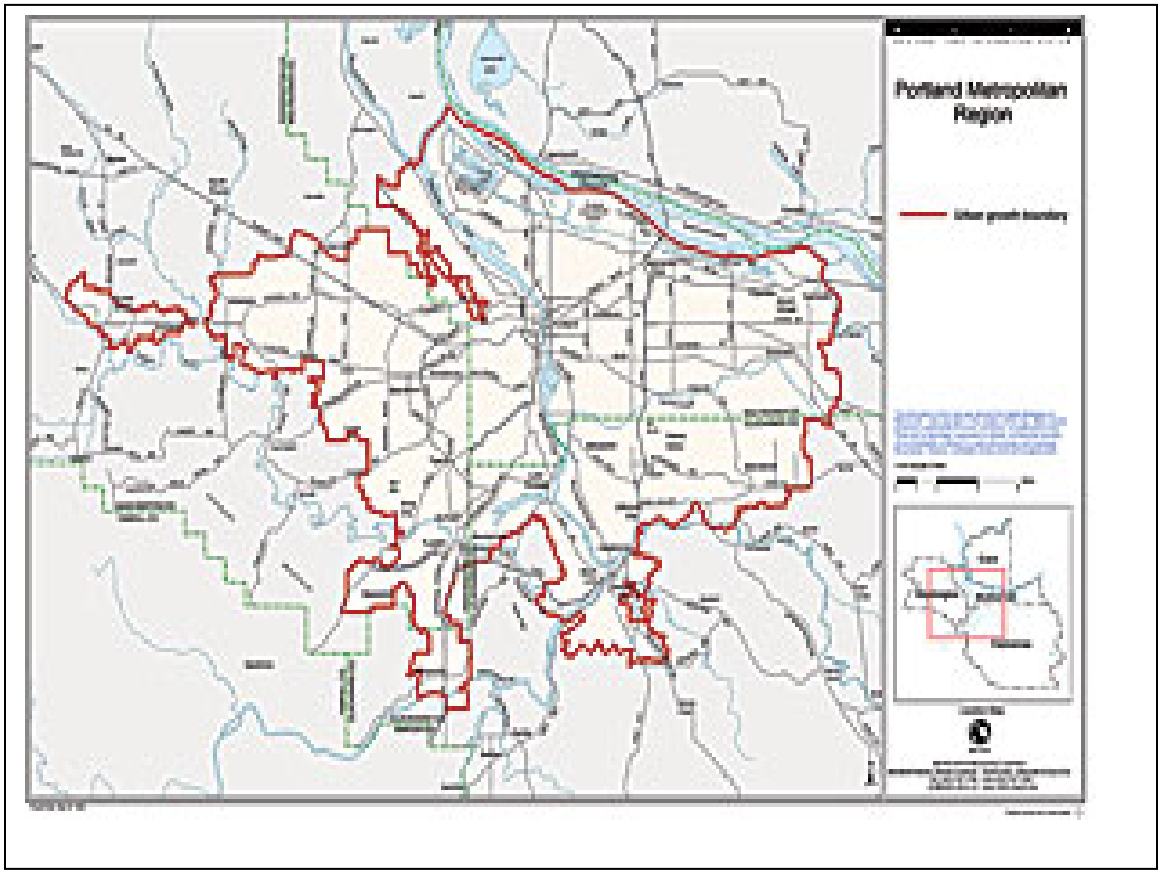


Figure A2: Urban Service Area Map, Orange County, FL

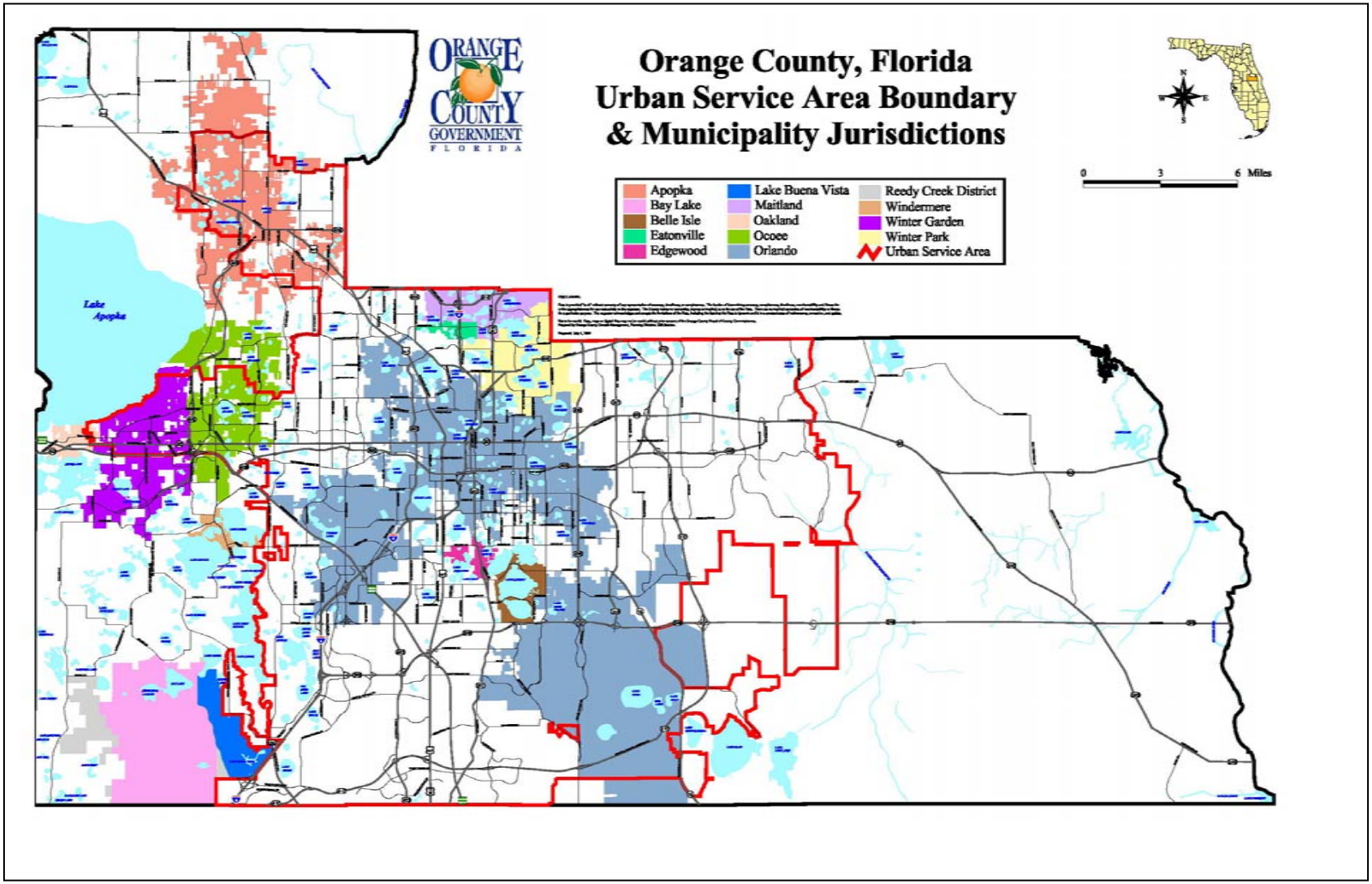
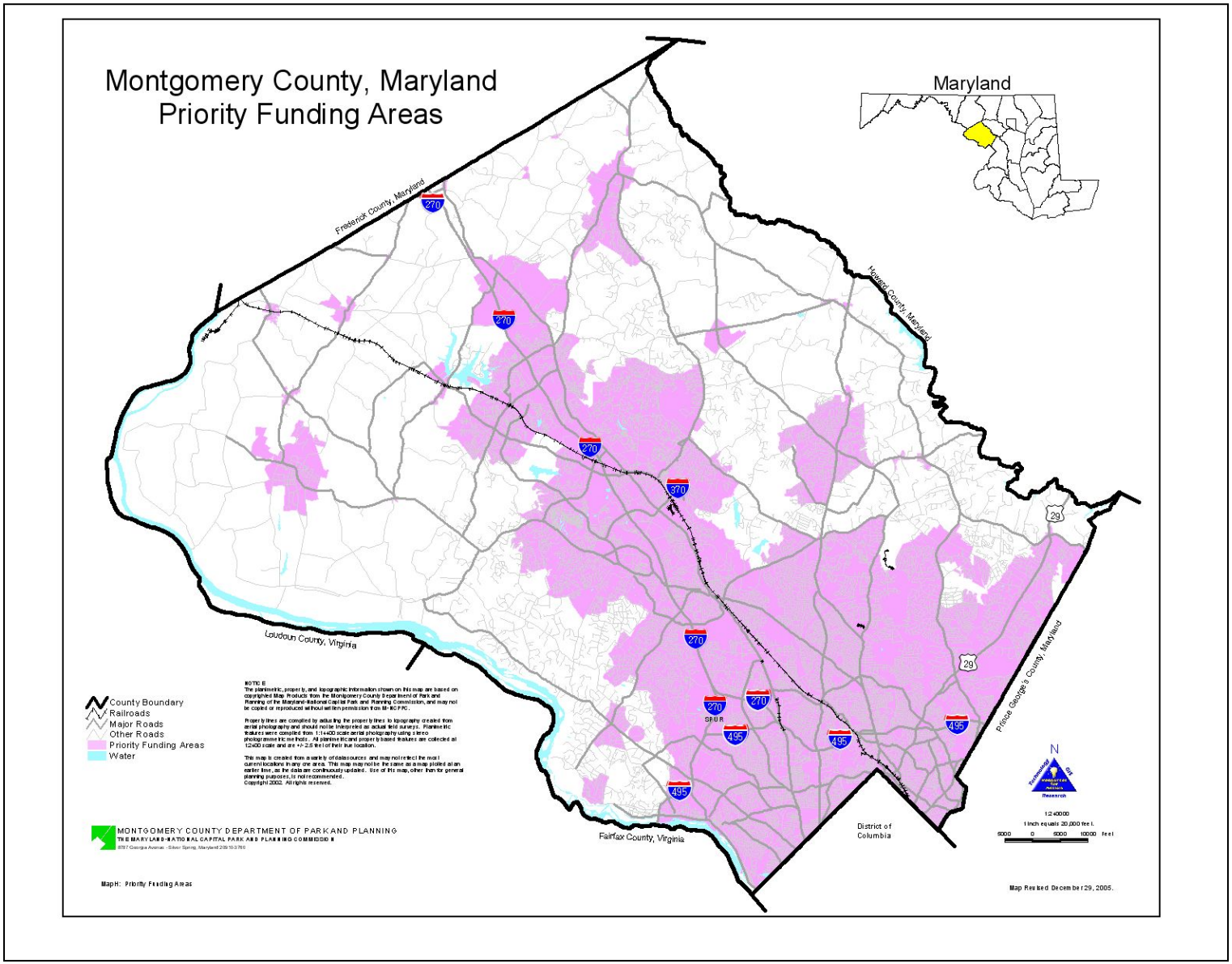


Figure A3: Priority Funding Areas, Montgomery County, MD



Vita

Muhammed Sayeedul Islam was born in Bangladesh. He received his Bachelor in Urban and Rural Planning (BURP) degree from Khulna University, Bangladesh. After graduating, he worked as a lecturer at the same university. He finished a Master of Science degree in Urban Planning, Land, and Housing Development from Asian Institute of Technology (AIT) in Thailand in 1998. After graduating from AIT, he worked as a Research Associate at Urban Environmental Management Program of the same institute. Muhammed worked as a Graduate Research Assistant at the University of New Orleans from 2000 to 2004. During this period he worked in the Comprehensive Land Use Planning Project for Jefferson Parish. He also worked in the land use planning projects for the city of Kenner and the City of Harahan, LA. He specializes in Land Use and Environmental Planning, Geographic Information Systems, and Sustainable Development.