The Shape of Metropolitan Growth: How Policy Tools Affect Growth Patterns in Seattle and Orlando

Metropolitan Policy Program
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THE SHAPE OF METROPOLITAN GROWTH: HOW POLICY TOOLS AFFECT GROWTH PATTERNS IN SEATTLE AND ORLANDO

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EXECUTIVE SUMMARY

Land use, infrastructure, and open space policy play an important role in shaping metropolitan growth, and whether or not they are coordinated on the policy level, they do interact with each other in shaping those patterns.

However, the exact interplay of these policies is not well understood.

This paper uses two metropolitan areas—Orlando and Seattle—with differing growth management regimes to explore the effects of conscious growth policy on metropolitan form.

In Orlando, growth management is realized largely through open space protection guided by state law and environmental concerns. Though Florida also has a state growth management law, it is far more concerned with providing concurrent infrastructure with new development than guiding metropolitan form.

The Seattle experience differs in that the state growth management law and its attendant urban growth boundary were the major policy influence on metropolitan growth. However, additional efforts in agricultural protection and the use of transferable development rights also played a key role.

Overall the paper finds that:

- Urban growth boundaries can help to redirect urban growth, but in and of themselves they cannot encourage a fundamentally different urban form.

- Open space protection efforts can divert growth away from important natural areas, but as a more defensive, or reactive, approach, they themselves they cannot shape a coherent metropolitan form.

- Neither solution, by itself, solves the problem of the development battleground on the metropolitan fringe, often the most politically divisive growth area in any region.

- Unless they are coordinated, these different types of policies often work at cross-purposes, boosting the costs of land preservation and/or open space protection.

Though these two metropolitan areas are hardly emblematic of all of the nation's cities, they do offer insights into the enactment and implementation of conscious strategies to guide metropolitan development. Perhaps the overwhelming lesson is that, in order to best adapt to market forces, especially on the battleground of the metropolitan fringe, growth policies should be conceived and implemented in a holistic fashion.

TABLE OF CONTENTS

THE SHAPE OF METROPOLITAN GROWTH:
HOW POLICY TOOLS AFFECT GROWTH PATTERNS IN SEATTLE AND ORLANDO

I. INTRODUCTION

Metropolitan growth patterns are shaped by a combination of market forces and public policy tools and often by the interaction between the two. But the specific dynamics that create metropolitan growth patterns—and, in particular, the precise role that public policy tools play in shaping those patterns on the metropolitan level—are not well understood.

Previous Brookings research has attempted to identify and understand the most important policy levers that shape metropolitan growth, especially those that deal with land use. For example, research has found that the geographic pattern of urban growth within a metropolitan area is shaped in large part by three public policy tools: land use regulations on both a local and regional level; patterns of infrastructure investment, including roads, water, and sewers; and patterns of open space protection and acquisition programs (Pendall, Martin, and Fulton, 2002).

In some metropolitan areas tools such as urban growth boundaries (land use regulation), urban service areas (infrastructure investment), and greenbelts (open space protection) are consciously used to shape patterns of development, but generally these tools are not used to shape overall metropolitan growth. But because they are in place nevertheless, they play a role—consciously or not—in shaping the pattern.

Other research looked more specifically at open space protection programs throughout the United States and attempted to trace the relationship between those programs and conscious efforts to manage and shape metropolitan growth. Although open space programs clearly have an impact on metropolitan growth patterns, they are rarely used consciously or strategically to do so (Hollis and Fulton, 2002).

This paper represents a next step in understanding how these policy tools shape the patterns of urban growth in American metropolitan areas. The previously cited research drew from national surveys reviewing growth management and land conservation policies throughout the country to identify patterns and connections among different types of policies. This paper, by contrast, seeks to take this analytical framework and apply it to specific metropolitan areas.

In so doing, we seek to use these “pilot” metropolitan areas to examine in closer detail some of conclusions of the previous papers. Beyond that, we hope to test a method—partly quantitative, partly qualitative—for examining the effect of growth management policies on the pattern of growth in any metropolitan area. It is our hope that this method will be replicable across all metropolitan areas in the United States, whether they have explicit growth management policies or not.

Perhaps most important, however, our goal is to examine “conscious” growth management policies and, for the first time, seek to assess their impact at the metropolitan level. Our two case

study metropolitan areas, Seattle and Orlando, both operate under statewide growth management systems that have received a great deal of attention from policymakers and policy analysts. Although both have been criticized, these growth management systems are generally presumed to be successful in altering the pattern of metropolitan growth. But is this really true? And if so, in what way? And do the growth management systems work with or against other land-related public policies?

II. METHODOLOGY

It is not difficult to conclude that growth management tools, consciously or not, do have an impact. It is very difficult, however, to measure exactly *how* these factors affect metropolitan growth.

Consistent and reliable information about metropolitan growth patterns is hard to come by, especially across metropolitan areas. Land-use policy, including the monitoring of growth trends, is typically the province of local governments, so measurement techniques can vary widely even among adjacent jurisdictions. Many regional planning councils do a heroic job of attempting to track metropolitan growth trends, but are hampered by lack of consistent data across jurisdictional boundaries. Large-scale datasets with the potential to provide accurate and consistent information across metropolitan areas, such as satellite imaging, are difficult to interpret accurately and may not be able to provide fine-grained information.

In addition, the task of understanding a metropolitan area's plethora of growth-related policy tools, determining how they are used, and examining how they have affected overall growth patterns is difficult to accomplish purely quantitatively. Simply put, this task requires a qualitative approach that relies not only on statistical and spatial analysis but also on detailed knowledge of the "on the ground" situation.

For this reason, the paper uses case studies, examining the relationship between growth policies and actual growth patterns in two important but distinctly different metropolitan areas: Seattle and Orlando.

We have chosen these two metropolitan areas as our “pilot study areas” for several reasons, including the following:

- They are roughly the same size, at least in terms of population. As we have defined them the two metropolitan areas had a population of close to 3 million people each, according to the 2000 Census.[1] They also had a very similar number of housing units (between 1.3 million and 1.5 million) as recorded in the Census.

- They are located in different parts of the country and have different geographical contexts. Seattle is located in the West, where metropolitan areas are characterized by generally higher densities and topographical constraints. Orlando is located in the South, where metropolitan areas are characterized by generally lower densities and few topographical constraints.

- They operate under strong but somewhat different state growth management laws that have been in place for a relatively long period of time. Florida's Growth Management Act was

[1] For the purposes of this paper we have defined the Orlando metropolitan area more expansively than the federal definition.

passed in 1985 and has traditionally focused on infrastructure concurrency; Washington's Growth Management Act was passed in two phases in 1990 and 1991 and focuses on containing urban growth and protecting critical resource land such as farmland.

- Each represents a good example of one of three policy drivers described above. Seattle's growth is currently being strongly shaped by the boundaries of the Urban Growth Area created as a result of its state law, while Orlando's patterns are currently being strongly shaped by Florida's open space acquisition programs, which are among the most well-funded and active in the nation.

We recognize that, especially because of this last point, Seattle and Orlando are atypical metropolitan areas. Most do not operate under a strong and consistent state growth management regime, as Seattle and Orlando do. The Southern states, in particular, do not have strong growth management laws. In addition, both Seattle and Orlando are entirely contained in one state, while one in three large metropolitan areas in the country straddles state lines.

Nevertheless, we chose to overlook these potential drawbacks for the purposes of this study. One reason is ease of analysis. Because this policy framework analysis had not been undertaken at the metropolitan level previously, we concluded that a single-state analysis would be the best way to start. In addition, we chose metropolitan areas that operate under ”conscious” growth management systems because we believed it would be easier to assess the impact of growth management policies. Clearly, future analyses using this framework must examine the cumulative impact of “unconscious” growth management systems, but this will require more fine-grained work across many jurisdictions. Finally, we chose Orlando because, like other Southern metropolitan areas, it is fast-growing and has (until recently at least) had abundant land, making it a good contrast to land-constrained Seattle.

Once we selected our case studies, we undertook a four-step assessment that attempted to weave together policy analysis and interpretation of actual growth patterns.

First, we researched and attempted to summarize the existing growth-related policies within the metropolitan area. We focused especially on the land-use policies as they function under the two state growth management laws and the array of open-space acquisitions programs, again focusing on the state level. Our goal was to depict, for the first time, the urban containment "regime" that is in place in each metropolitan area.

Second, we used all available data to examine the quantity and spatial distribution of recent growth patterns, with particular emphasis on Census data and on the land urbanization data available in the metropolitan area. In particular, we sought to examine the geographical patterns of urbanization over time, especially in relation to policy tools, such as open space acquisitions and urban growth boundaries that may have had the effect of removing some otherwise developable land from the path of growth.

Third, we selected one case study in each metropolitan area in order to take a closer look at how the actual use of specific policy tools affected the dynamics of metropolitan growth, especially the geographic pattern. In each case, we selected an example of an open space protection program. We made this choice, in large part, because our previous research suggested that both funding and policy interest for open space protection is on the increase, and that while local open space acquisitions are often made in the context of a specific development threat, regional open space programs are rarely designed or implemented with a conscious goal of shaping urban growth.

Finally, we sought to synthesize our previous analytical steps—the growth policy summary, the recent growth trends, and the case study—to draw some conclusions about how growth policies actually affected growth patterns in the two metropolitan areas, and about what the impact of these policy tools might be on growth patterns generally in U.S. metropolitan areas. In so doing, we present some recommendations about how these policy tools might be used more consciously in order to shape metropolitan growth patterns.

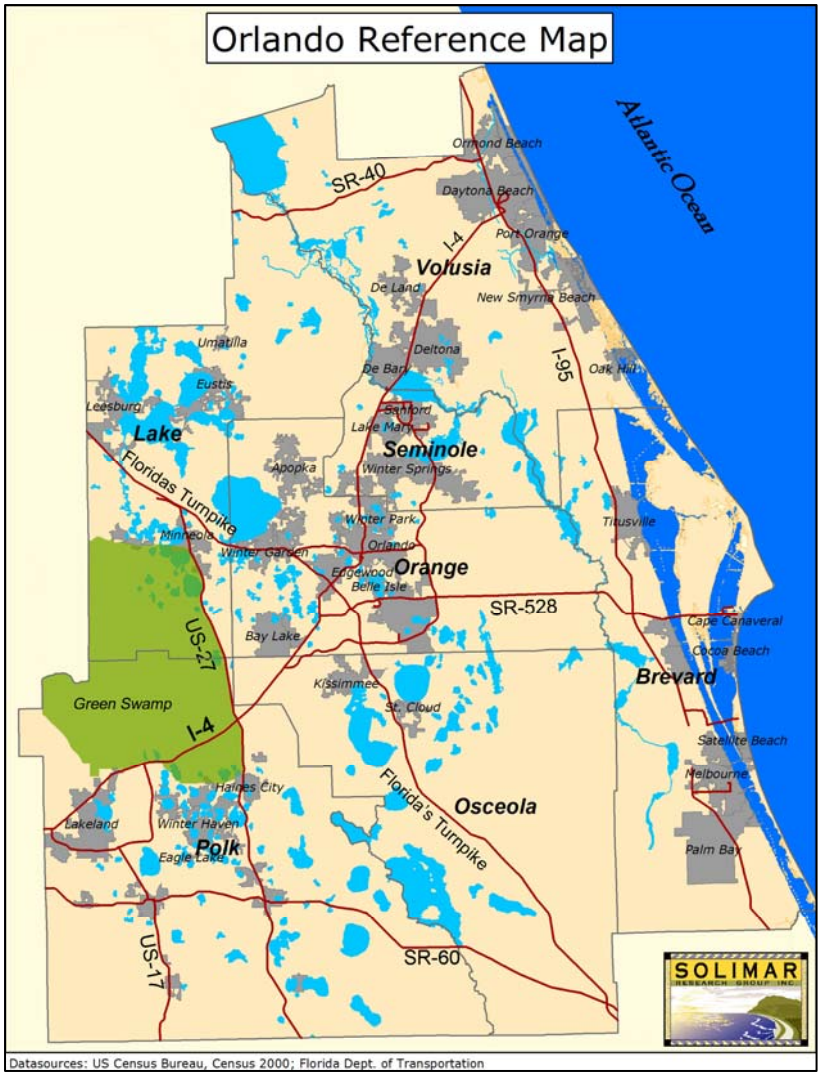
III. METROPOLITAN ORLANDO

With a population of approximately 3 million people according to Census 2000, the seven-county area that we used as our metropolitan Orlando study area is one of the largest and fastest-growing urban agglomerations in the United States. It is also rapidly emerging as a major metropolitan area in Florida, a fast-growing state with many metropolitan areas experiencing a great deal of urban expansion. Like the rest of Florida, this region has operated under the Florida Growth Management Act since 1985. As stated above, Orlando is atypical of Southern metropolitan areas because Florida has different growth dynamics and a strong growth management system. It is typical, however, in that growth is fast and the stock of available land has been plentiful.

The seven-county area that we have used as our study area involves a more expansive definition than is used is most other analyses of metropolitan Orlando. The seven counties we include are Lake, Orange, Oceola, and Seminole Counties, which are the four counties included in the U.S. Census Bureau definition of the Orlando metropolitan statistical area (MSA); Volusia County, which is the larger of the two counties contained in the Census Bureau's Daytona Beach MSA; Polk County, which is the only county in the Census Bureau's Lakeland-Winterhaven MSA; and Brevard County, which is the only county in the Census Bureau's Melbourne-Titusville-Palm Bay MSA (Map 1).[2]

Although these seven counties are divided among four Census MSAs, six of them (all but Brevard) are part of the East Central Florida Regional Planning Council.

Map 1



[2] In the 2000 Census, the four-county Orlando MSA was the 28th-largest metropolitan area in the nation. If the seven counties included in this study were aggregated by the Census, the region would have ranked 14th, between Minneapolis and Phoenix.

A. Regional Setting: Geography and History

The Orlando region is situated in Central Florida, approximately 50 miles west of the Atlantic Ocean and 80 miles northeast of the City of Tampa and the Gulf Coast. It is located to the north of Lake Tohopekaliga, Lake Okeechobee, and the Everglades. Much of its growth can be attributed to the fact that the Orlando region sits along two major interstates -- I-95, the most important north-south highway in the eastern United States, and I-4, one of the leading east-west highways in Florida.

The region contains many geographical features, but central Orlando is located on what is known as "the Central Highlands." The land is spotted with lakes and sinkholes from underlying limestone erosion, with more than 50 lakes within the Orlando city limits. The region is home to the Wekiva River, named an “outstanding Florida water.” It is also the site of the headwaters of the Kissimmee River, one of the primary water sources for Florida’s endangered Everglades system. Florida's aquifer is one of the most productive in the world, and prior to human manipulation the region had dry, flat prairies covered with shrubs and grasses. In the decades prior to urbanization, the scrub habitat was replaced by citrus, row crops and tame grass pastures.

Orlando was originally settled as a fortress during the Seminole Indian wars. The city was incorporated in 1875 as the first city in Central Florida. From that time forward the economy was based on citrus production and cattle ranging, and at its peak in the 1950s the citrus industry spread over 80,000 acres in Orange County, home of Orlando.

Shortly thereafter, however, the forces of postwar prosperity began to accelerate Orlando's urbanization. One of the earliest engines of urban growth was the opening of the U.S. Missile Test Center at Cape Canaveral, 30 miles to the east on the Atlantic Coast, in 1955. Three years later the National Aeronautics and Space Administration (NASA) was created and headquartered at the Cape. In 1956, the Glenn L. Martin Co. (forerunner of Martin Marietta and Lockheed Martin) opened a missile plant south of Orlando.

But the biggest shift to urbanization came in the 1960s, when Walt Disney announced plans to build a Florida theme park 10 miles southwest of Orlando. Today, the complex of Disney resorts—built on 12,000 acres purchased by Disney in the1960s—has helped the Orlando area become the leading tourist area in the United States, with 43 million visitors per year (Fogelsong 2001). Today, tourism accounts for 25 percent of the region's economy. Metropolitan Orlando has more than 100,000 hotel rooms, while Orange County's stock of citrus groves has dwindled to less than 10,000 acres.

The 2004 state of Florida population estimates pegged the seven-county region's total population at approximately 3.4 million. The largest county by far was Orange County with a population of over 1 million. However, Polk, Volusia, and Brevard Counties all had populations of about 500,000, and Seminole County had a population of around 400,000 persons.

In a region where most people live in unincorporated areas, no one city is dominant. There are more than 80 incorporated cities in the region, but Orlando, the largest at 208,900 persons (2004 estimate) is only about 6 percent of the region's total population (and only about 12 percent of the Orlando CMSA). No other city has even 100,000 persons; cities such as Palm Bay and Melbourne (in Brevard County), Lakeland (in Polk County), and Daytona Beach and Deltona (in Volusia County) have between 60,000 and 90,000 people.

Despite the number of cities, as of 2002 almost 1.8 million people in the region, or 52 percent, lived in unincorporated areas. More than 60 percent of residents live in unincorporated areas in Orange, Osceola, and Polk Counties. Only in the two coastal counties, Volusia (Daytona Beach) and Brevard (Cape Canaveral) do most residents live in incorporated cities. Hence, county governments play an extremely important role in managing growth.

B. Growth Management and Urban Form Policy

Florida has a long history of state-level growth management and open space protection policy that has affected metropolitan Orlando. One of the first pieces of state-level planning legislation was passed in Florida in 1972, out of concern for the water supply. This law, the Environmental Land and Water Management Act (ELMS), gave the state the power to designate "areas of critical state concern," along with the power to prepare local plans and regulations if local governments do not respond to state recommendations. The Orlando region includes one such area, the Green Swamp. (See discussion below.)

Also in 1972 Florida instituted a system for state and regional review of “Developments of Regional Impact.” DRIs are defined as projects having a substantial impact on more than one county; such projects are reviewed for their impacts on land use patterns, public services and the environment. In the Orlando region the East Central Florida Regional Planning Council (ECFRPC) works with the state Department of Transportation, the local transportation planning organization (MPO), the water management district, and other local, state, and federal agencies.[3]

The state began requiring local governments to prepare comprehensive plans in 1975. However, the law had little teeth until the framework for the current growth management system was created between 1984 and 1986. The cornerstone of this system is the Growth Management Act of 1985.

The Growth Management Act (GMA) requires local comprehensive plans to include specific "elements," or chapters, including future land use, housing, transportation, infrastructure, coastal management, conservation, recreation and open space, intergovernmental coordination, and capital

[3] After conducting a regional public hearing, the Regional Planning Council issues an advisory report to the local government with jurisdiction over the DRI project. Because this report is advisory in nature, the local government can approve the development or make other decisions with which reviewing agencies are not in accord. If so, reviewing agencies can appeal to the state Land and Water Adjudicatory Commission, which can override local decisions.

improvements. The 1985 act also provided that local government should not approve new development unless capital facility capacity would be available "concurrent" with that development. Required facilities include roads, water, wastewater, drainage, solid waste, parks, and transit. The law also gave the state Department of Community Affairs the power to review local comprehensive plans, plan amendments and development regulations, and to approve or reject them.

Under the GMA local governments are encouraged to designate "urban service areas" in the future land use element and on the future land use map.[4] The GMA further advocates more compact growth patterns and less urban sprawl.

From the outset, the concurrency provision has been difficult to meet, due to lack of highway capacity and inadequate state transportation funding. In 1993, Florida adopted updated ELMS legislation that permits development that does not meet concurrency to move forward if the local government has failed to implement its Capital Improvement Element, and if the developer makes a binding commitment to pay a fair share of the cost of needed facilities. Transportation improvements that have approved funding and are due for construction within three years are considered to meet the concurrency requirements.

In June 2005 the GMA was reformed through a package of legislation called "A Pay as You Grow Plan for Florida's Future." The plan includes billions of dollars of state funds for roads, schools and water projects, and requires school concurrency by December 2008. The new law also streamlines the comprehensive plan amendment process, making it easier to develop within approved urban service boundaries.

The 2005 plan also recognizes the threat to continued growth posed by the state's shrinking supply of groundwater by requiring that adequate water supplies be available no later than the date of issuance of the certificate of occupancy for new construction. It also requires local governments to better coordinate their plans with those of the regional water management districts (Florida Department of Community Affairs website).

Most of the Orlando region is served by the St. John's River Water Management District (SJRWMD), with the South Florida Water Management District covering the southern portions of Orange and Polk and the western portion of Osceola County.

The SJRWMD recently announced that, by 2020, the regional supply of groundwater will not be sufficient to meet demand. At that point the region will need to tap into alternative sources, such

[4] An urban service area (USA) refers to a line beyond which a city has decided that its infrastructure—typically sewer and water—should not extend. In many metro areas, urban service areas support a "tiering" system—that is, a system that directs public infrastructure into new areas in a particular sequence – in order to eliminate "leapfrog" development, encourage orderly urban expansion, and reduce the cost of public infrastructure. USAs resemble urban growth boundaries in the sense that they create geographical limits on urban growth (at least urban growth that requires the extension of public water and sewer systems). But they also tend to be more flexible and easier to move because they tend to be concerned with the geographical sequencing of growth rather than its constraint. See (Pendall, Martin, and Fulton, 2002)

as the St. Johns River or the Atlantic Ocean. A spokesman for SJRWMD said, “You’re not going to run out of water, but what you might run out of is cheap water,” (Barnes, 2005).

Most counties in the Orlando region adopted comprehensive plans after the Growth Management Act was adopted in 1985. The plans of four of those counties did not contain any strongly identified urban growth boundary or urban service area, although Florida's concurrency law does force local governments to sometimes address the geographical sequencing of growth through infrastructure policy.

However, Orange, Seminole, and Polk counties did include clearly designated areas of urbanization in their plans. The first USA was designated in Orange County in 1991 and contained 65,000 acres. Both Seminole and Orange Counties drew lines on their future land use maps designating rural areas to the east. In Seminole, north of Orange County, the line is called the Urban/Rural Boundary. Polk County, located southwest of Orlando, has identified short-term Urban Development Areas and longer-term Urban Growth Areas, based on infrastructure sequencing, in its comprehensive plan.

In addition to growth management implemented by regulation and infrastructure policy, the Orlando region has also been shaped strongly by Florida's open space acquisition efforts. Floridians have long been conscious of the need to protect natural resources and environmentally sensitive areas. And there is probably no other state where so much open space has been permanently protected through purchase with bond funds. The impact on urban growth patterns has been considerable.

State bonds of $20 million in 1964 and $40 million in 1972 were used to acquire outdoor recreation lands. In 1979 the Conservation and Recreation Lands (CARL) program was established in the state Department of Environmental Protection (DEP). In 1981 the Save Our Rivers (SOR) program was established, also in DEP. SOR includes the Water Management Lands Trust Fund, which is distributed to the water management districts for land acquisition and protection.

The big move came in 1991, when a 10-year, $3 billion program of land acquisition using state bonds commenced under the name of Preservation 2000, or P2000. P2000 funds helped acquire over one million acres in 60 counties. P2000 funds were allocated 50 percent to CARL; 30 percent to water management districts; 10 percent for programs including recreation, parks, greenways, trails, forestry, fish and wildlife; and 10 percent to Florida Communities Trust (FCT).

FCT began in 1991 charged with helping local governments implement their comprehensive plans through land acquisition. The program is administered by DCA, the agency responsible for approving local plans. FCT funds can be used to further the goals of the conservation, recreation and open space, or coastal elements of local plans. Counties and cities over a certain size must provide local funds to partially match their FCT grants. As of June 2001 FCT funds have helped preserve over 40,000 acres statewide (Hollis and Fulton, 2002). Between 1991 and 1999, the seven counties in the greater Orlando region received over $63 million in FCT grants. Matched with almost

$34 million in local funds, these counties preserved over 6,200 acres during the decade (Florida Communities Trust website).

Because of the popularity of P2000, Florida voters approved continued state funding in 1998. Florida Forever, as it is known, is funded at $300 million per year. Its allocations are different, however. CARL will receive 35 percent; water management districts 35 percent; 8 percent for other programs; and 22 percent for FCT. This increases FCT funding from $30 million to $66 million per year.

According to the projects on the 2002 Florida Forever list, more than 140,000 acres in the seven-county region have been preserved using funds from the CARL program, water management districts, and other sources. The total area that could eventually be preserved in these projects is almost 600,000 acres, or 12 percent of the estimated 4.8 million acres in the seven counties, including 147,111 acres in the Green Swamp (Florida Forever web site).

In 2001, the legislature established the Rural Land Stewardship Areas Program. This permits up to five counties to use conservation easements to maintain designated areas in agricultural or other rural land uses. To date several counties have expressed interest in this program, including Lake in the Orlando region.

Another new development is a partnership between The Nature Conservancy and the U.S. Department of Agriculture Natural Resources Conservation Service. In East Central Florida this will involve protection of the headwaters of the Kissimmee River in Osceola County. The South Florida Water Management District has targeted for protection almost 34,000 acres in the Kissimmee River's upper basin, which is located in the greater Orlando region (Newman, 2002).

Some local governments as well have embarked on their own, locally funded land conservation programs. In 1991 Brevard County voters approved a property tax of $0.25 per $1,000 value for 20 years to issue up to $55 million in bonds. These funds have been used to establish the Environmentally Endangered Lands Program (EEL), and have helped to protect more than 18,000 acres of threatened habitat. In addition, since 1993 Brevard has worked with The Nature Conservancy on land acquisition (Brevard County website).

In 1995, Orange County Commissioners approved $37.9 million in bonds which was used to purchase some 10,000 acres of environmentally sensitive land. (Jackson, 2002). In 2003 Orange County created a program called Green PLACE—Park Land Acquisition for Conservation and Environmental protection. The program was recently funded with $20 million from the county's public services tax (Garcia, 2005).

Like Orange County, in 1994 Polk County voters approved a property tax of $0.20 per $1,000 value for 20 years for green space. Since that time the Environmental Lands Program has acquired 12,230 acres in 13 sites throughout the county (Battels, 2002, and Polk County web site).

As for Seminole County, in 1990 voters there approved a $20 million bond to establish the Natural Lands Program. Since that time the county has preserved over 5,000 acres in wilderness tracts, nature preserves and ranches throughout the county (Seminole County website).

Volusia County was the first county in Florida to implement a local environmental land acquisition program, enacting such a program in 1986. Since that time the county has purchased over 18,000 acres. In 2000 county voters approved a property tax of $0.20 per $1,000 value for 20 years. This tax is expected to provide $3 million per year for the new Volusia Forever land acquisition program, and $3 million per year for Volusia ECHO (environmental, cultural, historic and outdoor recreation projects) (Volusia County web site).

C. Recent Growth Patterns

During the 1990s, metropolitan Orlando grew by approximately 650,000 persons, from 2.4 million to 3.05 million persons—a growth rate of 27 percent. This was slightly slower than the 1980s growth rate, both in terms of absolute numbers and in percentage terms.

In assessing metropolitan areas, it is sometimes useful to compare growth rates in a "core" county, where the central city is located, to those in the outlying counties. The core county in metropolitan Orlando is Orange County, where Orlando itself is located. Orange County has a population of about 900,000 persons, or almost one-third of the metropolitan area population. But comparing Orange to outlying counties is not very useful, because Orange itself is still growing fast and some outlying counties, especially along the coast, are in some ways more mature in their urbanization than Orange County.

However, examining the growth rates for the counties individually does help reveal some patterns. Most of the growth in the immediate Orlando area occurs in Orange County, Seminole County to the north, and Osceola County to the south. During the 1990s, these three counties added 360,000 people -- 56 percent of the regional total. In raw numbers, Orange County continues to grow much faster than any other county (more than 200,000 persons in the 1990s) and Osceola has by far the highest percentage rate (60 percent in the '90s).

Polk and Lake Counties, to the west and southwest, grew by 19 percent and 27 percent respectively, with their growth impeded to a certain extent by protection of the Green Swamp, which bisects their county line. The two coastal counties, Volusia (Daytona Beach) and Brevard (Cape Canaveral) grew by 20 percent each.

According to the National Resources Inventory (NRI), the urbanized land in the seven-county Orlando region almost doubled from 1982 to 1997, from 479,000 acres to 925,000 acres. Although all counties grew quickly, Orange (153 percent) and Polk (115 percent) had the highest percentage

increases, while Lake County (97,000 acres) urbanized the most land. The most rapid urbanization, according to the NRI, occurred between 1987 and 1992.[5]

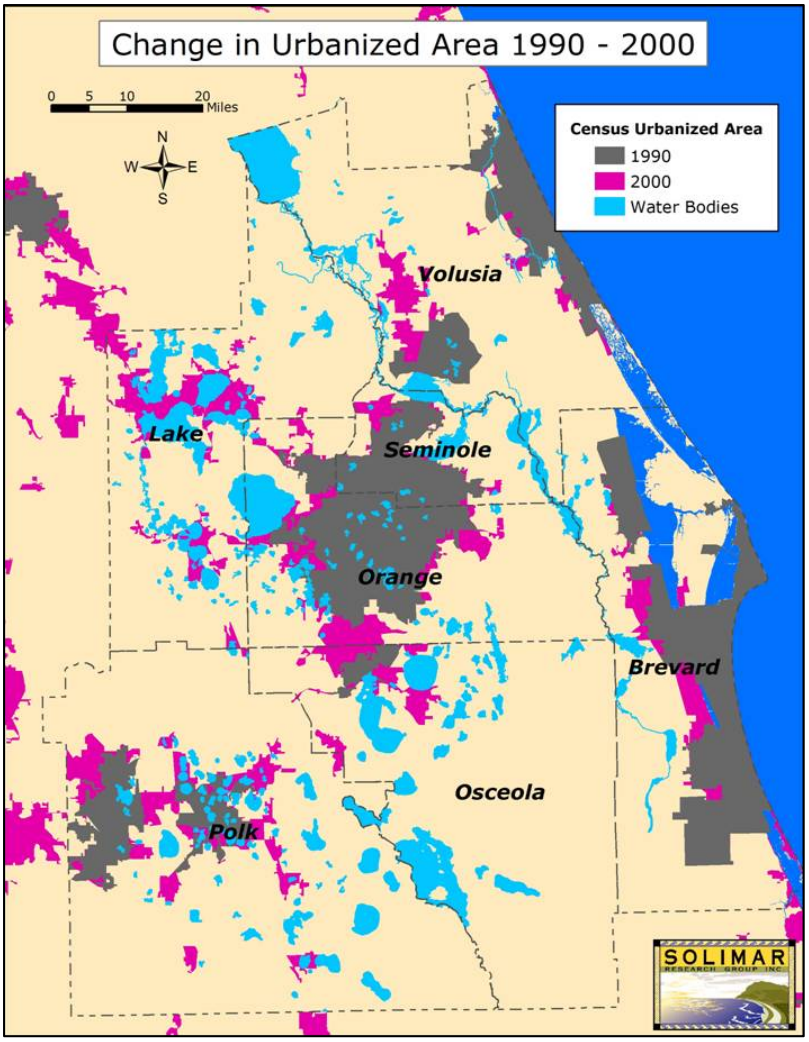
In geographical terms, the pattern of growth is occurring along several distinctive corridors that are shaped largely by open space protection and highways. As the 1990-2000 Census Urbanized Area map reveals, most new urbanization is occurring adjacent to the Orlando urban area. Much of it is occurring along the Interstate 4 corridor—which, in the metropolitan area, stretches from Lakeland and Winter Haven in Polk County through central Orlando and then northeast through Volusia County to Daytona Beach on the coast (Map 2).

Much of the remaining growth is moving out of Orlando to the northwest into Lake County, clustered around a series of small communities surrounding a series of lakes in the area.

Florida's aggressive efforts at protecting open space have clearly helped channel growth into the I-4 corridor. Growth near Lakeland and Winter Haven has been re-directed away from the Green Swamp, which is close to the interstate and the major population centers in Polk County. The presence of the Ocala National Forest and the Wekiva-Ocala Connector to the north—mostly in Volusia County—have directed growth eastward along the interstate corridor.

Furthermore, the acquisition of major chunks of open space along the St. Johns River, located on the border of Orange and Brevard Counties, has created a buffer between the main portion of metropolitan Orlando and the coastal communities such as Titusville, Port St. John, Cocoa, and Cape Canaveral.

Map 2



[5] This report uses both the NRI urban land and the Census Bureau's urbanized areas as reference points. These are different data sets that measure different things. NRI is a measurement, based on a sampling of aerial photographs, that seeks to measure all land converted even to low-density urbanization. The Census Bureau's urbanized area is a measurement of population density. For the seven-county Orlando area, however, the two measurements line up quite closely.

More than 1.84 million acres are permanently protected in the seven-county area—35 percent of the total area of the region.[6] The anchors are large federal holdings such as Ocala National Forest and Merritt Island National Wildlife Refuge, 140,000 acres of federal land adjacent to Cape Canaveral. But during the last decade, the stepped-up efforts of both state and county governments to protect open space in the region have increased reserves considerably.

Since its original inception in 1991 as Preservation 2000, Florida Forever has facilitated the acquisition of more than 150,000 acres of land in the Orlando region, including 37,000 acres of land for the Wekiva-Ocala Greenway, and about 20,000 acres of the Green Swamp. A total of 500,000 acres has been targeted, including virtually all of the Green Swamp. More than 9,000 acres of land along the Econlockahatchee River has been acquired as well. (More detail on growth dynamics along that river will be discussed in the case study below).

The Green Swamp was designated as Central Florida's only Area of Critical State Concern in 1974. Covering 187,000 acres in southern Lake and northern Polk Counties, the Swamp includes the headwaters of several major rivers and has the highest groundwater elevation in the Florida peninsula. It is critical to the recharge of the Floridan Aquifer, the lowest part of the groundwater reservoir in the state. This aquifer is tapped by public water systems in Orlando and other cities, and is also a major supplier of industrial, irrigation and rural use water.

Between 1974 and 1991 Polk and Lake Counties passed three sets of Comprehensive Plans intended to protect the Swamp, but by the late 1980s large residential developments were being proposed there. In 1991 the counties recommended changing the minimum lot size in the core of the Swamp from five acres to 20 acres. Because of strong opposition to this proposed downzoning, in 1994 the legislature created the Green Swamp Land Authority (GSLA), with $30 million for land protection. The GSLA was authorized to acquire "land protection agreements" (LPAs), similar to conservation easements. The process of crafting LPAs brought together the agricultural landowners and the conservation and environmental communities in the Green Swamp so that in 1996 the Comprehensive Plan with 20 acre zoning was approved by the state. Between 1994 and 1999 the GSLA acquired almost 18,000 acres in the swamp for protection through LPAs.[7]

Thus, the Green Swamp protection efforts have deflected growth away from certain areas of Polk and Lake Counties despite their proximity to Interstate 4 and the Walt Disney complex in southwestern Orange County.

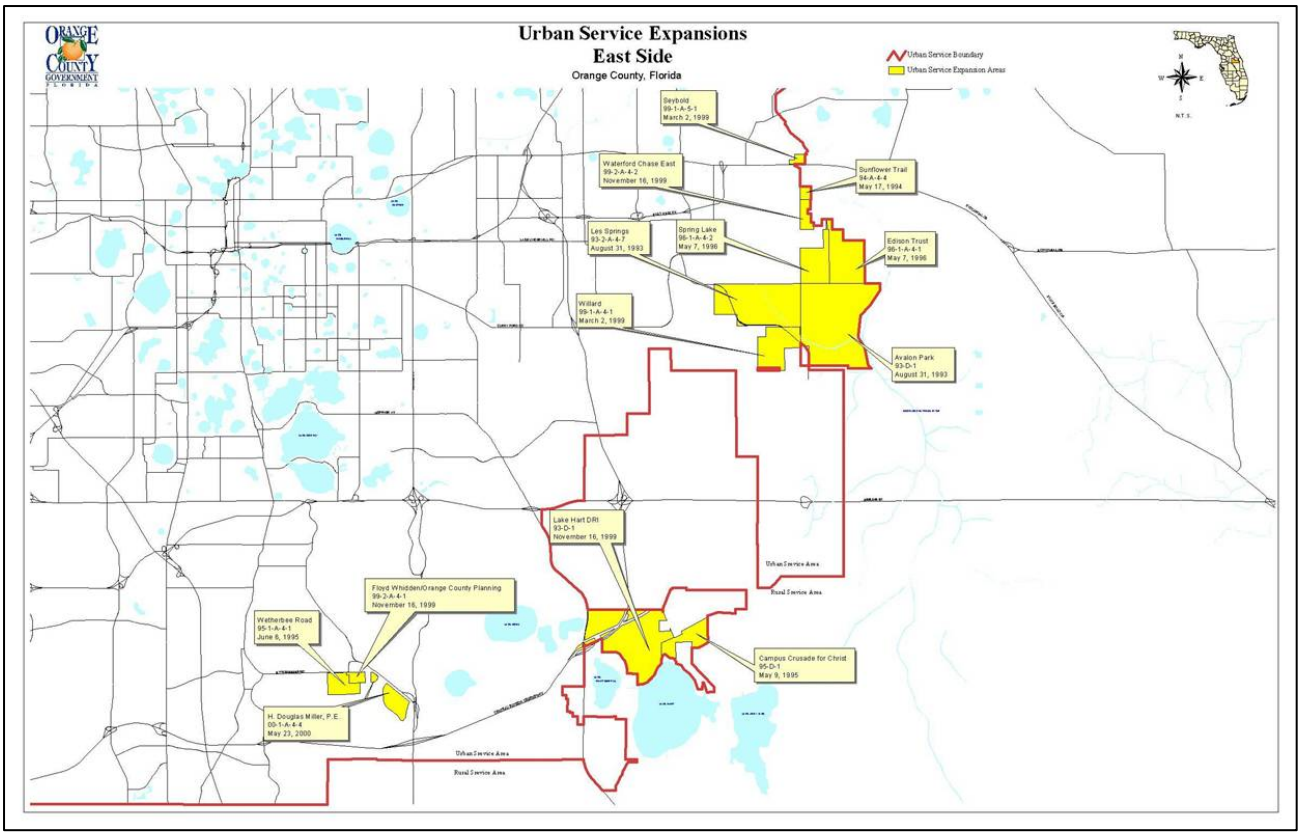
[6] These figures pertain to surface area and include bodies of water.

[7] However, the LPAs are monitored by the water management districts, which have their own easement acquisition programs. In 1999 the GSLA was terminated and its functions transferred to the state Department of Environmental Protection. The Green Swamp is on the 2002 list of approved projects for the Florida Forever land acquisition program. Land there continues to be protected through a combination of sources.

While the open space acquisition efforts have created firm lines against urbanization in some parts of the region, the urban service areas created by the some of the county governments have not done the same. Perhaps the best example is the Urban Service Area for Orange County.

As it was originally adopted, the Orange County Urban Service Area covered 65,000 acres, or approximately 100 square miles. Since 1991, however, the Orange County Board of Commissioners has expanded the Urban Service Area on 43 separate occasions, adding approximately 15,000 acres (23 percent)—the maximum amount of land that the Department of Community Affairs will permit the county to allocate to urban growth (McClendon, 2002) (Map 3).

Map 3



Of those 43 expansions, 22 of them—totaling more than 8,200 acres—were located in County Commission District 4, which covers southeastern Orange County. And most of the land involved (4,500 acres) opened up land along the west bank of the Econlockhatchee River for development. Of the land added on the west bank of the Econ, 1,582 acres was for Avalon Park in 1993. Since that time the only large expansions of the county's Urban Services Area have been for the gigantic Horizons West project in western Orange County, located on the other side of the county (These projects and other issues regarding the Econ will be discussed in the case study below.) (Orange County Planning Division, 2003).

In 2000 Orange County updated its comprehensive plan, making it more difficult to add rural land to the USA (Orlando Sentinel, December 10, 2000). The county also continues to update the Development Framework posted on its website (www.orangecountyfl.net/Dept/growth/planning). The plan designates two “growth centers,” one adjacent to Osceola County and the city of Kissimmee, and one adjacent to Lake County and the city of Mt. Dora. Under interlocal agreements new development in these growth centers will be served by utilities provided by the cities and not by the county. The plan also designates an activity center on International Drive, site of Sea World and other tourist attractions, as well as the Orange County Convention Center.

Even as Orange County has been expanding its Urban Service Area, the county has had to deal with the city of Orlando, which increased its land area 30 percent during the 1990s by approving 200 different annexations. Many of them were in the same critical area of southeast Orange County.

In response to the city’s proposal to annex some 12,000 acres in both Lake Nona and the Vista East area of southeast Orange County, the county began negotiations which led to a Joint Planning Agreement (JPA) between the two entities. The JPA, approved in the spring of 1994, includes a map defining where the city could annex over the next 12 to 24 years. This could potentially double the city’s size. The JPA also set permanent boundaries for the provision of public sewer service, with the service provider not to be changed by annexation. Under the JPA the city also agreed to provide sewer service to enclaves that are within its service area but served by septic tanks (Orlando Sentinel, 1994).

As of Census 2000, the seven-county Orlando metropolitan area had about 1.43 million housing units, of which 796,000, or about 59 percent, were single-family detached units (Figure 1). What stands out in Orlando's recent patterns is the sheer amount of housing production. The region produced almost 1 million units in the 20-year period between 1980 and 2000 and almost tripled the housing stock in the process. As in many other parts of the nation, the percentage of new housing construction consisting of single-family detached units rose markedly during the 1990s. During the '80s—the peak period for housing production in metropolitan Orlando—only 44 percent of new construction was single-family detached housing (about 169,000 out of 382,000 units). During the '90s, that figure rose to 69 percent (about 189,000 out of 276,000 units) (Figure 2).

Perhaps the most striking aspect of Orlando's housing stock is that 14 percent of the units (187,000 units in 2000) are mobile homes, and this figure is growing over time. Between 1980 and 2000, the region's housing stock grew by 96 percent, but the number of mobile homes grew by 135 percent. Almost as many people in metropolitan Orlando live in mobile homes as live in multifamily buildings of five units of more.

Unlike many older metropolitan areas, housing in metropolitan Orlando is not concentrated in a core county. Orange County, where Orlando is located, accounted in 2000 for 400,000 units, or about 30 percent of the region's total. Orange County has approximately the same percentage of the region's population. The regional distribution of housing has been constant since the 1970s, with each county adding housing at about the same rate.

Figure 1. Housing Type, Orange County and Outlying Counties, 2000

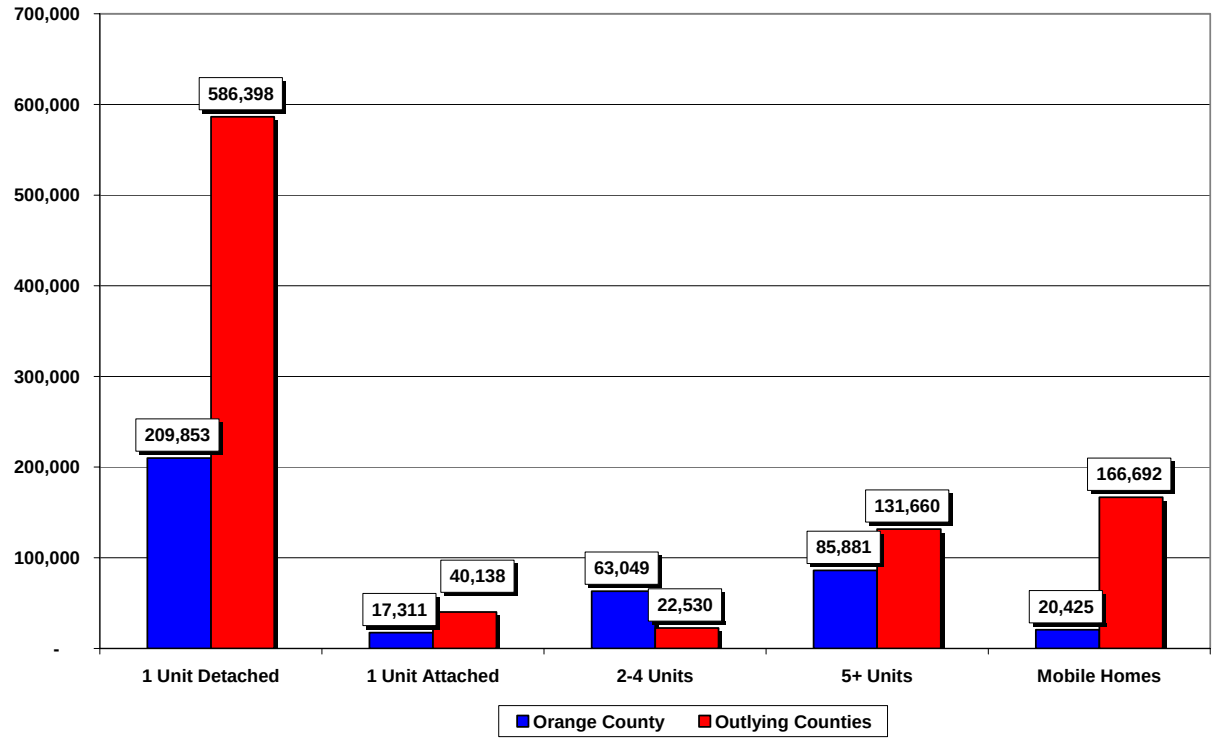
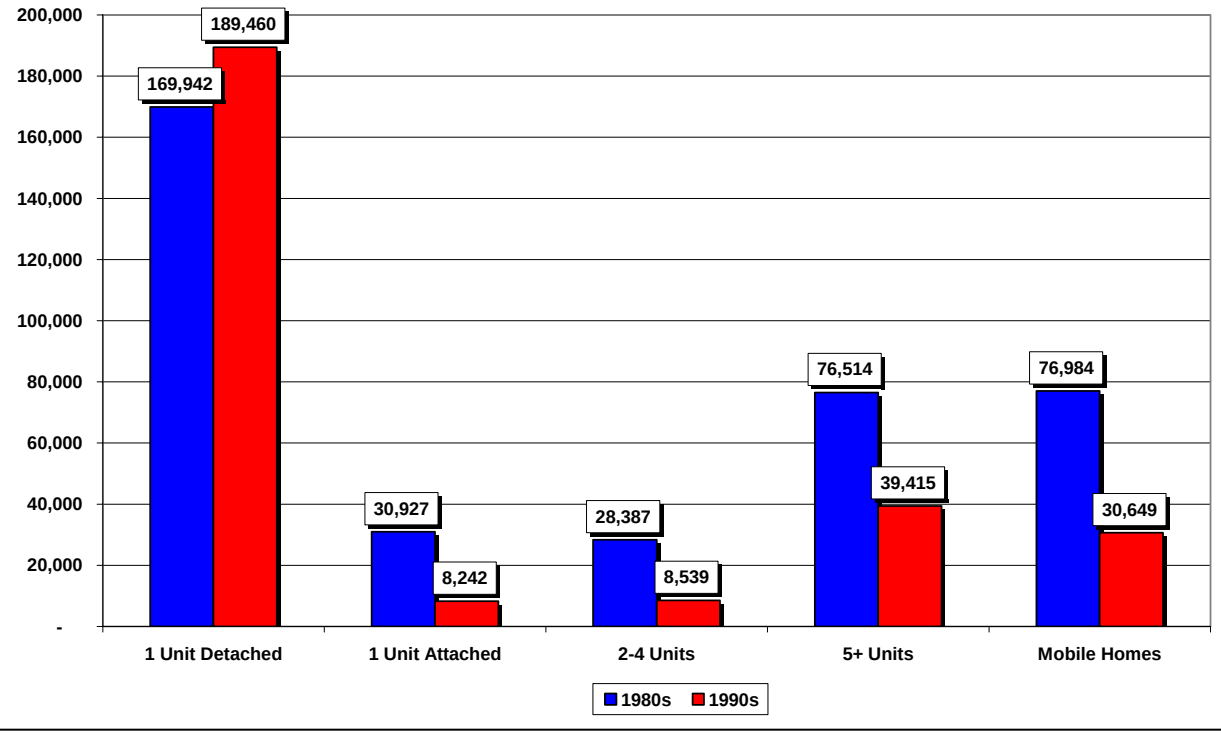
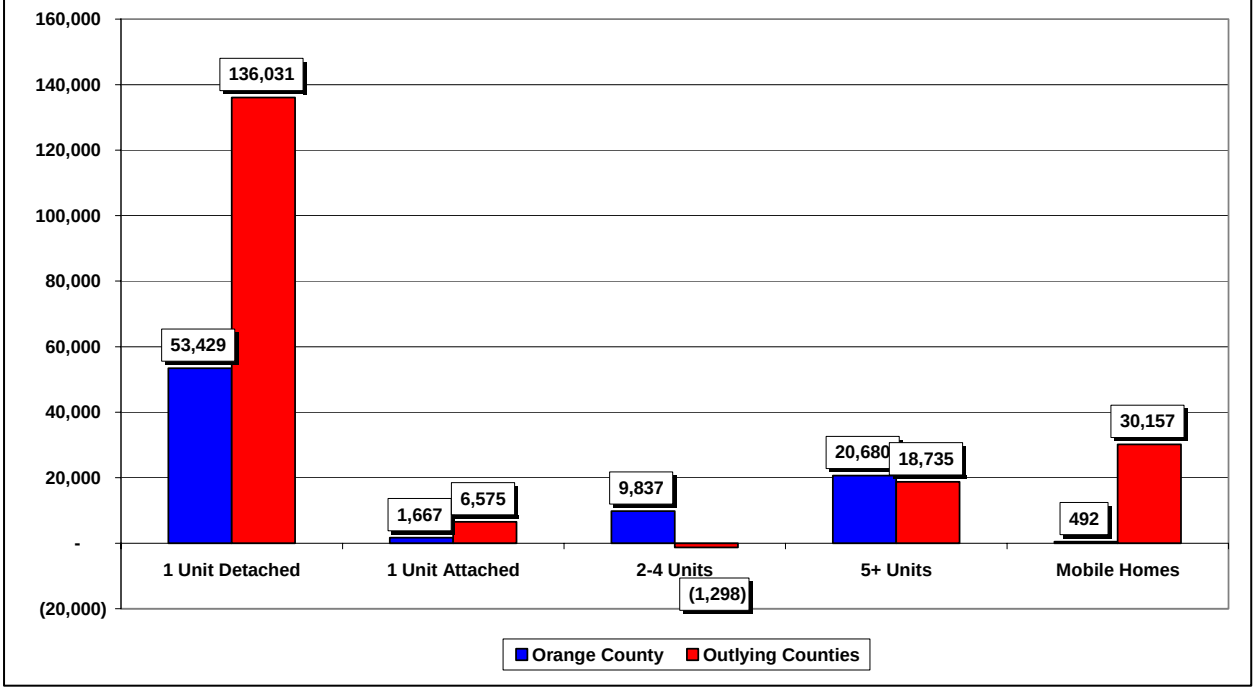


Figure 2. Housing Type, New Housing Production, Metropolitan Orlando, 1980s and 1990s



Source: U.S. Census Bureau

Figure 3. Residential Production by Unit Type, 1990s
Orange County and Outlying Counties



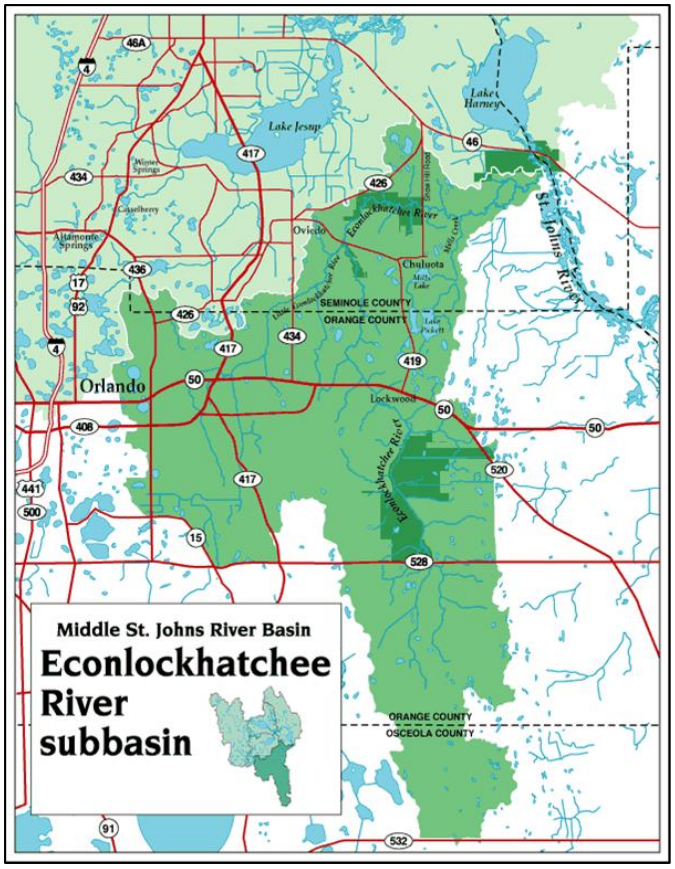
Source: U.S. Census Bureau

Where Orange County does differ from the rest of the region—and in a way that makes it similar to other core counties—is in housing type. In 2000, only 53 percent of Orange County's housing stock consisted of single-family detached units, compared with 59 percent in the other counties. Orange County also has more multi-family units and fewer mobile homes than other counties. Half the multi-family units in the region are located in Orange County (148,000 out of 303,000), whereas the county was home to only slightly more than 10 percent of the region's mobile home stock (about 20,000 units out of 166,000).

Furthermore, the difference in the housing stock between Orange County and the other counties increased in the 1990s -- especially in products other than single-family units. During the 1990s, about 71 percent of the housing units added in the outlying counties were single-family detached units, compared with only 62 percent in Orange County. Even though Orange County only added one-quarter of the region's housing units it produced almost two-thirds of the new multifamily units. Furthermore, Orange added fewer than 500 mobile homes, compared with 30,000 for the rest of the region (Figure 3).

In short, traditional multi-family housing units are most prevalent in Orange County, accounting for almost half the housing stock. Outside of Orange County, almost 80 percent of residents live in either single-family detached units or in mobile homes.

Map 4



D. Orlando Open Space Case Study: The Econlockhatchee River

Ever since Central Florida began to develop a robust urban economy in the 1950s, east Orange County has been a major battleground of potential development. In large part, this is because of its proximity between Orlando—the region's major urban center—and Cape Canaveral, which was one of the earliest drivers of employment and economic growth in the region. Aggressive efforts to preserve the St. John's River just west of the coast pushed development pressure closer to Orlando, and especially to the banks of The Econlockhatchee River.

The Econlockhatchee River—commonly known simply as "The Econ"—is located about 15 miles east of Orlando. The Econ is one of the Orlando region's most significant bodies of water. It flows 36 miles north from Osceola County, through Orange County, and then northeast into Seminole County, where it empties into the St. Johns River. It is one of the few rivers in central Florida that wasn't "channelized" by the U.S. Army Corps of Engineers, and is an important wildlife and recreation corridor (Spear and Shenot, 2001, and Florida Department of Environmental Protection web site) (Map 4).

Much of the pressure to jump east of the Econ predates Orange County's modern growth management efforts, which date back to the mid 1980s. The University of Central Florida was first located to the west of the river (as Florida Technological University) in 1963 and has since spun off the Central Florida Research Park. Another significant chunk of land was originally proposed for development in the 1960s as "Rocket City," a housing development for NASA employees working 30 miles to the east at Cape Canaveral. This proposal went bust when NASA's headquarters were moved to Houston, although part of it was eventually developed as a golf club with some 5,000 single-family homes (Brunson, 2002; Phillipps, 1987; Chapin, 2002).

Orange County first began to deal with development along the Econ in its growth management plan in 1985. This plan designated five growth areas in the county. Three were located south of Orlando, including Disney World and Orlando International Airport. Two were located in east Orange County: the University of Central Florida and its Research Park, both north of State Route

50; and an area then known as Huckleberry and now called Waterford Lakes, south of State Route 50 -- a few miles west of the Econ (Throne, 1985).

At that time, most of the land on the east side of the Econ was designated as rural, generally zoned for one house per ten acres. The Wedgefield Golf & Country Club, which has its own wastewater and water treatment plants, was designated as a "rural settlement area". The next year, county commissioners approved the creation of International Corporate Park, east of the Econ and south of State Route 528 (the "Bee Line Expressway"). This 2,900-acre business park was approved in 1986, though it did not get its first tenants until 2000. Nevertheless, as a result of this approval, Orange County paid for many key pieces of infrastructure east of the Econ, including a $21.3 million landfill and a fire station to serve International Corporate Park (Snyder, 2000).

Critics also believe that the industrial park's existence resulted in the approval of significant residential development in the formerly rural area, on the grounds that its workers needed places to live. Over the next several years a number of important residential projects were approved in the area. In some cases, the concurrency requirement in the Growth Management Act required the county to install more infrastructure east of the Econ. In 1987, approval of a 1,700-unit housing project east of the Econ, Cypress Lakes, required the county to install $6 million worth of stormwater drainage facilities. Two years later, the East-West Expressway (State Route 408) was extended east to State Route 50 (Colonial Drive) (McBreen, 1987). In 1993, access to the area was further improved when "The Greeneway" was opened, connecting the Beeline Expressway on the east to Interstate 4 on the south. By 1988 runoff from construction had clogged the Econ River system, resulting in the county's issuing warning letters to several developments in east Orange County (Poe, 1988).

But the flashpoint in the Econ battle began in 1990, when an investment group proposed development of Avalon Park, a 9,000-acre development that straddled the Econ and was designed by the renowned New Urbanist firm of Duany Plater-Zyberk. By proposing development on both sides of the river, Flag Avalon Associates galvanized interest by the public and by resources agencies in the Econ. The St. Johns River Water Management District created a regional task force that recommended either a temporary building ban along the Econ or emergency safeguards to minimize runoff. Two years later, the district designated a 550-foot buffer zone on either side of the Econ -- a measure eventually adopted by Orange County in its planning policies (Regan, 1990; Regan, 1992).

In this environment, the developers went back to the drawing board to create a revised plan for Avalon Park. The resulting plan was touted by the developers as the Orlando region's first New Urbanist community, with 4,000 homes and apartments, retail and office space, a golf course, three schools, and warehouse and industrial space. It envisioned attracting high tech jobs complementary to the University of Central Florida and the Central Florida Research Park, both of which are located nearby. The proposal was also advertised by the developers as a model of conservation planning. The proposal called for a 1,100-foot buffer along each side of the Econ—twice the size

recommended by the Water Management District—and wildlife corridors. It covered only about 20 percent of Flag Avalon's 9,000-acre holdings (Wellons, 1993; Wellons and Lebowitz, 1993).

Even as revised, Avalon Park galvanized public opposition to more development along the Econ. Orange County Commissioners approved the project in 1993. But to do so, they had to expand the county's Urban Service Area to the west banks of the Econ and alter the zoning from one house per 10 acres to an average residential density of 5 to 6 units per acre (Orlando Sentinel, 1993).

Since the Avalon Park development was first proposed, public agencies have acquired almost 9,000 acres of land along the Econ for permanent protection. This includes about 2,500 acres sold as conservation land by Flag Avalon and purchased by Orange County and the St. John's River Water Management District between 1992 and 1994, and almost 4,000 acres purchased jointly by the county and the water district in 1996. In 2002, Orange County purchased another 1,280 acres at the headwaters of the Econ, and is working with the landowner to place the remaining 3,920 acres of the Holland Ranch into a mitigation bank (Jackson, 2002).

Even with all this conservation activity, it has been hard for Orange County to "hold the line" at the Econ. In 1998 Linda Chapin, then Chair of the Orange County Board of Commissioner, proposed establishing a permanent eastern boundary for the USA at the Econ River. She also proposed a moratorium on development in the east County. Neither of those proposals was successful. In fact, in order to serve the Cypress Lakes subdivision originally approved in 1987, the Commissioners in 1998 voted to extend water and sewer lines east of the Econ. That extension has taken place and provides capacity not only for Cypress Lakes but also for the Bithlo, Wedgefield, and Christmas "rural settlements" in the eastern part of Orange County (Orlando Sentinel, 1993; Shenot and Stratton, 2000; Simmons, 2002).

All this activity has meant that development along the Econ has occurred at a rapid pace even with the conservation efforts. An estimated 40,000 people moved into Orange County west of the Econ between 1990 and 2000. While the entire City of Orlando gained 21,277 residents during the 1990s, a single Census tract along South Alafaya Trail grew by 550 percent, or over 20,000 people. In fact, over the same decade, an estimated 85,000 people moved into the Econ River basin in both Orange and Seminole Counties. The Route 419 corridor, running north from Bithlo in Orange County to Chuluota, Oviedo and Winter Springs in Seminole County, has been a popular spot for residential development since the mid 1980s. And unlike Orange County, Seminole has not limited development to the west banks of the Econ (Shenot, 2001; Shenot, 2002; Golgowski, 2002).

Eastern Orange County remains a land use battlefield. Most recently, the owners of International Corporate Park (ICP) have proposed development of a high tech corridor on their site east of the Econ. Their proposal is supported by Orange County Mayor Rich Crotty, as a way to link the University of Central Florida to the Orlando International Airport. Opponents point out that development there would endanger the tributaries and headwaters of the Econ River. In the spring of 2005 the County Commissioners put the ICP proposal on hold and approved a $350,000 study to

“frame a vision for growth in east Orange County.” And a new coalition of environmental, business and government leaders in Central Florida, called “myregion.org,” released a 36-page document describing “seven places that must be saved” to preserve the Orlando region’s quality of life. The places include the Green Swamp, the Wekiva-Ocala Greenway, and the Econlockhatchee River (Orlando Sentinel, April 7, 2005; August 12, 2005; August 13, 2005; and August 14, 2005).

E. Conclusions about Metropolitan Orlando

Over the last 20 years, Orlando has been one of the fastest-growing metropolitan areas in the nation, doubling both its population and its housing stock. It has also expanded outward in dramatic fashion. Given the pace of Orlando's metropolitan growth, such outward expansion was inevitable. However, there is little question that the shape and direction of that outward expansion has been influenced by all the policy tools we described at the beginning of this paper.

Perhaps the most important conclusion from Orlando is that the state’s open space protection efforts have been more important than the state’s Growth Management Act in shaping metropolitan growth.

This is not surprising when one considers the history and intent of the Growth Management Act. When it was adopted in 1985, the law was not overtly focused on directing the geographical shape of metropolitan growth. Rather, it was focused largely on coordinating the construction of public infrastructure with the construction of private development.

This approach has had an influence on the metropolitan pattern, of course. But the "big picture" pattern has been shaped more by open space.

Most urban growth has occurred along the Interstate 4 corridor, which runs southwest-northeast through metropolitan Orlando. It has been blocked by the Green Swamp to the west and the aggressive efforts to protect land along the St. John's River to the east.

Under the Florida system, local government comprehensive plans must be linked to local plans to spend state open space funds. But this is sometimes a chicken-and-egg proposition. In the case of both the Green Swamp and the St. John’s River, local plans more or less had to conform to these large-scale preservation efforts. Bear in mind as well that most large-scale preservation funded by the state is initiated by special government agencies—principally water districts—that operate outside the realm of local land-use planning.

In battlegrounds such as the Econlockhatchee River, it is clear that preservation efforts and land use regulation can sometimes work at cross-purposes, just as our previous paper on conservation and growth management suggested. Simply put, the metropolis as a whole does not have a consistent effort to save the Econ, as it has had for the Green Swamp, and this has created a confusing policy situation. Orange County created an Urban Service Area for eastern Orange

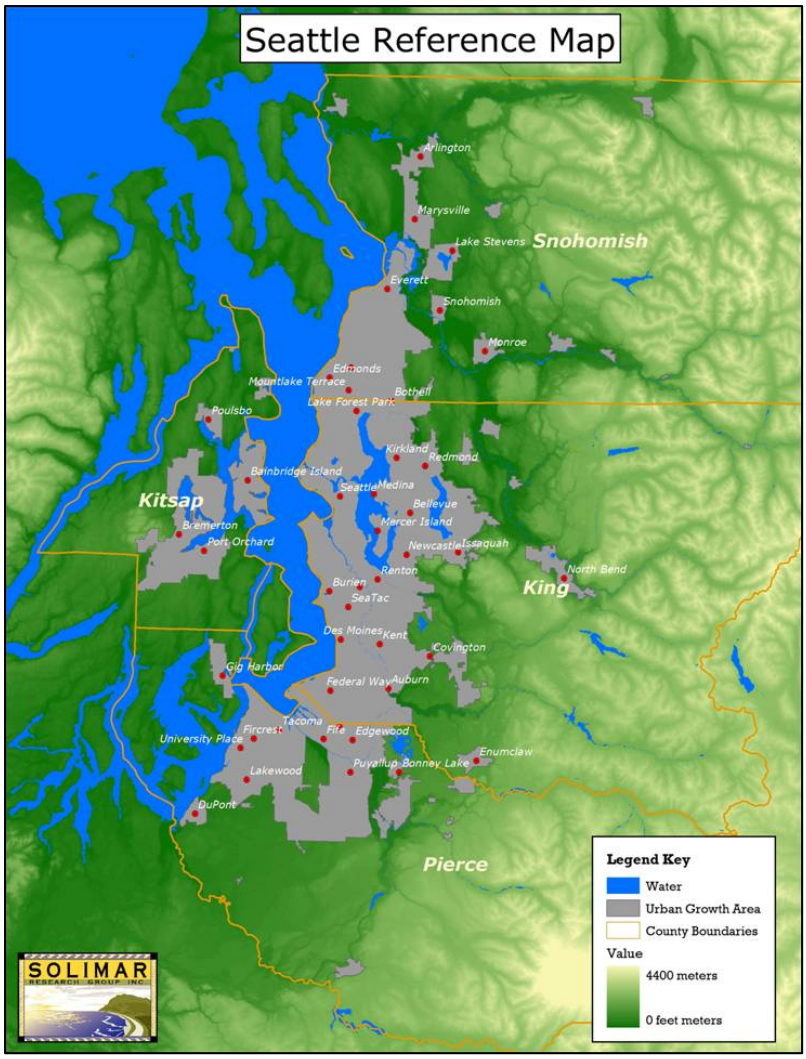
County as called for in the Growth Management Act. But the county altered the urban service line many times in response to developer requests, and county officials were hard-pressed to resist Avalon Park, a large-scale development that was receiving national attention in New Urbanist circles.

As a result, the St. John's Water Management District, private conservation organizations, and sometimes even the county itself had to expend large sums of money to purchase land along the Econ from the landowners after the county had signaled its willingness to permit development—a signal that inevitably increases the value of the land. This is perhaps the most important point about the lack of coordination between growth management and open space protection—that government agencies often must spend large sums of taxpayer dollars to buy their way out of land-use decisions that conflict with open space policies.

IV. METROPOLITAN SEATTLE

With a population of well over 3 million people, metropolitan Seattle is, according to Census 2000, the 13th-largest metropolitan area in the United States and the largest in the West outside of California. In the last 20 years, it has also become one of the most progressive metropolitan areas in the United States in terms of managing metropolitan growth. The creation of a regional growth "vision" in the late 1980s, followed by the passage of the Washington Growth Management Act in 1990-91, has created a much different environment for the use of growth policy tools in Seattle than prior.

Map 5



For the purposes of this study, we have defined the metropolitan area as including the four counties (Snohomish [Everett}, King [Seattle], Pierce [Tacoma], and Kitsap [Bremerton]) which cover the bulk of the land ringing the Puget Sound. This four-county area, which includes about 6,000 square miles and had a population of almost 3.3 million persons in 2000, is the same area covered by the Puget Sound Regional Council, metropolitan Seattle's regional planning agency. It is somewhat smaller than the Seattle consolidated metropolitan statistical area identified by the U.S. Census Bureau (Map 5).[8]

A. Regional Setting: Geography and History

Like many metropolitan areas in the western United States, metropolitan Seattle is sharply defined by topographical features, and partly for this reason it is geographically separated from other

[8] The Census Bureau includes six counties in the Seattle CMSA. In addition to the four we used, the Census Bureau includes Thurston County (where Olympia, the state capital, is located), and Island County (consisting of two islands in the northern part of the Puget Sound). These two additional counties combined have a population of 275,000. Therefore, more than 90% of the population in the Seattle CMSA is contained in our four-county study area.

metropolitan areas. These geographical features, combined with the region's historical growth patterns, have helped to shape the pattern of metropolitan growth.

Metropolitan Seattle is located largely in the Puget Sound basin—a fertile, coastal plain that stretches along the east side of the Puget Sound to the Cascade Mountain range, and from the upper bay of Puget Sound to coastal plans to the south of the city. It is punctuated by many bodies of water—principally the Puget Sound itself, which covers approximately 1,020 square miles and separates most of metropolitan Seattle from Kitsap County.[9] Two other major bodies of water also help shape Seattle's metropolitan region—Lake Washington and Lake Sammamish, both located east of Seattle. Lake Washington in particular serves to separate Seattle from many of its eastern suburbs.

Metropolitan Seattle averages almost 40 inches of rain per year, mostly in the winter, and for this reason most of the region was originally heavily forested. Indeed, Seattle began in the mid 19th Century as a "sawmill town," supplying lumber for rapid urban growth in California during and after the Gold Rush. Slivers of forest are still interwoven into the urbanized region outside of metropolitan Seattle along the east coast of Puget Sound. Farther east are the more rugged uplands of the Cascade Mountain Range, most of which is held by the U.S. Forest Service, the National Park Service, and the Washington Department of Natural Resources. In between the urbanized area and the forest is low-lying agricultural land that has served as the locus and sometime battleground for most new urban growth in metropolitan Seattle for the past 20 years.

Over the past century and a half, the Seattle region has repeatedly "reinvented" itself with new economic activities, most of which remain in the region in some fashion. Timber remains an important part of the region's economic base. Seattle's deep, ice-free, and protected harbor on Puget Sound provided the basis for a thriving business in international trade, and today the Port of Seattle is the sixth largest container port in the US (City of Seattle 2002). The region was an important shipbuilding center during World War I, and later became a major aviation manufacturing center thanks to Boeing (which recently relocated its headquarters to Chicago). Most recently, Seattle has emerged as a leader in computer software and online marketing, thanks principally to Microsoft (located in the first-ring suburb of Redmond, east of Lake Washington) and online companies such as Amazon.com.

Seattle and King County remain the dominant jurisdictions in the region in terms of population. With a population of approximately 1.7 million, King County is home to half the people in metropolitan Seattle. With 563,000 people according to the 2000 Census, Seattle is by far the largest city. Indeed, Seattle and King County are the most populous city and county in the Northwest. In population, Seattle is followed by Tacoma (Pierce County, south of Seattle), which has just under 200,000 people; Bellevue (an older suburb east of Lake Washington), with 106,000 people; and Everett (the largest city in Snohomish County, north of Seattle), with 93,000 people. The

[9] Measurement estimated at mean high water mark by John Lincoln, University of Washington, Department of Oceanography, for the Pacific Science Center's Puget Sound Model. http://exhibits.pacsci.org/puget_sound/PSSummary.html.

leading city in Kitsap County, Bremerton, numbers only 37,000, a figure exceeded by many suburban jurisdictions on the east side of the Puget Sound.

B. Growth Management and Urban Form Policy

Washington's state framework for growth management has been adopted incrementally over the last 30 years. Two important pieces were put into place in the 1970s and the third was adopted in two pieces in 1990 and 1991. This last piece of legislation, the Growth Management Act, was adopted in the context of intense activism during the late 1980s in the Seattle area around the issue of metropolitan growth (Pivo, 1998).

Washington adopted the State Environmental Policy Act in 1971. This law is one of 17 so-called "mini-NEPAs—that is, state equivalents of the National Environmental Protection Act (Mandelker, 1997). Like NEPA and other mini-NEPAs, Washington's SEPA (as it is commonly called) functions as an environmental review law—that is, plans and projects are reviewed for their environmental impact and, in many cases, significant environmental impacts are minimized through changes in the project and other "mitigation" measures. SEPA is used more expansively than any other mini-NEPA in the country except for the California Environmental Quality Act.[10] Because mini-NEPAs represent a parallel process to land-use planning and project approval, it has often been difficult to meld the two effectively (Mandelker, 1997).

The Washington Shoreline Management Act was adopted in 1971 and ratified by state voters in a 1972 referendum (Washington State Department of Ecology, 1999). The law requires each city and county to adopt a shoreline master plan program dealing with areas adjacent to the ocean, bays and sounds, streams and lakes, upland areas 200 feet landward from the edges of these waters, and wetlands and deltas and to land in the 100-year floodplain. Once the local shoreline plans are in place, permits are required for most projects, although some, such as single-family residences, are exempt. Decisions may be appealed to state hearing boards, which specialize in shoreline cases in some counties but dovetail with the Growth Management Act (described below) in others (Settle, 1998).

The passage of these two laws made environmental protection the pre-eminent growth policy issue in Washington state during the 1970s and '80s. Also beginning in the 1970s, King County undertook an ambitious farmland protection program. With voter approval in 1979, the county issued $50 million in bonds and purchased the development rights to more than 12,000 acres over the next six years (Druffel and Barkley).

[10] In 1992, the last year for which a good account is available; SEPA generated 364 Environmental Impact Statements and 1,862 actions that found no significant impact on the environment (Landis, 1995). (Anecdotal reports suggest that the EIS' is less frequently used now; instead, "mitigated determinations of non-significance" are used as a less costly and time-consuming alternative, just as "mitigated negative declarations" are used in California.)

During the 1980s, however, a new wave of urban growth sparked significant growth management activism in metropolitan Seattle and especially in the city of Seattle and King County. The office construction boom of the period affected downtown Seattle significantly. Some of the tallest skyscrapers on the West Coast were constructed there, leading to a successful growth limitation ballot measure in 1989 (California Planning & Development Report, 1989). At the same time, the success of Microsoft and the general trend toward job decentralization dramatically altered older, low-scale suburbs such as Redmond (Microsoft's headquarters), turning them into job centers with large corporate campuses. It was during this period as well that King County adopted its first comprehensive plan that contained an infrastructure-driven urban growth boundary.

The next step in the creation of the Washington Growth Management System turned out not to be the passage of the law, but the creation of a kind of ad-hoc regional growth management strategy for the Seattle area. In response to the problems of urbanization and citizen unrest about growth, the Puget Sound Council of Governments initiated an effort in 1987 known as "Vision 2020".

Although PSCOG was in many ways a typical regional planning agency -- it had little real clout and was often hostage to the parochial concerns of the local elected officials on its board -- over a three-year period the Vision 2020 effort did produce a surprisingly strong shared vision for a different urban growth model in the region (Pivo, 1998).

Specifically Vision 2020 called for:

- Containing urban sprawl through the use of regional boundaries and a regional open space system
- Organizing urban development into compact communities, focusing on a hierarchy of "central places" including urban centers throughout the region
- Protecting rural areas by promoting the use of rural lands for farming, forestry, recreation, and other rural uses
- Providing a greater variety of housing choices in all parts of the region, including accessory units, townhouses, and small-lot single-family houses
- And creating a regional transportation strategy that focused on creating a high-frequency, high- speed bus and rail transit system connecting the urban centers.

In an attempt to implement this new vision, the local governments in the Seattle area disbanded PSCOG and replaced it with a new entity, the Puget Sound Regional Council (PSRC). Unlike PSCOG, the Regional Council included a weighted voting system that favored existing urban areas and also included representation from the Washington Department of Transportation and the region's three major ports. However, the PSRC did not have any implementation power.

Partly as a result of the Vision 2020 process, the Washington State Legislature began tackling growth management as an issue in 1989 (Other political considerations played a role, but the “bottom line” was that the Seattle region had enough political clout to force the Legislature to move the growth management agenda.) The result was a state Growth Management Act passed in two pieces. The first piece was passed in 1990. The second piece was passed in 1991 after state officials defeated a strong environmental initiative in the fall of 1990 with the promise of further action. As finally adopted, the law includes five core mandates (McCormick, 2002).

These are:

1. Natural resource lands of long-term commercial significance must be designated and conserved.
2. Environmentally critical areas must be designated and protected.
3. New growth must be directed to Urban Growth Areas, which must be designated by the local governments.
4. New development must be contingent on transportation and other public facilities concurrency.
5. Local governments may not exclude essential public facilities or affordable housing from their jurisdictions

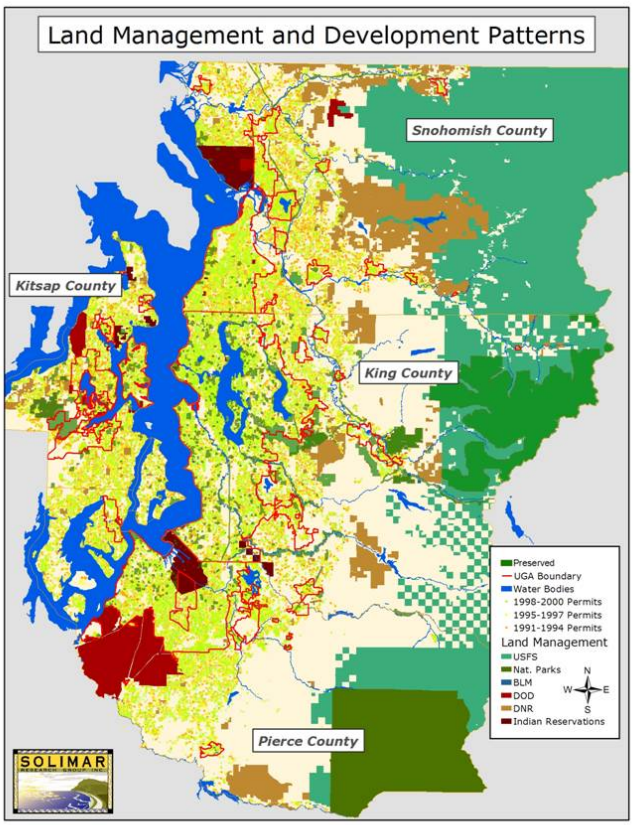
The law created a whole new system, which provides some local flexibility without a statewide framework. The system is not entirely top-down; local governments are responsible for complying with it individually, and the law is enforced largely through three land-use appeals boards, including one that covers just the Seattle area.

Among other things, the law required counties to adopt comprehensive plans; among other actions, King County revised its existing comprehensive plan in 1994 to add many features as a result of the Growth Management Act, including a new zoning district known as an "Agricultural Protection District," which preserves agricultural zoning in selected areas. Most of these districts surround farmland whose development rights were purchased by King County in the 1980s.

Most significantly, the law required the three urban counties on the east side of the Puget Sound (King, Snohomish, and Pierce) to work together to create an Urban Growth Area and a regional plan. Eventually, it was agreed that Vision 2020 and the Puget Sound Regional Council would be used as important tools in this effort. (Kitsap, which is also part of the Puget Sound Regional Council, was required to create a separate Urban Growth Area.)

The Urban Growth Area that resulted from the Growth Management Act does not look clean or pretty on a map (Map 6). Rather, it is the result of much negotiation among local governments in the region, as well as recognition of previous urbanization that was shaped within a regional growth management policy. However, there is little question that it provides an important framing device for future regional growth. The UGA includes about 1,000 of the region's 6,000 square miles (roughly 15 percent) but includes 85 percent of the region's existing population.

Map 6



"Seattle's Urban Growth Area acknowledges that the urban zone is not—and should not be—a continuous 'circle' around the center city. Rather, it is a series of urban places, some connected and some separated by open space," (Calthorpe, 2001).

A complementary component of the Seattle area's regional growth policy is the "urban centers strategy." Vision 2020 called for the designation of a "hierarchy" of places. In creating a growth strategy, the PSRC has designed 21 "urban" centers of regional significance, including downtown Seattle, four other Seattle neighborhoods, several older suburban downtowns, and several emerging suburban job centers. The strategy also designates dozens of other town centers and industrial and manufacturing centers of regional significance. These centers contain only 2.4 percent of the region's land and 5 percent of the region's population (though population density in the centers is double that of the region as a whole). However, these centers contain 400,000 jobs, or 30 percent of the region's total. Regional policy calls for a concentration of both new jobs and new housing construction in the future. Furthermore, they are expected to form the spine of an enhanced regional transit system. Seventeen of the 21 centers are designated to serve as major transit centers in the near future.

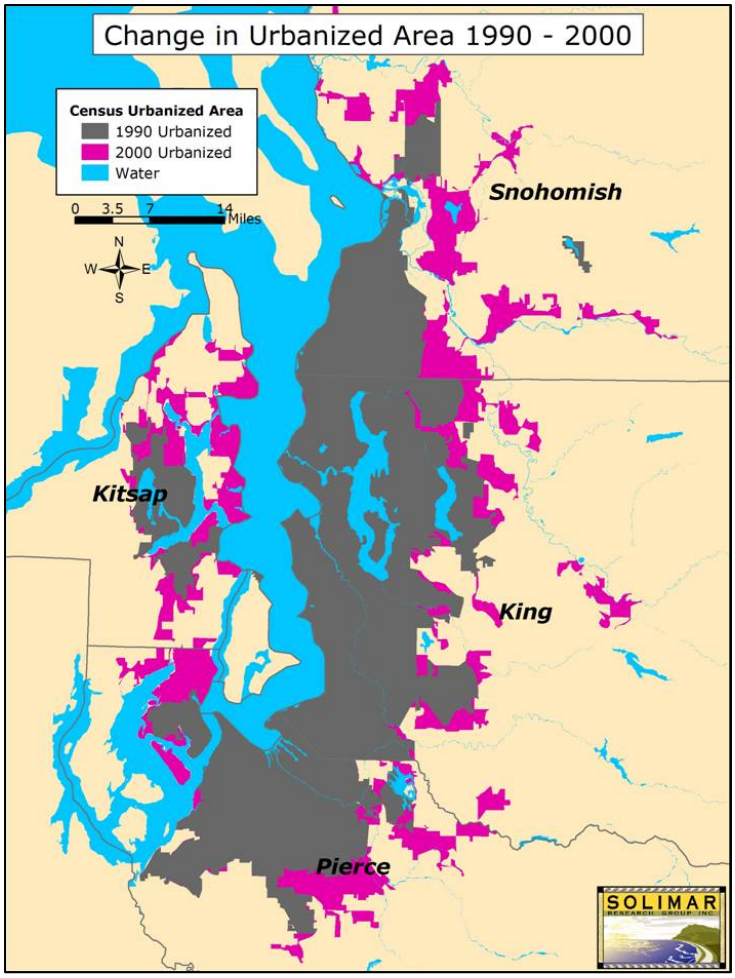
C. Recent Growth Patterns

During the 1990s, the four-county metropolitan Seattle area grew from about 2.75 million people to about 3.28 million people—an increase of slightly over 500,000 people, or about 16 percent. This growth was somewhat less than the growth in previous decades.

King County added the most people (229,000) but had the lowest percentage increase in population (15.2 percent). The highest percentage increase (30.2 percent) was in Snohomish County.

According to the National Resources Inventory, metropolitan Seattle increased its urbanized land by about 50 percent between 1982 and 1997, from 410,000 to 627,000 acres (Map 7). King County, which created a precursor to the current urban growth boundary in the mid 1980s, grew much more slowly than the other three counties (36.3 percent). Snohomish and Kitsap increased their urbanized land by more than 70 percent. According to the NRI, land urbanization was much more prevalent during the 1987 to 1992 period than either before or after.[11]

Map 7



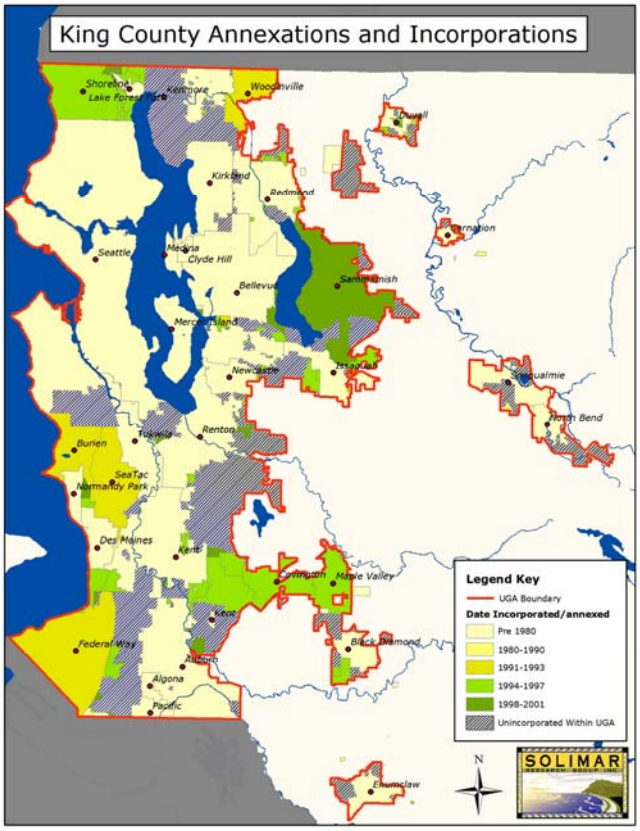
The Growth Management Act encouraged the annexation of land and the incorporation of new cities, especially in King County and especially along the "eastern front" of the Urban Growth Area. Covington, Maple Valley, and Sammamish—all of which were communities that protruded into the rural land to the east—incorporated during the mid- to-late 1990s, apparently encouraging more concentration of urban development within their boundaries and, therefore, inside the UGA itself (Map 8).

During the 1990s, most residential growth occurred inside the UGA. Progress was especially rapid in the outlying counties once the UGA was created. Because King County had created a growth boundary in 1985, even in the early 1990s more than 80 percent of residential permits were issued inside the growth boundary. In the outlying counties, however, only about 53 percent to 56 percent of residential permits each year were being issued inside the growth boundary (Figure 4).

By 2000, however, 70 percent of residential permits in outlying counties were issued inside the UGA, an increase of 15-20 percent from the early 1990s. For the region as a whole, the percentage of residential permits issued inside the UGA grew from 63 percent in 1992 (the low year) to 77 percent in 2000. In King County the figure approached 90 percent.

[11] As explained in Footnote 3, the NRI urban land is a different type of measurement than the Census Bureau's urbanized area. While these two measurements seem to be comparable in Orlando, this is not as true in Seattle. The 2000 Census Urbanized Area contains about 20% more land than the 1997 NRI urban land measurement.

Map 8

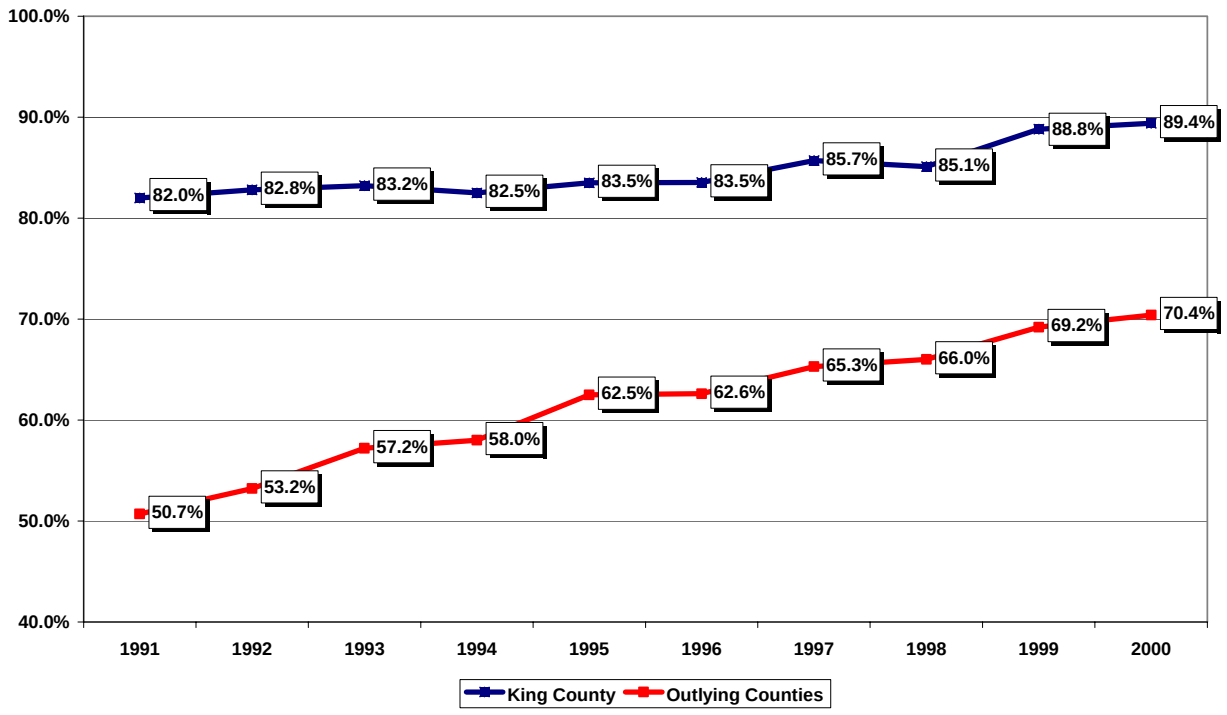


Furthermore, it does appear that the Agricultural Protection Districts in King County successfully deflected growth during the 1990s. The 1994 Comprehensive Plan identified five APDs in the county—the Sammamish River, the Snoqualmie River, the Lower and Upper Green Rivers, and the Enumclaw Plateau. The core of these areas was the 12,800 acres of farmland on which King County had purchased development rights, but the total amount of land was much greater—41,268 acres. The Enumclaw Plateau is located southeast of Seattle on the "eastern front." The Green River APDs were small units surrounded by mostly urbanized areas around Auburn and Kent. The Sammamish River APD is located just north of Redmond. The Snoqualmie River APD is located in the middle of the eastern front east of Redmond, and it was where the county purchased the most farmland rights in the 1980s. These areas were virtually untouched by residential growth in the 1990s. Not only were the farmland protection properties off-limits for development, but the larger APDs—protected only by regulation—received very few permits (The Sammamish and Snoqualmie APDs are discussed in more detail in the case study.)

What is remarkable is that this increased geographical concentration of residential growth occurred at a time when single-family development was actually increasing as a percentage of overall housing growth —and when the traditionally lower-density outlying counties were capturing a greater share. As of the 2000 Census, the four-county Seattle metropolitan area had about 1.28 million housing units, of which about 800,000 (63 percent) were single-family detached units. About 60 percent of these housing units were in King County. Furthermore, multi-family units were very concentrated in King County. Whereas the number of single-family units in King County and the outlying counties was very similar in 2000, King County had twice as many multi-family residences as the outlying counties (Figure 5).

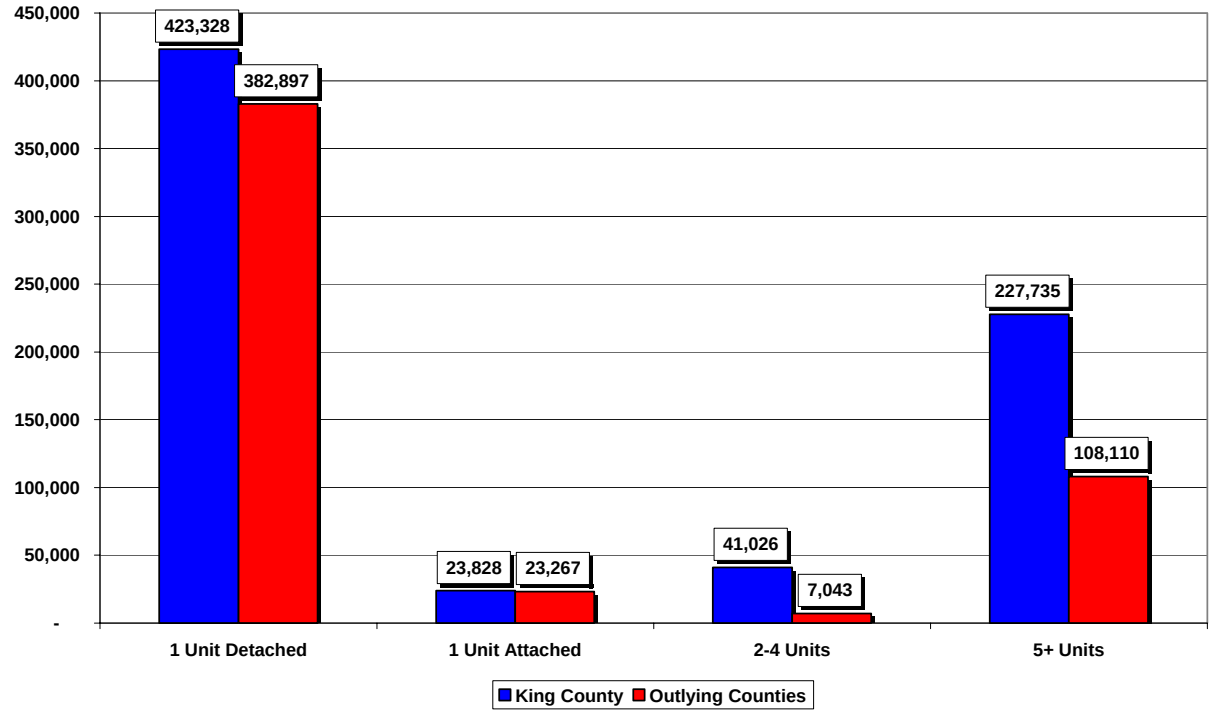
But during the 1990s—the same decade that the UGA was instituted—the percentage of single-family detached production went up, and housing production in the outlying counties exceeded housing production in King County for the first time.

Figure 4. % of Residential Permits Located Inside UGA, 1991-2000



Source: Puget Sound Regional Council

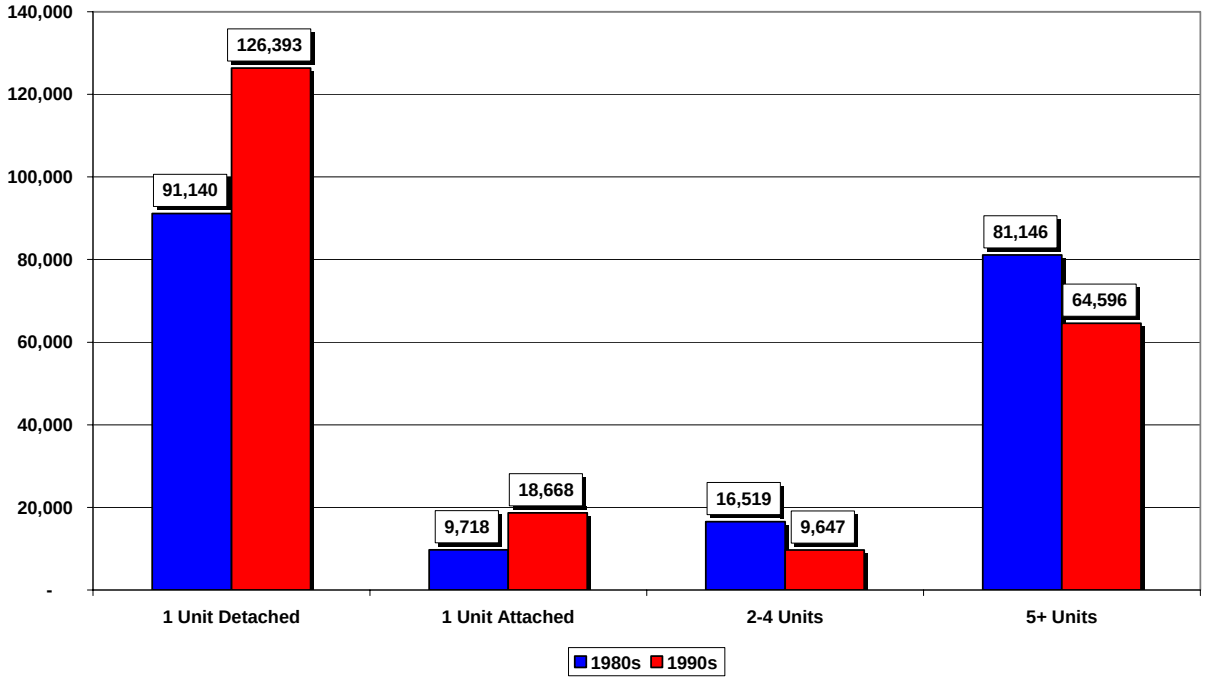
Figure 5. Housing Type, King County and Outlying Counties, 2000



Source: U.S. Census Bureau

Regionwide, 57.9 percent of all new housing during the 1990s was single-family detached units (126,000), compared with only 45.9 percent (91,000) during the 1980s. The number of single-family attached units doubled, though it was still a small percentage of overall production. Multi-family production dropped from 81,000 during the 1980s (40.7 percent) to 64,000 (29 percent) (Figure 6).

Figure 6. Residential Production by Housing Type, Metropolitan Seattle, 1980s and 1990s



Source: U.S. Census Bureau

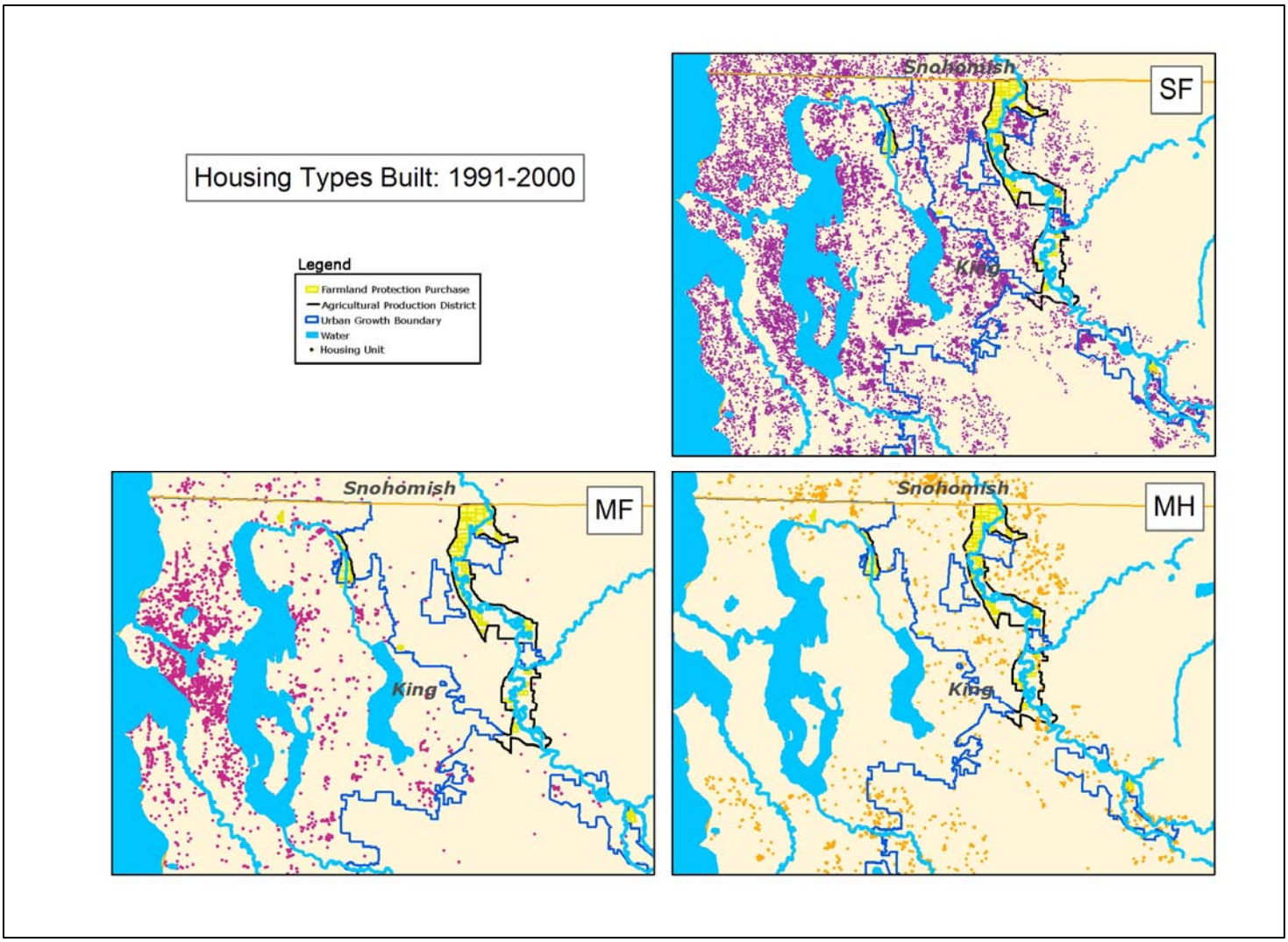
Housing production in the outlying counties exceeded production in King County for the first time ever—and that production was heavily tilted toward single-family development. In the 1980s, King County produced approximately 109,000 housing units, compared to 90,000 in the outlying counties. In the '90s, that relationship was reversed -- the outlying counties produced 119,000 housing units compared to 100,000 for King County. Nearly 68 percent of that production in the outlying counties was single family detached units. Further, the number of single-family units rose by 60 percent in outlying counties from the '80s to the '90s (48,000 to 80,000) and less than 10 percent in King County (42,000 to 45,000).

Multifamily construction was down in the 1990s in King County but it remains concentrated there. Multifamily construction represented 40 percent of King County housing production and less than 20 percent in the outlying counties.

But perhaps the most striking difference in housing production is the difference between the city of Seattle and the rest of the region. Whereas 29 percent of housing production regionwide was multifamily in the 1990s, it was 74 percent of the production in Seattle. There is a significant difference between Seattle and the rest of King County and an even more pronounced difference between Seattle and the outlying counties, where the ratio of single-family detached to multifamily is almost a mirror image (about 3.5 to 1).

Map 9, which depicts mostly King County, shows the difference between the even distribution of single-family (SF) construction and the extreme concentration of multi-family (MF) construction (mobile homes (MH) are also shown). This trend is likely to continue, especially in King County, as the county pursued such policies as a transferable development rights program which permits transfers of development rights from rural, undeveloped areas to high-density neighborhoods in Seattle (See case study).

Map 9

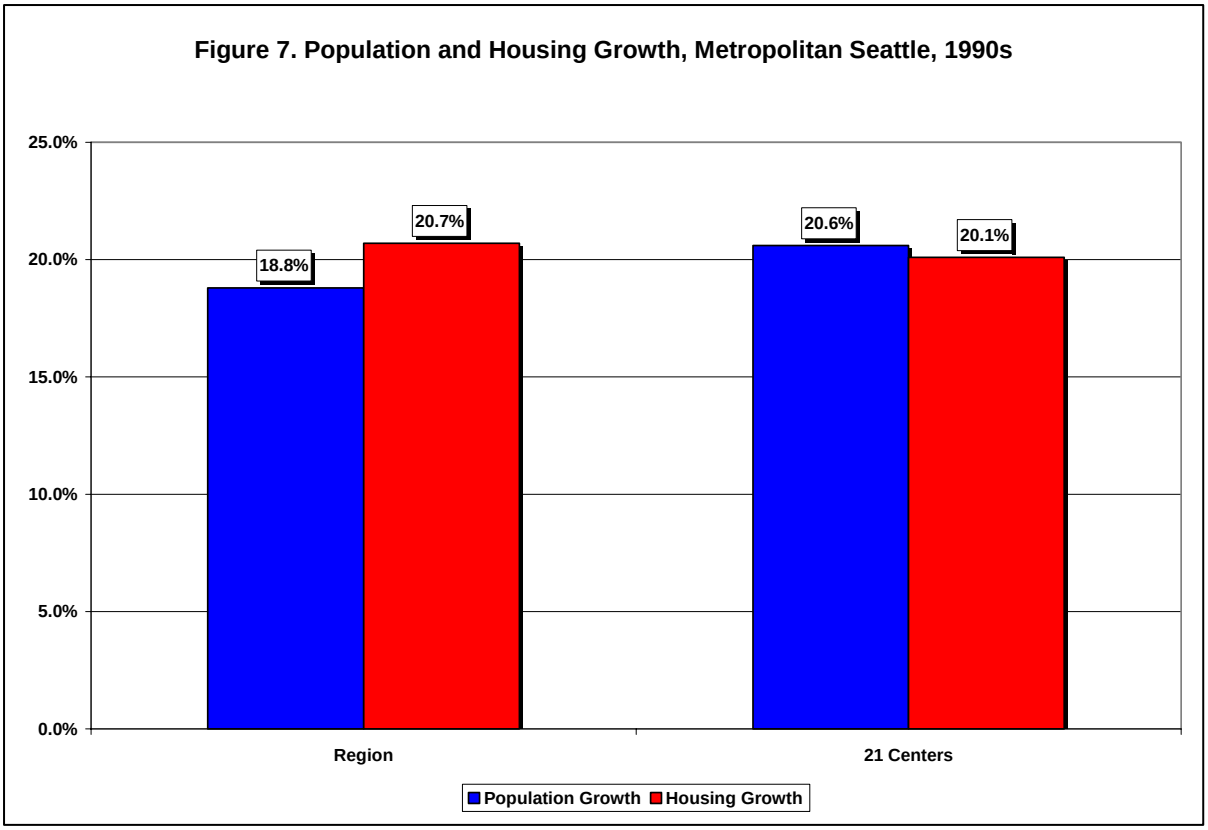


It is also worth noting that, in addition to shifting development out of farming areas and inside the UGA, regional policy has focused on driving development inside the 21 designated regional growth centers. These growth centers are all located inside the main UGA east of the Puget Sound except for Bremerton, the largest community in Kitsap County.

These centers were mostly selected because of their employment density and their potential for high-density housing development. On average, they are 730 acres in size and together they account for only 2.4 percent of the land area inside the UGA. However, they currently contain 5 percent of the region's population, 6.6 percent of its housing, and almost 30 percent of its employment. Altogether these centers contain more than 450,000 jobs on a land area of 24 square miles. They have a population of approximately 140,000 persons living in 77,000 housing units.

A recent analysis by the Puget Sound Regional Council found that these centers did not grow any faster in terms of population and housing during the 1990s than the region as a whole (Figure 7). Furthermore, the analysis found that most of the housing production occurred in two centers, downtown Seattle and downtown Bellevue. If current housing production levels continue to 2020, then these centers would add between 30,000 and 35,000 new housing units, achieving about 70 percent of the housing target set by the Regional Council (Puget Sound Regional Council, 2002). Thus, while the regional growth policies have driven residential development out of farming areas and inside the UGA, it has not pushed all development into the centers.

Figure 7. Population and Housing Growth, Metropolitan Seattle, 1990s



Source: U.S. Census Bureau

D. Seattle Case Study: The Sammamish and Snoqualmie River Valleys

Much of the recent fights over urban growth in metropolitan Seattle have occurred in the low-lying King County agricultural lands east of Seattle and Lake Washington, in between the developed part of the region and the Mt. Baker-Snoqualmie National Forest to the east. It is in these areas that low-density residential development has occurred and where most land conservation efforts have been focused. Partly for this reason, the Urban Growth Area boundary—which, with a few exceptions, runs mostly north-south through this territory—has become a significant tool in shaping metropolitan growth.

The two valleys, which cover almost 200 square miles, are an excellent location for a case study on metropolitan growth for many reasons. They are subject to considerable urban growth pressure because of proximity to Redmond and other emerging job centers east of Lake Washington. And in fact, many of the policy tools discussed elsewhere in this paper are in play there, including:

- an urban growth boundary
- an agricultural protection district
- purchase of development rights on agricultural land
- transfer of development rights from natural land
- the presence of large chunks of federally owned land.

Altogether, the study area we chose for the Sammamish-Snoqualmie area covers more than 250 square miles, about 4 percent of the region's total land and approximately 12 percent of King County's land.[12] Excluding the National Forest, which is a barrier to urban development, the study area includes about 187 square miles. Of this amount, about 50 square miles is located inside the Urban Growth Area—about 5 percent of the regional total and 11 percent of the King County total. Some 23 square miles are located inside King County's Agricultural Protection Districts (APDs), 36 percent of the total area in APDs. In addition, the area contains most of the 12,800 acres of agricultural land whose development rights were purchased by King County in the 1980s. Few major highways traverse this area. State route 202 runs along the southern portion of it, and Interstate 90 runs just to the south of it.

According to the 2000 Census, the Sammamish-Snoqualmie area had about 170,000 residents. This was a 37 percent increase from 1990, but this rate of growth is much slower than in the 1970s and 1980s, when the population doubled each decade.

The Sammamish-Snoqualmie area stretches from Redmond and Lake Sammamish eastward along the Snoqualmie River and the cities of Duvall and Carnation to the National Forest boundary. The main UGA boundary hugs the developed part of the metropolitan area around

[12] In terms of King County's Community Planning Areas, this case study area covers virtually all of Bear Creek and East Sammamish, most of the western portion of Snoqualmie, and some of the northern portion of Tahoma/Raven Heights.

Redmond, but reaches much further east to accommodate the rapid growth in the newly incorporated city of Sammamish. Most of the land along the Sammamish River and Lake Sammamish is heavily urbanized and located inside the UGA. However, the Sammamish River Agricultural Protection District is located along the river north of Redmond, and the land within that district is almost completely protected by development rights purchases by King County.

The Snoqualmie River Valley lies approximately five miles east of the main UGA boundary, and is largely contained within King County's two Agricultural Protection Districts covering the Snoqualmie. Two cities with non-contiguous UGAs are located on the east side of the river—Duvall in the north and Carnation in the south. The agricultural areas along the river to the north and west of Duvall—bordering Snohomish County—represent the largest concentration of agricultural land protected through King County's purchase of development rights program in the 1980s. Carnation serves as the divider between the two Agricultural Protection Districts along the river.

The five-mile area in between the main UGA and the Snoqualmie River is mostly rural land subject to extreme pressure for suburban growth. It is not protected by any agricultural policies, and it is located less than 10 miles from Microsoft's headquarters in Redmond. There is one other freestanding area that has been placed inside the UGA, which is located just west of the river a few miles due east of Redmond.

Similarly, there is considerable land located farther to the east in between the Snoqualmie River and the National Forest. Although removed from job centers, this land too is subject to pressure for low-density development; although it is outside the UGA, it is not located in the county's agricultural zone and it is not part of the National Forest. Some of this land, especially in between Duvall and Carnation, was categorized by the Census Bureau as part of the urbanized area in 1990.

Up until the passage of the King County Comprehensive Plan in 1985, which contained a precursor to the Urban Growth Area boundary, most the rural lands in the case study area were zoned for one-acre lots. The 1985 plan downzoned virtually the entire rural area for small-scale agriculture. The Sammamish Valley Agricultural Protection District was zoned mostly for 10-acre lots and was used for sod and truck farms. The Snoqualmie Valley Agricultural Protection District was zoned for many 10-acre lots but also for many 35-acre lots to accommodate dairy farming (Wolf, 2003). The remaining rural areas—in between the UGA and the Agricultural Protection Districts—were zoned mostly for 2.5- and five-acre lots. Urban development was also discouraged in this area by the county's strict infrastructure policy, which limited sewer hookups in rural areas.

When the Urban Growth Area was first introduced in the early 1990s, the Sammamish-Snoqualmie area was one of King County's ripest for new residential growth. Even though the area represents only 4-to-5 percent of the county's land area and its UGA area, in most years in the early 1990s it accounted for about half of all residential permits issued outside the UGA in King County. As a result, the Sammamish-Snoqualmie area fell far behind the rest of the county in building within the UGA. In the early '90s the rest of King County was issuing 90 percent of its residential permits inside the UGA. In the Sammamish-Snoqualmie area, that figure hovered around 50 percent.

This trend appeared to be driven largely by two things. First was the boom in high-end jobs in the area immediately west of the rural zone, especially in Redmond, where Microsoft is headquartered. "We never envisioned there would be that many rich people in Redmond who wanted to buy a 10-acre lot and build a mansion on it," said King County planner Karen Wolf (Wolf, 2003). Second is Washington's vested rights law, which allowed subdividers already in the pipeline to finish their projects in spite of the fact that they were now located outside the UGA. In Washington, vesting occurs when the building permit or application is applied for, not when it is granted (McCumber, 1990).

During the decade of the 1990s, these patterns changed somewhat. But it is important to note that the Agricultural Protection District designation, buffered of course by the purchase of development rights in the 1980s, effectively "held the line" against the encroachment of urban growth. In the 10-year period from 1991 to 2000, only 68 residential permits were issued inside the APDs contained in the study area, out of a total of 11,071 total permits (0.6 percent of the total). Thus, the combination of the agricultural designation and the purchase of development rights do appear to have preserved the Snoqualmie River Valley as a farming region.

The effects of the UGA, however, were slower to be revealed. The agricultural preservation effort appears to have had had the effect of pushing fairly low-density suburban growth to either side of the Snoqualmie River Valley but still outside the growth areas. On the east side of the river in particular, residential growth occurred at fairly low densities. Relatively speaking, little growth occurred inside the UGA around Duvall and Carnation.

During the 1990s, however, this pattern changed. Figure 9 shows residential permits broken down by two time periods—from 1991 to 1995 and from 1996 to 2000. During this period, the number of residential permits issued inside the UGA increased from 55 percent to 69 percent. But because overall building activity was greater during the second half of the 1990s, the number of building permits issued outside the UGA declined only slightly (from 2,100 to 1,900).

What is most obvious is that, over time, fewer low-density permits were issued on the east side of the river. Much more growth was driven inside the UGA of the two cities along the river, Duvall and Carnation. Considerable growth still occurred in scattered areas west of the river near Redmond and Sammamish, but overall that pattern thinned out. There was also much more concentrated building activity in the UGA around the city of Sammamish, which incorporated in 1998 largely as a byproduct of the Growth Management Act. The Redmond area also clearly saw more building activity inside the UGA during the latter half of the 1990s, and very little activity immediately to the east of the UGA.

The nature of housing in the Sammamish-Snoqualmie area also changed somewhat during the 1990s. The area was traditionally developed overwhelmingly with single-family detached houses. As of 1990, 81 percent of all housing units in the study area were single-family detached

homes, and this proportion had remained more or less constant during the building boom of the 1970s and 1980s, when the number of units grew from 8,600 to 34,000.

In the 1990s, however, only 65 percent of the housing production in the study area consisted of single-family detached homes (12,300 out of 18,800). This was still higher than the region as a whole and much higher than the rest of King County, but it was lower than the figure for the outlying counties. Furthermore, it ran counter to the trend in the rest of the region, which saw the percentage of single-family units produced increase during the 1990s. Much of the shift in the case study area—as in the region as a whole—was toward single-family attached units. The number of attached units in the case study area quintupled between 1990 and 2000, from about 600 to about 2,500.

About 20 percent of housing production in the case study area consisted of multi-family projects of five or more units. Virtually all of these projects were built inside the main UGA on the western edge of the study area, especially in Sammamish.[13]

Thus, it can be reasonably concluded that the combination of growth policy tools in place in the Sammamish-Snoqualmie study area pushed growth out of the designated farming areas. Over time, they pushed some single-family construction inside the UGA, where those single-family homes were probably built at higher densities. Although anecdotal evidence suggests that single-family lot sizes in Bellevue and Redmond are declining, sometimes to as little as 4,000 square feet (Lewandowski, 2003), single-family densities have remained relatively low compared to the rest of the region. Average permit density in Redmond, for example, was 4.8 units per acre between 1995 and 2000. For Bellevue, the figure was 2.8 units per acre. The rural cities of Carnation and Duvall approved projects at approximately 2 units per acre. This compared with 6.6 units per acre in the western part of King County (Seattle) and 4.2 units per acre in the southern portion of the county (King County Buildable Lands Evaluation Report, 2002).

It could even be argued that the growth policy tools, in combination with market forces, had moved demand from lower-density rural areas on either side of the Snoqualmie River Valley to attached and multi-family units inside the main UGA to the west. Even if this is a stretch, there is little question that the combination of Agricultural Protection Districts and purchase of development rights has done a much better job of protecting the farming areas in the Snoqualmie River Valley than the UGA has done in protecting other rural areas.

While this geographical shift in demand may be a reasonable conclusion from the data contained in the case study, it is literally true in at least one case. Yet another policy tool that the King County government has pursued is a program to transfer development rights from sensitive areas to areas designated for urbanization. Most typically, TDRs are transferred from one undeveloped area, which is preserved, to another, which is built more densely. Furthermore, most TDR programs permit transfers only within the same jurisdictions.

[13] The map and the statistics are not from the same data. The statistics are derived from the decennial Census. The map is derived from residential permit data provided by the Puget Sound Regional Council.

But in the one of the most unusual TDR programs in the nation, King County and Seattle have reached an agreement to permit density transfers from rural areas in eastern King County to urban neighborhoods in Seattle. And the first transfer involved sensitive land in the Snoqualmie River Valley. In 2002, King County created the first transfer by purchasing the development rights on 443 acres of land near Carnation for $2.8 million. The land is located in a flood-prone location at the conjunction of the Snoqualmie and Tolt rivers, and represents part of an effort to save natural as well as agricultural areas in the Snoqualmie Valley.

It is likely that the rural area outside the UGA will be better protected in the future, but not as well as the farmland is protected inside the agricultural protection districts. There appears to be capacity to build some 5,000 additional units on platted land in the rural area, although no new plats have been approved in the last two years (Lewandowski 2003). Thus, it would appear that the agricultural protection districts have succeeded in keeping urban development out, and the UGA has gradually drawn more growth inside the boundary. The policy tools have slowed, but have not effectively stopped, large-lot residential subdivision in the eastern part of the county.

E. Conclusions About Metropolitan Seattle

During the 1980s and '90s, Metropolitan Seattle altered its growth management regime more quickly in a shorter period of time than any other metropolitan region in the country. King County initiated a series of changes, including purchase of agricultural development rights and a comprehensive plan with an urban growth boundary. The region as a whole followed by implementing the Growth Management Act adopted by the state, many of whose provisions were borrowed from the King County effort.

There is little question that the urban growth boundary created as a result of the Growth Management Act has had a significant impact. The vast majority of residential development permits are now issued inside the Urban Growth Area, even in the outlying counties—a significant change from the early 1990s. An indirect result is that most metropolitan Seattle residents now live in cities, because new annexations and incorporations occurred as a consequence of complying with the state law.

Some of this shift may have occurred because of "pull" factors rather than "push" factors. Traffic congestion in metropolitan Seattle did increase significantly during the 1990s—partly as a function of the region's job growth and increase in wealth—and the city of Seattle in particular gained a reputation as a good place for high-density urban living. Be that as it may, the maps in this report present strong evidence that the state's growth management regime accomplished its stated goal of containing urban growth within a strongly defined Urban Growth Area.

Interestingly, what the new growth management regime did *not* do—at least in the aggregate—was stimulate the construction of high-density housing. The 1990s was a fallow period for multi-family construction everywhere in the nation, and for many reasons. It's true that in certain

locations, especially the city of Seattle, multi-family construction became the rule rather than the exception. But this was not true for the region as a whole. The geographical shift in residential development occurred in spite of the fact that the region's housing stock became more tilted to single-family detached units.

Anecdotal evidence would suggest that this seemingly paradoxical outcome was accomplished in large part by reducing single-family lot sizes. In expensive inner-ring suburbs such as Redmond, lot sizes have dropped to 4,000 square feet in some cases. This would be consistent with the Portland experience. The result is a much more efficient use of land, but not necessarily a fundamental difference in the way the urban area operates. As experience in California suggests, high-density single-family living (i.e., 4,000square-foot lots) can lead to crowded conditions in which residents are still dependent on cars. In other words, this shift in the use of land must be accompanied by other changes—especially in transportation alternatives—in order to create a different set of realistic choices for residents.

At the same time, the agricultural protection efforts in King County seem to be successful as well, although it is not clear how the different tools worked together and which one was most important. The county initiated its purchase of development rights program in the late 1970s, when most of the rural area of the county was still zoned for one-acre lots. In that sense, the county was buying its way out of its past land-use policy decisions, just as Orange County and other government agencies in Orlando were doing along the Econlockhatchee River. But around the time that the purchase program was completed, King County altered its comprehensive plan and dramatically downzoned the rest of the land in the Agricultural Protection Districts. And even though no more development rights have been purchased, these agricultural areas have continued to be viable and have experienced virtually no urban development. Thus, the purchase program predated a much stronger and more comprehensive growth management regime which eventually served to protect the agricultural areas.

As the case study reveals, however, the most difficult question in metropolitan Seattle is what to do with the rural areas in between the Urban Growth Area and the Agricultural Protection Districts—the "battleground" areas traditionally designated for large-lot development. The growth management regime—including both the Urban Growth Area and King County's strong sewer policy—has succeeded in slowing development in these areas, but it has not produced a strong alternative vision as to what role these areas should play. They apparently are not viable for agriculture, at least not given the current zoning designations. They have some potential to serve as a "rural residential buffer" between the Urban Growth Area and the agricultural regions, but their development pattern is so scattered and inconsistent that this may not be possible. They could serve as a reserve of land for future urbanization of higher density, but this raises many questions about future urbanization policies and the expectations of landowners in the area. In many ways, these non-agricultural rural areas remain the problem child of metropolitan growth in Seattle and elsewhere.

V. THE ROLE OF GROWTH POLICY TOOLS IN SHAPING METROPOLITAN GROWTH PATTERNS

The patterns of metropolitan growth are shaped by many sources, including public policies, large-scale economic forces that drive land and job markets, and small-scale economic forces that help to shape the preferences of individual consumers. The case studies of metropolitan Seattle and Orlando suggest that, while market forces are important, public policy tools do, in fact play an important role—whether they are coordinated or not. These public policy tools come in three primary forms—land-use regulation such as urban growth boundaries, infrastructure policy, and open space protection efforts.

We selected Seattle and Orlando as case study metropolitan areas for several reasons, but one of the most important was that they provided a good opportunity to examine how strong—though different—growth management and open space policies function in tandem to shape growth patterns. Such insight might assist states and regions in crafting better-coordinated policies in the future. Seattle and Orlando provide different experiences in how these policies work together. Some of these differences are attributable to policy differences. But some are also attributable to the specific characteristics of the metropolitan area—especially topography and maturity—because that has affected how the growth management and open space regimes have "played out" on the landscape.

A. Urban Growth Boundaries and Metropolitan Form

Urban growth boundaries are designed to restrain urban expansion into rural areas. A UGB policy can have one or both of two goals: first, to conserve rural or open space land; and, second, to encourage development in specifically designated urban areas to reduce infrastructure cost. Previous research suggests that, while UGBs drive some development back inside the urban growth boundary, they also tend to create some “leapfrog” development beyond the rural greenbelt (Pendall, Martin, and Fulton, 2002).

Both Seattle and Orlando have an urban growth boundary, though Seattle’s is stronger. Orlando’s is an urban service area created by Orange County that has proven more flexible, especially when faced with intense political pressure. In Orlando, the outer counties are growing faster than the core county, and county officials have altered the urban service area—and permitting somewhat higher densities than the metropolitan norm—in hopes of capturing more growth.

Metropolitan Seattle, by contrast, has implemented a strong three-county urban growth boundary partly as a result of regional consensus but largely because of the edicts of state law. And, at least in quantitative terms, the urban growth boundary has succeeded. Much residential growth has been driven “across the line” into the designated urban growth area; and there is a good argument that this residential development has increased in density as well, which may mean that infrastructure is being more efficiently used.

However, in and of itself, the urban growth boundary policy in metropolitan Seattle has not led to a complete conservation of rural and open space lands, as land conservationists often hope, nor has it led to a transformation to a less car-dependent urban life, as urbanists often hope. Farmland has been successfully conserved in the Agricultural Production Zones, but this was mostly because of tools other than the urban growth boundary. In the rural areas outside these agricultural zones, single-family residential development has been reduced, but the pressure for low-density suburbanization remains, partly because there appears to be no economically viable alternative outside the agricultural zones.

Meanwhile, while the urban growth boundary policy in Seattle has placed more residential growth in or near existing urban areas, it has not, in and of itself, led to the construction of more multi-family housing or a transformation of urban life so that it is less automobile-dependent. It is true that these trends were occurring in the city of Seattle during the 1990s and some of this intense urbanization pressure in the core city might have resulted from the urban growth boundary policy. However, to a great extent the effect of the urban growth boundary policy, especially in eastern King County, was to push single-family residential development westward across the growth boundary (and also into small rural cities). The result appears to be a more concentrated pattern of auto-oriented single-family neighborhoods, with the houses sitting on smaller lots.

Thus, while the urban growth boundary policy in Seattle appears to be an important tool in shaping metropolitan growth on the large-scale, it does not by itself achieve the underlying objectives many of its advocates seek. It must be combined with other strategies and tools, such as farmland protection in rural areas and a transit orientation in urban areas.

B. Open Space Policy and Metropolitan Form

One inevitable conclusion of this paper—especially considering the Orlando experience—is that open space policy plays a major role in shaping large-scale metropolitan growth patterns. This role, however, can best be described as “defensive,” rather than “offensive.” Open space policy—especially acquisition of land and easements—directs development away from certain places but does not, by itself, direct development *toward* certain locations. Nor does it dictate a different type of urban form.

Washington State does not have a robustly funded open space acquisition program, as Florida does. In large part, Seattle’s metropolitan growth is already constrained by topography. However, in those areas where privately-owned rural land does exist, acquisition of land and easements—in combination with other policies—have directed development away from certain locations. This is clearly true with the King County farmland preservation effort. The easements provided a base of conserved farmland, and the Agricultural Production Zone policy built on that base.

In contrast to Seattle, Orlando has abundant land and a well-funded open space acquisition program. The result has been an even stronger influence on the shape of metropolitan growth.

Especially in the case of the Green Swamp and the St. John's River, open space efforts have played a profound role in shaping metropolitan growth patterns—though again this role is defensive. The presence of the Green Swamp has, essentially, directed development to all other locations along the I-4 corridor. Meanwhile, the St. John's River preservation effort has maintained a greenbelt between inland Orange County—which has been growing fast in the last 20 years—and coastal Brevard County, whose urban growth dated from the space boom of the '60s and '70s. Without the St. John's effort, it is likely that Cape Canaveral and the other coastal communities would long ago have been subsumed by the suburban growth of Orlando and Orange County.

It is important to reiterate, however, that open space acquisition is essentially a defensive measure. It seeks to protect certain sensitive area—or scenic areas that have popular public support—from development. In and of itself, an open space acquisition strategy includes no vision for the how the urban development of a metropolitan region should proceed. Like an urban growth boundary policy, it is just one tool in the arsenal.

C. The Battleground on the Metropolitan Fringe

Interestingly, in both case studies we discovered a "battleground area" located in between the suburbanizing edge of the metropolitan area and a permanently protected open space area. Coincidentally, both battlegrounds were located in the eastern part of the core county—the Econ River area in eastern Orange County near Orlando and the rural area in eastern King County near Seattle. In each case we found that the policy tools available to the county could not withstand the political and economic pressure pushing for more development.

In eastern Orange County, the Econ was regarded as an important ecological resource and had been established by the county as the urban growth boundary. However, the path of growth in metropolitan Orlando was moving toward the Econ and the county found it impossible to "hold the line". In part, this was because of the presence of a politically popular development proposal, Avalon Park, which was gaining national attention in New Urbanist circles. (Now constructed, Avalon Park is a fine example of New Urbanist town planning, but it is not immediately adjacent to other development in eastern Orange County.) And in part, this was because previous land conservation efforts in eastern Orange County had been focused elsewhere—specifically, farther east along the St. John's, which served as eastern Orange County's "real" urban growth boundary. Thus, the battle along the Econ was a kind of rear-guard action in which some development had to be accommodated and some land was purchased, albeit at a very expensive price.

In eastern King County, we found a somewhat similar situation. Between the urban growth boundary and the National Forest, a large agricultural area was threatened by urban development. Beginning in the 1970s, the county had undertaken a successful effort to preserve the core farming areas along the two rivers—first with easements and later with the Agricultural Preservation Zone. This agricultural preservation effort, however, was unable to save all the farmland in the area, and gradually low-density suburban development began encroaching on formerly agricultural areas outside the preservation zones. When the Urban Growth Area was created, these areas were

placed off-limits for urban growth, but they were not included in the agricultural preservation area. Again, the “real” growth boundary was placed farther east, in the Ag Preservation Zones. No economically sustainable vision for these rural areas was devised and linked to policy; hence here too a rear-guard action has been fought—permitting some low-density suburban development and repelling other development proposals in the absence of strong conservation strategies other than the UGA.

Our conclusion is that any metropolitan growth strategy must recognize where these battleground areas are likely to be and how to handle them. If urban growth is not desired in these areas—but government agencies are not willing to devote resources to preserving them—then either an economically sustainable rural strategy must be devised or some type of urban or suburban growth must be permitted.

D. Interaction of Urban Growth Policy and Open Space Policy

In our earlier paper on land conservation and growth management, we concluded that these two policy areas are usually not coordinated and therefore we hypothesized that land acquired for conservation purposes often comes at a very high price (Hollis and Fulton, 2002). The case study of Orlando in particular reinforces this conclusion.

In Orange County, land-use policymakers were moving the urban growth boundary frequently in response to development pressure, especially from Avalon Park. However, this willingness to be flexible led to a political backlash among conservationists committed to protecting the Econ. Thus, “holding the line” against development along the Econ required the water management agency and private land conservation organizations to buy or negotiate to obtain land after the county’s actions had already increased the price.

This is a common situation in “battleground areas,” where the policy position of local land-use regulators and the desires of regional, state, and private land conservationists often conflict. It is often said that land conservationists must purchase development rights four, five, or six times over, because the speculative value of the land will always assume the maximum development potential even if the market would not support development on all parcels. This situation is made worse when public land regulators signal their willingness to permit development in areas that are ultimately bought out for conservation.

The particular history of agricultural preservation in eastern King County provides a contrast. The county stepped in almost 30 years ago to acquire easements on core farmland. It quickly became clear that the county could not afford to buy all the land, but the initial purchases laid a relatively inexpensive foundation of easements, and then the county reinforced that signal with the creation of Agricultural Preservation Zones. In that case, the consonance of land acquisition policy and land use policy has proven effective and—in retrospect, at least—inexpensive. King County was not forced to "buy its way out of the problem."

VI. CONCLUSIONS

In this paper, we have examined only two metropolitan areas—albeit two areas that were carefully chosen for both their similarities and their differences. Analysis of other metropolitan areas might reveal different patterns and different effects of growth policies. But based on this case study analysis, we can make the following conclusions:

- Land use, infrastructure, and open space policy *do* play an important role in shaping metropolitan growth, and whether or not they are coordinated on the policy level, they *do* interact with each other in shaping those patterns.

- Urban growth boundaries can help to redirect urban growth, but in and of themselves they cannot encourage a fundamentally different urban form.

- Open space protection efforts can divert growth away from important natural areas, but by themselves they cannot shape a coherent metropolitan form from the point of view of human systems.

- Neither solution, by itself, solves the problem of the battleground on the metropolitan fringe, which is often the most politically divisive growth area in the region.

- Unless they are coordinated, these different types of policies often work at cross-purposes in a way that is very expensive.

Although we deliberately selected two metropolitan areas for study that were unique in many ways, we believe that many of the lessons and conclusions we have found can inform metropolitan-wide growth debates elsewhere.

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