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Planning Growth Management; The Rapid Urbanization of Loudoun County, Virginia

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Master of Urban and Regional Planning

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Urban and Regional Planning at Virginia Commonwealth University.

Thesis Chair: Dr. John J. Accordino,

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Abstract

Planning Growth Management; The Rapid Urbanization of Loudoun County, Virginia

By Shaianna L. Trump, B.S. Urban and Regional Studies and Planning

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As the population grows, planners and politicians must decide how to direct growth. This thesis analyzes how growth management can control land use and development using Loudoun County, Virginia, as a case study. By looking at how Loudoun County has implemented growth management policies, a case can be made for why governments should look to growth management to manage growth pressures. This thesis looks at the past and present growth management policies in Loudoun County and analyzes the County's 2019 Comprehensive Plan.

Keywords: Urban Planning, Growth Management, Loudoun County

Chapter 1: Introduction

Growth management in the United States began in 1969 in a quiet town in New York. Ramapo, New York, enacted a local regulation that linked the rate of new home approval to the availability of adequate public facilities. This legislation would influence other municipalities, counties, and states in the United States to adopt their local growth management programs. Growth management programs emerged in states like Oregon, Florida, Maryland, and Minnesota. It has since been utilized by the few municipalities, counties, and states with the political willpower to adopt such stringent policies. However, while the role of growth management in planning is still in flux, it is widely accepted that local governments should be able to control their growth rate (Landis, 2021). Local and state governments can be better equipped to manage rapid urbanization by controlling growth.

Urbanization is "the process of land transformation mainly occurring as a result of rural urban migration" (Sahana et al., 2018, p. 1558). Urban sprawl can happen when urbanization is not managed, leading to inefficient land use. Urban sprawl is defined as the uncontrolled expansion of urban areas. Sprawling regions are characterized by low-density, single-use, and scattered or leapfrog development. They are known to be inequitable and environmentally insensitive (Carruthers, 2002). Sprawl as a result of urbanization is detrimental to sustainable land use planning. To grow sustainably means to be able to control land use and development in a way that effectively manages growth. Land use regulations, specifically growth management regulations, are an effective land use planning instrument to prevent urban sprawl and to enforce sustainable development (Bovet et al., 2017). Sprawl is imminent in many regions, especially those that are experiencing rapid population growth, and it is clear that alternatives to current urban development

approaches are needed (Deal et al., 2009). Growth management may offer a policy route for regions looking to curb sprawl.

Researching growth management is essential because the findings can be used to show local governments that they can successfully use growth management in planning for population changes. Frenkel and Orenstein (2012) explain that the "potentially profound impact of urban sprawl and the contentiousness of the related policy debate emphasize the importance of continuing research on the efficacy of growth management policies" (Frenkel and Orenstein, p. 17 2012). A look into Frenkel and Orenstein's research on the matter and other authors' research can be found in Chapter 2: Literature Review.

The literature review is essential to this thesis and lays the foundation for the methodology and analysis. The literature review reveals the positive and negative effects of growth management. These effects of growth management are sorted into three categories in this thesis. The three categories are environmental, economic, and sociocultural. The environmental category primarily focuses on how growth management affects the environment through managing land use. In the economic section, the financial implications of growth management are analyzed. Finally, the sociocultural category focuses on how growth management alters the social fabric of an area. Each category is addressed in detail and elaborated in the literature review.

After determining the effects of growth management in the literature review, Chapter 3: Methodology introduces a case study. The case study will take the reader through time and break down Loudoun County, Virginia's growth management policies over the years. The key question is whether or not Loudoun County has stuck to its growth management policies, or if there has been a fluctuation in its approach to how land is used and developed due to political shifts or growth pressures. Chapter three also introduces an assessment later used to analyze how Loudoun

uses growth management policies today to manage land use and development while encouraging the positive effects and limiting the negative effects of growth management.

Loudoun County is in northern Virginia and part of the Washington D.C. metropolis. Figure 1 shows its location within Virginia, and Figure 2 shows its approximate location in the Washington, D.C., metro area. Loudoun County is historically a rural county with a booming agricultural industry. The county has faced immense growth pressures since the late 50s. As the Washington metropolis grew, Loudoun quickly became a candidate to be a bedroom community of the city. As the county became subject to suburbanization, concerns about preserving the rural landscape surfaced (Cowell et al., 2020). Growth management policies grew from these concerns. Chapter four looks at these policies from the 1950s to the 2000s.

Today, the county is still primarily rural, with urban pockets. This continued maintenance of the rural character may be attributed to the growth management policies that Loudoun County has implemented over the years. Chapter five of this thesis applies the assessment outlined in chapter three to analyze Loudoun County's current approach and unpack how it has used growth management to control land use and development to alleviate growth pressures and keep two-thirds of their county rural.

Using Loudoun County as a case study, this thesis highlights how growth management policies can be used to control land use and development. However, beyond the scope of this research are several concerns related to growth management. Factors such as social equity and environmental quality are important to consider. Higher-income communities disproportionately adopt growth management policies, and some scholars have pointed out that the most notable effect of growth management policies is that they exclude poor and minority households from these higher-income communities (Landis, 2006). Some studies have found that limiting housing construction increases

housing prices, potentially displacing many residents (Landis, 2006). Adopting growth management policies in higher-income communities may be coupled with affordable housing policies, but this is not a guaranteed package. While this thesis does not determine if growth management is socially inequitable, it does recognize that this is a potential downfall of implementing such policies.

Additionally, environmental concerns have been raised around growth management. This thesis assumes that one of the primary goals of growth management is to protect the environment; however, critics of growth management have pointed out that localized policies do not solve regional or national environmental problems. It has been suggested that growth management does not prevent development but redirects it. The best-case scenario is that the development is redirected back into more urban areas. The worst-case scenario is that development is redirected to adjacent municipalities or counties that lack growth management policies (Chinitz, 1990). This means that while the environment in one area is being protected, it is being degraded in an area nearby.

We must also recognize that urban sprawl is a regional problem that localized policies may be unable to manage effectively. Here, an argument can be made as to why regional collaboration is essential to ensure the successful implementation of growth management. At a regional level, growth management has been pushed to the side by many planners who favor smart growth because of its regional reach (Landis, 2006). This thesis does not address the need for regional planning in growth management, but it is an important consideration.

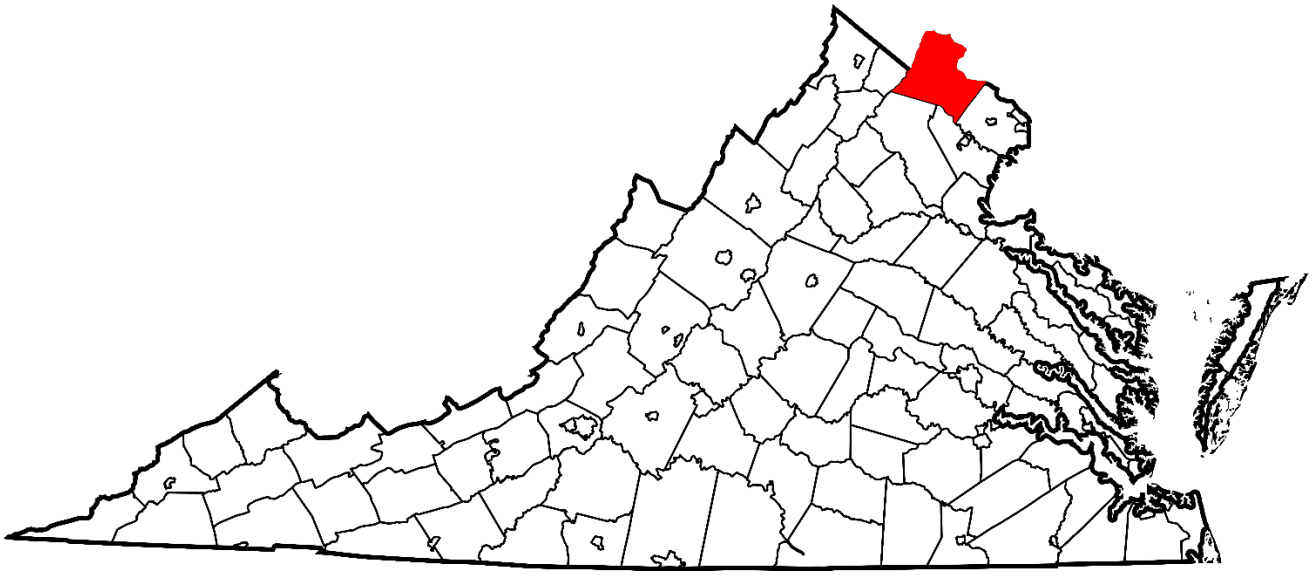
Additionally, preferences for suburban living have resurfaced due to the COVID-19 pandemic (Parker et al., 2021). Politicians must respond in a way that recognizes the desires of their residents which may lead to local governments who have previously denounced sprawling development,

permitting development in a sprawling pattern once again. The effects of the pandemic on urban planning have yet to be fully realized, and it may very well be that growth management is on the decline in these places. However, this thesis remains relevant for those governments who still aim to reject sprawl.

Finally, a case must be made for why growth management can still be used as an effective policy for population growth. This thesis covers a policy analysis and elaborates on how these policies can be used. However, it does not cover the efficacy of the policies. The efficacy of growth management strategies is still under heavy debate, as little empirical evidence supports their effectiveness (Carruthers, 2002). The importance of contributing empirical evidence that supports growth management is discussed in Chapter 6: Discussion & Conclusion. We should not worship unquestioningly at the altar of growth management because, without empirical evidence, it is hard to determine the actual effectiveness of such policies (Chinitz, 1990). However, at the very least, it can still be evaluated as an alternative policy approach.

Figure 1

Location Map of Loudoun County, Virginia



Source: https://upload.wikimedia.org/wikipedia/commons/thumb/8/8c/Map_of_Virginia_highlighting_Loudoun_County.svg/7486px-Map_of_Virginia_highlighting_Loudoun_County.svg.png

Figure 2

Proximity to Washington D.C. Map, Loudoun County, Virginia

Source: https://www.huduser.gov/portal/pdredge/images/pdr_edge/trending_111714_1.jpg

Chapter 2: Literature Review

There is debate in the literature around the efficacy of urban growth management strategies. There are numerous uncontested benefits of utilizing urban growth management strategies, but concerns have been raised regarding the unintended negative externalities of using such an approach in planning. To understand and compare the positive and negative effects of utilizing urban growth management strategies, this chapter splits the effects into three sections: economic, environmental, and sociocultural. The financial impacts have mainly been studied through the lens of rising housing costs and increasing land costs. However, the rise in housing costs is as much a sociocultural effect and will be discussed in more detail in its respective section. The environmental impacts are almost entirely positive, with few scholars questioning the effectiveness of growth management strategies in environmental preservation. As for the sociocultural impacts, however, it is unclear how growth management strategies upset the social-cultural fabric of an area. This chapter provides a table that summarizes the effects of urban growth management as identified in the literature (Table 1).

Section 2.1 Economic Effects of Urban Growth Management

Rural landscape protection is one of the most prominent reasons for implementing growth management. While protecting the rural landscape is most often a result of environmental preservation attempts, protecting the rural landscape through growth management is an effective tool for supporting the prosperity of agricultural sectors (Kirby et al., 2023). Growth management tools also economically benefit the public sector. By preventing unmanaged sprawl, the cost of installing public utilities is decreased (Olde & Oosterynck, 2021). Managing growth regulates the rate and timing of growth, alleviating the unpredictability of rapid urbanization (Chinitz, 1990;

Landis, 2006). This means there is less urgent pressure to build infrastructure such as roads and public services, giving local governments a chance to plan for expansion adequately. Additionally, by preventing sprawl into rural areas, growth management may turn developer attention back to more urban areas, allowing them to flourish. Growth management is known to reduce city-center deterioration and increase focus on revitalizing these areas (Kirby et al., 2023; Siedentop et al., 2016; Landis, 2006).

Critics of growth management point out that developers may turn away from the jurisdiction rather than refocus on the city center and choose to develop in adjacent municipalities, counties, and states with less restrictive or no growth policies. Suppose no incentive is given to developers to encourage infill development. In that case, the result may be "leap-frog" development, where growth is just redirected to adjacent areas, never really preventing sprawl in the larger context (Frenkel & Orenstein, 2012); (Siedentop et al., 2016). Leap-frog development is a form of urbanization where disjointed patches of urban land arise, interspersed with green areas (Noor et al., 2014). The developers bypass vacant land within the city in favor of cheaper land further away. This may cause a decrease in investment into the jurisdiction, having a profound economic impact where city center deterioration accelerates instead of stalls. One of the significant economic impacts of leap-frog development is infrastructure costs. The further away development is, the more expensive utility and road installation are. Leap-frog development may be prevented by coupling growth management strategies with a revised tax system that entices developers to stay.

A revised tax property system can be a supplemental tool to growth management (Gihring, 1999). Currently, if a landowner adds improvements to a property, taxes increase. A revised tax property system would place heavier taxes on land-extensive uses such as vacant land or parking lots and a lighter tax on land-intensive uses such as apartment buildings. By creating a system where

improved properties are taxed lighter than un-improved properties, developers would look more favorably at infill development rather than purchasing cheaper land on the outskirts (Gihring, 1999). Altering the tax system can mitigate the effect of developers leaving a region due to growth management policies.

Increased land costs may be another reason that developers choose to sprawl. Growth management policies have been proven to affect land costs negatively (Carruthers, 2002; Siedentop et al., 2016). If growth is contained within a particular area, the land becomes more valuable, increasing in price. However, this may be less of a concern since growth management policies are disproportionately adopted by higher-income communities (Landis, 2006). This is traceable to financial constraints that urban growth management puts on a jurisdiction. Local governments consider these constraints before implementing growth management policies. Since wealthier cities have fewer fiscal constraints, they are more likely to adopt urban growth management policies (Niu et al., 2022). While this implies no significant economic impact from rising land use costs for municipalities, counties, and states that currently have growth management policies, this also means that the places that can successfully implement growth management are limited in number. Additionally, the true impact of growth management on land use costs is still being determined. Some literature finds that growth management significantly affects land value, housing price, and development potential. In contrast, other studies have found that growth management does not significantly impact the real estate market (Niu et al., 2022). The former is more likely accurate as real estate developers tend to turn the high land price into the housing price (Niu et al., 2022). Rising land prices are an inevitable effect of urban growth management. However, the rise in housing costs can be mitigated through affordable housing policies, something to be discussed in section 2.3 of this chapter.

In general, studies have found that, in theory, urban growth management should lead to economically efficient anti-sprawl solutions, combating this recurring tendency of sprawl (Hepinstall-cymerman et al. 2013). Places such as Portland, Oregon, and Vancouver, British Columbia, have implemented growth management to combat sprawl and protect the rural landscape. The efficacy of Oregon's growth management can be seen in their residential building permits and land subdivisions. Between 1985 and 1989, over 90% of permits and 98.8% of subdivisions were requested for land within the urban growth boundary they created (Hepinstall-cymerman et al. 2013). Oregon has prevented unmanaged sprawl and increased investment in the inner city by implementing growth management. The state is regarded as having one of the more successful cases of growth management policy.

Section 2.2 Environmental Effects of Urban Growth Management

Infrastructure construction, such as roads and public services, is vital to urbanization. As places continue to grow, investment in infrastructure is definite. This increase in construction impacts natural ecosystem processes by replacing natural ecosystems with human infrastructure (Hepinstall-cymerman et al., 2013). The conversion of these rural landscapes into urban uses can accelerate land consumption, soil degradation, and deterioration of water resources (Hepinstall-cymerman et al., 2013). Replacing wildlife habitat, watershed land, farmland, and open space with human infrastructure may cause the loss of farmland and open space, natural resources, increased pollution, and traffic congestion (Noor et al., 2014). This change in land uses can be described as land use cover change.

By monitoring land use cover change over time and documenting development patterns, urban planners can hypothesize what an area will look like over a certain number of years. This data can be used to justify protecting the rural landscape through growth management to maintain an

equilibrium between the conservation of these ecosystems and human development (Chinitz, 1990; Boda, 2018). Supported by this data, growth management can ensure sustainable development, contributing to preserving the rural landscape (Boda, 2018).

Protecting the rural landscape has long been one of the most critical aspects of growth management. The literature reveals that one of the top reasons for utilizing growth management strategies is to protect open space (Frenkel & Orenstein, 2012; Siedentop et al., 2016; Chinitz, 1990). Protecting open space encourages more compact development and reduces the risk of sprawl (Frenkel & Orenstein, 2012; Siedentop et al., 2016). Preserving these rural ecosystems is crucial in sustainable land management (Cecchini et al., 2018). Cecchini et al. mention the importance of containing urban sprawl and informal development and recommend that local bodies prepare land use plans that strive for conservative development. Local bodies may use growth management policies to enforce sustainable development patterns.

In addition to creating sustainable land management practices, growth management naturally alters transportation patterns. Transportation patterns dramatically changed during the mid-twentieth century. As cars became more affordable, people moved further away from the city, and low-density suburbs became a primary land use (De Vos & Witlox, 2013). Today, it has been found that increases in automobile use and travel distance can lead to environmental degradation and a lower quality of life (Wey, 2019). Within cities and regions, transportation accounts for 20 to 30 percent of total emissions (Heinen, 2020). Using growth management to decrease travel distances can reduce emissions, improving the environment and the quality of life by enhancing accessibility (Wey, 2019). More compact development increases the use of public transit (Frenkel & Orenstein, 2012) and reduces commuting time (Kirby et al., 2023). The denser environments created by growth management create more sustainable travel behavior, increase ecological sustainability,

and improve public health (De Vos & Witlox, 2013). Growth management strategies can be vital in creating sustainable transportation systems by densifying cities and altering land use to favor more transit-oriented development.

Growth management aids in adapting to climate change through environmental sustainability. The most significant impact is in the realm of energy consumption. Energy consumption is high in sprawling regions because detached buildings require more energy to heat (Isinkaralar, 2023). By densifying, energy consumption is reduced. Additionally, the protection of rural land allows for climate resiliency. Natural surfaces can sequester carbon and mitigate the effects of natural disasters (Isinkaralar, 2023).

Counterarguments exist regarding the positive effects of growth management on protecting the environment. It has been speculated that increasing the amount of profitable agricultural land may lead to unintended consequences, such as a greater risk of groundwater depletion and pesticide exposure from increased agrarian use. It may also make natural disasters more catastrophic due to the increase in population density associated with growth management (Kirby et al., 2023). Additionally, utilizing growth boundaries may concentrate pollutants in certain areas, decreasing air and water quality within the urban growth boundary (Wey, 2018; Wey, 2019). Higher densities can also increase the urban heat island effect (Wey, 2019). While these concerns have validity, research overwhelmingly supports growth management strategies for environmentally related reasons.

Scholars have also pointed out that political differences question the role of growth management in environmental protection. Some reasons are differing aspirations leading to some actors' dissatisfaction (Chinitz, 1990; Olde & Oosterynck, 2021) or a varied institutional context within which growth management strategies are formulated and implemented (Olde & Oosterynck, 2021).

This suggests that rather than seeing growth management as a stand-alone concept, it may be better to pair the goal of environmental preservation with other approaches and tackle resulting issues from multiple perspectives (Sotoca 2016). A combination of conservation of rural land, containment of development, and improvement of urban fabric should be used (Sotoca, 2016). Any one of these reasons alone may not be powerful enough to sway political opinion, so it is best to use them in tandem. Overall, it is clear that growth management and environmental protection are inseparable concepts. Approaching growth management through the lens of environmental conservation must be done judiciously to avoid political turmoil.

Section 2.3 Sociocultural Effects of Urban Growth Management

The social impacts of utilizing growth management strategies have yet to be fully realized. They are understudied and hard to determine. It is understood that urban sprawl threatens sociocultural sustainability (Isinkaralar, 2023). Still, there is a great need to consider the broader social and political context when utilizing growth management strategies (Kirby et al., 2023). Controlling development through growth management is a top-down approach, and it must be delicately balanced with bottom-up needs. Bottom-up pressures such as population growth, economic pressure to develop land, changes in lifestyle preferences (such as more suburban living), and conflicting interests in environmental preservation are all factors to consider when implementing growth management (Frenkel & Orenstein, 2012). Population growth and lifestyle preferences are significant when discussing growth management's sociocultural effects.

As aforementioned, growth management strategies can inadvertently raise housing costs (Kirby et al., 2023; Chinitz, 1990; Siedentop et al., 2016). However, it has been found that when coupled with affordable housing policies that encourage affordable housing or exempt developments from growth management policies, the adverse effects of growth management policy may be mitigated

(Landis, 2006; Kirby et al., 2023). On the other hand, in places where the majority demographic can afford the rising housing costs, affordable housing may not be seen as a priority, and there may not be an effort to have active policies. This causes unequal access to the benefits of living within a managed area (Landis, 2006). The displacement of people who are outpriced within a managed area is not a light concern. Displacement can alter a community's existing culture. Upsetting the cultural fabric of an area is a genuine concern that should not be taken lightly by planners or politicians.

When housing costs continue to rise, and neighborhoods begin to gentrify, those who can afford to do so may move to a neighboring jurisdiction with lower housing costs. This flow of people across jurisdictional boundaries can decrease the population, leading to further decline in the city center (Carruthers, 2002). The movement of people across jurisdictional lines can also lead to regional leapfrog development, where sprawl is just redirected to adjacent areas. People migrate to find a place where their suburban lifestyle is the norm. While it may look like a jurisdiction is managing growth at a local level, it becomes apparent that sprawl has just shifted elsewhere, never really making a difference regionally. Additionally, those who own land that is no longer permitted to be developed are not being compensated for the loss of development potential and, therefore, may choose to sell and relocate (Siedentop et al., 2016).

These challenges threaten the success of implementing effective growth management strategies. However, adequate space should be allotted for further development with a properly managed growth zone, reducing some pressure associated with these bottom-up desires. Growth management policies should be reexamined periodically to ensure the population's needs are rationally considered (Siedentop et al., 2016).

Properly managed areas have seen positive social changes, such as increased diversity in the city center. The movement of people back into the city, coupled with densification, decreases racial segregation. Because more people live within the managed area, growth management policies can also increase the occupancy rate. Deal et al. found a significant gap in occupancy rates between areas with growth management policies and those without; the municipalities and counties within a managed area saw higher occupancy rates. Several studies have concluded that urban growth management may increase social welfare by structuring infrastructure investment cycles (Hepinstall-cymerman et al. 2013). Managed areas have also seen a rise in recreational opportunities on the fringe of development and a decrease in commuting time (Kirby et al., 2023). The mention of commuting times then brings into the conversation the relationship between growth management and transportation. Growth management is often focused on land use, but it has been suggested that planners should also focus on transportation systems. Adequate transport systems provide an opportunity to improve community quality of life (Deal et al. 2009). Additionally, well-defined transit systems can accommodate potential increases in population.

Section 2.4 Conclusion

While the effects of growth management can be broken down into these three categories, it must also be noted that they are, in the end, all related to each other. The topic of population growth intersects with all three categories. Isinkaralar (2023) explains that "the rapid population increase in urban areas has hindered sustainable development and caused environmental and socioeconomic problems at various scales." It has already been established that rapid urbanization harms the environment, but Isinkaralar also recognizes that it is as much a socioeconomic problem. The economic, environmental, and sociocultural effects of utilizing growth management strategies are

still being studied by scholars, and the only explicit assumption to be made is that one should not worship unquestioningly at the altar of growth management (Chinitz, 1990).

The results of growth management are clearly mixed. The jury is still out on whether or not growth management is an effective land-use tool. A key factor that plays a role in how growth management fairs are the opinions of residents and politicians. Advocates for growth management are typically nongovernment environmentalists, local public officials, and private real estate developers (Downs, 2005). These groups believe that controlling growth can lead to positive environmental impacts, less money spent on infrastructure, and more mixed-use projects. However, not mentioned as a key advocate, is the general public. The larger advocacy groups must persuade the general public to support growth policies (Downs, 2005). The general public is not educated like environmentalists, urban planners, or government officials. They may not tend to weigh the negative and positive effects on the overall population; instead, they think of how it will affect themselves.

One of the primary naysayers of growth management is those who stand to benefit from sprawl (Downs, 2005). Those who own land on the outskirts of a city or town that could be developed into subdivisions may lose that opportunity if growth policies are implemented. In contrast, the developers in the denser areas benefit from the policies, as their land becomes more valuable. Additionally, there are the residents who are just weary of change. The suburban lifestyle has become ingrained in some way. Downs explains that “faced with such uncertainty, [residents] are reluctant to support such a major change, especially if they are among those groups who would lose existing benefits from sprawl (Downs, 2005, p. 369). Beyond the selling of land for subdivisions, there are those residents who want to maintain the standard of suburban living. Adding additional density and varied types of housing intimidates homeowners who believe such

a change could reduce the desirability of their neighborhood, leading to a decrease in their house value (Downs, 2005). However, the same homeowners who look down on growth policies with a negative view may also oppose sprawl due to the increase in taxes that come with new infrastructure improvements. Deciding if they support growth policies may be a difficult decision. Because of these conflicting opinions, the controlling government may struggle to find a balance between managing growth and maintaining the desired community character. It may be that the larger advocacy groups that support growth management have a larger, more centralized voice, but the general public gets to vote, too. The general public's opinions influence how government officials approach growth. The fight between advocates and protestors seems to be ongoing. In some ways, they may settle their differences and agree on things like a distaste for sprawl. In other ways, they may never agree on topics such as increased density. It is up to the government to weigh the opinions of these groups and come to a rational conclusion. However, governments talk about growth management much more than they implement it to avoid conflict. Advocates for growth policies need more political support in order to get the government to act on growth management (Downs, 2005).

Table 1.

Overview of Effects of Growth Management

Negative Effects		
Economic	***Environmental***	***Sociocultural***
Increase in land costs	Catastrophic natural disasters	Increase in housing prices
Developer disinvestment	Concentration of pollutants	Displacement
Leapfrog development	Urban heat island effect	Leapfrog development
Increase in housing prices		
Positive Effects		
Economic	***Environmental***	***Sociocultural***
Support of agricultural sectors	Support of agricultural sectors	Decrease in racial segregation
Public utility installations are cheaper.	Conservation of ecosystems	Increase in diversity
Shifts developer attention back into more urban areas	Protection of open space	Increase in occupancy rate
Revitalization of the city center	More compact development	Increase in recreational opportunities
	Decrease in automobile usage	Decrease in commuting times

Chapter 3: Methodology

This thesis aims to thoroughly analyze the policies Loudoun County, Virginia, has implemented to control land use and development. The first step was to provide an in-depth literature review. The literature review analyzed how academia has observed growth management's positive and negative effects. Reviewing the current extent of knowledge is crucial to the thesis process and establishing methodology. The purpose of the thesis is to contribute to the existing knowledge pool; understanding what knowledge already exists enables the determination of where more research needs to be done.

Additionally, the literature review ends with a table that breaks down certain factors of growth management and what category they fall under. The categories are environmental, economic, and sociocultural. Cataloging them can identify where growth management has the most effects. In this case, it was found that each category had relevantly the same number of effects, meaning that growth management may equally affect environmental and economic policies, as well as sociocultural policies.

These effects are later used to determine what Loudoun is doing about growth management. An assessment of all the effects identified in the literature review was created. The assessments can be found in Appendix B and Appendix C. These assessments break down each positive or negative factor and compare it to action items found in Loudoun County's most recent 2019 Comprehensive Plan. For example, one of the adverse effects is that growth management policies may increase housing costs. Action items relating to this effect can then be determined. The items tell us how Loudoun is handling the negative implications of growth management, if at all. Regarding the positive effects, we can look at the action items to determine what Loudoun is doing to ensure these effects transpire.

An assortment of data was used to analyze the policies related to growth management. The method used was the collection of secondary data through sources such as the U.S. Census Bureau, Virginia Commonwealth University's library database, Google Scholar, and government web pages. These sources were used to find content and data specific to the case study area. Most findings come from looking at Loudoun County's policies throughout the years. This analysis explains how Loudoun County has used growth management to control land use and development.

Section 3.1 U.S. Census Bureau Data

The U.S. Census Bureau provides detailed statistics on municipalities, counties, and states. The American Community Survey (ACS) provides one- and five-year estimates on education, population, employment, income, and housing. Data can be found from the state level down to the census tract. These statistics tell a lot about a jurisdiction. In the case of this thesis, looking at population numbers provides an opportunity to see how the county is growing. In the case of Loudoun County, Leesburg, its county seat, should see the most population growth compared to its rural counterparts if growth management actively addresses the need to control land use and development. In the case of growth management, protecting rural areas is essential. If the population continues to increase outside of urban areas, it may indicate sprawl, which is the opposite of what happens when growth management practices are successful. The ACS also provides data on housing. One effect of growth management identified in the literature is a rise in housing costs. Successful growth management alleviates this pressure by requiring affordable housing. By analyzing housing data and comparing it to the threshold for affordability, it becomes clear if affordable housing is available in the county. If the majority of housing is considered unaffordable, it may be indicative of poor growth management. The ACS gives a way to answer questions related to population growth.

Section 3.2 Library Databases and Google Scholar

One of the most essential parts of the thesis is the literature supporting the argument or claim one is making. Research builds on previous findings. Searching the internet for peer-reviewed articles and accepted books is essential. Library databases, like the Virginia Commonwealth University one, are central to finding critical information. Many databases have a way of searching for peer-reviewed articles related to the topic of interest. Another option for searching for relevant literature is Google Scholar. Google Scholar is a free database that provides search options for finding literature online. It functions like Google Search, but it is precisely for educational purposes. Google Scholar finds relevant literature from all over the internet. Some articles may still require institutional access, but it is an excellent place to start to find peer-reviewed literature for free. In the case of this thesis, previous literature on growth management, specifically growth management in Loudoun County, provides findings that help inform the analysis.

Section 3.3 Government Webpages

When researching a municipality or county, one of the first places to look is at informational sites. Government web pages provide access to comprehensive plans and zoning codes. Additionally, they provide general and reliable information on the jurisdiction, which may provide a contextual background. These web pages are essential for this thesis due to the information they have on policies. The comprehensive plan and zoning code found on these sites for Loudoun County provides information on all county growth management policies.

Section 3.4 Geographic Information Systems (GIS) Mapping

GIS mapping can provide information on the population with ACS data. Population density can be mapped to see where the most people are located. Mapping out the population offers a visual

experience for the reader, allowing them to see in color where people are living. Maps help tell a story; they highlight vital facts and leave an impression.

Information provided on government webpages, like open GIS portals, can be used to map out where the population is the highest. If the goal of growth management in Loudoun County is to protect rural areas, we can understand how growth management policies can be used to control land use and development by looking at population data.

Section 3.5 Rational-Planning Model

In addition to searching for information in the data available, a theoretical approach to the methodology can be taken. In this case, I use the rational-planning model. There are several versions of the rational-planning model. For this thesis, the model identified by Nigel Taylor in his book *Urban Planning Theory since 1945* is used. The model involves several rational actions or steps; it begins with identifying a problem or goal. The steps (in order) are to identify alternative policies, evaluate the alternative policy, implement the policy, and then monitor the effects of the policy. In this case, the first step would be to identify and define the need to control land use and development in Loudoun County and determine the goals of the policy. The second step would be to identify growth management as an optional policy. The third step is to assess the policy. Once growth management is decided upon, the fourth step is implementation. Once a policy is implemented, the final step is to evaluate and monitor its effects. This thesis falls under the third step of the rational-planning model, assessing the policy. This step is crucial in understanding how growth management policies can be used to control land use and development.

Chapter 4: Findings

Section 4.1 Introduction

Loudoun County, Virginia, is in the Washington D.C. Metropolitan Area, just west of the city. It is considered an outer suburb of the city (Figure 3). The county is home to around 430,000 residents, making it the 4th largest county by population within Virginia. Loudoun is predominantly White (non-Hispanic), with just over 50% of the population classifying as White. The next largest racial group is Asian, with the group comprising just about 20% of the population. The county boasts the title of having one of the highest median household incomes in the United States at $170,463 annually (U.S. Census Bureau, 2022).

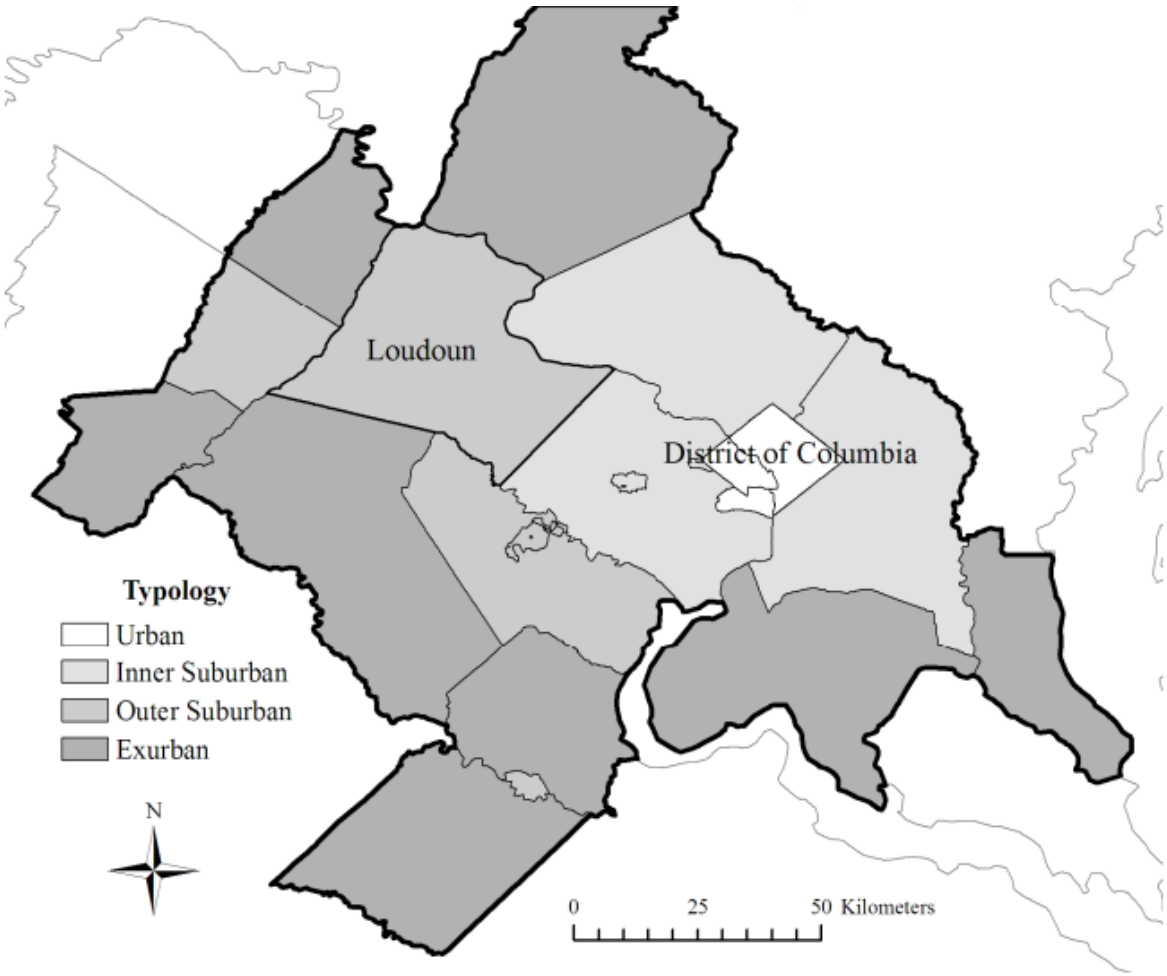
Loudoun is home to the most grapes, hops, and honey of any jurisdiction in Virginia, allowing it to be home to the most wineries and breweries in the state. The wineries and breweries have led to a thriving tourism industry. Its agricultural prosperity is in the roots of Loudoun. The county was largely rural until the 1970s, making plenty of space for farmland. It was in the late 1960s that it became a popular suburb of Washington. When the county became subject to suburbanization, serious concerns about preserving the rural landscape surfaced (Cowell et al., 2020). The community's perception of the rural landscape in Loudoun County has served as a powerful constraint to development. Still, the growth pressures from the expanding metropolis have created a political whirlwind for the county dating back to before the 1960s.

Historically, Loudoun County has implemented growth management policies. This chapter gives a history of growth management policy in Loudoun County by analyzing plans, including The 1956 Comprehensive Plan, the 1969 Comprehensive Plan, the 1984 Rural Land Management Plan, the 1991 Choices and Changes General Plan, the 1994 Greenways and Trails Plan, the 1995

Purcellville Urban Growth Area Management Plan, the 1995 Countywide Transportation Plan, the 2001 Revised General Plan, and the 2019 General Plan. Additionally, the county zoning ordinance is used for information. The assessment defined in the methodology is applied to the 2019 General Plan because it contains its most recent policies and is the most relevant.

Figure 3

Map of Suburbs of Washington D.C.



Source: Turner, S., Zolnik, E., & Gupta, D. (2013). Support for Suburban Growth Management: Lessons from Loudoun County, Virginia. *Suburban Sustainability*, *1*(1). https://doi.org/10.5038/2164-0866.1.1.1

Section 4.2 History of Growth Management in Loudoun County

4.2.1. The Beginning of Growth in Loudoun County

In 1956, Loudoun County adopted the 1956 Comprehensive Plan. At the time of adoption, Loudoun was preparing for the expansion of the Washington Metropolis. The population in Washington D.C. began to decline in 1950 with white flight and disinvestment gutting the city center (Baker, 2017). Those who could afford to do so began to move into the suburbs. The metropolitan area began to experience rapid suburbanization. The debate over development ensued in Washington, with political groups fighting over where development was appropriate. Loudoun County, just a mere twenty-five miles upstream from Washington, would face these immense development pressures from the growing metropolis. Loudoun County absorbed part of the population fleeing the city. At the time, Loudoun was majority White, with just over 82% of residents being classified as White (1956 Loudoun County Comprehensive Plan). Most of the voting-age residents were between the ages of 30 and 45. A population pyramid showing the age diversity in Loudoun can be found in Appendix A. Because of the size of the working population, they were the most invested in the decisions being made for the future of Loudoun and, therefore, were most likely to speak out at public hearings. Loudoun was primarily rural, with agriculture being a major industry in the county. The 1956 Comprehensive Plan was meant to prepare the county for future growth. The county's consensus was that growth would happen but directing that growth would be essential to maintaining the character of the rural county. The county sought to control the growth so that it would become an "integral part of the county's development, not a malignant growth spreading and growing until the land is blighted beyond human aid" (1956 Comprehensive Plan, p. 2, 1956). The county was weary of the growth, and for good reason. In 1956, Loudoun was almost entirely rural, with over 87% of the land in the county being occupied

by agriculture and only having 21,147 residents. The population was projected to grow by 50% before 1980, and the 1956 Comprehensive Plan needed to lay the foundation for where those residents would reside. The plan was not to restrict growth but to direct it. Today, the county would be considered progressive in planning due to wanting to control suburban growth, but the county's main concern was protecting its job stock, not necessarily protecting the rural landscape for the sake of environmental conservation. This concept of managing growth would follow Loudoun throughout its history and become engrained in the county's policies. By the time the plan was adopted, the concept of urban sprawl had been introduced. The comprehensive plan recognized that sprawl was beginning in the eastern part of the county and objected to it. The plan cites five reasons for objecting urban sprawl. These reasons included:

1. There are too few people on each acre to provide adequate schools, shopping facilities, fire protection, and bus services.
2. They are deficit areas paying less in taxes than they receive in roads, storm drains, police protection, and school bus service.
3. They result in the unnecessary destruction of land.
4. Valuable farmland is taken from its logical use and permitted to lay idle for years waiting for the all too often non-existent purchaser of lots.
5. "Urban Sprawl" is infectious in that once a tract of land has been subdivided the owners of adjacent land cease thinking in terms of making a living "on" the land and begin to think in terms of making a killing "off" the land.

To prevent urban sprawl, Loudoun sought to craft a comprehensive plan that would restrict the subdivision of agricultural land and instead look to direct development adjacent to established communities. At the time, only 1% of the land in the county was classified as subdivisions of five

lots or more (1956 Comprehensive Plan, 1956). The Town of Leesburg was imagined to be the center of development, with smaller areas such as Hamilton and Purcellville taking on additional residential growth. Loudoun officials did not anticipate that the county would experience residential growth on the scale that adjacent counties like Fairfax had; the 1956 Comprehensive Plan was meant to be the plan that would take the county to 1980. However, the county began to face vast growth pressures in the 60s, prompting the Board of Supervisors to adopt a new comprehensive plan in 1969. The opinion that growth should be controlled was almost certainly unanimous among officials and residents of Loudoun County. The 1956 Comprehensive Plan advocated for controlling growth and the 1969 plan would be no different, only more relevant.

4.2.2. Welcoming Growth

At the beginning of the 1960s, Loudoun was still very much rural, but the growth pressures from Washington, D.C., were beginning to cultivate. In 1962, Washington-Dulles Airport was opened in Loudoun. Figure 4 shows the location of the airport within Loudoun County. The airport was created on what was nearly 10,000 acres of farmland. In addition to constructing the airport, a pipeline for sewage, the Potomac Interceptor, was installed. The pipeline's capacity made it possible for more developments than just the airport to use it. The surrounding land became a prime candidate for suburban sprawl. The growth incentives in the area increased, leading to rapid suburbanization. Loudoun County had finally become a bedroom community to Washington. The creation of the airport led to the planned community of Sterling Park. Sterling Park was the poster child for suburban expansion in the county. At the time, local officials supported this new growth. Because the creation of the airport brought with it the infrastructure needed to support additional growth, Loudoun officials saw no reason to oppose it, as one of the main concerns with growth

was the ability of the county to keep up with the need for things like new roads and sewer lines. Sterling Park was able to be created with minimal government funds.

Figure 4

Map Showing the Location of Washington-Dulles Airport in Loudoun County, Virginia

Source: https://www.realtycouncil.com/northern-virginia/loudoun-county/map-search/

At the same time that farmland was being converted into suburbs, more farmland was being put at risk of becoming underwater. To increase water quality downstream near Washington, the Army Corps proposed the Seneca Dam. The dam would flood parts of Loudoun and was expected to displace around 400 families (Baker, 2017). The county quickly opposed the construction of the dam. The land that would be flooded was slated for industrial development. It had sewer

connections, reliable water supplies, roads, and a nearby airport, making it a perfect place for development. The dam would flood part of the land, leading to the need to construct expensive bridges and sewer connections. Luckily for Loudoun, the dam did not garner support from other government agencies. The Department of the Interior rejected the dam. However, they simultaneously called for the acquisition of land lining the Seneca River for a national park.

The proposed new national park had differing views in Loudoun County. By 1968, the county was experiencing political difficulties in managing growth. Local elections pitted developers and working farmers against exurbanites, gentlemen farmers, and preservationists. Those in the latter group saw the preservation of open space as a way of curbing sprawl, and those in the former group saw a potential increase in taxes (Baker, 2017). The fight over the park ensued until it was finally decided that it would only be on the Maryland portion of Seneca Creek. Between 1944 and 1971, Loudoun County faced six metropolitan infrastructure projects, with the Washington-Dulles Airport and the accompanying Potomac Interceptor being the only proposals constructed (Baker, 2017).

4.2.3 Controlling Growth

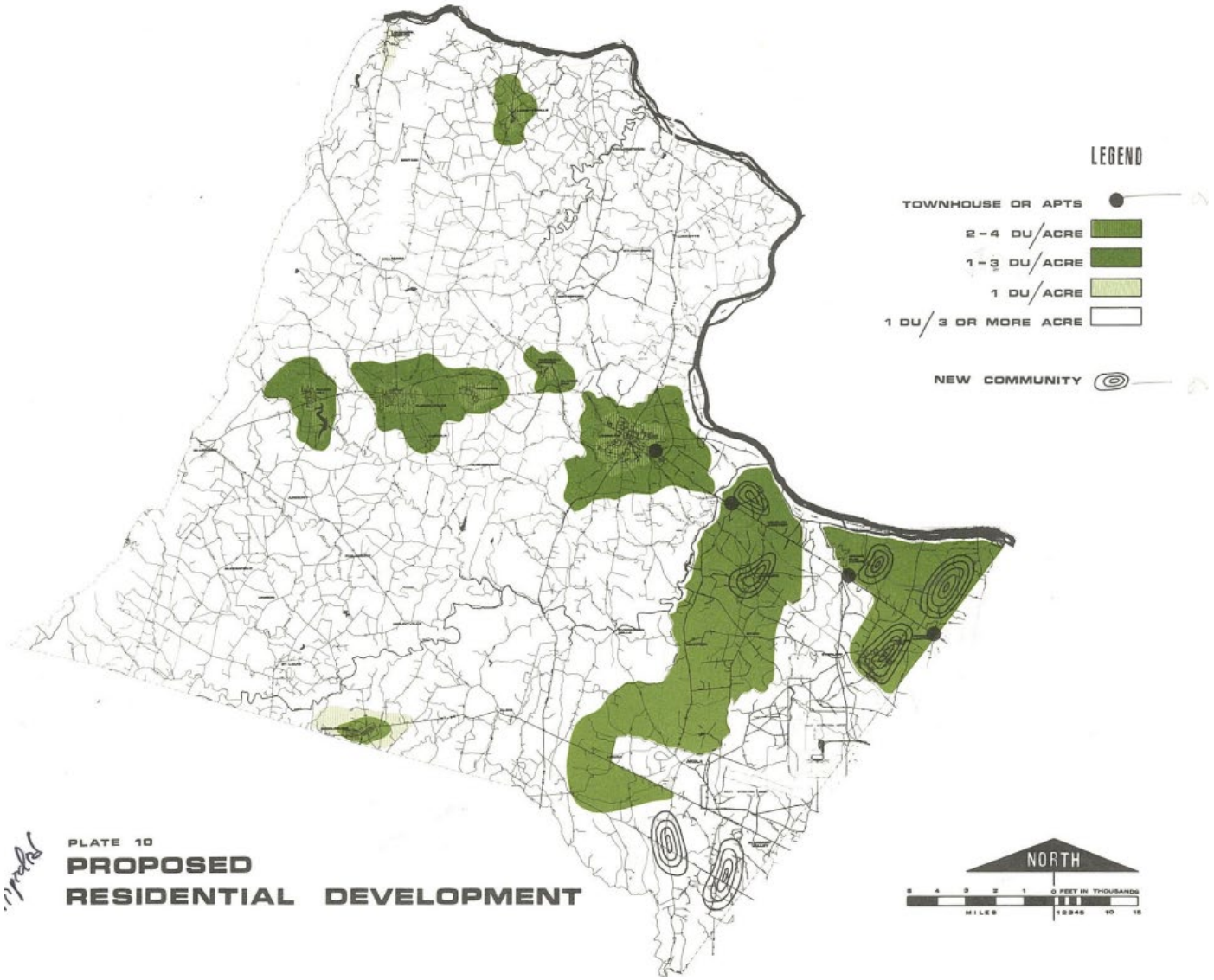
In 1969, after struggling politically to grapple with how the county would handle growth, the county adopted the 1969 Comprehensive Plan. The plan came when population was rising, technology was expanding, and the national economy was changing. The impact of the growth of the Washington Metropolitan Area was beginning to exert an influence in Loudoun, and a new growth plan was desperately needed. The plan needed to coordinate and guide growth to prevent the disintegration of the community's visual and environmental continuity (1969 Comprehensive Plan, 1969).

Similar to the 1956 Comprehensive Plan, the 1969 Plan aimed to welcome growth but to direct it to certain areas. Residential and commercial growth were mainly under the microscope. The plan stated that the governing body needed to impose specific policies on residential development to perpetuate a desirable density level (1969 Comprehensive Plan, 1969). Residential development was to be concentrated in the eastern portion of the county. Figure 5 shows proposed residential development areas. Note that these areas are predominately in the east portion of the county. The policies proposed in the plan were meant to guide residential growth in a way that allowed for greater coordination in community development. Additionally, keeping residential development within particular areas would allow for a more economical extension of public services and a more coordinated road system. The Republican majority Board of Supervisors wanted growth to happen anywhere that was cheap for the county. They aimed to stick with growth management policies, but still allow for housing developments within serviced areas.

Regarding commercial development, the plan focused on regional and highway-oriented centers—figure 6 shows where these centers were planned to be located. The regional centers were meant to provide a variety of shopping activities and a selection of consumer goods. The new regional centers would allow residents to shop within the county boundaries rather than having to travel elsewhere. Leesburg was noted as having the most significant potential to be the largest regional center. The plan explains that planning for regional commercial centers could prevent sprawling strip commercial activity. Highway-oriented centers were intended to capture the commercial activity resulting from increased traffic volumes along major roadways.

Figure 5

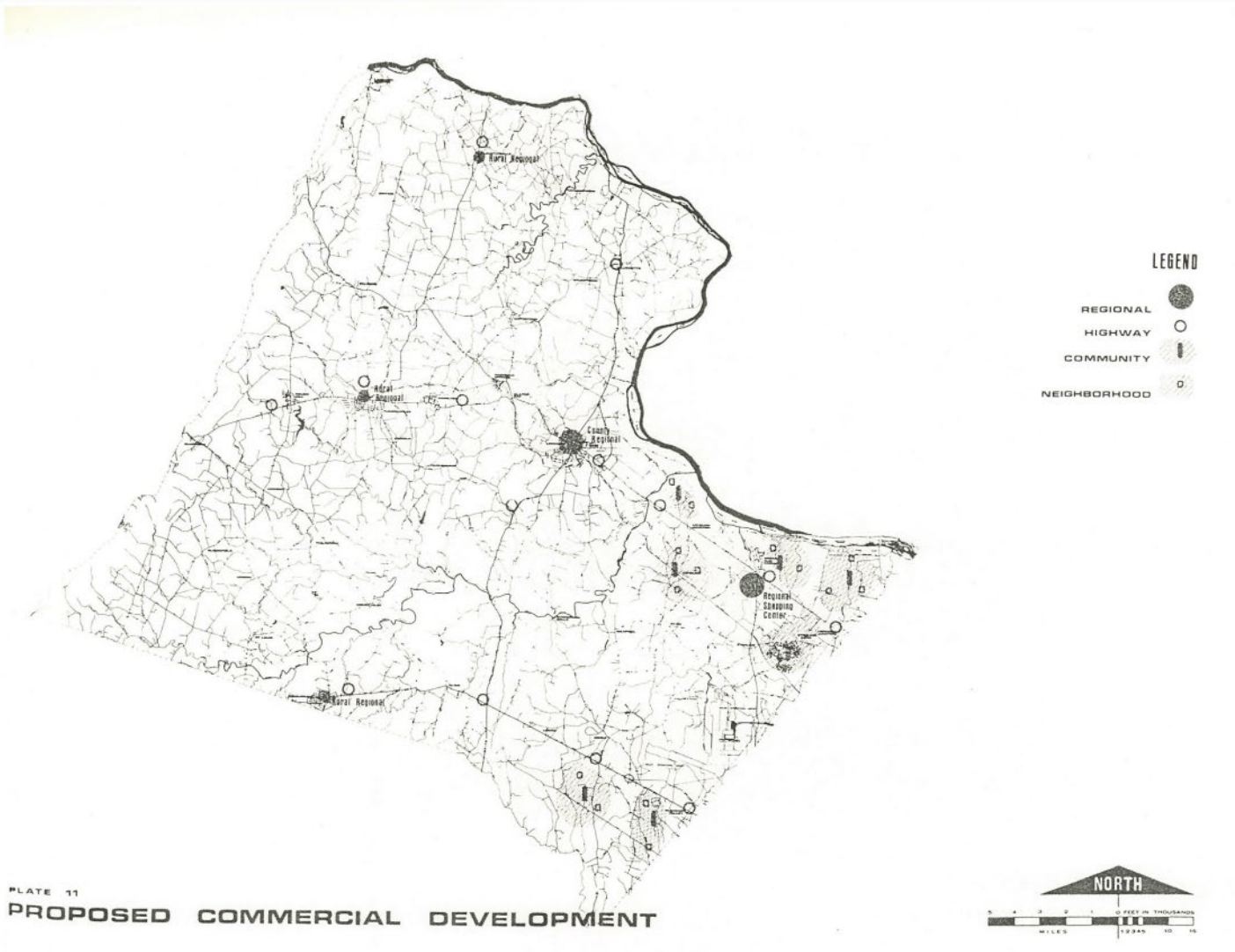
Map Showing Proposed Residential Development in Loudoun County, Virginia



Source: 1969 Loudoun County Comprehensive Plan

Figure 6

Map Showing Proposed Commercial Development, Loudoun County, Virginia



Source: 1969 Loudoun County Comprehensive Plan

4.2.4 Opposing Growth

By the 1970s, Loudoun began to oppose the growth coming from the rapid suburbanization of the Washington metropolis. In 1972, the elected Board of Supervisors, who were majority Republican, instituted a development moratorium. This law prevented the development of over 20,000 homes. This was the first time that the county implemented such a rigorous policy. The moratorium was overturned in 1977 by the state judiciary (Spiers, 2013). However, while this was a loss for Loudoun, that same year, Virginia began to allow localities to create agricultural and forestry districts to protect the rural lands by passing the Agricultural and Forrestal Districts Act. Localities were given the authority to form Agricultural-Forrestal Districts (AFD), which would limit or pause development in that district. The Act was seen as a way to preserve farmland and forests. Loudoun could finally bring to fruition what their plans had been aiming to accomplish for two decades. Due to increased tourism, protecting the rural landscape also became an economically wise decision. By 1978, the total value of Loudoun's agricultural products was $29 million, while tourism contributed another $20 million to the local economy (Spiers, 2013). By 1980, the county was the leader in rural land management in Virginia (Spiers, 2013). By their fourth year under the new regulation, Loudoun had set aside over 60,000 acres of land in agricultural districts. The county was finally able to manage its growth through state policy. While this did not prevent the county's population growth, it allowed it to direct that growth in specific directions.

4.2.5 Deciding Where to Allow Growth

The 1980s brought with it more growth pressure than ever. By this time, Loudoun had changed from a "self-contained, farming community to a diverse extension of the metropolitan Washington region" (Loudoun County Choices and Changes General Plan, 1991, p. 2). The Board of

Supervisors looked to their county staff to craft a rural land management plan for western Loudoun. As part of this plan, a community-led civic group was formed, which included landowners, affluent residents, and environmentalist residents. By 1984, the Rural Land Management Plan was approved. The preamble of the plan states that,

"…It is the primary goal of this Plan to preserve and enhance farming and farmland in Loudoun County by the most feasible, effective, and equitable methods available…establishing a future growth pattern that promotes farming and farm-related industries is the most important concern of this planning document" (Rural Land Management Plan, 1984, preamble).

During the planning process, the Planning Commission found that in 1982, there were around 2,000 residential lots in rural Loudoun, 500 of which were created just that year. They projected that the population would double during the 1980s. To control this growth, the Rural Land Management Plan included goals, policies, and detailed programs to control rural areas' location, timing, and character of development. The Plan asserted that key issues fell into three categories: Economic and Fiscal, Public Health and Safety, and Social and Aesthetic problems.

The Economic and Fiscal issues included eight topics: Growth Rate, Pattern and Location, Farmland Conversion, Taxes, Landowner Equity in Land, and Protection of Rural Property Value. The county sought to achieve more compact growth patterns around towns and existing urban areas to avoid the costs of installing public utilities farther out. Similarly, to the 1969 Comprehensive Plan, the county wanted to prevent as much farmland from being converted into subdivisions as possible. New subdivisions required roads and public utilities, increasing taxes. However, the county also recognized that preventing farm owners from selling their land to developers could prevent them from financial gain. The Plan states that there must be a balance

between the public interest and the wishes of the individual landowner (Rural Land Management Plan, 1984, p.4).

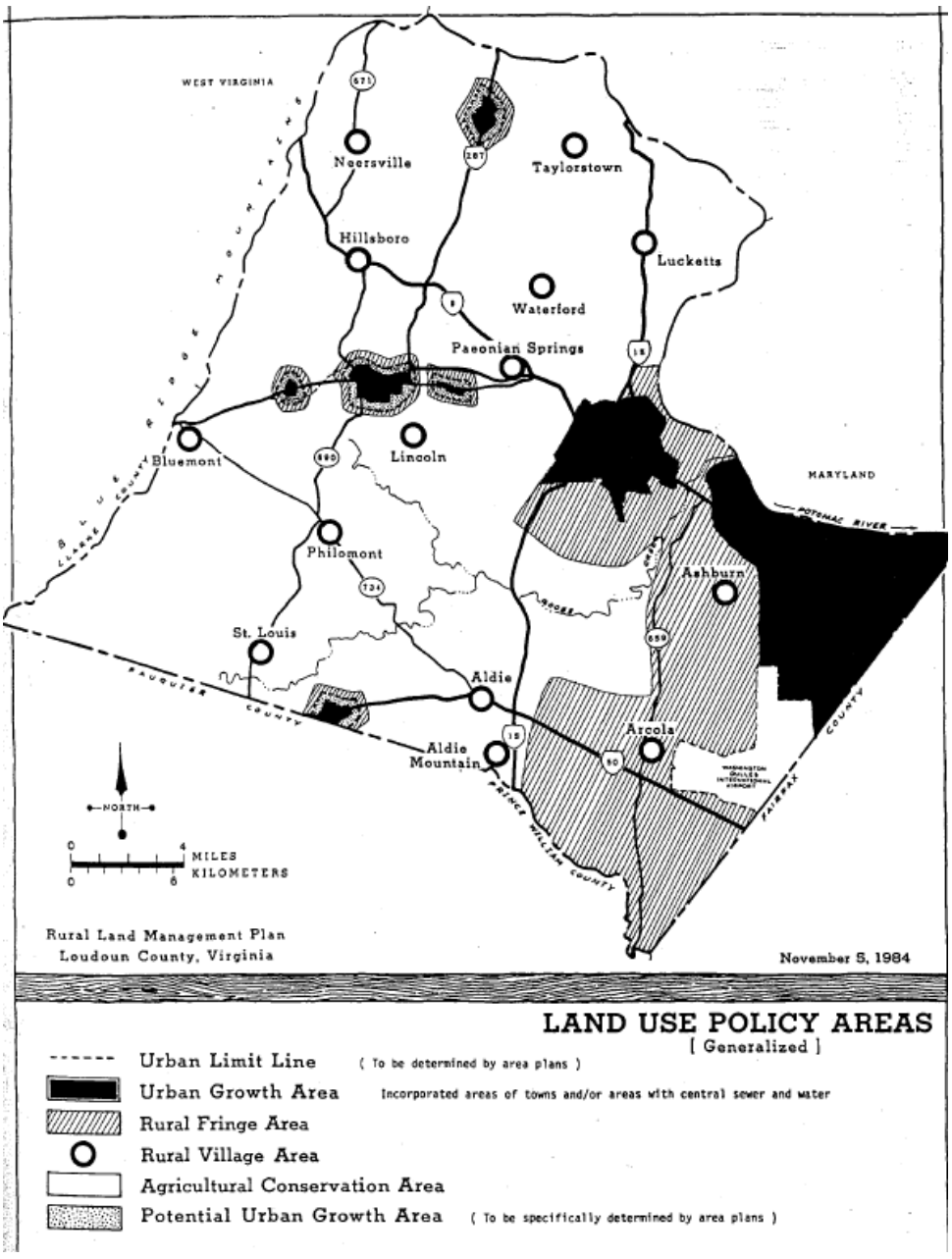
The Public Health and Safety Issues included Water Supply and Quality, On-site Sewage Disposal Regulations, Road Improvements, and Environmental Quality and Constraints. The goal was to minimize water facilities, sewer facilities, and road improvements by concentrating development near the already existing urban fabric. The Plan introduced the idea that clustered rather than sprawling development is better for water, sewage, and road improvements. Concerns about the capacity for development were also noted, given the limited water supply and poor-quality roads in more rural areas (Rural Land Management Plan, 1984, p.5).

Aesthetic issues included Scenic Quality and Environmental Quality. The Plan recognized both the economic and environmental effects of managing growth. By promoting scenic quality, the county would see financial gains from tourism. In addition to monetary gain, they would be protecting the environment. The county's environmental quality was deemed necessary for maintaining clean air, water, and diverse ecosystems. The Plan also recognized that there must be a balance between development and environmental protection (Rural Land Management Plan, 1984).

Based on the goals of the Plan, the county created five Policy Areas to control where growth would happen in the county. These Policy Areas included Urban Growth Areas (UGAs), Rural Fringe Areas, Rural Village Areas, Agricultural Conservation Areas, and Environmental Overlay Areas. Figure 7 shows the location of these areas within the county. Most of the county is located in the Agricultural Conservation Area, with development concentrated in the eastern part of the county, closest to Washington, D.C.

Figure 7

Map Showing Location of Policy Areas as Defined in the 1984 Loudoun County Rural Land Management Plan



Source: 1984 Loudoun County Rural Land Management Plan

In 1985, just a year after the Rural Land Management Plan was adopted, Loudoun faced a significant test of development pressure. Beacon Hill, a rural estate in western Loudoun, was on the table for development. A developer proposed to turn the rural estate into a private golf club and residential community. Officials immediately rejected the application but eventually approved the golf course. The golf course proposal fell through and was never constructed. The developer returned to the county and requested that the estate's buildable density be changed from one house per three acres to one per three-quarters of an acre (Spiers, 2013). Four proposals to develop the land were brought to the county. The fourth proposal, a project to build fifteen houses on 130 acres, brought out a nearly 250-person crowd at the hearing. The Planning Commission rejected the proposal.

At the same meeting that handled the fourth Beacon Hill proposal, the Planning Commission endorsed an ordinance protecting the county's mountainsides. The ordinance would prevent the construction of houses on slopes of more than 25%, protecting environmentally sensitive slopes and groundwater springs. This ordinance directly reflected the goals of the previously adopted Rural Land Management Plan. Critics of the ordinance came from eastern Loudoun residents who believed the ordinance would lead to higher housing costs and taxes in the developable part of the county.

Later, in 1988, the developers for Beacon Hill sued Loudoun County for enacting the ordinance. The developers claimed that the ordinance violated the due process and equal protection clause because "its application to the property of a certain elevation and slope was "arbitrary, discriminatory, unreasonable, and [bore] no reasonable or substantial relation to a legitimate governmental interest" (Spiers, 2013). The case was thrown out, and the ordinance was upheld as legal. The case of Beacon Hill highlighted the immense growth pressures that Loudoun was facing.

4.2.6. Changing Opinions on Growth

By the 1990s, the county's attitude towards growth would change again. The 1990s was the first time that development became more important than preservation to the government. While this approach did not last long, it impacted where Loudoun would be most developed. In 1991, the Board of Supervisors was up for re-election. The newly elected Board of Supervisors were development-driven Republicans. The county residents' attitude towards development was changing, as shown in the election. Residents began to believe that housing prices would surely rise in more urban areas by preventing development in rural areas (Spiers, 2013). The growing population in Loudoun was putting more growth pressure than ever on the suburbanizing Loudoun. Between 1990 and 2000, the population in Loudoun would grow by +94.9 percent (Turner et al., 2013). It seemed that the new goal was to relieve this pressure by sprawling further out into rural areas. By 2002, farmland acreage would drop by 15.7% (Spiers, 2013). The county was at a crossroads, "struggling amid an identity crisis at a time when change [couldn't] wait" (Bates & O'Harrow Jr., 1991, para. 3).

In 1991, right before the election, Loudoun County adopted the Loudoun County Choices and Changes General Plan. During the planning process, it was found that many residents felt that their community was growing too fast and the sense of community in Loudoun was being lost. To address this concern, Loudoun planners set out to craft a plan to control land use and development. Fourteen growth management goals were outlined in the General Plan (Table 2). These goals included encouraging a diverse housing pool, establishing urban growth boundaries, and encouraging infill development. The goals covered topics like economics, the environment, and urban design.

Table 2

Loudoun County Choices and Changes General Plan, 1991: Growth Management Goals

Loudoun County Choices and Changes General Plan, 1991: Growth Management Goals	
Goal 1	Provide the opportunity for all persons who live and work in Loudoun County to obtain adequate housing priced within their means.
Goal 2	Encourage the development of a complete range of housing opportunities located in sustainable communities which accommodates the housing needs of the existing and future county residents, and which accommodates Loudoun County's fair share of the region's population growth over the next 20 years.
Goal 3	Manage the location, scale, and timing of new growth to accommodate the County's fair share of regional growth while ensuring that development does not exceed the capacity of public roads, utilities, services, and facilities.
Goal 4	Develop a distinct plan for the county's urbanizing areas, rural areas, and areas that are changing from rural to urban.
Goal 5	Establish a long-range plan for the next 20 years with a five-year implementation and review cycle and an ultimate vision of 50 years.
Goal 6	Establish guidelines for orderly expansion of urban boundaries to ensure new development that complements existing communities.
Goal 7	Encourage infill development to establish a comprehensive development pattern in the urban areas of the county.
Goal 8	Encourage the assemblage of small parcels to achieve a consistent and compatible development pattern, which provides adequate facilities and services.
Goal 9	Maximize the beneficial impact of development on taxes or other costs to County residents by maintaining an economical balance of business and residential uses and by directing attributable costs to the users of new development.
Goal 10	Preserve the cultural, social, economic, environmental, and aesthetic amenities

	provided by agricultural land use to both Loudoun County and the region.
Goal 11	Promote planning efforts in future urban areas to help alleviate land use and economic burdens on agricultural land so as either to avoid its premature conversion to urban or suburban non-agricultural use or to direct any conversion in such a way as to preserve large, usable agricultural areas.
Goal 12	Conserve agricultural resources and avoid environmental pollution which would degrade the farmland, the natural environment, and the surrounding communities
Goal 13	Design and construct new roads and road improvements that truly enhance traffic safety, that provide for improved vehicular capacity consistent with area land uses and regional demands, and that provide for safe and convenient pedestrian movement in the urban areas.
Goal 14	Create a transportation system that is considerate of natural and cultural environmental features and the pedestrian.

Source: 1991 Loudoun County Choices and Changes General Plan

The General Plan was meant to guide the location, scale, and rate of development. By managing growth, Loudoun would be able to plan for public facilities and services and provide residents and businesses with the sense of community that they sought. Additionally, the General Plan aimed to protect environmentally sensitive areas by preserving the rural landscape in western Loudoun. The Plan further addressed the need to distribute the financial benefits and burdens fairly among residents to create a more affordable community.

The General Plan noted that eastern Loudoun was expected to grow the most, given its proximity to Washington. By the 1990s, the public infrastructure needed to support development had been implemented, so the eastern third of the county was prepared for the growth. The plan's goal was to ensure that this growth would have minimal fiscal and traffic impacts paired with substantial

open space and parkland (Loudoun County Choices and Changes General Plan, 1991). Western Loudoun was expected to remain rural, with growth directed only towards existing towns. Rather than ultimately limiting development in western Loudoun as the Rural Land Management Plan called for, the General Plan called for the development of clustered towns, villages, and hamlets. A balance between the goals of the Plan and the goals of the new Board of Supervisors needed to be established. The Board of Supervisors wanted growth, and the General Plan made recommendations to manage this growth. Whether the Board was going to follow the plan explicitly was up for debate. In the 90s, the Board leaned more towards supporting growing the suburbs than they had any time before.

4.2.6 Matching Land Use Controls to Proposed Policies

The County Zoning Ordinance was updated in 1993 to help implement the general plan. The first section outlines the ordinance's goals, purpose, and intent. In Article 1—General Regulations, the ordinance references fourteen things it was designed to do, with a minimum of six related to regulating growth. The ordinance was explicitly designed to guide and regulate the orderly growth, development, and redevelopment of Loudoun County (Loudoun County Zoning Ordinance, 1993).

To prevent unmanaged development from happening and to protect the rural landscape, the ordinance required that any rezoning of land shall be based on the Comprehensive Plan and shall consider trends in growth and development. Additionally, the rezoning of land must consider the existing character of the neighborhood and the adequacy of sewer and water. (Loudoun County Zoning Ordinance, 1993). The General Plan encouraged new developments on the fringe of existing urban areas and tied to existing sewer and water connections. The code of ordinances enforced that recommendation and made it more difficult for a developer to sway from the general goals of the plan.

4.2.7 Smaller Plans Addressing Growth

By 1994, residents still felt that their communities were changing drastically. The 1994 Greenways and Trails plan highlighted that the county was welcoming growth due to economic opportunities but needed more consideration of the effects of growth on local recreational opportunities and natural, scenic, and historic resources. The Greenways and Trails plan aimed to preserve and utilize natural and crafted greenways. To do this, the plan suggests that growth needs to be controlled to maintain the ability of residents to have these amenities. The plan was adopted in September of 1994. The idea of managing growth was finding its way into nearly every plan that the county drafted.

The following year, 1995, the Purcellville Urban Growth Area Management Plan was adopted. Purcellville, earlier on identified as one of the smaller towns meant to take on additional residential growth, needed a plan for managing its growth. The Town of Purcellville is located in western Loudoun and, in 1956, had a population of 945. That population grew to 2,118 by 1995 (U.S. Census Bureau, 1995). The population boom in Purcellville began in the 1980s, with the town experiencing pressure for non-agriculturally related development. The pressure came from the fact that the town had recently updated the water and sewer system to aid more development. Additionally, the construction of the Dulles Greenway had better connected the town to eastern Loudoun. The plan to manage the growth of Purcellville dates back to the 1984 Rural Land Management Plan, where the town was identified as one of the Urban Growth Areas. Leading up to the adoption of the plan, many residents expressed concern over population growth in the town. Mayor John D. Marsh and council members believed growth was inevitable and said the plan was essential for orderly development (Lenhart, 1999). Regardless of community opposition, it seemed that Loudoun would continue down its growth management pathway.

In 1995, the Countywide Transportation Plan was also adopted. One of the plan's key objectives was to develop a strategy to accommodate the County's planned growth (Loudoun Countywide Transportation Plan, 1995). A new surge in development had emphasized the need to create a responsive transportation system. The capacity of roads, particularly in western Loudoun and on Route 7, was being consumed. Loudoun has always been a bedroom community to Washington, where most residents commute east to work. By 1995, the transportation system to accommodate commuters was becoming strained. However, a new concept had emerged in the 1990s that Loudoun included in their latest plan. Transit-oriented development was a newer idea, and Loudoun incorporated. The transportation plan highlighted the need for transit corridors where residents would be encouraged to use fewer personal vehicles and instead opt for public transportation. The goal was to help alleviate the growth pressures on the transportation system in the county.

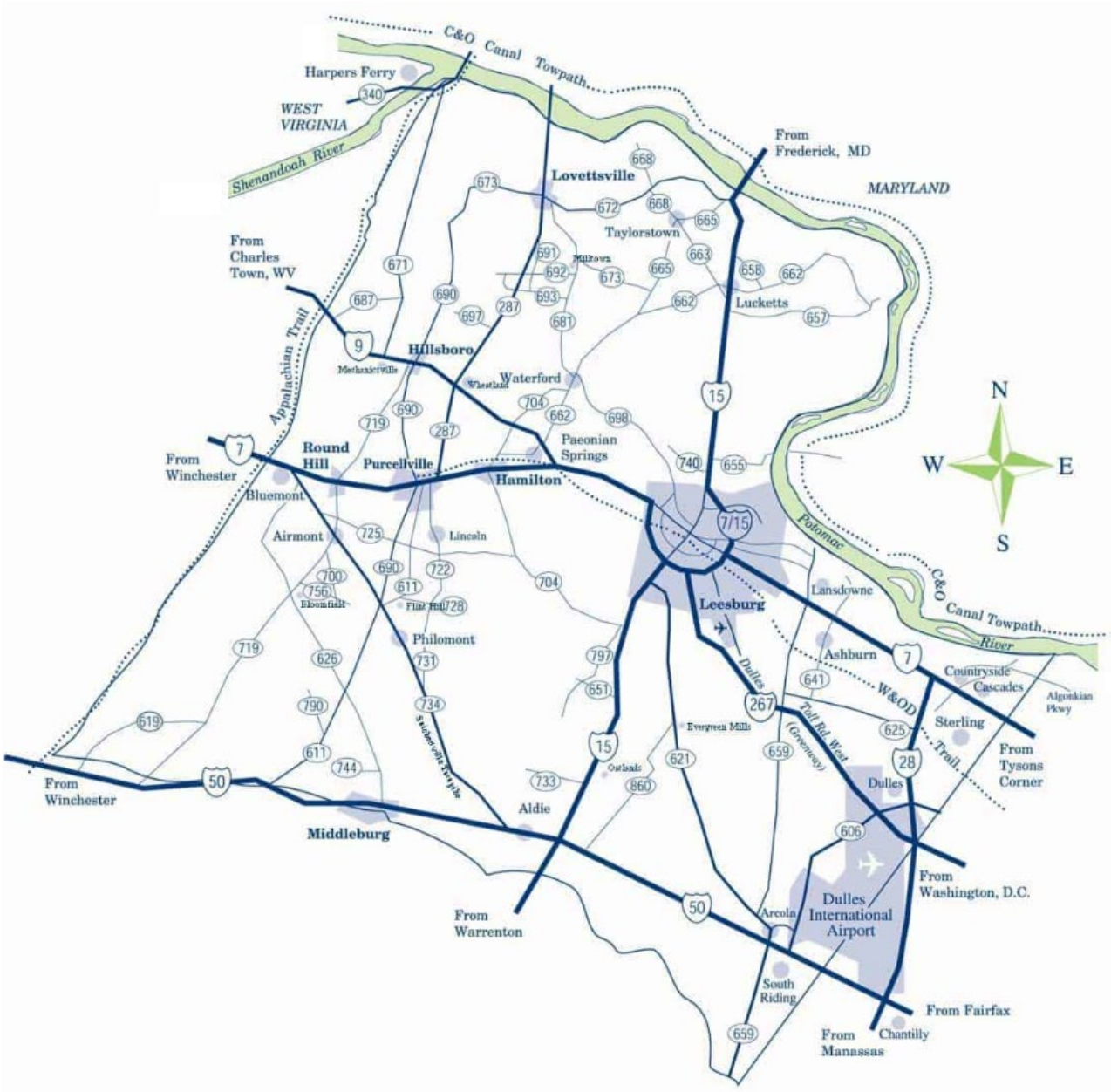
One of the ways that Loudoun chose to alleviate the pressure on the existing roadways was to create a new roadway. The Dulles Greenway Plan was adopted by the Board of Supervisors in 1995. The new plan was to build a toll road connecting Leesburg and the Dulles International Airport. The toll road would help to alleviate pressure on Route 7 going eastbound. Figure 8 is the map showing the Dulles Greenway. The development of the road would support new mixed-use centers centered around transit. Befitting Loudoun's historical standing as a commuter county, this new plan would enable residents to live, work, and recreate in the county rather than traveling elsewhere. The plan's goals were centered around building up dense centers, similar to what the 1969 Comprehensive Plan envisioned, that would be served by transit and surrounded by open space. Even though, at the time, the Board of Supervisors was development-driven Republicans, they saw the economic value in protecting rural lands. Loudoun had a booming tourism industry

based on the wine country. Loudoun was trying to grapple with growth through expanding transportation networks while preserving the rural landscape, a common theme for the county.

Unfortunately, the Dulles Greenway was a double-edged sword. While the government promoted mixed-use centers, developers took the rezoning opportunities to build vast office parks. Today, these office parks serve a thriving tech hub, but at the time, they were just sprawling developments. The Dulles Greenway enabled suburban sprawl surrounding the highway, bleeding into what was considered rural areas. At the time, Supervisor James G. Burton explained that the Greenway made it easier for western Loudoun to grow economically, but it also hastened the pace of population growth (Blum, 1999, para. 2). To slow this growth, in 1998 the Board of Supervisors voted to cut by about 50,000 the number of houses that could be built in the corridor. Residents also spoke out, with controlled-growth advocates voicing their concerns. These activists believed that roads like the Greenway encourage the scattering of new houses. In response to resident concerns, George Barton, who chaired the Loudoun Board of Supervisors at the time the Dulles Greenway was approved, said the Greenway's impact on western Loudoun did not come up when supervisors considered the proposal. "Western Loudoun was going to develop whether or not the toll road was there," he said. (Blum, 1999, para. 24).

Figure 8

Map Showing the Dulles Greenway in Loudoun County, Virginia



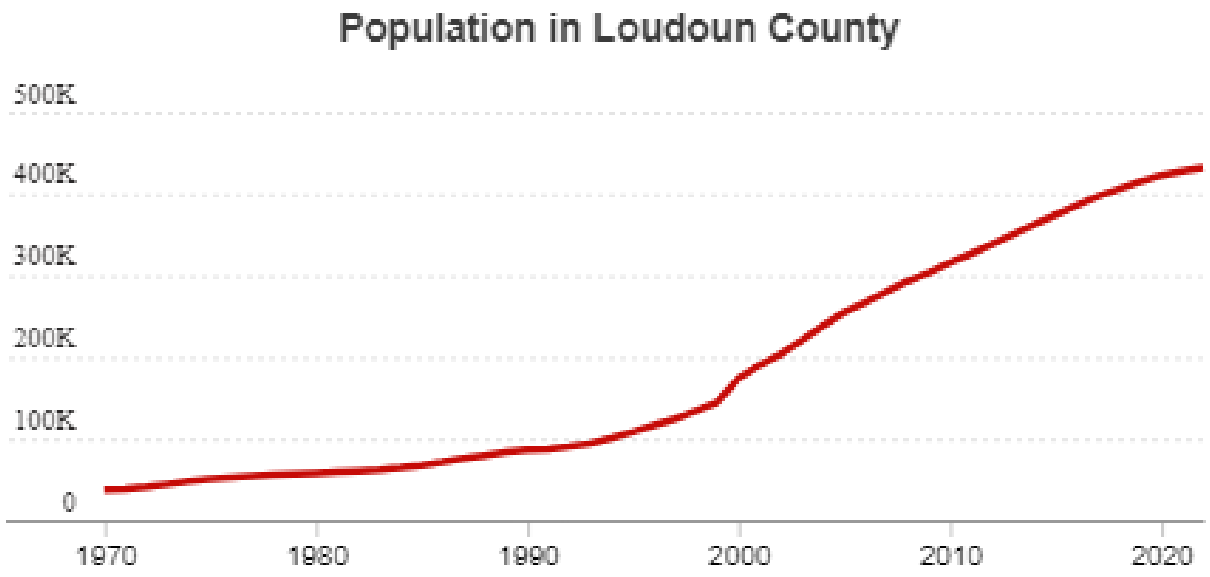
Source: https://www.loudounhistory.org/map-loudoun-with-roads/

4.2.8 The Unwavering Growth of Loudoun County

Loudoun County did not stop growing at the turn of the century. By 2000, the population in Loudoun was nearly 200,000 (U.S. Census Bureau, 2024). Figure 9 shows the exponential population increase that Loudoun has experienced since 2000. From 1990 to 2000, the population nearly doubled. By 2010, it had almost doubled again. By 2018, the population in Loudoun County topped 400,000 people (2019 Loudoun County General Plan, 2023). From the adoption of the 1991 Choices and Changes General Plan to the adoption of the revised version in 2001, the population in Loudoun County grew by 97% (2019 Loudoun County General Plan, 2023).

Figure 9

Graph of Population Change in Loudoun County, Virginia



Source. U.S. Census Bureau, 2024

Around the same time that the General Plan was being re-envisioned, the community was up in arms about politics. Residents deemed controlling land use and development as “Snob Zoning” and saw it as detrimental to the middle class. Growth management policies are disproportionally adopted by higher-income communities and those who are not wealthy enough to absorb the negative costs associated with those policies were beginning to speak out. In the beginning stages of growth management in the county, most residents supported the policies. They were unaware of the unintended consequences at the time, such as a rise in housing costs (Laris, 2000). By 2000, many residents began to feel the impact of growth management. Those looking to develop their land for profit were prevented from doing so by growth policies. In 2000, a county-commissioned study predicted that some land would lose value if the county continued to tighten up on home building (Laris, 2000). A resident of Loudoun expressed her concern for middle-class workers, saying that those in the middle class “can’t afford to live in Loudoun County” (Laris, 2000, para. 12). Controlling growth was becoming unpopular with the middle class at the turn of the century and officials had to respond. Supervisor Charles A. Harris said that he did not believe that the county’s efforts to control growth would decrease the ability of the middle class to afford housing. In fact, he said that the Board of Supervisors was looking to do what was best for the county as a whole.

In 2004, Loudoun was deemed the fastest-growing county in the United States and the Board of Supervisors was majority Republican. The board was eager to adopt development policies. Supervisor Stephen J. Snow expressed that growth was going to happen regardless of attempts to limit it. He believed the next best option was to guide the growth by controlling land use and development. Snow explained that Loudoun needed to set a development “glide path” that would accommodate more growth than the current county plans allow but do so in a way that would bring

improvements to existing communities (Laris, 2004). Snow was chairman of the county board's land-use committee, which initiates and vets development-related initiatives. He aimed to, "be a catalyst for conciliation, bringing development and environmental lobbyists together in a nonpartisan bid to hammer out good policy" (Laris, 2004, para. 18).

Section 4.3 Growth Management Today in Loudoun County

The 2019 General Plan was born from an extensive community engagement process that started in 2016, known as Envision Loudoun. This planning process identified essential community desires about growth management, land use, place types, transportation, natural, environmental, and heritage resources, community facilities and amenities, economic development, and fiscal management. Approximately 3,000 people participated in the planning process (2019 Loudoun County General Plan, 2023). The purpose of the new General Plan is to provide "guidance for elected officials and other governmental decision-makers as to where and how the community will grow in the long term" (2019 Loudoun County General Plan, Chapter 1, p. 3, 2023). The plan is a critical tool for growth management in the county.

The concept of growth management is the foundation of the 2019 General Plan. By the time the plan was adopted, Loudoun County had been implementing growth management strategies for decades. Like the previous plans for the county, the 2019 General Plan aimed to protect rural and agricultural uses while encouraging development adjacent to existing infrastructure. Specific growth management policies in the 2019 General Plan generally fall under Chapter 2: Land Use.

Chapter two identifies a vision for land use in Loudoun County. The vision states, "Loudoun will carry forth our successful land use and growth management policy while promoting the well-planned development of unique and appealing places…" (2019 Loudoun County General Plan,

Chapter 2, p. 5, 2023). The purpose is to accommodate a high growth rate while still maintaining the rural character of the county, a purpose that has followed Loudoun through the decades. The plan attributes Loudoun's success at keeping nearly two-thirds of its land rural to its planning that has guided, managed, and directed growth to appropriate locations (2019 Loudoun County General Plan, 2023). Rather than implementing completely new ideas, the 2019 General Plan aims to build upon previous plans that have already addressed growth management. At its core, the 2019 General Plan is a growth management plan.

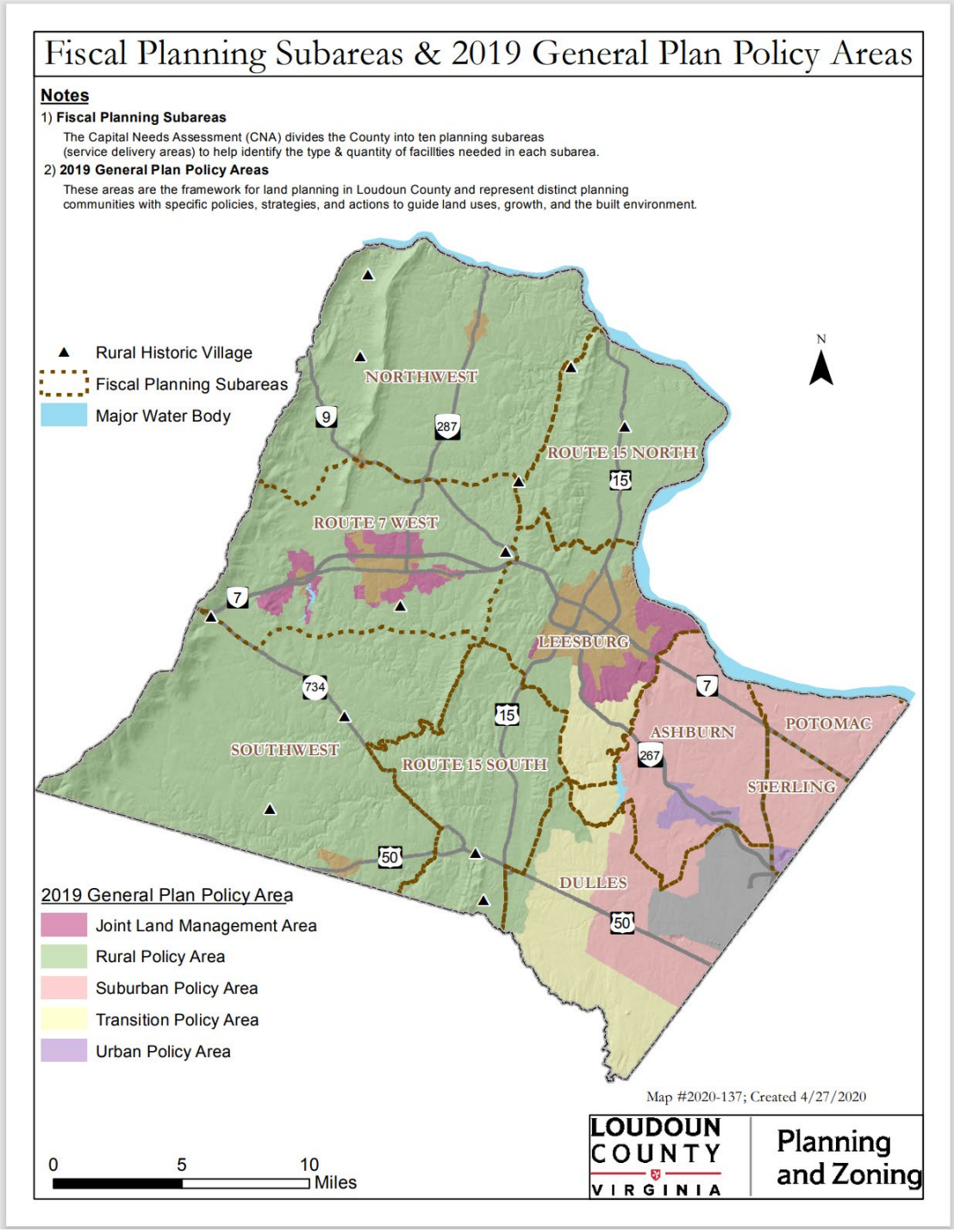
Their growth management strategy is three-fold:

1. Focuses the location and intensity of development in eastern Loudoun and around towns, which maintains the agricultural character, pastoral landscapes, and natural resources of the County's rural areas
2. Calculates a fair share contribution by new development towards associated capital facility impacts
3. Uses service standards and development forecasting to plan the location and timing of investments in infrastructure, facilities, and services

Like the Rural Land Management Plan, the county identified four policy areas: Urban, Suburban, Transition, and Rural. Creating the policy areas allowed for specific policies, strategies, and actions that could be tailored to each area. See Figure 10 for the location of each Policy Area. The policy areas are meant to transition into one another seamlessly, like a transect (Figure 11).

Figure 10

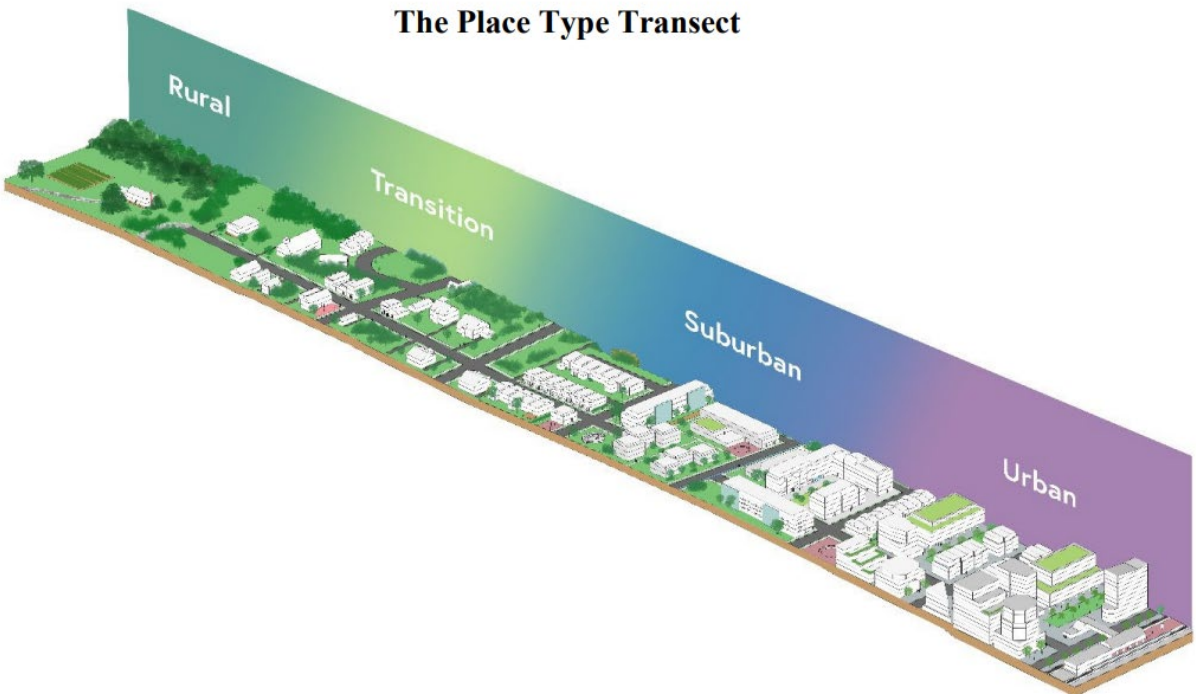
2019 Loudoun County General Plan Policy Areas



Source: 2019 Loudoun County General Plan https://storymaps.arcgis.com/stories/30bedace5c474188b13b2d3ec2b0e095

Figure 11

Urban Transect



Source: 2019 Loudoun County General Plan

Each policy area is relatively similar to the proposed Rural Land Management Plan. The newest concept is the Urban Policy Areas. The Urban Areas are centered around the two Silver Line Metrorail stations located in the county, something that did not exist when the Rural Land Management Plan was crafted. These areas reflect the goals outlined in the 1991 General Plan, where the county sought to increase mixed-use centers and transit-oriented development. This plan identifies the Metrorail stations as the perfect place for accommodating mixed-use development that supports housing, employment, retail, education, and entertainment. They are seen as economic development opportunities and a way of curbing sprawl (2019 Loudoun County General Plan, 2023).

The Suburban and Transition Policy Areas are where most single-family housing is located. The Suburban Areas are located in the eastern third of the county and have been experiencing growth since the 1960s. The development pattern is primarily suburban with limited commercial uses. Transition Areas also have suburban housing types but are less dense than the Suburban areas and have minimal commercial uses. The priority in the Transition Area is open space and recreation (2019 Loudoun County General Plan, 2023).

The Rural Policy Areas account for nearly two-thirds of the county. These areas contain Rural Historic Villages and farmland. Limited residential development is supported, focusing predominately on the rural economy. A vital goal of the General Plan is to protect these areas' landscape, economy, and existing character (2019 Loudoun County General Plan, 2023). Policy three in the RPA section states that agricultural and rural business uses will be developed in a manner that is consistent with the County's growth management goals (2019 Loudoun County General Plan, 2023).

In addition to these four policy areas, joint management areas (JLMA) exist. These areas surround several of the towns located in the county. Within the JLMAs, the county and town elect to limit the potential for municipal water and sewer past a specific identified area. This concept effectively serves as a growth boundary for the town (2019 Loudoun County General Plan, 2023). In addition to mimicking growth boundaries, the plan encourages infill and redevelopment. When the 1991 General Plan was adopted, there was significant growth pressure on Loudoun County, and much of the county's eastern portion was suburbanizing. The 1991 plan designated certain areas for growth. However, when the 2019 plan came around, many designated areas were seemingly reaching capacity. This created a new challenge for Loudoun and resulted in the approach of infill

and redevelopment. This approach reduces development pressure on rural areas and redirects attention to urban areas. By doing this, sprawl can be prevented.

While growth management in Loudoun County is supported by numerous goals, policies, and action items in the plan, growth management still has adverse effects. Growth management comes with several economic, environmental, and social issues. In the literature review, several factors related to growth management were identified for each issue. The comprehensive plan offers solutions to these challenges brought about by growth management. To best understand how Loudoun has supported growth management and addressed the practice's negative effects, Appendix B breaks down each positive effect, and Appendix C breaks down each negative impact defined in the literature review and connects it to corresponding action items within the plan. Action items are identified as supporting growth management goals or as ways to combat the adverse effects of growth management. Chapter five goes into more detail on each impact and related action items.

Chapter 5: Analysis of Growth Management Policies Today in Loudoun County, Virginia

Section 5.1 Support of Agricultural Sectors, Protection of Open Space, & Recreational Opportunities

One of the primary goals of growth management is protecting and supporting the agricultural sectors. This has been a goal of Loudoun County since they enacted their first zoning ordinance. Their current 2019 plan continues to reflect this core value of Loudoun. Chapter two recommends the adoption of zoning regulations that support rural businesses and protect the right to farm, especially in Rural Policy Areas. Chapter two also suggests that the county regularly review, update, and enhance the Land Use Assessment Program and other voluntary agricultural programs to support the rural economy and maintain the viability of farming. In chapter five, the plan

recommends creating mechanisms allowing Loudoun to be a regional agrarian leader. Loudoun looks to growth management to protect these rural areas that support agricultural sectors in accomplishing these action items. The four action items related to the support of agricultural sectors are as follows:

(Chapter 2) 3.2.A. Adopt zoning regulations and design standards that include new types of rural business and agricultural uses, permit flexibility for the sale of farm products, and promote rural tourism, hospitality uses, and similar kinds of rural business uses that are compatible with the character of the RPA.

(Chapter 2) 3.4.A. Regularly review, update, and enhance the Land Use Assessment Program and other voluntary agricultural programs, such as the Agricultural and Forestal District (AFD) program, to strengthen the rural economy, preserve rural character, and maintain the viability of farming.

(Chapter 2) 3.7.A. Maintain zoning regulations and design standards that protect the right to farm.

(Chapter 5) 1.5.D. Create mechanisms for the rural economy to maintain its status as a regional agricultural leader and local advantage.

The literature review revealed that one of the most important goals of growth management is protecting open space. Loudoun County has at least seven listed action items in its comprehensive plan that reflect the goal of protecting open space within the county. Many of these action items relate to establishing programs supporting open space protection—chapter two calls for developing a Master Plan for parks, open space, and shared-use trails. Chapter Two and Chapter Six action items call for conservation easements and regulatory mechanisms that increase and protect open space.

In addition to supporting agricultural sectors and protecting open space, the county's comprehensive plan calls for protecting and increasing recreational opportunities. Using growth management to preserve rural areas increases the chance for recreation. The plan mentions creating shared-use trails connecting towns and major destinations several times. The comprehensive plan calls for creating zoning regulations and design standards for rural recreational uses to ensure that recreational uses are compatible with the county's goals.

Section 5.2 Decreased Cost of Public Utilities

It has been found that the cost of public utilities is cheaper in areas that manage growth. Installing public utilities in areas adjacent to existing developments is significantly more affordable than installing public utilities in sprawling regions. Loudoun County has defined areas in which public utilities will be provided. Chapter six looks at prohibiting development outside of these serviced areas. Specifically, the chapter calls for banning the extension of public services into the Rural Policy Area. This effectively manages growth by preventing sprawling development. There are three action items related to the cost of public utilities. There are three action items in the plan related to the cost of public utilities and they are as follows:

(Chapter 2) 1.1.C. Require new development to connect to Loudoun Water's central water and wastewater systems and encourage existing development to connect.

(Chapter 6) 4.2.B. Prohibit connection to water distribution and wastewater collection systems when such requires crossing land outside a defined water or sewer service area, except as allowed herein.

(Chapter 6) 4.5.A. Prohibit extension of central water and wastewater service into the Rural Policy Area, except to address a public health threat to an existing rural community or to serve public

facilities on contiguous parcels immediately adjacent to the western boundary of the Transition Policy Area.

Section 5.3 Shifting Developer Attention Back Into More Urban Areas

The county turns developer attention back to targeted areas by implementing growth management. Preventing a sprawling development pattern is one of the critical goals of growth management. Preventing sprawl through growth management practices is only successful if it is also seen as beneficial to the developer. To shift developer attention back into more urban areas, the county outlines a few action items that can be implemented. The action items laid out in Chapter Two reflect a need to incentivize developers to get them to invest in targeted growth areas. An essential action the county can take is to provide incentives for redevelopment, infill development, and adaptive reuse projects. There are four action items related to shifting developer attention back into more Urban Areas and they are as follows:

(Chapter 2) 1.1.E. Evaluate the creation of overlay districts to encourage reinvestment in priority/targeted areas where there is community support and buy-in.

(Chapter 2) 1.3.G. Develop incentives that encourage the private sector to improve retail and commercial establishments in targeted areas.

(Chapter 2) 1.5.A. Evaluate and implement the use of fiscal tools to incentivize redevelopment, such as tax increment financing (TIF) and public improvement districts (PID).

(Chapter 2) 2.1.A. Provide incentives for redevelopment, infill development, and adaptive reuse projects that will enhance quality of life and neighborhood character, fulfill community needs, and improve economic opportunities.

Section 5.4 Encouraging More Compact Development, Decreasing Automobile Usage, & Reducing Commuting Times

Growth management naturally encourages more compact development by preventing sprawl. Both Chapter Two and Chapter Four exemplify the need to enact zoning regulations that facilitate compact development patterns. Chapter Two calls for zoning regulations and design guidelines that support compact and walkable development in appropriate policy areas. Chapter four also calls for zoning regulations to facilitate compact residential and mixed-use development. By creating more compact and walkable environments, growth management encourages decreased automobile usage. To support this, the county is looking at creating guidelines and zoning regulations supporting bike facilities and pedestrian-friendly infrastructure. In the areas where automobile usage is needed for travel, growth management has been known to decrease commuting times. While in the past, Loudoun has addressed commuting times (a concern that helped lead to the creation of the Dulles Greenway), their new comprehensive plan does not talk about decreasing commuting times. Instead, their focus is predominantly on reducing automobile usage in more urban areas, specifically those served by the Metrorail. Concentrating the population around mixed-use centers in the east alleviates the growth pressures on western Loudoun. There are four action items related to encouraging more compact development, decreasing automobile usage, & reducing commuting times and they are as follows:

(Chapter 2) 2.1.A. Develop and implement zoning regulations or design guidelines that support a compact, walkable development pattern in areas that area appropriate for pedestrian activity.

(Chapter 4) 1.1.D. Develop zoning regulations and design standards that facilitate innovative, lower cost, compact residential and mixed-use development that emphasizes the physical form and the character of the built environment

(Chapter 2) 4.1.A. Create guidelines, zoning regulations, and/or design standards that ensure bike lanes, shared spaces, and paths of travel are created in areas where multimodal activity should be encouraged.

(Chapter 4) 1.5.D. Provide access to amenities and services through alternate modes of transportation such as walkability and pedestrian access, bicycle facilities, and public and/or private mass transit facilities such as mini-bus or shuttle services.

Section 5.5 Decreasing Racial Segregation & Increasing Diversity

It was found in the literature review that growth management may result in decreased segregation and increased diversity. While not often considered a goal of growth management, it may be of particular interest in areas that have been historically segregated or lacking diversity. This specific effect of growth management is not well researched, and therefore, it may not be fair to say that Loudoun County missed the mark. There are no action items related to the county's racial makeup, and only one is related to increasing diversity. In chapter two, the county highlights the need to encourage development that supports social and economic diversity. There is only one action item in the plan that relates to racial segregation and diversity, and it is as follows:

(Chapter 2) 1.2.A. Encourage the maintenance, improvement, or adaptive reuse of existing building stock in a manner that supports social and economic diversity within the community.

Section 5.6 Increase in Land Costs

With growth management comes scarcity in developable land. Growth management policies have been proven to affect land costs negatively (Carruthers, 2002; Siedentop et al., 2016). If growth is contained within a particular area, the land becomes more valuable, increasing in price. This often means that the developer will make their money back by charging the consumer a higher price.

However, this may be less of a concern in Loudoun. Higher-income communities disproportionately adopt growth management policies, and Loudoun residents have some of the highest incomes in the United States (Landis, 2006). However, Loudoun has developed two action items to help alleviate the land cost. The comprehensive plan proposes that the county use public property to offset the land costs. The plan talks explicitly about doing this for developers seeking to build housing for persons with special needs and households earning less than 50 percent AMI. Offering incentives to developers helps to control land use and development by ensuring that development to support the growing population continues to happen within a particular area. Loudoun is aiming to combat the rise in land costs by doing two things:

(Chapter 4) 3.3.A. Explore the development of a proactive "public land for public good" program that offers public property to reduce the cost of housing development by reducing or eliminating the land cost.

(Chapter 4) 3.3.C. Use public property to offset the land costs to nonprofit and for-profit housing developers seeking to build housing for persons with special needs and/or households earning less than 50 percent AMI.

Section 5.7 Developer Disinvestment & Leapfrog Development

Although growth management can turn developer attention back into more urban areas, there are cases where the developer chooses to go elsewhere where growth management policies do not exist. To prevent this from happening, Loudoun plans to offer additional incentives to developers in the county. The plan identifies Priority Commercial Redevelopment Areas, where the county wants to see redevelopment the most. One action item is to develop creative incentive programs for projects located within the priority areas for redevelopment, such as allowing more density

where infrastructure is available, reduced fees, or expedited review processes. Action items also include using tax increment financing and creating private-public partnerships.

Another critical concern of growth management is that it may lead to regional leapfrog development. Leapfrog development happens when developers skip over land to obtain cheaper land further away from cities, leaving swaths of land empty between the city and the new development. In the case of Loudoun, leapfrog development is being prevented by growth management. However, adjacent counties may not have growth management policies, and therefore, developers may skip over land right into the next county, never really preventing sprawl at a regional level. The plan does not explicitly discuss the concept of regional leapfrog development, but it talks about preventing sprawling development patterns, which is similar. There are six action items related to this topic and they can be found in Appendix C. However, two important action items to consider are:

(Chapter 2) 1.4.D. Develop creative incentive programs for projects located within the priority areas for redevelopment identified on the Priority Commercial Redevelopment Areas Map and other qualifying projects, such as increases in permitted density where infrastructure is available, reduced fees, or expedited review processes.

(Chapter 4) 3.1.E. Create an expedited permit process to fast-track applications for developers who commit to providing additional units affordable to households earning less than 100 percent AMI.

Section 5.8 Increase in Housing Prices & Displacement

One of the most problematic effects of growth management is that it may increase housing costs. This is both an economic and a sociocultural issue. Loudoun County touches on this issue significantly throughout its comprehensive plan. There are at least twenty-eight different action

items related to keeping housing affordable. There is even an entire chapter on housing. A topic that comes up often is the concept of allowing more middle housing. The action items suggest that the zoning code should be amended to allow accessory dwelling units, manufactured housing, and micro-units. The comprehensive plan also points to allowing affordable housing developments to be by-right. Additionally, the plan looks at requiring or incentivizing developers to maintain affordable housing if affordable housing has already existed on the redevelopment site. The plan also speaks to developing housing programs such as a community land trust. The most important action item on this topic is the call for creating an Unmet Housing Needs Strategic Plan that explicitly identifies strategies, actions, programs, and best practices to address the County's current and future unmet housing needs. Ensuring affordable housing helps to alleviate the negative effects of population growth in a county with growth management. There are over 27 action items related to keeping housing affordable. All of these action items can be found in Appendix C.

Section 5.9 Natural Disasters, Pollution, & Urban Heat Islands

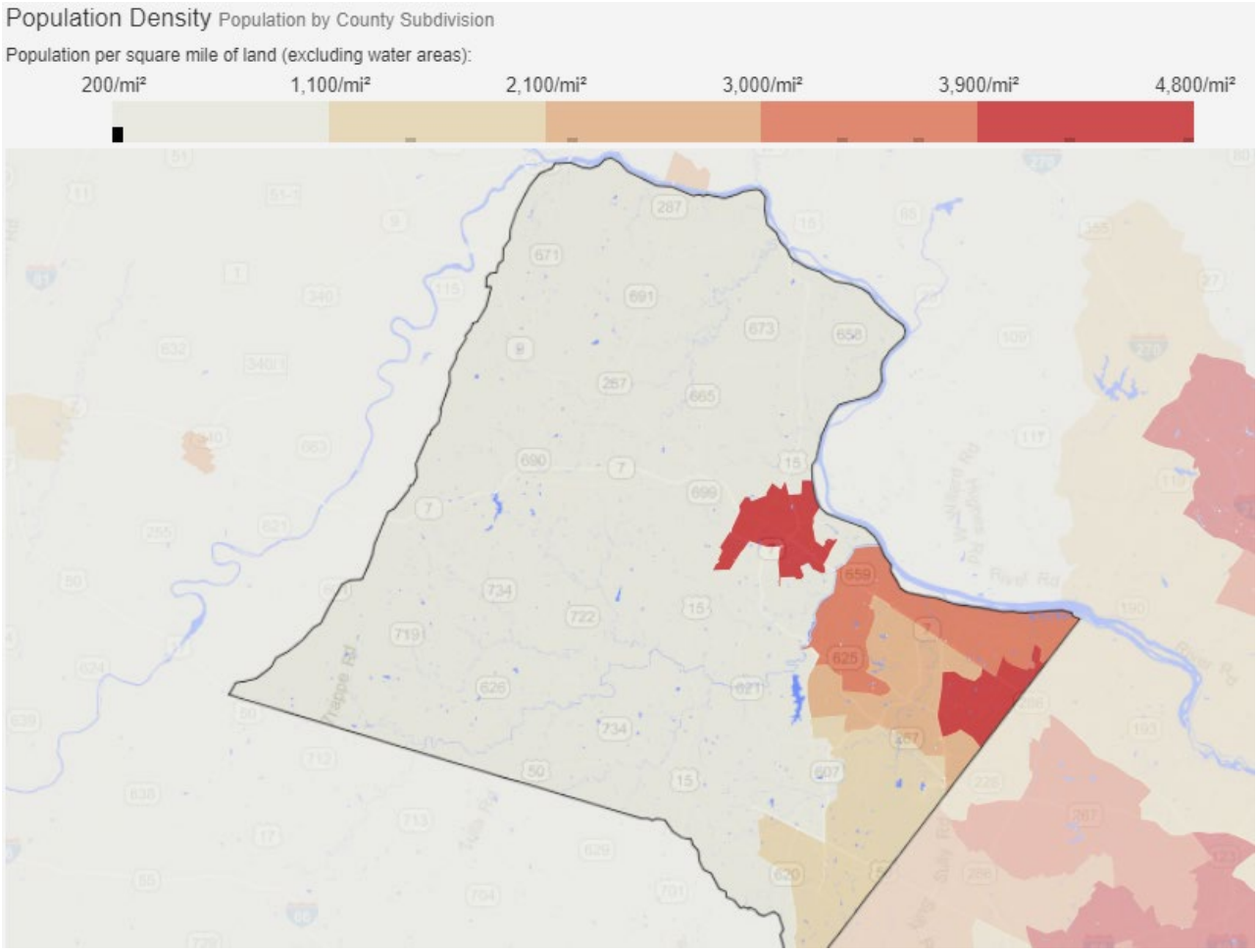
The concept of increased risk of natural disasters in managed areas is not popular. It is understudied and not talked about much. This plan does not mention natural disaster preparedness, but a comprehensive plan may not be the place for such a topic. Additionally, the urban heat island effect is not mentioned. However, Loudoun is a relatively dense county, not a very dense city. They may not experience the urban heat island effect to the degree that a larger and denser city does. There are several action items related to pollution. Because Loudoun is set on protecting its rural areas, they are also looking to prevent the unnecessary pollution of these areas. Unfortunately, these action items may not be relevant given that they have nothing to do with the effects of growth management and are not included in Appendix C.

Section 5.10 Conclusion

Overall, the plan endorses growth management and provides goals, policies, and action items to control land use and development. The policies Loudoun County has put into place support the need to manage growth. Policies dating back to the 1960s identify the need to control land use and development as a, if not the primary goal of the county. These policies have been rather strict and structured in a way that supports both the economic prosperity of the county and the protection of the rural identity of the county. Looking at a population density map in 2023 in Loudoun County (Figure 12), it becomes clear that Loudoun's population has steadily been within the same areas. Loudoun has managed to keep two-thirds of the county rural despite the immense growth pressures they have faced since the 60s (2019 Loudoun County General Plan, 2023). Comparing a map from 1969 to a map from 2019 shows Loudoun's ability to control land use and development (Figure 13). Every plan and zoning ordinance update supports the goal of managing population growth through controlling land use and development.

Figure 12

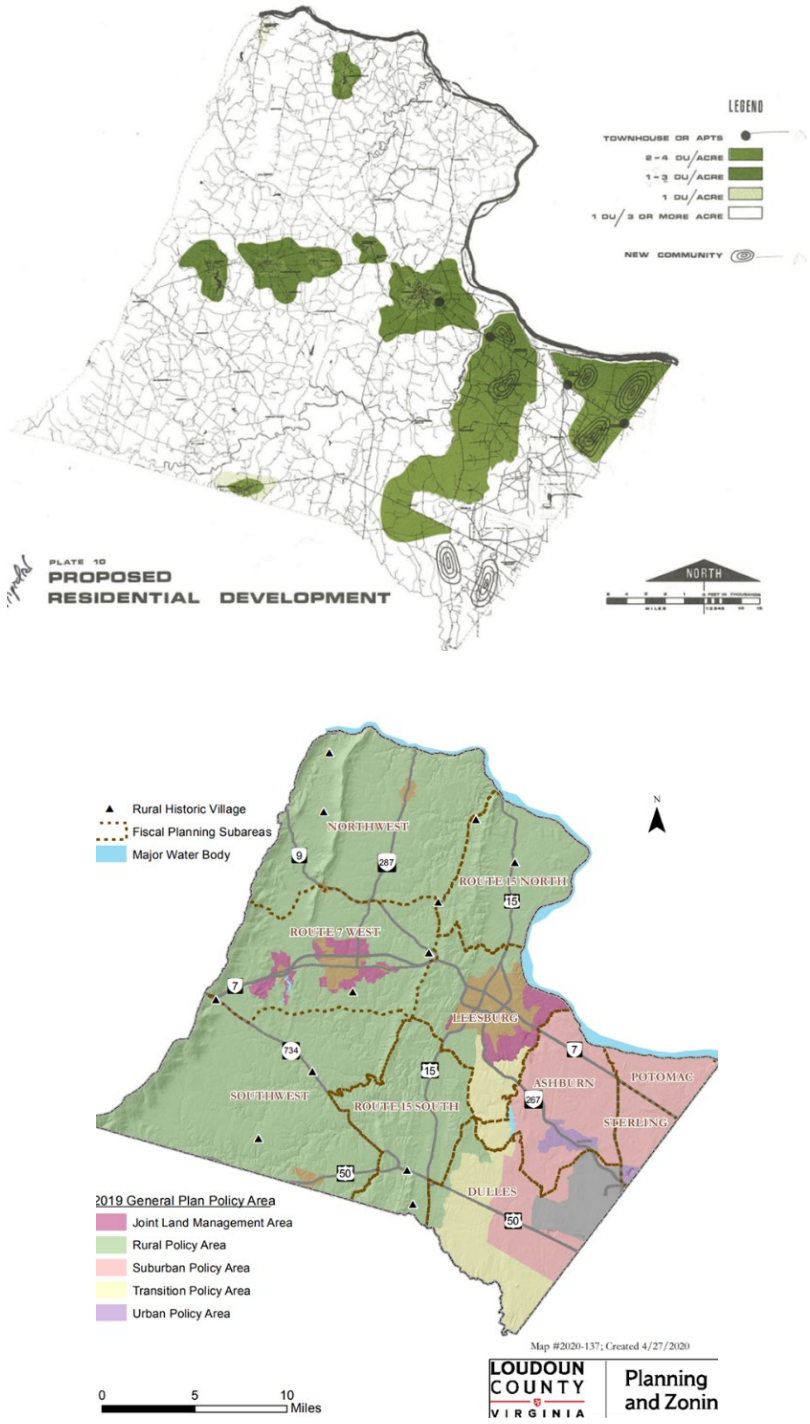
Map Showing Population Density by County Subdivision in Loudoun County, Virginia, 2024



Source: https://statisticalatlas.com/county/Virginia/Loudoun-County/Population

Figure 13

Comparison Between 1960s Residential Development and 2019 Development in Loudoun County, Virginia



Chapter 6: Discussion & Conclusion

Growth management has proven to be bipartisan. Regardless of who has been on the Board of Supervisors, the concept of controlling land use and development has been consistent. However, the reasons have changed. For the Republican party, controlling land use and development means protecting the county's economic viability. Loudoun is known as part of the wine country in Virginia. Protecting rural areas protects this profitable industry. Additionally, Republicans see controlling land use and development as a way of decreasing infrastructure costs and keeping taxes low for the residents of the county. On the other hand, Democrats see controlling land use and development as a way of protecting the environment and moving towards a Smart Growth approach to planning for the future of the county. Changes in administration have rarely impacted the county's approach to growth management.

There were two notable times in Loudoun's history when the Board of Supervisors leaned away from strict growth policies. First, in the 1960s, when Washington-Dulles Airport was opened, they decided to support suburban development adjacent to the airport at that time. The Republican majority Board of Supervisors saw the opportunity for economic gain and supported the development. The second notable time was in the early 1990s, when residents began to oppose growth management policies, and the government shifted its policy approach.

Today, Loudoun County continues down the path of growth management. The Washington metropolis is not slowing down in growth. Loudoun County's population has continued to rise over recent years. Since the 2019 General Plan was adopted, the population has grown from 414,872 to 432,085 persons ("*Loudoun County, VA population by year, race, & more,"* 2024). Loudoun has grown continuously for the last seven decades, putting immense pressure on the

county to develop. Residents and politicians have been in an uphill battle attempting to grapple with the growth since the 1960s.

Due to Loudoun's public school system, Loudoun has an unusually high population of school-aged children and their parents. Loudoun is known to have one of the best school systems in the region (Envision Loudoun Market Analysis, 2019). In addition to this population, Loudoun has seen significant growth in its non-White population due to immigration. This all means that the voting population in Loudoun has shifted in recent years. In 1960, the population was 82% White, with most residents being a part of the Silent Generation; today, that population is just under 65% White residents, and the majority generation being Millennials (U.S. Census Bureau, 2023). While the population demographics have shifted, Loudoun's approach to growth management has not. The working class is still fighting that uphill battle. In fact, Loudoun has said that the county is no longer a bedroom community to Washington D.C. but a self-sustaining community (Envision Loudoun Market Analysis, 2019). Residents are still battling against growth for the same reason they were in 1960: the economy. Loudoun County is home to many wineries and large equestrian farms. Residents want to protect the agricultural and tourism industries while keeping their property taxes low. The uphill battle also continues for officials. Finding a balance between growth and what the residents want is nearly impossible for the fast-growing county.

Preservationists are still battling for increased restrictions in the Rural Policy Areas. Estate owners also want to keep western Loudoun rural to protect the value of their estates. Single or those with no children, millennials want density in eastern Loudoun near the metro line, and millennials with children want suburban subdivisions. The political climate in Loudoun is as intense as it has always been, and the Planning Commission and the Board of Supervisor meetings see vocal residents sharing their varying opinions (Stapor, 2024).

One drawback to having such a family-oriented population is that sprawl is imminent. These families typically prefer suburban living; in 2015, single-family detached homes comprised one-half of all closings (Envision Loudoun Market Analysis, 2019). Even though single-family detached homes make up a large supply of Loudoun's housing stock, their 2019 plan still calls for increased density. Will Loudoun hold themselves to the plan, or will they keep approving large-lot subdivisions? It is still too early to tell, but if Loudoun did allow sprawl, what would it look like?

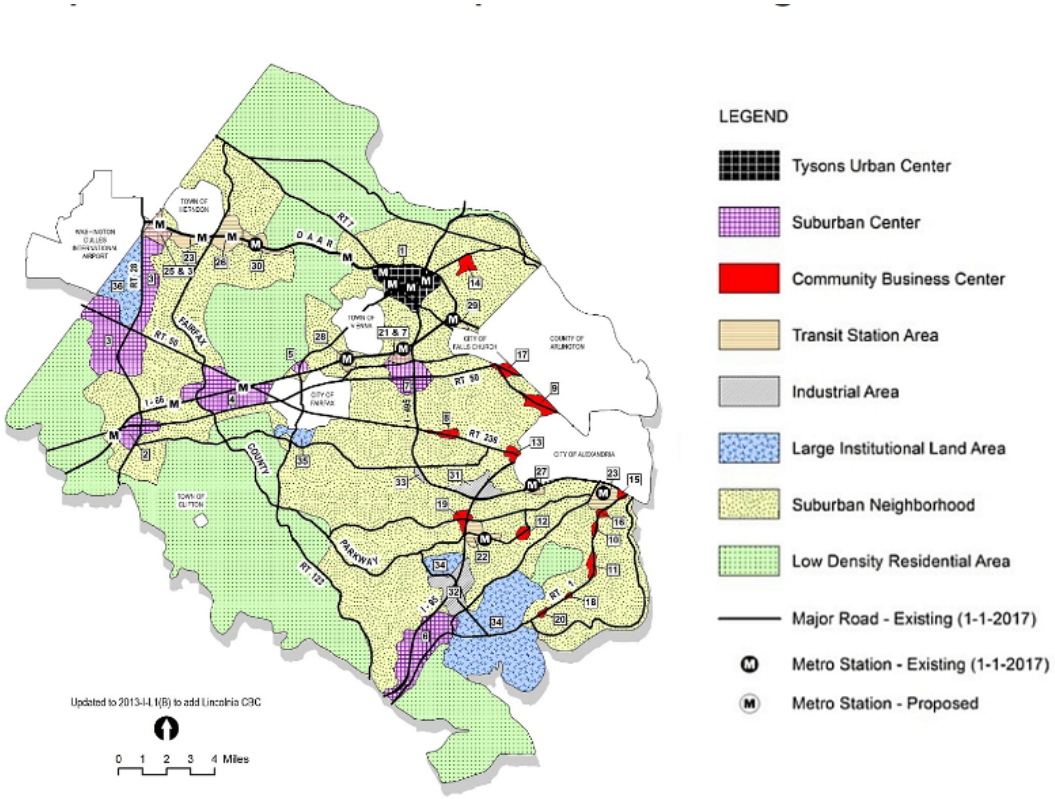
Adjacent to Loudoun County is another county grappling with growth. Fairfax County has endured the same growth pressures as Loudoun County. However, Fairfax County has a much higher population of 1.1 million (U.S. Census Bureau, 2022). For comparison, Loudoun County has 515 square miles of land area and Fairfax only has 390, yet the population in Fairfax is more than double that in Loudoun. Fairfax has not prioritized growth management and is a near-poster child for sprawl. Figure 14 shows a county with more suburban land than anything else. Looking at adjacent counties may be one way to determine if growth management in Loudoun County has been worth pursuing. The growth management policies in Loudoun County are strict, but without them, Loudoun County could have grown like Fairfax.

If Fairfax County had also enacted growth management policies and prevented sprawl, those people would have gone to the next neighboring jurisdiction without growth management policies. Without regional solutions, unmanaged growth is inevitable. While not the focus of this thesis, it is important to note that, as the literature review points out, regional leapfrog development is a serious concern in planning and should be addressed through regional collaboration. So, while the case study of Loudoun County may point to the positives of growth management, a regional

viewpoint must also be acknowledged which recognizes the limits of localized growth management policy.

Figure 14

Map Showing Land Uses in Fairfax County, Virginia



Source: https://www.fairfaxcounty.gov/planning-development/sites/planning-development/files/Assets/documents/subject-headers/specialplanareas.jpg

In addition to developing a regional perspective, we must also take notes from signs of the time. Over the years, politics and community engagement have shifted just how strict the growth management policies in the county are. It is the responsibility of political officials to answer to the preferences of their communities. Historically, Loudoun County residents have fought to protect the county's rural character. However, the recent COVID-19 pandemic may shift those preferences. Concerns have been raised over more dense environments. Families have begun to revert to suburban living preferences (Parker et al., 2021). This may sway officials in these growth

management communities to allow for suburban sprawl. It is too early to determine the pandemic's impacts on Loudoun County residents' living preferences. Still, it must be considered, particularly by local government officials. Additionally, some people do not want to live in a denser environment. In the case of Loudoun County, many people may be moving from Washington, D.C., into the county in search of more suburban living standards. To successfully prevent sprawl, the community must also support the growth management policies that call for additional density.

Additional questions regarding the sociocultural impacts also need to be addressed. Growth management can be seen as socially inequitable as higher-income communities often adopt it. This means that while most of the population can afford the potential increase in taxes and housing prices, the minority will suffer significantly. More research into the sociocultural effects of growth management is needed to determine whether these policies are truly ethical.

This thesis offers a policy analysis that evaluates *how* Loudoun County has planned growth management policies. What this thesis does not do is evaluate the efficacy of these policies. This thesis alluded to the fact that these policies may have successfully preserved the county's rural character based on the support of maps showing the urban-rural divide in the county. However, the true efficacy of growth management in the county has not been determined. Additional research must be done to evaluate the effects of growth management on the county's character, as there is little empirical evidence to support the effectiveness of growth management (Carruthers, 2002). This research may be centered around analyzing topics such as population demography and land use cover change. Land use cover change can inform how land uses have changed over time, potentially showing the conversion of rural land into more urban or suburban land uses. Mapping population demographics can reveal population density, answering questions about where the population is concentrated in Loudoun County. This research into the efficacy of growth

management is essential for making a case for why other municipalities, counties, and states should implement growth management policies.

While this thesis does not determine if growth management has been effective in the county, it highlights how the county has successfully planned growth management policies. Even with changes in the political climate in the county, Loudoun has successfully incorporated growth management policies into almost every adopted plan since the 1960s. The idea of growth management in the county appears to be bipartisan, with both parties seeing the benefits of controlling land use and development. Whether it is for environmental or economic reasons, Loudoun supports growth management in some way at every turn.

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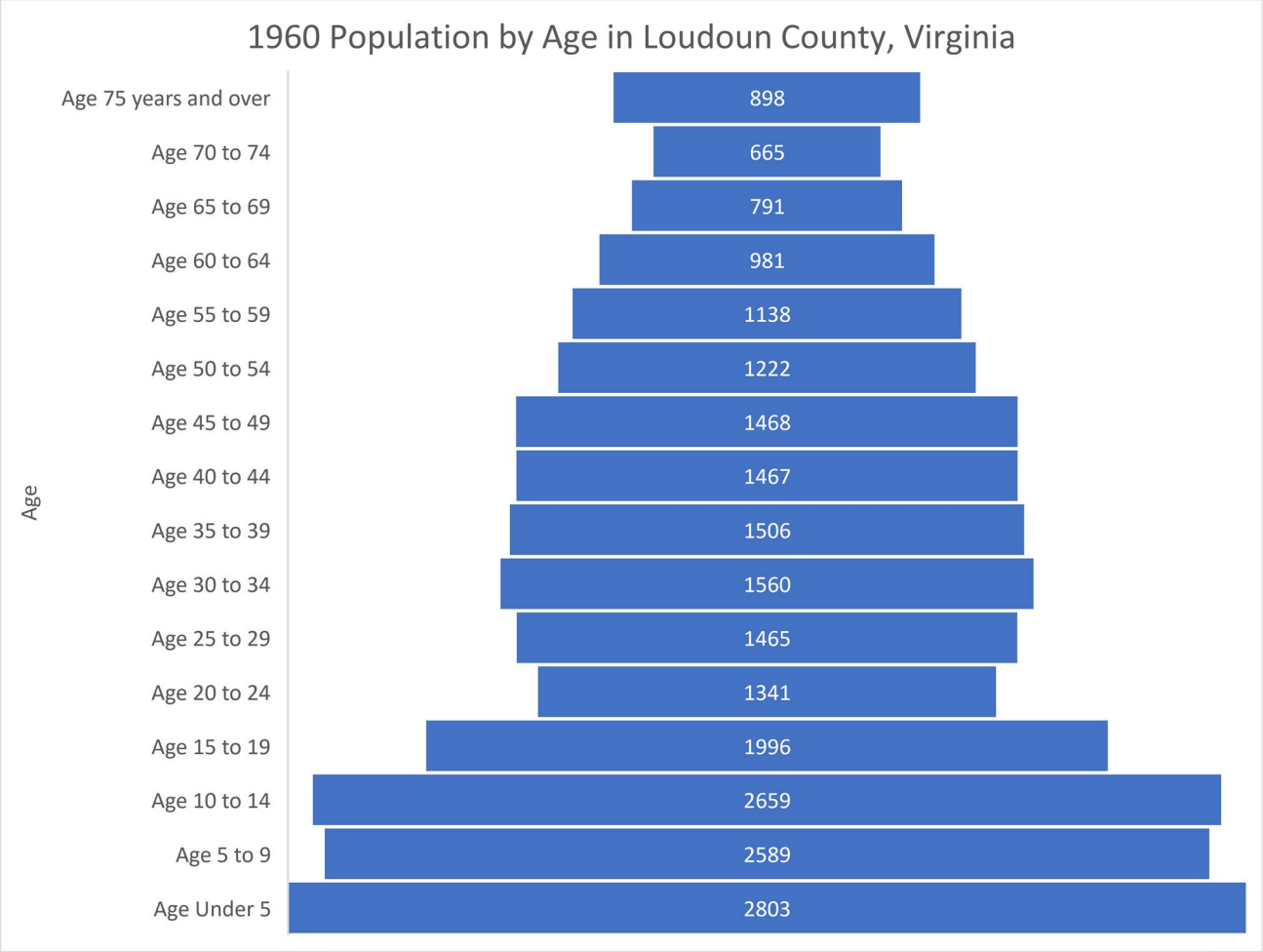
Appendix A


1960 Population by Age in Loudoun County, Virginia
Age
Age 75 years and over
898
Age 70 to 74
665
Age 65 to 69
791
Age 60 to 64
981
Age 55 to 59
1138
Age 50 to 54
1222
Age 45 to 49
1468
Age 40 to 44
1467
Age 35 to 39
1506
Age 30 to 34
1560
Age 25 to 29
1465
Age 20 to 24
1341
Age 15 to 19
1996
Age 10 to 14
2659
Age 5 to 9
2589
Age Under 5
2803

Appendix B

Positive Effects	Related Action Items in Loudoun County
Support of agricultural sectors	**(Chapter 2) 3.2.A.** Adopt zoning regulations and design standards that include new types of rural business and agricultural uses, permit flexibility for the sale of farm products, and promote rural tourism, hospitality uses, and similar kinds of rural business uses that are compatible with the character of the RPA. **(Chapter 2) 3.4.A.** Regularly review, update, and enhance the Land Use Assessment Program and other voluntary agricultural programs, such as the Agricultural and Forestal District (AFD) program, to strengthen the rural economy, preserve rural character, and maintain the viability of farming. **(Chapter 2) 3.7.A.** Maintain zoning regulations and design standards that protect the right to farm. **(Chapter 5) 1.5.D.** Create mechanisms for the rural economy to maintain its status as a regional agricultural leader and local advantage.
Protection of open space	**(Chapter 2) 2.1.A**. Develop a Master Plan for parks, open space, and shared-use trails in the TPA that: 1) builds on and links current planned trails and park areas, and 2) places greater emphasis on quality, connected, usable, and publicly accessible open space. **(Chapter 2) 2.1.D**. Establish programs and regulatory mechanisms to increase publicly accessible open space, consistent with County facilities plans, through easements, land dedications, and purchase. **(Chapter 2) 1.1.G**. Work with the Towns, interested group, and nonprofit foundations to identify open-space and agricultural preservation strategies such as: donation of conservation easements, fee-simple purchase, clustering, and the possible creation of a conservation service district. **(Chapter 2) 1.8.B.** Be an active partner with the Middleburg community and interested preservation groups to identify open space

	and agricultural preservation approaches such as conservation easements, land acquisition, and development standards to promote and implement open-space preservation around the Town of Middleburg that helps establish a greenbelt and protect the rural appearance of roadways leading into the Town. **(Chapter 2) 2.1.C.** Retain 50 percent open space throughout the TPA, unless otherwise called for by the applicable place type or in the Lower Bull Run subarea where 70 percent open space is required for residential development to protect drinking water source watersheds, and seek to reserve publicly usable, accessible, and interconnected open space. **(Chapter 6) 3.1.I.** Continue the Open Space Preservation Program, to the extent permitted by Virginia Code Section 15.2- 2303.4, linking the loss of open space associated directly with low-density land use to the provision of open space or funds towards the purchase of open space that provides publicly accessible and usable open space. **(Chapter 6) 3.1.K.** Encourage protection of the following priority open space areas through conservation easements acquired by the County or others, participation in the Open Space Preservation Program, development design, and other means.
Decreased Cost for Public Utilities	**(Chapter 2) 1.1.C.** Require new development to connect to Loudoun Water's central water and wastewater systems and encourage existing development to connect. **(Chapter 6) 4.2.B.** Prohibit connection to water distribution and wastewater collection systems when such requires crossing land outside a defined water or sewer service area, except as allowed herein. **(Chapter 6) 4.5.A.** Prohibit extension of central water and wastewater service into the Rural Policy Area, except to address a public health threat to an existing rural community or to serve public facilities on contiguous

	parcels immediately adjacent to the western boundary of the Transition Policy Area.
Shifts developer attention back into more urban areas	**(Chapter 2) 1.1.E**. Evaluate the creation of overlay districts to encourage reinvestment in priority/targeted areas where there is community support and buy-in. **(Chapter 2) 1.3.G.** Develop incentives that encourage the private sector to improve retail and commercial establishments in targeted areas. **(Chapter 2) 1.5.A.** Evaluate and implement the use of fiscal tools to incentivize redevelopment, such as tax increment financing (TIF) and public improvement districts (PID). **(Chapter 2) 2.1.A.** Provide incentives for redevelopment, infill development, and adaptive reuse projects that will enhance quality of life and neighborhood character, fulfill community needs, and improve economic opportunities.
Encouraging more compact development	**(Chapter 2) 2.1.A.** Develop and implement zoning regulations or design guidelines that support a compact, walkable development pattern in areas that area appropriate for pedestrian activity. **(Chapter 4) 1.1.D**. Develop zoning regulations and design standards that facilitate innovative, lower cost, compact residential and mixed-use development that emphasizes the physical form and the character of the built environment and seamlessly integrates uses.
Decrease in automobile usage	**(Chapter 2) 4.1.A.** Create guidelines, zoning regulations, and/or design standards that ensure bike lanes, shared spaces, and paths of travel are created in areas where multimodal activity should be encouraged. **(Chapter 4) 1.5.D**. Provide access to amenities and services through alternate modes of transportation such as walkability and pedestrian access, bicycle facilities, and public and/or private mass transit facilities such as mini-bus or shuttle services.
Decrease in racial segregation	No action items.

Increase in diversity	**(Chapter 2) 1.2.A.** Encourage the maintenance, improvement, or adaptive reuse of existing building stock in a manner that supports social and economic diversity within the community.
Increase in recreational opportunities	**(Chapter 2) 3.2.C.** Create zoning regulations and design standards for existing and new types of rural recreational uses to evaluate their appropriateness and ensure their compatibility with the character of the RPA. **(Chapter 2) 3.2.E.** Develop a publicly accessible multi-use trail network (i.e., pedestrian, bicycle, and equestrian) to link private and public lands in the RPA in partnership with nonprofit entities, landowners, and developers of rural properties. **(Chapter 2) 1.3.C.** Support development of sidewalks and recreational, multi-use, and equine trails connecting the Towns to each other, to regional trail networks such as the W&OD and C&O Canal, and to area destinations. **(Chapter 2) 1.5.H.** Work with the Town of Hamilton to plan for a shared-use trail connecting to the Town of Purcellville. **(Chapter 2) 1.9.B**. Work with the Town of Purcellville to plan for a trail extension that connects the W&OD Trail with Franklin Park. **(Chapter 2) 3.1.H.** Seek through public purchase, proffer, donation, or third-party easement, the preservation of natural areas and the development of linear parks, recreation space, and trails.
Decrease in commuting times	No action items.

Appendix C

Negative Effects	How is Loudoun planning to combat these effects?
Increase in land costs	**(Chapter 4) 3.3.A.** Explore the development of a proactive "public land for public good" program that offers public property to reduce the cost of housing development by reducing or eliminating the land cost. **(Chapter 4) 3.3.C.** Use public property to offset the land costs to nonprofit and for-profit housing developers seeking to build housing for persons with special needs and/or households earning less than 50 percent AMI.
Developer disinvestment	**(Chapter 2) 1.4.D.** Develop creative incentive programs for projects located within the priority areas for redevelopment identified on the Priority Commercial Redevelopment Areas Map and other qualifying projects, such as increases in permitted density where infrastructure is available, reduced fees, or expedited review processes. **(Chapter 2) 1.5.A**. Evaluate and implement the use of fiscal tools to incentivize redevelopment, such as tax increment financing (TIF) and public improvement districts (PID). **(Chapter 2) 1.5.B.** Evaluate entering into public-private-partnerships to initiate redevelopment and adaptive reuse efforts and reduce development risks in priority areas. **(Chapter 4) 3.1.E**. Create an expedited permit process to fast-track applications for developers who commit to providing additional units affordable to households earning less than 100 percent AMI. **(Chapter 4) 3.3.C**. Use public property to offset the land costs to nonprofit and for-profit housing developers seeking to build housing for persons with special needs and/or households earning less than 50 percent AMI. **(Chapter 5) 5.1.A**. Establish "Tourism Zones" that would enable the County to provide tax incentives and regulatory assistance and would provide a mechanism to assist developers of authorized tourism

	projects to obtain gap financing and make payments thereon.
Increase in housing prices	**(Chapter 4) 1.1.A**. Promote mixed-income housing developments that provide a continuum of housing types and prices. **(Chapter 4) 1.1.E.** Amend zoning regulations and design standards to permit accessory housing product types (e.g., carriage houses, accessory apartments, and cottages) in residential and mixed-use zoning districts and incentivize the integration of universal design features in accessory units. **(Chapter 4) 1.1.F.** Amend zoning regulations to expand the number of districts where manufactured housing, accessory units, and alternative housing types are allowed (e.g., small lot, zero lot-line, micro-units, maximum unit sizes, and innovative housing types). **(Chapter 4) 1.1.G**. Develop regulations and standards by which affordable housing development can be approved as a by-right use. **(Chapter 4) 1.5.A** Encourage the provision of a diversity of housing types and prices within active adult and/or age restricted housing development projects. **(Chapter 4) 1.6.A.** Provide incentives to encourage zoning map amendments or zoning concept plan amendments on previously entitled properties that increase the provision of a mix of smaller housing types and affordably priced housing. **(Chapter 4) 1.6.B.** Research and implement effective incentives, such as appropriate density increases for the provision of housing focused on the County's unmet housing need proximate to major employment centers and public transit such as Silver Line Metrorail stations, as well as the offset of capital facilities contributions to reduce housing development costs to foster a continuum of housing affordability for workers in Loudoun. **(Chapter 4) 1.7.A.** Develop zoning regulations and design standards to implement form-based approaches for infill

	and redevelopment areas that facilitate the development of "missing middle" housing product types and affordable prices. **(Chapter 4) 2.2.B.** When redevelopment projects are proposed for areas with existing housing affordable to households earning less than 100 percent AMI in otherwise good condition, incentivize the preservation and rehabilitation of that existing housing stock. **(Chapter 4) 2.2.C.** Require that redevelopment projects removing existing affordably priced units as a last resort provide a one-for-one replacement of similarly priced housing units in order to ensure no net loss of affordably priced units. **(Chapter 4) 2.2.D.** Explore local funding options and implement housing programs that preserve and improve existing affordably priced housing. **(Chapter 4) 3.1.A**. Develop an Unmet Housing Needs Strategic Plan, consistent with the adopted Loudoun County 2019 Comprehensive Plan, that specifically identifies strategies, actions, programs, and best practices to address the County's current and future unmet housing needs. Such plan should include, but is not limited to, down-payment assistance programs, utilization of housing trust funds, and home purchase programs, and should be developed prior to the approval of any zoning map amendments requesting higher densities planned in the Urban Policy Area outside the Metrorail Service Districts, Suburban Policy Area, and the Transition Policy Area. The plan would include estimates on unmet housing needs, establish development targets, and evaluate how housing programs address those needs every five years. **(Chapter 4) 3.1.C**. Develop zoning regulations and design standards that remove barriers and incentivize the development of housing affordable to households at or below 100 percent AMI in all residential and mixed-use development.

	(Chapter 4) 3.1.G. Strengthen Affordable Dwelling Unit regulations in the Loudoun County Zoning Ordinance and the County Codified Ordinances, to the greatest extent that the Code of Virginia allows, to increase the development of housing that helps address the County's unmet housing needs in all residential and mixed-use development. **(Chapter 4) 3.1.I**. Develop effective incentives that enable development to meet unmet housing needs to include housing for households with incomes at or below 30 percent AMI and 50 percent AMI, which is the area of greatest need. **(Chapter 4) 3.1.J**. Address the housing needs of extremely low-income or vulnerable households including older adults on fixed incomes and persons with disabilities by exploring partnerships with healthcare providers, local nonprofits, and philanthropic organizations to develop targeted housing for this population. **(Chapter 4) 3.2.A.** Identify and designate dedicated local funding sources to support the County's plan to provide a continuum of housing. **(Chapter 4) 3.2.B**. Use the Economic Development Authority (EDA) to issue tax exempt bonds for qualified residential rental projects and to make grants or loans of its own funds with respect to single or multifamily residential facilities, in order to promote high-quality and affordable housing in the County. **(Chapter 4) 3.2.C.** Leverage strategic geographies with federal programs, such as opportunity zones and qualified census tracts, and proactively pursue grants and other funding from federal, state, and private foundation sources, such as HOME, Emergency Solutions Grants, and State and Federal Housing Trust funds. **(Chapter 4) 3.2.D.** Use public and private partnerships, programs, tools, and incentives to address unmet housing needs and increase

	the County's capacity to compete for federal, state, and private sector assistance. **(Chapter 4) 3.2.E.** Use the EDA to assist with property acquisition, tax exempt bond financing, and leverage gap financing, and stimulate cooperative partnerships toward the preservation and production of housing to address unmet needs. **(Chapter 4) 3.2.F.** Work in partnership with nonprofit, public, and private entities that are committed to provide a wide range of housing opportunities by offering technical and financial assistance such as loans, gap financing, tax credits, and grants. **(Chapter 4) 3.3.A.** Explore the development of a proactive "public land for public good" program that offers public property to reduce the cost of housing development by reducing or eliminating the land cost. **(Chapter 4) 3.3.B**. Explore the establishment of a community land trust/land bank and assemble properties, including tax sale properties, for the construction of housing that addresses the County's unmet housing needs. **(Chapter 4) 3.3.C**. Use public property to offset the land costs to nonprofit and for-profit housing developers seeking to build housing for persons with special needs and/or households earning less than 50 percent AMI. **(Chapter 4) 3.3.D.** Promote collocating public facilities with affordable housing. **(Chapter 4) 3.4.A.** Expand and increase the funding for the Down Payment and Closing Cost Assistance and Public Employee Grant programs to help households earning up to 100% AMI purchase a home. **(Chapter 4) 3.4.D.** Work with employers located in the County to develop workforce housing financial assistance programs such as direct loans, gap financing, revolving loans, credits, and grants.
Displacement	**(Chapter 2) 1.2.E.** Develop strategies to address displacement and housing affordability, when redevelopment occurs.
Leapfrog development	No action items.
Catastrophic natural disasters	No action items.

Concentration of pollutants	No action items.
Urban heat island effect	No action items.