My Land or Our Land: Farmland Preservation in Connecticut

by

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CHAPTER ONE Introduction: Public Intervention for a Public Good

I. Introduction

Landscapes are an integral part of our sense of geographical and social identity. People inherit natural or artificial landscapes, and then, influenced by historical and cultural aesthetics, shape the landscape to embody their own ideas of how places should look and feel. Geographers James and Nancy Duncan observe: "not merely a backdrop for social action, landscapes play an active role in the performance of elite social identities and the framing of social life and values within a community" (Duncan & Duncan, 2001, p. 387). People living in rural or semi-rural areas, motivated by an agrarian ideal, a sense of historical localism, or potential economic gain, might thus advocate for the preservation of rolling pastured hills, picturesque red barns, and an occasional wooded lot. Urban and suburban dwellers can also be advocates for rural preservation, motivated by sentimental reasons or because they want an escape from the city.

Fostering a certain landscape aesthetic can be accomplished through building new structures or planting trees, but the look of landscape can be shaped just as intentionally by preserving features that are prized as essential to regional or local character. As sociologist David Lowenthal writes, preservationists attempt to construct "shared identity, uniting present communities through felt continuity with an ancient past" (Lowenthal, 1989, p. 28). Preservation need not reference ancient history; it might be motivated by an affinity with relatively recent land uses that have

only in the past fifty to one hundred years become less common. Such is the case of farmland preservation in the United States.¹ Cultivated land, and its accompanying structures and practices, is a landscape feature to which many Americans feel a visceral attachment.

Rural landscape preservation is an increasingly common endeavor, protecting anything from large tracts of natural lands to individual barns. A recent New York Times article detailed the growing number of land donations to conservation organizations by religious orders. In New Jersey, New York, and Massachusetts, monasteries are closing their doors, but preserving picturesque grounds for public enjoyment by entrusting their land to The Nature Conservancy and other organizations (Berger, 2008). In another article, Connecticut residents rally support to preserve historic barns (Carlson, 2009). Reporter Wendy Carlson's interview with Kent Gilyard, a barn restorer, reveals the priorities of certain Connecticutians: "Maybe it reminds them of a simpler time, even though farming wasn't simple." This statement speaks to the double nature of landscape preservation: the structures and land preserved fulfill both a visible aesthetic ideal as well as an emotional or conceptual one. Both are powerful as motives for preservation, particularly farmland preservation.

¹ The protection of farmland is generally referred to as "farmland preservation," although the term "conservation" may also be used. This is not the case in the wilderness protection movement; American environmentalists have long been divided into two groups: the conservationists and the preservationists. Conservationists advocate the proper use of nature or the regulation of human use, whereas preservationists seek to eliminate human impact altogether. Human use is implicit in the protection of farmland, so the terminology is not so contested.

Many different interest groups in the United States are concerned about the changing role of farms in American society and of farmland in the American landscape. Often-cited threats to agricultural land in the United States include population sprawl, escalating land values, decline in agricultural profitability, and retirement of agricultural operators. All these factors impact the amount of farmland in the U.S. According to the USDA Natural Resources Conservation Service's National Resources Inventory (NRCS NRI), between 1992 and 1997 more than 11 million acres were converted to developed uses, of which more than 6 million acres were agricultural land (Natural Resources Conservation Service, 2003). The shrinkage of cultivated land has catalyzed advocacy for farmland preservation at the national, state, and local level. At the national level, agribusiness lobbying blocs seek to protect agricultural land as an essential element in this multi-billion dollar American industry. State-level policies can significantly affect farmland preservation as well, especially through the allocation of funds. At the municipal level, land use regulations directly affect the location and preservation of local farmland. Within each level of influence, farmland preservation is motivated by citizens reacting to the loss, or perceived loss, of a rural ideal.

The mission statement of the American Farmland Trust (AFT), the most prominent agricultural land preservation organization in the United States, speaks to the key ideas shared by agricultural preservationists. AFT helps "communities looking for ways to sustain agriculture, rural heritage and their quality of life. Increasingly, communities are recognizing the value of conservation programs that keep farmland in production and help keep farmers in business" (American Farmland

Trust, 2008, p. v). This statement, made by AFT's New England Policy Director Cris Coffin, posits three key ideas shared by supporters of farmland preservation. First, that farmland is integral to American community identity and quality of life. Second, that the transaction of agricultural land departs from the standard economic market model, a situation that should be ameliorated by governmental and private intervention. And third, that these interventions are helpful in preventing the conversion of farmland to other uses.

If farmland is essential to American identity, why are there fewer acres in cultivation every year? Why is it that a valued resource can be so vulnerable? In a perfect market, the survival of this essential aspect of American life – farming and farmland – would be guaranteed. The cost of agricultural land would reflect its high societal value, and prohibit its conversion to other uses. However, as Coffin and others claim, the land market – the sum of individual transactions – is not providing farmland at a level that is socially desirable. Thus, the public, as embodied in government and private non-profit organizations, must intervene to preserve this land.

This thesis will explore the public role in agricultural land preservation through a study of the farmland preservation movement in Connecticut.² It will put into perspective the claims made by Cris Coffin and others by evaluating the role that farmland plays in the formation of the local aesthetic, and the ways in which national, state, and local initiatives affect the conversion or preservation or change of agricultural land.

² A "public" action, in this thesis, refers to government or non-profit work representing communal desires.

The remainder of this introduction provides a theoretical basis for discussing the social and economic aspects of farmland preservation. Chapter Two analyzes American land use controls and their effect on the preservation or loss of agricultural land. This analysis leads to a discussion of the specific case of Connecticut in Chapter Three, looking in particular at the use of bonds at the town level to preserve land and their effect on land use change. Chapter Four highlights how local aesthetics affect decisions about land use regulations and preservation initiatives. In the Conclusion, the findings of this study will be used as a lens to evaluate the place of farmland preservation in today's struggling economy.

II. Farmland Preservation as a Public Endeavor

In order to understand why the preservation of farmland becomes a public action, rather than a purely private concern, one must first view this issue in the context of a traditional economic model. The following section presents basic urban economic concepts as they relate to farmland preservation. I define public goods, and demonstrate how farmland can be conceived of as a public good, and then present the types of value that may derive from agricultural land. These definitions lead into a discussion of public policy responses to potentially underprovided goods such as farmland close to cities, and some geographical considerations regarding its preservation.

Farmland and Urban Economics

Farms exist in specific places in American geography. Today, many people associate productive agriculture with vast swaths of unbroken fields in the Midwest and West, far from developed areas. This image is not entirely accurate, because proximity to a developed area is important to provide a market for agricultural goods and a hub of transportation. One must first understand the traditional urban economic model in order to gain an understanding of the spatial distribution of different types of land uses.

In this model, land used for residential, commercial, industrial, or agricultural purposes has a value that is determined by its distance from a city, or Central Business District (CBD). Land rent per acre generally falls as distance to the CBD increases (see O'Sullivan, 2003). This decline in rent causes consumers to use more land as distance increases, leading to greater land consumption in the suburbs. Land rent and land consumption depend not only on distance from the CBD, but also on income (Breuckner, Mills, & Kremer, 2001, p. 68). An increase in income affects the city's spatial size because urban residents demand more living space as they become richer. By itself, the greater demand for space causes developed land use areas to expand.

Conforming to this model, a city's land area increases as population and income increase, and its land area decreases as agricultural commodity prices and commuting costs rise (Breuckner et al., 2001, p. 70). The social value of farmland around the city includes the profit from agricultural goods produced and the aesthetic landscape benefits it generates. However, since intangible benefits such as the

enjoyment of a beautiful vista do not constitute part of the land's agricultural income, the disappearance of these benefits does not translate into a dollar loss when the land is developed. Thus, too much land may be allocated to residential, industrial, or commercial uses. This problem is due to the public good nature of farmland as open space, a concept that is explained in the following section.

Public Goods

Market failure occurs when the price of a product does not explain the full value of the good. This is known as an externality. Externalities are associated with public goods, products whose consumption is non-rival and non-exclusive. A nonrival good is one that can be enjoyed by an infinite number of people without detracting from its value. For example, a national park could be considered a nonrival good; provided people do not litter or overly-congest the park, one person's use of it does not keep other people from enjoying it. However, if too many people try to use the park at once it becomes congested and is no longer non-rival.

A good that is non-exclusive is one whose potential benefits to the consumer cannot be restricted to any one individual. Radio is a classic example of a public good; inexpensive radios allow an unlimited number of people to tune into one radio broadcast. The enjoyment of a park is also non-exclusive because anyone can appreciate the view of a park if they are able to drive or walk past it or through it. In the case of a park, people might additionally gain utility from simply knowing that it is there; they do not need to see it, but they like to know that it is present somewhere near them, or just somewhere in the world. Public goods tend to be undersupplied,

owing to their non-exclusivity. People can enjoy them without paying for them, so there is too little incentive to produce the good. When the value of a good is not easily quantifiable, and that aspect of it that can be given a price tag is lower than its true societal worth, the good is often provided at inefficiently low quantities.

Like a park, a commonly admired parcel of farmland is a public good. There are non-rival and non-exclusive benefits of an attractive field; it is not worn out by thinking about it, and an unlimited number of people may enjoy its existence at once, and it is non-exclusive because one need not pay to look at it. One may not even need to see the farmland to derive benefit from its existence; the mere fact of knowing it exists will provide value. Thus, the provision of farmland is associated with a positive externality, which exists when an individual or firm providing a good does not receive the full benefit of that action, so the benefit to the individual or firm is less than the benefit to society.³

Generally, agricultural land as aesthetic open space is a location-specific public good. It is typically enjoyed most by the people closest to it. The value of such an amenity is reflected in the price of real estate nearby; often homes close to attractive parcels of farmland are valued more highly than those in other locations. Yet the aesthetic open space value of the farmland is generally not accounted for in

³ By contrast, a negative externality occurs when the individual or firm does not pay for the full cost of the action, making the societal cost greater than the individual consumer's cost. An example of a negative externality is pollution. A factory that emits pollutants into the air pays for electricity and materials in its production, but the individuals living around the factory will pay for the pollution if it causes them to have higher medical expenses and lowered quality of life -- a cost the factory owner does not pay.

its own cost. This may result in a market failure, meaning that there is a lower amount of this land than is optimal.

If there is something about farmland which causes the market to supply too little of it, then a case may be made for a market intervention. This might be as simple as a subsidy, or as complex as the regulation of development on that land. Determining how and at what level to intervene requires further exploration of the public value of farmland.

The Value of Farmland

1. Private Value

Agricultural land is a special kind of landscape feature. It allows for the income-generating production of food and other goods, and it also has value as an undeveloped landscape. This is in contrast to the claim, used by some preservations, that urban growth devours agricultural land without regard to its worth. In a free market economy, resources find their most productive uses. The value of agricultural goods produced on a parcel of land should be reflected in the real estate value of that parcel, so as agricultural land values rise, developed uses will be less likely to shift to that land.⁴ Thus, in regions where agricultural land is productive and hence expensive, urban or industrial land uses will be less likely to sprawl outward from population centers than in regions where land is unproductive and cheap (Breuckner

⁴ In the United States, however, most agricultural production is subsidized, so the true value of the agricultural products is actually lower in most cases than it would be in a system free of farm subsidies.

et al., 2001, p. 70). Productive agricultural land is therefore more resistant to conversion than unproductive land.

2. Public Value

Agricultural land plays a double role. Farmland cannot be what it is without its practical value as productive land. Private owners benefit from the revenue generated through cultivation of their land. Beyond the benefits it affords to the landowner, farmland also has public value. When speaking of farmland preservation at the community level, it is generally in terms of preserving its amenity value – the intangible benefits a town receives through the presence of farmland – especially as it increases the attractiveness or "livability" of the locale. This thesis will primarily address the amenity value of farmland.

Unlike the income-generating side of agricultural production, the ecological benefits of farmland are difficult to quantify. Agricultural land provides ecological benefits for the wildlife, streams, and other natural systems of a region. It can act as a buffer to stop excessive urban runoff into streams and rivers, and it can act as wildlife habitat, especially if it is part of a larger corridor of undeveloped spaces in a town. Many parcels of land that are farmed contain uncultivated areas that provide further ecosystem benefits: forest patches are often kept to act as wind barriers and to provide wood for fuel; farms often contain wetland areas as well, which by law must be left uncultivated.

Value derived from agricultural land is also difficult to project into the future. The people who decide whether farmland is developed or not are those who presently

live in a community; future generations have no say in the land use decisions of today. But current decisions are extremely relevant to future land users because they limit the options available later on. Developing farmland is a non-reversible decision. Most agricultural land, once converted to residential, industrial, or commercial uses, can no longer be cultivated due to irreversible changes in the structure and nutrient-level of the soil. Even if present land users are conscious of wanting to preserve a certain amount of cultivatable land for future generations, they cannot know exactly which parcels will be most in demand in the future. There is a lack of perfect information about what type of land should be preserved. Thus, many potential ramifications for future landowners and land beneficiaries accompany the decision to develop farmland.

While the ecological and future use benefits of farmland are important to take into account in considering the overall value of the land, this thesis will primarily focus on the aesthetic value of farmland. Open landscapes are central to the identity of many American communities, yet their aesthetic worth is not quantifiable. Most often, the concept of aesthetic value is seen as too subjective to enter the realm of policy-makers. As philosopher John Hospers writes, "aesthetic value could be seen as simply a matter of the psychological effect on or the attitude of the observer, and these vary considerably from observer to observer" (Hospers, 1972, p. 54). Similarly, community aesthetics will change from town to town, aligning with the physical and cultural identity residents collectively ascribe to themselves. The role open space plays in that aesthetic will influence how much weight a given town puts on its preservation.

"Open space" is a vague term. It can include playing fields, hiking trails, untouched woodlands, wetlands, meadows, and working agricultural lands. Discussing open space in a town could also refer to the areas in private backyards that collectively contribute to the amount of undeveloped space in the municipality. If a town seeks to preserve open space by raising public funds, it generally targets public open space – land that can be enjoyed by all, and in larger concentrations than the back half-acre of someone's yard. Open space is also generally something thought of as beautiful in a certain aesthetic; it is a break from the artificial built environment, and thus natural in some way, or harkening back to a simpler time. Thinking of farmland as a type of open space is somewhat counterintuitive, since agriculture is a very intentional and artificially imposed change in the natural environment. However, many people think of certain types of agricultural land as aesthetically pleasing, and associate it with historic nostalgia.

Historic imagery is especially important in farmland preservation. The farming lifestyle is associated with pre-modern times in the minds of many Americans, who see agriculture primarily as something that is experienced at a "living history" colonial farm more than as a contemporary industry. Thus, the motivation for preserving farms in America may lie in creating a historic or cultural aesthetic more than in protecting a livelihood.

III. *Public Policy Responses to the Farmland Externality*

Because the value of farmland in a community is both productive and aesthetic, policies that work to aid solely the business side of agriculture or that only

preserve the land itself do not address the whole value of the good. However, while the business viability of agriculture is essential to keep it *farmland*, rather than simply open space, this thesis will focus primarily on efforts to preserve the land itself.

In general, national programs are more focused on farming as an economic pursuit while local programs target the amenity value of farmland. Large agriculture lobbying groups, advocating subsidies for large-scale American crops such as corn and soybeans, influence national policy-makers. Many of the business-side policies that regulators use to encourage the continuation of farming are in the form of subsidies. This type of incentive can be efficient if the public value of the land or the business is higher than the cost of the subsidy. Partly because federal funds already aid the business of agriculture and partly because the changing aesthetic of local land is so readily apparent to town and regional residents, local programs tend to target landscape preservation. Local preservation actions tend to be influenced by citizens wishing to preserve "rural community character." This is why most local efforts put money towards preserving the land itself more than the business.

Preserving land is a much different task than preserving agribusiness because it requires a new type of value assessment. It has been established that farmland is unique as a public good because it has several different types of amenity values associated with it. One simple form of government intervention can be used to account for the difference between the dollar value of the land and its value with the addition of amenity value: charging a development tax on each acre of land converted from agricultural to urban use. The difficulty, though, is that implementing such a policy requires assigning a price in dollars to the marginal value open space benefits

provide on an acre of land. Only a few economic studies have attempted to estimate such values, for instance a 1994 study by Lopez, Shah, and Altobello in two Massachusetts towns estimated the marginal values at \$8.80 and \$67.00 per acre respectively and a 1998 study by Breffle, Morey, and Lodder in an Alaska town estimated the marginal value at \$31.00 per acre (Breuckner et al., 2001, p. 73).⁵ Clearly, the marginal amenity value is quite different from town to town, and conducting the research to estimate such a value to inform policy-making is expensive and time-consuming.

Charging a development tax is thus not generally done because of the difficulty in arriving at a quantifiable valuation. Instead, land preservation usually occurs through direct acquisition of land, or purchasing its development rights (PDR).⁶ Whereas a subsidy for agriculture recognizes agriculture itself as a public good, a purchase of land or development rights by government or a non-profit organization recognizes the aesthetic value of land as a positive externality that can be corrected through public intervention.

Purchase of Development Rights can occur with the aid of national, state, or local government funding, through private funding, or using a combination of sources, which is most often the case. This thesis will look closely at one mechanism

⁵ These numbers are expressed on an annualized basis, with 2001 values approximately 20 times as large.

⁶ Purchase of development rights (PDR) is a tool that puts land into agricultural conservation easements. An easement is a deed restriction that is recorded with land records stays with the land in perpetuity. In an agricultural conservation easement, the landowners voluntarily restrict development on a piece of property in order to protect the continued agricultural use of the land, as well as the natural resources on the property. The land remains under the continued ownership of the landowner, and may be sold, inherited, or transferred in a manner similar to non-protected land.

used for raising money targeted at land preservation: the municipal bond. State and local governments can issue bonds to finance public works such as the construction of schools or sewers, but bonds are also utilized to purchase land or the development rights to that land. Municipal bond income is free from federal and local taxes, making it an attractive way to raise money. Towns in Connecticut generally vote to pass bonds for specific amounts dedicated to PDR or outright land purchase.

Some government interventions try to address the possibility that urban development is taking place at an excessive rate relative to what is socially desirable, often referred to as urban sprawl (Breuckner et al., 2001, p. 66).⁷ Sprawl is one driver of farmland loss that has garnered particular attention in recent years. Critics of sprawl argue that urban expansion encroaches excessively on agricultural land, leading to a loss of amenity benefits from open space as well as the depletion of scarce farmland resources. Measures designed to prevent urban sprawl are generally in the form of regulatory barriers to urban development beyond a certain distance from the CBD, often called Urban Growth Boundaries. This and other land use regulations are pervasive in American policy, and are discussed in the following chapter of this thesis.

⁷ Urban economist David Soule defines the term "sprawl" as "low density, autodependent land development taking place on the edges of urban centers, often leapfrogging away from current denser development nodes, to transform open, undeveloped land, into single-family residential subdivisions and campus-style commercial office parks and diffuse retail uses." (Soule, 2006).

IV. Geographic and Social Considerations

This study is primarily concerned with farmland preservation in New England, specifically, in Connecticut. Agricultural land preservation is a very different creature if one focuses on Africa versus Europe, the United States versus Britain, or Connecticut versus Iowa. While in one region of the world, agricultural land preservation may be more an effort to preserve a nostalgic ideal, in another region, preserving that land is crucial to the survival of an entire regional population.

As in the United States, many Less Developed Countries are losing farmland, but generally for different reasons than in their Western counterparts, including rapid population growth, desertification, and no or few government subsidies for agriculture to sustain the business. In Africa, for instance, increased residential land use is not a result of growing income levels, as it often is in Europe and America, but rather it is due to an exponential population growth that simply requires more land for basic family housing, not land for larger lots or second homes as in Europe or America.

Even between Europe and the United States, there are differences in the motivation for farmland preservation. While many commonalities exist, European actions generally take place on a higher political level than in the U.S. Europe has the same or higher rates of agricultural subsidy, but stricter development standards and construction barriers (Nivola, 1999, p. 29). Also, the preservation attitude in Europe is different (Barthel, 1996, p. 4). For instance, in Britain, much preservation work is done through two powerful national organizations: the National Trust for Places of Historic Interest or Natural Beauty and English Heritage. The U.K. also has a system

of ranking properties of historic, cultural, or natural significance, with accompanying powers of enforcement. In the United States, the ranking system is not as streamlined, and it does not have the same associated regulatory powers; properties must be proposed for inclusion in preservation districts by localities and states, and owners, retaining significant rights, can obstruct the process. In both Britain and the U.S., the preservation movement has found itself open to charges of elitism, although in Britain it is framed more as "ruling class domination," and in the U.S. the terminology used is generally social elitism (Barthel, 1996, p. 6).

Homes located next to preserved areas sell at a premium, so they are out of reach for many buyers. This might support accusations of elitism. In her paper "The value of open spaces in residential land use," economist Jacqueline Geoghegan looks at the effects of permanent open spaces on adjacent residential land values. The empirical results from Howard County, a rapidly developing county in Maryland, show that permanently preserved open space increases nearby residential land values over three times as much as an equivalent amount of developable open space (Geoghegan, 2002, p. 91). Another study in central Maryland, by Elena Irwin of Ohio State University, looked at potential property value increases in residential areas that still have farmland. She found that if a 10-acre parcel of farmland were located in the center of this type of residential development, then the projected increase in property values of the surrounding private land, if the 10-acre parcel was permanently preserved farmland versus developed land, would range from \$2,920 to \$8,864 per

acre (Irwin, 2008, p. 15).⁸ Farmland preservation thus has the potential to create exclusive communities whose residents can afford relatively high housing values.

Within the United States itself, there is much variation in citizen interest in farmland preservation. The above studies were conducted in Maryland, a state that has a considerable but decreasing amount of farmland (2,051,756 acres of 6,251,090 acres total land area, or 33 percent), as well as some well-funded programs to protect it (National Agricultural Statistics Service, 2007). Many Midwestern states have much more agricultural land than Maryland, so feel less immediate concern about its preservation. In Iowa, for instance, 86 percent of the land is still in agricultural use. Moreover, the farmland in Midwestern states tends to be open, flat, and visually unappealing. Cherished ideals of the beautiful farmscape are replaced by pragmatic appreciation, and business interests take on a larger role in advocating to keep the land in production. By contrast, Northeastern states such as Connecticut feel a more pressing need to preserve farmland for its landscape value. Connecticut has less farmland (only 13 percent of the state's land area is farmed), and it is home to more aesthetically pleasing operations: many agriculturalists are dairy farmers, whose rolling pastureland provides picturesque vistas. Connecticut also produces many specialty goods that use the land in more interesting ways than do corn and other monocrops. The visible disappearance of farmland in Connecticut compared to Iowa is a great motivation to permanently preserve the land.

⁸ Assuming the 10-acre parcel is located within the center of residential development, an average of 8.5 residential properties would be within 400 meters of the parcel with 1-acre minimum lot size and an average of 2.8 properties if the minimum lot size were 3-acres.

Connecticut provides an interesting study of farmland preservation in the United States because for most of its history – until the last half century – the majority of the state's land was under cultivation. Connecticut is also the fourth wealthiest state, so its residents can afford to consume large quantities of land, and are at the same time interested in preserving elite communities. This historic land use still significantly impacts the way many Connecticut residents conceive of themselves and the landscape in which they live. A large number of the state's 169 towns prioritize the "preservation of rural character" in their community planning goals. The visible loss of agricultural land heightens communal awareness of how the farm economy is changing and it impact on the landscape aesthetic. This visible loss can motivate state and town actors to designate significant resources to the preservation of that landscape. The number of private land trusts in the state is one indicator of this phenomenon. Connecticut, with 128 trusts, has the third highest number of such organizations in the country, after California and Massachusetts (Land Trust Alliance, 2005). Beyond the state, specific towns provide an opportunity to understand the communal pressures and desires that lead to land use decisions.

V. Conclusion

One cannot easily generalize about farmland preservation in global, or even national terms, as the motives for preservation differ from town to town, state to state, or country to country. Thus, this thesis focuses on farmland preservation in Connecticut in order to gain a window into the complex matrix of forces impacting farmland preservation in America. Central to the study will be the motivation of

Connecticut town residents to preserve a perceived authentic place-based aesthetic. The regulations and other public actions employed to preserve agricultural lands and public green spaces generally serve the interest of cultivating or conserving that aesthetic. While Connecticut is just one case in the United States, with a unique landscape and specific set of cultural values, its farmland preservation efforts resonate within the larger frame of defining national identity. Moreover, while the state of Connecticut and its municipalities are intimately involved in determining the fate of farmland in the region, many national-level land use regulations and policies have a secondary or equal influence in shaping the land. Thus, the following chapter will provide a broad discussion of land use policies in the United States.

CHAPTER TWO Farmland and Federalism: How American Land Use Policies Affect the Landscape

I. Introduction

Land use and preservation decisions in the United States take place in a larger historical and regulatory context. Americans prize private landownership as integral to their lifestyle, and the desires of landowners are prioritized in much of the planning and decision-making that occurs in this country. At the same time, the U.S. government puts restrictions on individual actors in order to ensure the safety and common welfare of Americans. This tension between private and public concerns has been the driving force in shaping American landscapes since European settlement.

Private ownership ensures a great deal of freedom in land-use decisions. Owners of property have the right to consume, sell, rent, mortgage, transfer and exchange their property. Yet at a certain point, private actions by one person may infringe upon the rights of others, possibly endangering their livelihoods, health, or safety. This is where the government may intervene.

Under U.S. law, private property rights are granted by the government, and property can be used to pursue private ends as long as those ends generally correspond with the community's (Jacobs, 1998, p. 54). Constraints on land use imposed by government are meant to facilitate desired growth and development while minimizing negative impacts. In playing the role of negotiator between different land-use interests, the government can require uses on private land to meet certain

standards for the general welfare that may affect anything from regional population density to the look of the landscape.

The organization of the U.S. government is based on the concept of jurisdiction: federal, state, and municipal governments have particular powers at different geographic levels, which is particularly evident in the ways that land-use decisions are made. Each level has been granted specific responsibilities for land-use decision-making by the U.S. Constitution, and over time through case law and statute. Most land use regulation takes place at the municipal level, through local ordinances and other requirements. Local government is empowered to intervene directly in land use decisions because it is charged with the tasks of mitigating societal nuisances, ensuring a logical timing of development, and protecting local values. Yet, where resource conservation is concerned, many argue for more involvement by the regional and national government, as these regulators will have some perspective outside of narrow interests (Young, 1998, p. 83).

Whereas today government intervention is often in the interest of conservation, in the early days of regulation, it was on a very practical level: ensuring safety. The earliest American land use regulations were fire protection measures. In 1672, Boston enacted legislation that required structures to be built with fireproof materials such as brick and stone. The next set of land use regulations went further than the last to protect city-dwellers from other public health risks besides fire; in 1692, Boston restricted the location of slaughterhouses and tallow manufacturers. This regulation did not just address public health risks; it was the beginning of sanctions on nuisance-creating land uses in certain areas, specifically those that

smelled bad or emitted loud, industrial noises in a residential area. Boston was the earliest city to implement these restrictions, but many followed suit, and by the end of the nineteenth century, every major city had similar land use statutes (Garvin, 2002, p. 428).

Land use regulation is still a contested and politically charged process. Many governmental decisions that affect the built or natural environment do not find full support in American populations. There are many cases of people complaining that governmental actions take away the value of their private land without due compensation. The Fifth Amendment of the Constitution ensures that private property is not taken for public use without due process of law and just compensation. Legal battles can arise over whether a governmental land regulation qualifies as a "taking" of private property without just compensation,.

This takings issue, in the context of natural resource conservation, can be illustrated through the case *Lucas v. South Carolina Coastal Council* (1992), often cited in this debate to define the limit of governmental power over landowners. The South Carolina government wanted to ban development on the beachfront property of David Lucas because it was considered a valuable natural resource that should be preserved. Lucas contested this action, and in the 1992 case, the Supreme Court ruled that he be compensated for the loss of potential revenue from development. What particularly motivated the case was the fact that owners of developed beachfront property on either side of Lucas were not denied the profits from the land they had already developed (Innes, 1997, p. 404).

The decision taken in *Lucas* upheld the expansive view of the reach of a private landowner's autonomy. Yet on the state level, there have been some decisions that balance environmental and developmental concerns in a different way. In the 1972 case of *Just v. Marinette County*, the Wisconsin Supreme Court affirmed, on facts nearly identical to the Lucas case, that it was "not an unreasonable exercise of power to prevent harm to public rights by limiting the use of private property to its natural uses." Hence there is no clearly defined boundary between government intervention and private owner liberties, but it will become clear in the following sections that there are a myriad of ways in which the government can define and redefine land use.

Land preservation is a special type of public intervention that generally requires a significant monetary investment. Programs that give tax deductions to farmland owners shift millions of dollars away from individuals who do not own farms, while direct public acquisition of farmland is expensive, especially as the parcels purchased are often in areas where real estate values are high (Kelsey, 1994; Morris, Kline, & Frick, 1989). The decision to preserve land is not an isolated one; it can lead to increased taxation and housing prices, and creates a particular landscape look that may not be unanimously desired.

Any action involving public resources and changing public spaces must attempt to gauge public interest. Support for farmland preservation programs has been studied through "willingness-to-pay" surveys, such as the one conducted by Lopez, Shah, and Altobello (1994). In a University of Connecticut preferences survey, 91 percent of respondents agreed that preserving rural areas in Connecticut is

important and 90 percent agreed that it is important to maintain farmland for future generations (University of Connecticut, 2000). Public preference information can aid in governmental decisions as to how much and when to intervene in land allocation and use questions. But if government should have some say in how and when land is used, should the decisions be made primarily at the local, regional, or national level?

This chapter will explore the public role in land use decisions, and locate farmland preservation within the broader context of American land use policy. Farmland loss and preservation reflect both community aesthetic and cultural interests and long-established land use policies. Government intervention in land use decisions at the federal, state, and municipal levels has a long history in the U.S. I find that even though the American government has regulated land uses in some capacity since the seventeenth century, its actions and policies do not always lead to land allocations that reflect long-term communal needs and desires.

II. Federal Policy

While the United States has less centralized land-use planning than do some European countries, the impact of the federal government on American landscapes is still significant. National policy shapes American land use through various mechanisms, including regulatory measures, subsidies and other expenditures, direct land ownership, and tax policy.

Regulations

In the last forty to fifty years, the U.S. federal government has assumed a major role in defining and implementing national policy that influences the built and natural environment. This has been done primarily through wide-reaching legislation such as the National Environmental Policy Act of 1969, the Clean Water Act in 1972, and the Endangered Species Act in 1973. The most important of the statutes that affect land use, the National Environmental Policy Act of 1969 (NEPA), came into existence following widespread protests against the federal government's destruction of neighborhoods and the natural environment while building interstate highways during the 1950s and 1960s. The language of the Act is quite expansive; it seeks "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." The most significant impact NEPA has on land decisions is its environmental impact assessment requirement for major federal government projects, forcing agencies to consider the environmental and natural resource consequences of their actions (Albrecht, 2005, p. 272). NEPA also provides a statutory basis for private lawsuits.

Other direct regulatory federal powers that affect land management include the Clean Water Act, the National Flood Insurance Program, and the Endangered Species Act. The Clean Water Act (CWA) requires federal permits to discharge pollutants into any navigable waters. The Endangered Species Act (ESA) requires that any federal action which may affect an endangered species first be approved by the Fish and Wildlife Service or the National Marine Fisheries Service. Since issuing federal permits to private actors is a routine action of agencies, this requirement is

effectively extended to private projects on private property. Both of these Acts, passed in the 1970's, ensure a federal role in many land use decisions.

NEPA, CWA, and ESA can all be beneficial for farmland preservation if the farm supports important environmental features such as wetlands or wildlife. Many farms are part of a belt of open space designated as wildlife habitat; many farm parcels include marshlands or forestlands that support endangered species, in which case the farmland owner could be eligible for participation in an ESA program, with its associated funding. However, ESA can also be detrimental for farmers; if a certain land use, including agriculture, threatens a protected species, the federal government could prohibit the continuation of that use.

Soil conservation programs also affect rural lands. The current legislation, the Soil and Resources Conservation Act, was enacted in 1977, in recognition of the growing demand on soil, water and related resources. The Act provides for the collection and periodic analysis of resource data and appraisals of the status, condition and trends. The Natural Resources Conservation Service maps all the soils in the U.S. and categorizes certain of them as "Prime Agricultural" or "Nationally Important" soils. This data often leads to the protection of certain lands with high concentration of soils recognized as particularly productive or endangered.

All of these broad programs, implemented in the last forty to fifty years, represent a new expansive influence over land use by the federal government. However, even broad statutes have their limits. In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (2001), the Supreme Court rejected the federal government's assertion that isolated ponds in northern Illinois are "waters of

the United States" subject to Clean Water Act regulation. The court cited the rights of states to "plan the development and use of land and water resources" (Albrecht, 2005, p. 273). The American system of federalism is still powerful, limiting the number of over-arching regulations possible.

Expenditures

Beyond direct regulation on how property owners can use their land, the federal government can provide strong incentives for particular land uses through special programs and subsidies. The Coastal Zone Management Act is one of the most successful laws that enables direct federal funding for local land-use planning. The objective of this Act is to control pollution sources that affect coastal water quality. Federal financial assistance is available to any coastal state that is willing to develop and implement a comprehensive coastal management program. The amount of money tied to the Act makes it quite influential: federal funds provided to states from the program's inception in 1972 exceed \$915 million (National Oceanic and Atmospheric Administration, 2008).

Purchasing land, or the development rights to land, is the most common tool used to protect farmland permanently. Most farmland preservation programs work through direct purchase of development rights (PDR), a tool that puts land into agricultural conservation easements, protecting the land in perpetuity.⁹ The USDA is a primary funder of PDR programs, usually in partnership with states, municipalities, and nonprofit land trusts. In order to accomplish a PDR transaction, the government

⁹ Occasionally, easements last for only finite periods of time, such as 50 years, and must be renewed.

pays the landowner for the reduced value of the land (full market value minus restricted value) per acre. The landowner then receives a fee for the restrictive easement and maintains underlying ownership while the government keeps the property on the tax rolls (although taxes are reduced), and receives assurance that the land is kept open and protected. Since the first agricultural easements were acquired in the late 1970s, more than 2 million acres on several thousand farms have been put under easement at an estimated cost of close to \$3 billion in mostly public funds (Sokolow, 2006).

National funding for farmland preservation PDR programs is allocated mainly in the "Farm Bill," which determines most of the federal policy on agriculture and natural resource conservation. The 2008 Bill raised funding for the Farmland Preservation Program from \$97 million to \$200 million a year in 2012. Federal funds generally provide up to 50 percent of the value of the conservation easement, with states and local funders making up the rest. While the use of this tool to preserve farmland is quite impressive, it represents only a small fraction of the 434 million acres of crop and grazing land under private ownership in the nation (USDA Agricultural Census, 2002). Thus, less than one percent of the private agricultural land in the nation has been permanently protected under an easement program.

Perhaps the most pressing barrier to the implementation of easement programs on a large scale is lack of sufficient funding. According to a 2001 report by the USDA Economic Research Service, "the chief obstacle to conserving more farm and forest land through PDR programs is the high cost of purchasing easements" (Claasen et al., 2001). The ERS study estimates that purchasing development rights on all of

the approximately 94.7 million acres of U.S. cropland located near urban areas, which are the most vulnerable to development pressures, would cost about \$130 billion.

Public Land

While PDR programs leave control of the land in the hands of private owners, the government may also own land outright. 31 percent of American land, or about 690 million acres, is owned by the federal government (while 67 percent of the land in the U.S. is privately owned and 2 percent is owned by state or local governments) (Dale et al., 2000, p. 643). Any description of federal land-use control must include a discussion of Federal lands. The public lands include national forests, the national parks, and military bases. Influencing the use of land, particularly of those lands located in the Western U.S., has been a central role of the federal government since the drafting of the Constitution. Article IV of the Constitution provides that "The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory and other Property belonging to the United States."

Federal agencies have nearly absolute authority over federal lands through laws like the National Forest Management Act and the Federal Land Policy and Management Act, which regulate the use of Forest Service and Bureau of Land Management lands. The percentage of land under Federal control is considering the historical role of the federal government as a supplier of cheap land to private individuals. During most of the nineteenth century, the role of the government was to dole out Western lands. So much was available that the price steadily dropped to a low of \$1.25 an acre in 1820's (Kunstler, 1993, p. 29). The federal government

retains authority over many public lands, due in large part to the conservation movement begun in the late nineteenth century. In 1891, Congress authorized the president to designate public lands as forest reserves, and during the last decade of the nineteenth century, 35 million acres of land were conserved by Presidents Harrison and Cleveland. By the end of Theodore Roosevelt's term in office, national forest land had grown to 172 million acres (Kline, 2007, p. 54).

Public lands are one real source for our national imagery. The National Parks system is unique in its immense scale, highlighting some of the most awe-inspiring American landscapes and resources like the Grand Canyon or Voyageurs or the Everglades. Federal ownership of land does not necessarily mean that it is protected from development or resource extraction. Federal land is often leased to logging companies or other enterprises. Much of the land, in fact, generates revenue for the government. Especially in the West, it is increasingly being sold to developers (McKinley, December 3, 2007).

Compared to historic patterns of federal land purchase, there have been few resources designated to land acquisition in recent years. The government's primary land acquisition program, the Land and Water Conservation Fund, shrunk considerably under the Bush administration, and the other natural lands conservation program, Forest Legacy, is budgeted at only \$60 million (Editorial Staff, 2006).

Taxation

Tax policy influences land use in often unexpected ways. In his book *Laws of the Landscape*, Pietro Nivola (1999) compares U.S. tax policy with that of the other

Group of Seven (G-7) countries (Canada, France, Germany, Italy, Japan, United Kingdom). The work reveals a stark contrast between American tax policy and that of other developed countries. The American preference to live in single-family homes on separate plots of land is aided by the federal tax code's allowance for the deduction of mortgage interest. The tax laws of other countries, such as Canada, Germany, and Japan, have no such provisions (Nivola, 1999, p. 24). Furthermore, compared to other G-7 nations, the U.S. relies much more on revenue from income taxation, whereas taxes on the consumption of goods and services more commonly used sources of revenue in Europe.

Differences in revenue collection between the U.S. and other countries have implications for land use. Taxation systems that tend to penalize the use of energy and the purchase of household items keep a society from adopting the style of life to which many Americans are accustomed. For instance, the sales tax on a new car in the Netherlands is approximately nine times higher than in the U.S (Nivola, 1999, p. 27). The American system targets earnings and savings instead of expenditures, and offers extra tax relief to home-buyers, encouraging the acquisition of large houses on ample lots.

Estate and capital-gains tax laws can also unintentionally encourage suburban sprawl and large-lot rural residential development, which takes away land from farmland and open space (Diamond, Noonan, & Lincoln Institute of Land Policy., 1996, p. 105). Estate taxes discourage the inheritance of agricultural land from one generation to the next, especially where residential demand has elevated land prices.

Capital gains taxes encourage homeowners moving from an old house to buy a new and often larger home with their appreciated home value.

Federal assistance to local governments also affects land use decisions. Local dependence on property taxes can reinforce a low-density pattern of residential and commercial development. Local jurisdictions in the U.S. are left with the responsibility of raising about two-thirds of their budgets; thus each town has an incentive to maximize the assessed valuation of its real estate in relation to the expense of providing local services. A local government can decrease its required spending on public services by requiring relatively large parcels of land for buildings. This limits the number of households requiring services, but leaves fewer large areas of contiguous open space. Zoning large lots has the additional effect of making land more expensive, allowing only wealthy homeowners who pay more in taxes to live in the area.

Summation

NEPA, the ESA, the Farm Bill, and other federal programs that address land use issues are important in standardizing certain practices. Without federal supervision of environmental and resource management, states have an incentive to reduce environmental and resource-use restrictions in order to attract regulationfearing industries. Because all states must adhere to federal regulations, potential competition between states to deregulate is minimized. Federal monies for environment and resource conservation is also important in easing the burden of funding and staffing projects from state and local governments.
At the same time, positioning programs at the federal level can mean slower action on regulation because of increased bureaucracy. Processing of permits can be especially slow. The Clean Water Act, for instance, requires that the Army Corps of Engineers grant permits to anyone who wants to dredge or discharge anything into navigable waters, including wetlands. According to data from a January 2000 report issued by the Corps, the average project took 373 days to process and involved only 1.1 acres of wetlands. Even the smallest projects – those that involved less than one-tenth acre of wetlands – took 270 days. The permitting process is also costly. The same study states that it costs the Corps approximately \$5,000 per acre regulated (Report found in: Albrecht & Goode, February 1994).

Another problem with stringent regulation is preemptive development. Landowners may decide to develop their land as early as possible in order to make a profit before federal restrictions are applied. ESA regulation, for instance, can prohibit development on large tracts of land. In the case of the northern spotted owl, environmentalists succeeded in arguing that an entire ecosystem, roughly 3,000 acres, was essential for the survival of one nesting pair (Shutkin, 2005, p. 255). This single species stopped logging and development in an enormous swath of old growth forest in the Pacific Northwest.

Some national programs can work at cross-purposes. If one goal of federal regulation is to preserve farmland, this can be hindered by the goal of environmental protection. The water quality and wetlands protection regulations sometimes impose difficult regulations on farmers. Because many agricultural operations in the U.S. are large-scale, the heavy use of chemicals, crop monoculture, and large machinery has

had detrimental environmental effects that are often regulated by NEPA or other federal legislation, yet these practices are integral to the livelihoods of many farmers in the U.S.

One wonders, then, what type of farming Americans want preserved. Should federal funds go toward the preservation of a piece of land that is used to support a high-impact industrial agriculture operation? Or should the only type of agricultural land that is preserved with federal funds be that which also contributes to environmental and aesthetic goals? These overarching questions are not addressed in a comprehensive way by federal legislation; rather it is all the overlaps and contradictions of different funding and regulatory mechanisms that indirectly influence the way land use conflicts are decided. Aesthetic questions are often decided not on the national level, but in states and towns. Community and state residents weigh in strongly on which parcels they want preserved because many federal programs work in partnership with state and local governments and nongovernmental organizations.

Yet land in one part of the United States may get more attention from preservationists than in others. Thus, regional fairness is another consideration in the landscape regulation debate. People in the West often bear the greatest burden of national conservation policies simply because the East was developed earlier than the West (Dale et al., 2000, p. 5). Also, blanket regulations that impose the same financial burden on all regions of the U.S. can further disadvantage economically distressed regions even as they have little impact on the financial situation of higher

income areas. One way to solve this problem is to give more autonomy to individual states in making decisions about how landscapes are to be regulated.

III. *State Policy*

State governments are uniquely positioned to make place-specific resource and landscape decisions. With less bureaucracy than the federal government, states may be able to take more timely actions that reflect regional needs. Additionally, state governments may recognize that delegating authority to counties and municipalities can lead to enormous variation in land-use patterns and in the quality of planning for development. A purely town-level land use authority is particularly problematic in dealing with large-scale environmental issues like protecting watersheds or threatened important soils. Fragmentation of authority due to a lack of cooperation at the local level can mean the depletion of irreplaceable resources. State government can coordinate resource management from a higher level that still addresses regional needs.

Regulation

State-level land use regulation tends to address specific natural or cultural features in a way that federal laws cannot. Federal acts such as the ESA and NEPA still apply, but state land use laws reflect a more specific view of regional character than those implemented at the national level. While national regulations attempt to improve The Environment or The Waterways, state regulations control activities on a

particular coastline or in a parcel of forested land that is considered crucial to regional character, but does not gain attention as a National Landmark.

California's coastal-zone management is probably the best-known and most comprehensive state land use regulatory measure. Created by a ballot initiative in 1976, the Coastal Commission is the protector of the state's 1,100-mile coast, responsible for approving actions of local governments and all new developments within a "Coastal Zone" that varies in width from 1000 yards to five miles. The Commission has long been a thorn in the side of developers, municipal governments and wealthy beachfront property owners because of its authority to block development. It sees itself primarily as a protector of natural resources from the short-term impulses of cash-hungry local governments that may be inclined to accept lucrative proposals from developers regardless of the consequences for natural resource conservation.

Jonathan Zasloff, a law professor at the University of California, Los Angeles, stated in a recent New York Times article that the Commission is "the single most powerful land use authority in the United States, given the high values of its jurisdiction and its high environmental assets" (Steinhauer, 2008). This regulatory group has stopped many high-profile development proposals in California. In 1998, for example, the Hearst Corporation was denied permission to build a resort complex with hotels and a golf course near the famous castle in San Luis Obispo County. The Commission was so successful in its first years that during the 1970s Florida, Oregon, Vermont, Maine, and Wyoming adopted similar state-wide land use programs which attempted to regulate critical areas (Garvin, 2002, p. 431).

Multiple states have developed regulatory growth management systems that enable government participation in the major decisions that affect the use of land. For example, the Oregon Land Use Act, passed in 1973, requires communities and counties to submit conservation and development plans that must meet state approval. The central component of the Act is the Priority Funding Areas legislation, in which the State of Oregon works with local governments to use agreed-upon criteria in designating smart growth areas. Any new development outside these areas is not eligible for state funding for infrastructure projects. Maryland has a similar growth regulation initiative begun in 1997 (American Farmland Trust, 2008).

Expenditures

State-level spending, like regulation, is targeted to reflect local cultural and aesthetic goals. Some states prioritize the preservation of the farmed landscape more than others, and this is reflected in their funding allocations. Also, pressure to develop farmland varies by region, also influencing funding decisions. States in the Northeast, while they have historically had a high percentage of farmland, confront more opportunity costs for farmland currently than those in the Midwest. Unlike the middle and eastern parts of the United States, the Southwest has very little farmland; land use debates in this region often center around other conservation issues, such as water use. Any comparison of farmland preservation efforts in different U.S. regions must take into account their geographic location, dominant landscape features, average income level, and rate of urbanization.

Similar to federal-level land preservation, most permanent farmland

conservation at the state level occurs through Purchase of Development Rights programs. 27 states have authorized the use of PDR (American Farmland Trust, 2006). Wisconsin provides an example of a PDR program applied on a wide scale, with approximately 8.1 million of Wisconsin's 15.6 million acres of farmland protected, the highest percentage of any state in the country (Wisconsin Department of Agriculture, 2007). The Farmland Preservation Program of Wisconsin is designed to preserve agricultural land and open spaces through land use planning, soil and water conservation measures, and by providing tax relief to farmers in the program. A farmer in an "agricultural preservation or transition area" may qualify for farmland preservation tax credits and other benefits, but is obligated to meet certain environmental standards and give up the right to develop the land. In 2006, about 19,100 farmland owners received farmland preservation tax credits totaling \$12.5 million. The farmland preservation credits and the payments offset about 20% of the total property taxes paid by farmers who claimed the credit.

Pennsylvania also has a successful program in terms of the number of acres it has preserved. Participation in the program is voluntary, but those counties or municipalities that are designated as agricultural reserves receive special consideration regarding local ordinances affecting farming activities, nuisance complaints, and review of farmland condemnation by state and local government agencies (Fehr, 1997).

Pennsylvania has made use of a new land conservation tool that combines regulation and funding to encourage large swaths of preserved agricultural land: Transfer of Development Rights (TDR). This is a tool that can be implemented at the state, regional, or town level and is used to shift development from agricultural areas to designated growth zones closer to municipal services. The parcel of land where the rights originate is called the sending parcel. The rights are transferred from the sending parcel, which is placed under permanent conservation easement, to a receiving parcel. Governments use the market to implement and pay for development density and location decisions in TDR programs. Landowners sever development rights from properties in government-designated low-density areas, and sell them to purchasers who want to increase the density of development in places that local governments have selected as higher density areas.

Pennsylvania's TDR program is used in a designated Agricultural Reserve area, centered in Montgomery County, and is an interesting case study of the successes and failures of TDR. It has successfully preserved 93,252 acres of green space (Fehr, 1997). Yet there are numerous problems with the system, the most pressing of which is the disparity between the number of "sending" (conservation) and "receiving" (development) areas. Although more than 9,600 TDRs have been sold and used in receiving areas, there are still more TDRs in the sending area than there is receiving capacity to absorb them. In his Washington Post article, Stephen Fehr points out that:

> Realistically, a receiving capacity ratio of 2:1, or two receiving sites for every one TDR in the sending area, is needed to counteract the problem of diminished receiving capacity. Receiving capacity at a given site can diminish through environmental regulation, landscape suitability, economic constraints or lack of use by the developer.

As is obvious from the unequal ratio of sending to receiving sites, many residents of the area do not buy into the benefits of living or working in a more densely populated area.

A study conducted by Christine A. Vogt and Robert W. Marans (2003) looked at preferences in residential density among Michigan residents. It showed that the majority of the general population sample showed a preference for automobileoriented, low-density neighborhoods. In response to questions about preferred neighborhood design, eight out of ten recent homebuyers preferred large lot design to a design with smaller lot sizes. In the context of Transfer of Development Rights, this data suggests that the market for new development in designated receiving areas may not be strong enough to support the program in many areas. The difficulty lies in finding a balance between people's desire to have a home of their own in a largelot neighborhood and the desire of the community to preserve large tracts of green open space (Vogt & Marans, 2003).

Public Land

The federal government owns the majority of public land in the United States, yet states still hold a significant percentage. State-owned lands include parks and forests, roads and rights of way, and lands where mining and reclamation activities are sited. The most state-owned land is found in New York, Alaska, and New Jersey, with 37 percent, 29 percent, and 16 percent of their land owned by the state governments (National Wilderness Institute, 1995). New York owns large tracts of forestland in the northern part of the state; Alaska has the most federal- and state-

owned land combined of all fifty states, representing a wide variety of ecosystems and terrains; and a significant part of New Jersey's public land is in the Pine Barrens region in the southern part of the state. (By contrast, only 6 percent of Connecticut's total area owned by the state).

Like national public land, much state-owned land is not protected from development or intensive resource extraction. Yet deals can be made to ensure sustainable management. For instance, in a 2006 acquisition of 51,000 acres of forestlands in St. Lawrence County in upstate New York, the state paid the \$6.5 million for the development rights of the land. It worked in partnership with the timber company from which the development rights were purchased, and the national conservation organization Trust for Public Land, who conceived and brokered the deal. The timber company continues to manage the forest, but agreed to harvest the land sustainably, and cannot build anything on it (Editorial Staff, 2006).

The New York forestlands and New Jersey Pine Barrens lands are not all officially designated as "state parks," but they contribute to the character of the states. Connecticut, with two prominent bodies of water that define its landscape – the Connecticut River and the Long Island Sound – has many small state parks along the River and the Sound. Like national parks, they are iconic representations of natural beauty or historic character. Direct acquisition or purchase of development rights on these lands is a relatively quick method of preservation. Yet there are other ways to favor particular landscapes, such as tax law.

Taxation

States can set tax rates to favor particular land uses. Most offer tax breaks for farmers. In Connecticut, the special tax rate for farms is designated under Public Act 490 (PA 490), which states that "it is in the public interest to encourage the preservation of farm, forest, and open space land." This law allows farm, forest, or open space land to be assessed at its use value rather than its fair market or highest and best use value (as determined by the property's most recent "fair market value" revaluation) for purposes of local property taxation (Connecticut Department of Agriculture, 2008). Without the lower use value assessment, most landowners would have to sell the land because they would not be able to afford the property taxes on farm, forest, or open space land. Local tax assessors determine if a parcel of land qualifies for PA 490. The state law sets no minimum for farmland, but some towns do have certain acreage requirements for open space.

Though enacted at the state level, PA 490 is applicable at the municipal level. It is the responsibility of municipalities to implement the PA 490 program, and the extent to which it is privileged in town government generally reflects the land use priorities of the community.

Summation

State land-use management powers are often similar to federal powers. They include direct regulations such as state endangered species acts; regulation and permitting that affects the location of power plants, landfills, reservoirs, and mines; and programs such as Coastal Zone Management. Indirect regulatory powers include property-tax exemptions for farmland or commercial property, and economic

development programs. Like the federal government, state governments also manage publicly owned lands. Unique to states, growth management statutes can regulate land use, most notably in Oregon.

State-led actions that affect land use can suffer from the same bureaucratic problems as federal-level ones. The California Coastal Commission is lauded as a groundbreaking environmental watchdog, reviewing all development proposals near the coast. Like any project on this scale, however, the process of approving coastal actions is slow. Fifteen years after the Commission was created, it had approved only 51 of 103 coastal plans required to review (from Siegan, in Ben-Joseph & Szold, 2005, p. 209). Slowness due to state and national bureaucracy can sometimes be avoided by placing more land use policy in the hands of local government officials and locally based private organizations.

IV. Municipal Policy

Local governments are positioned to plan simultaneously for conservation and economic development. Municipalities may be geographically dispersed, but they usually have a more cohesive correlation of function to political control than higher levels of government. Compared to the federal government, local officials are less insulated from the political consequences of delay. However, local governments do not have the tax base or administrative wherewithal of the state and national levels.

Regulation

While federal regulation has some clout in determining whether or not a wetland can be dredged or a forest logged according to scientific ecological standards, local regulation reflects more subjective goals such as community aesthetics and history. Federal regulations such as NEPA or ESA do their job maintaining conservation standards across the country, but they do not address the particular needs of communities, nor do they recognize the relative ability of different populations to pay for conservation. Local-level regulation directly shapes a town landscape according to local resources and desires.

Zoning is the primary tool used to regulate land use at the municipal level. In short, zoning is a process "by which the residents of a local community examine what people propose to do with their land and decide whether or not they will permit it" (Garner and Callies). It specifies what land uses are permitted within certain geographic areas. More than that, zoning is the most comprehensive land use management tool available to municipal planners. Zoning – while it may seem like a straightforward planning guideline that simply allots certain uses to their designated geographic area – can have wide reaching effects on land use.

The practice of zoning is often condemned as a tool used by elitist towns and their planners trying to make living in certain areas possible for only the very wealthy. Zoning requirements that dictate large lot sizes can have this effect because anyone living in that zone must be able to afford an expensive quantity of land. Zoning can also be used to facilitate more forward-looking projects, for instance, "clustered" development – small houses and lots in a central location, surrounded by

open green space or agricultural land. The greatest benefit and drawback of municipal zoning regulations is their subservience to local politics; community members can greatly influence the type of zoning implemented in their town.

Zoning came about as a reaction to "nuisances," or unwanted land uses in certain areas. It was introduced in the United States as a reform of the nuisance law that was made necessary by the rapidly increasing complexity of modern urban life. By the nineteenth century, in most American cities, a variety of regulations on property were in place, including controls on the flammability of housing materials, provision of drainage facilities, erecting of fences, and the locating of slaughterhouses, of cemeteries, and of dams that could cause flooding (Bosselman et al., 1973).

New York City adopted the first major zoning ordinance in 1916, partly in response to the growing number of tenements in the city creating unhealthy conditions for residents. New York's Zoning Regulation, was the first land use ordinance in the U.S. that simultaneously regulated permitted land use, building height, and building placement for an entire city. The plan divided the city into zones for residential, commercial (in which residential also permitted), and unlimited (to which manufacturing was relegated) use. By 1926, 564 communities had adopted similar statutes. Other communities followed suit again after New York's 1961 revisions of its zoning (Garvin, 2002, p. 432).

The first significant legal challenge to the new zoning system came in 1926 in the case Village of Euclid v. Ambler Realty, at a time when the majority of American cities had adopted comprehensive zoning. Euclid, a suburb of Cleveland, Ohio,

introduced comprehensive zoning to restrict certain land uses. The town was afraid that Cleveland would grow into it and that industry would expand, changing the character of the village. Ambler Realty owned 68 acres of property in Euclid, and its property was divided into three zones, creating problems when Ambler wanted to develop the land for industry. Ambler Realty sued the village (unsuccessfully), arguing that the zoning ordinance had substantially reduced the value of the land by limiting its use, amounting to an unconstitutional taking of their property.

The firm not only claimed that zoning reduced its property value, it also appealed the measure on moral grounds, arguing that the town had imposed a legislatively sanctioned but transitory idea of beauty, which was not an appropriate exercise of the police power. Ambler called zoning a subterfuge to "classify the population and segregate them according to their income or situation in life... thereby furthering such class tendencies" (Garvin, 2002, p. 442). On the surface of the case was the issue of whether Ambler Realty had sustained a decrease in the value of its land to the extent of a taking. Beyond that, it highlighted the potential inequalities created by zoning.

The national Standard City Planning Enabling Act (SCPEA), was adopted in 1928. The language of the Act makes it clear that zoning is intended to prevent nuisances:

"Grant of power: For the purpose of promoting health, safety, morals, or the general welfare of the community, the legislative body of cities and incorporated villages is hereby empowered to regulate and restrict the height, number of stories, and size of buildings and other structures, the percentage of the lot that may be occupied, the size of yards, and other open spaces, the density of population, and the location and use of buildings and use of buildings, and land for trade, industry, residence, or other purposes" (from the Act). As is clear from this passage, the Act leaves room for very prescriptive land use regulations if the municipality chooses to institute them. Many municipalities, especially cities, have adopted particularly strict zoning regulations, while others, such as many rural towns, have more simple zoning regulations.

Small town zoning regulations have traditionally favored agricultural uses. During the 1940s and 1950s, when many communities adopted zoning regulations, farming and associated activities were generally permitted in all zoning districts. Even in the more urban municipalities, agriculture was generally an accepted land use with few, if any restrictions (Gibbons, 1993).

Most communities today have established residential, commercial, and industrial zones, but fewer have created agricultural zones. Unless a community has an agricultural zone, farming and farm-related activities such as farm stands for the sale of produce, even where permitted, are usually treated as secondary to the major land use in the district. Officials have widely differing opinions about agricultural commercial endeavors such as farm stands. Some think stands are true commercial uses and should be limited to commercial zones like any retail outlet. Others are concerned with farm stand traffic, off-street parking, noise, dust, lighting, signs, hours of operation, and general appearance (Gibbons, 1993). Many farmland preservationists advocate for agricultural zoning in order to avoid confusion of use and to prioritize the business of agriculture in certain areas (Chester, 2007).

Planning

A discussion of small town land management is not complete without a section on planning. Local land-use regulations are coordinated through master plans that direct the planning and zoning office. Planning attempts to assure that local values are respected and public goals are met as development proceeds over the long term. At the highest level, local planning is laid out in the Plan of Conservation and Development (POCD). The POCD can be helpful in preserving uses such as farmland if they are explicitly mentioned as community priorities. In Connecticut, for instance, every town has a POCD, but many do not include a section on agriculture.

Visioning sessions are an innovative planning technique that can bring a whole town together in discussing desires for future land uses. Sessions allow public review and comment on a POCD, allowing citizens to direct local government regulation of on land use. The Town of Lebanon, Connecticut recently completed a build-out analysis during a visioning session. A build-out analysis helps the community understand the impacts of development based on current land use regulations by showing how much development would occur in ten or twenty years if current population and building trends continued. The Lebanon build-out analysis projected that in twenty years, developed land would increase by 2,850 acres, with 631 homes and 5 new businesses. This could bring in \$2 million more in tax revenue for the town. Yet the demand for services for the increased population and additional school children would cost an additional \$4.2 million in expenditures, resulting in a shortfall of \$2.2 million (Chester, 2005). If the community decides, as a result of this

study, that they do not want their town to look the way it may in the build-out analysis, they can implement new zoning or other devices to change the current path.

Public open space and farmland preservation can be accomplished through reinterpretations of traditional planning mechanisms. Zoning ordinances increasingly encourage private property owners to set aside space for the general public. A 1961 Resolution by New York City accomplished this by introducing two techniques: the open space ratio and the plaza bonus. The city established zones in which every square foot of exterior public space – public plazas – entitled the developer to an additional two square feet of interior floor area. The Resolution was successful in creating more open space: between 1961 and 1973, 1.1 million square feet of open space was created in New York City, freeing pedestrian traffic, provided sitting areas, and opening up access to natural light. But the provision also produced "sterile, empty spaces not used for much of anything except walking across" (Garvin, 2002, p. 441). Although more open space was created, much of it went unused. Yet this example makes clear the potential power of zoning regulations to significantly change the community environment.

Expenditures

Communities in the United States tend to use public funds to protect open space. The amount of money allocated for open space protection by local and state governments exceeds the budget of the largest federal land protection program in the U.S., the Conservation Reserve Program (Nelson, Uwasu, & Polasky, 2006). Expenditures may come out of general operating funds or may be raised through an

open space referendum, an increasingly popular town-level action. According to the Trust for Public Land, which has tracked referendum measures for open space in American communities since 1988, 561 bonds for open space were voted on in the period 1990 to 1998, while 1,499 referenda were held from 2000 to 2008, a more than two-fold increase (Trust for Public Land, 2009b).

Economists Nelson, Uwasua, and Polaskya (2006) analyzed what types of municipalities hold open-space referenda and the level of support for them. The authors found that factors increasing the probability of a vote for an open space bond were large population, low population density, rapid growth of the surrounding area, and highly educated residents (Nelson et al., 2006).

Public Land

Expenditures for land preservation at the town level may result in the purchase of development rights or outright purchase. In the case of a town government land purchase, management of the land becomes the responsibility of the town. This can become a financial and administrative burden, however, so local public land is often maintained through public and private partnerships. For instance, Middletown, Connecticut has several large town-owned parcels that are not managed directly by the government, most notably, the Metacomet Ridge. The Ridge, including the wellloved local landmark Mount Higby, is visible throughout Middletown, and can be hiked via the 50-mile Mattabesett Trail. This large tract of natural land is cared for by a few private groups, including the conservation group Connecticut Forest and Park, which focuses on maintenance of the trail, and The Nature Conservancy, which

manages the summit and ledges of Mount Higby (Connecticut Forest and Park, 2009). Especially in towns with few resources to spare, partnering with private conservation groups is an appropriate and collaborative solution.

Taxation

Local governments are responsible for the provision of libraries and recreational facilities such as swimming pools, the installation and maintenance of sewage systems and traffic signals, and waste collection. All of these services require money, which primarily comes from tax revenue. PA 490, discussed in the last section, offers a tax break to landowners managing agricultural or natural lands. The Act is lauded by Connecticut farmland preservationists as one of the most significant measures adopted by the state in support of their cause. However, adoption of this provision may take some revenue away from towns with a high percentage of land in agricultural use, making it more difficult to supply services.

Summation

Local land use control is beneficial for communities with strong ideas about how the town landscape should look, and with sufficient funds to maintain that appearance. Municipalities have the power to decide where different types of development may take place, what it will look like, and how the land use on one parcel will interact with that of another parcel. American communities closely guard this autonomy in land-use regulation.

Zoning is one of the primary local land use controls. Because zoning deals with the separation of different land uses, one of the most difficult tasks planners face is countering opposition from "NIMBYISM," or the tendency of local people to say: "Not In My Backyard." In most rural communities, Randall Arendt points out in *Rural By Design*, "low-density single-use zoning necessitates amending the existing zoning and comprehensive plans, typically a highly charged political process" (Arendt, 1994, p. 41). People can have an extreme aversion to having – what they deem – unfavorable land uses in their backyard. It is the job of the planner to find consensus in the process of town design, sometimes by adding a variance to the zoning regulations. An administrative exception to land use regulations, a variance is applied when the municipality wants to avoid compensating a landowner for a potential taking. Variances are an easy fix for a city planner, but if they are used frequently, they weaken the usefulness of zoning regulations and make them increasingly cumbersome to decipher.

Critiques of zoning abound. In his book *Local Problems, Libertarian Solutions*, William Burt argues: "Under land use regulation, the system of protections for individual property rights built up under the common law is eroded, circumvented, ignored, and finally discarded" (Burt, 1978, p. 2). John McClaughry calls land use regulation the "New Feudalism;" existing so that entrenched political interests may profit at the expense of the general public (in Ben-Joseph & Szold, 2005). Many of those who see zoning as overly-intrusive cite Houston as the epitome of a successful city that has developed without zoning regulations. Houston, libertarians argue, is just as successful, if not more so, at responding to the goals and interests of the

community. Restrictive though zoning regulations may be, they are widely used, and Houston is the one great exception in American planning.

Local land use control gives little incentive for regional cooperation. Adjacent communities may find themselves in competition if their actions are not regulated regionally, eager to spur local growth while externalizing its negative effects on neighboring municipalities. Especially in Connecticut, where there is no county system, towns can push off environmental clean up or the provision of services onto those nearby.

V. Conclusion

The American landscape is shaped at the national level by land acquisition programs such as the Farmland Preservation Program, and by regulatory guidelines like the Endangered Species Act. Landscape is also affected by seemingly simple local standards for subdividing land and laying streets and utilities which, when adopted by hundreds of small locales, have an enormous impact on the way American communities feel. Public land use policies can make or break preservation efforts because they are so widespread and fundamental to the way planning and conservation occur in the United States.

Farmland preservation can bypass governmental intervention altogether. Private groups raise awareness about land preservation in their community and hold individual conservation easements. However, planner Myron Orfield argues that as a land preservation tool, conservation easements, though well intentioned, are "extremely costly and cannot on their own truly change the nature of U.S. development patterns" (Orfield, 2003, p. 123). Only coordinated public and private

efforts, both local and regional, can offer a long-term conservation strategy.

Connecticut provides an example of the challenges involved in overcoming strong localism and balancing growth with conservation. While federal and state government funding and regulation influence preservation and development in the state, Connecticut towns have a great deal of autonomy in land use decision-making, and there is little to no regional planning. The next two chapters will delve deeper into the history, economics, and policy of farmland preservation in Connecticut in order to gain a fuller understanding of the forces impacting the movement.

CHAPTER THREE Preserving Farmland in Connecticut: Continuing a Historic Land Use

I. Introduction

On March 18th, 2009, over one hundred people – and one cow – stood on the steps of the state Capitol to bring attention to Connecticut agricultural interests. Among the legislative proposals being protested was a bill that would eliminate the farm sales-tax exemption and farm fuel-tax exemption. The end to the tax exemptions is being proposed to help close a vast state budget gap, but farmers say it would put many of them out of business because their profit margins are so low. Another change that was protested by farmers is a proposal by Gov. M. Jodi Rell to take \$24 million over two years from a community investment fund that, among other things, provides funds for farmland preservation.

The concerns and opinions voiced by those standing on the Capitol steps reflect the general goals of agriculture supporters in the state: to make people aware that agriculture is still an economic industry in Connecticut, and that the continued presence of farms and farmland adds many intangible benefits to state residents' quality of life. Paul Miller, a dairy farmer from Woodstock, realizes that this is one of the worst years to be asking the state for economic assistance. But, he said, with wholesale milk prices at a 40-year low, many farmers are going to have to sell their Connecticut properties and move West, where the cost of running a dairy farm is cheaper, if they want to stay in business. That would mean more farms at risk of being developed. "We offer more than just food to Connecticut," Miller said (Moreau,

2009). Dairy farms also offer beautiful rolling pastures and a connection with a historical economy.

As Paul Miller and others will attest, Connecticut – New England's second smallest and southernmost state – has a unique agricultural history, but also a rich cultural and economic history. Connecticut is divided roughly in half by the Connecticut River, and the central Connecticut River Valley and coastal plain are relatively flat (the location of the larger cities and the best farmland), while other parts of the state are hilly and largely forested. With relatively mild weather, Connecticut has a decent growing season and moderate rainfall, appropriate for agriculture.

Heading north on Interstate 91, drivers travel quickly through the Connecticut River Valley, past shopping malls, industrial buildings, and subdivisions, perhaps glimpsing some agricultural land and forests. One can drive the miles between Branford in the south and Suffield in the north in about an hour and a half. But passing too quickly through Connecticut would be to miss an interesting and historical landscape. Leaving the interstate, one can stop to buy maple syrup at sugar houses, fruits and vegetables from roadside farm stands, or cider at an apple orchard. Though Connecticut is not nationally known for food production today, agricultural products are widely available in Connecticut, and the historical landscape of the state is characterized by hundreds of years of cultivation and pasturing on almost ninety percent of its land area.

Agriculture is still a significant part of Connecticut's economy, generating about \$2 billion annually with approximately 50,000 people working in the sector

(Working Lands Alliance, 2009). There are egg, dairy, vegetable, fruit and tobacco farms, many of which have been owned and worked by the same family for generations. Especially during the nineteenth century, making a living through agricultural production was the norm; at the end of that century, the majority of Connecticut's residents supported themselves through agriculture (Connecticut Public Television, 2008).

Connecticut is generally recognized as a wealthy New England state with a dense population (it is the fourth most densely populated state in the country and the third richest state by median income). Southwestern Connecticut is considered part of the immediate New York metropolitan area; many Connecticut residents commute to work in New York City. In 1999, the state had the nation's highest per capita income, 10 percent greater than in the next-highest states, Massachusetts and New Jersey, and 37 percent higher than the U.S. average (Orfield, 2003). Prosperity and population concentration have spurred build-out into previously undeveloped areas of Connecticut. Since 1985, the amount of land covered by roads and buildings grew by more than 30 percent in 10 of its municipalities, including several Hartford suburbs, and the amount of developed land state-wide grew by approximately 145 square miles (Univeristy of Connecticut: CLEAR, 2009).

The state's agricultural industry is strongly affected by these patterns. The area of Connecticut covered in agricultural fields has dropped from 80 percent to about 13 percent during the past one hundred years to make way mostly for housing and

industrial uses (Census of Agriculture, 2007).¹⁰ The loss of farmland is significant in historic, economic, and aesthetic contexts. Agriculture is an integral part of Connecticut's long history; the rich agricultural soils in the Connecticut River Valley makes the state better for farming compared to other New England states. Agriculture also adds to the tax base; owners of farmland and forests pay more in local taxes than it costs local government to service their properties (Connecticut Farm Bureau, 1998). Aesthetically, agriculture has long shaped the New England landscape and contributed to its rural character.

If Connecticut's natural lands and agricultural lands continue to disappear, the loss of these open space resources will dramatically change the landscape of the state in a way that many find unappealing. State and municipal governments and non-profit organizations in Connecticut have been working to establish strategies to reduce open space loss. Public officials rely on ballot referenda to raise funds for the purchase of open spaces, while land trusts use conservation easements, direct purchase of land, education, and advocacy strategies to slow the rate of farmland and open space loss. These efforts have broad implications for the future of the Connecticut landscape. Changing patterns of public participation in land preservation and new regulatory measures for land use planning suggest an increase in preservation measures. But this growth is not uncontested; many argue that the goals of preservationists are based on an unrealistic and idealized image of Connecticut as a historical pastoral landscape.

¹⁰ U.S. Census of Agriculture definition of agricultural land is more inclusive than the definition adopted by the University of Connecticut's project CLEAR, referenced in the study later in this chapter. Thus, the percent of the state in agriculture reported here is higher than that reported by CLEAR.

This chapter will evaluate trends in Connecticut landscape change, particularly focusing on the loss of agricultural land and corresponding preservation efforts. Connecticut is a particularly interesting state on which to focus this study. The state was primarily agrarian historically, but now cannot compete with the production of Midwestern states. While Connecticut's wealthy population generally supports public green space preservation, its high population density requires room for residential, industrial, and other uses, and many residents can afford to own large lots, spurring growth in previously undeveloped areas. Numerous conservation groups advocate for land preservation, but their efforts are hampered by some serious challenges, particularly the fractured control of land use by the state's 169 towns.

A brief history of Connecticut agriculture and land use patterns will lead into the current challenges facing those who wish to preserve the historic rural character and food-producing capacity of the state through land preservation. This is followed by a discussion of strategies, at the state and local levels, used to preserve farmland and open space. The last section will provide a more in-depth exploration of one particular measure available to towns for land preservation: the municipal bond. The chapter will argue that most farmland preservation actions in Connecticut towns are in response to immediately visible threats to regional and local rural, historic character. While the language of some state-level programs is focused on the preservation of farmland in the interest of producing food to feed the state and protecting agriculture as an industry, most farmland preservation organizations or efforts are supported by citizens who are concerned about a landscape that is changing more quickly than they desire. Thus, the measures discussed in this chapter

generally react to land change, rather than preventing it, and they have not yet had a significant impact on farmland and open space loss.

II. Background

History of Land Use and Agriculture in Connecticut

Connecticut agriculture has a long history. The glacier that covered New England for centuries melted about 18,000 years ago, depositing fertile soils, the most productive of which are in the Connecticut River Valley. Lake Hitchcock, a body of water that persisted after the glacier receded, stretched roughly from present-day Middletown to above Greenfield, Massachusetts. The Lake's tributaries provided the sedimentation which, when the lake vanished, left deep, nutrient-rich soils that are easy to plow, unlike other boulder-ridden New England soils. The fertile soil attracted European settlers to Connecticut.

Colonists from Massachusetts settled in the Hartford area in 1633, spreading out from there to the coast. The population grew from 1,500 in 1640 to 26,000 in 1700. These new settlers cleared forests and grasslands to make way for agricultural fields. Jedidiah Morse wrote in 1804:

"A traveler... even in the most unsettled parts of the state, will seldom pass more than half a mile or a mile without finding a house, and a farm under such improvements, as to afford the necessaries for the support of a family. The whole state resembles a well cultivated garden..." (The American Gazeteer 1804 in Bell, 1985, p. 9).

Morse's emphasis on the idyllic pastoral quality of the state is still reflected in current residents' image of Connecticut. Many preservationists believe those areas with the

look of a "well cultivated garden" should be valued more highly than less rural or historical parcels of land.

The number of farms in Connecticut declined in the late nineteenth century. Erosion due to over-use of the soil caused topsoil loss on many of the cultivated hills, and fields given too little time to lay fallow no longer contained important nutrients. An increasing amount of Connecticut land gave way to industry, a pattern that persisted into the twentieth century. With more industrialization came more people; the population grew significantly between 1860 and 1945: from 460,000 to 1,763,000 people (Bell, 1985, p. 103). Even with the population growth, Connecticut still had fifty percent farmland in 1945. The best soils stayed in agricultural production; the nutrient-poor, rocky-soiled farms were abandoned (Bell, 1985, p. 103).

Following World War I, a new phase in Connecticut development patterns began: suburbanization. Many blame "sprawl" for the spreading of formerly compact communities into surrounding open space and farmland. This argument points to various phenomena driving sprawl, such as the preference of individuals for larger, more rural residential lots, and the large-lot zoning that accommodated this preference. Others contend that the loss of agricultural and open land is the natural result of competing land uses, having nothing to do with land use policies. Whatever the reason, the trend is clear: as the population and wealth of Connecticut has increased, land reserved as open space or farmland has decreased.

Current Trends in Connecticut Land Uses

There is a correlation in Connecticut between development and the location of

important agricultural soils. The Connecticut River Valley region has the most "prime agricultural soils," a designation given to the most fertile soils by the U.S. Department of Agriculture, because it is flat, loamy,¹¹ and free of rocks.¹² The River Valley region be easily identified on the map of Connecticut's prime and important farmland soils, shown in Figure 3.1. The Valley runs down the middle of the state, approximately following the Connecticut River. The dense green and yellow streak on the map follows the Valley's contours. Interspersed with the green and yellow are grey splotches that represent soils that are no longer available for agriculture due to development.

A study of Figure 3.2 reveals that the Connecticut River Valley region is also home to many of the state's most highly developed municipalities. Eight of the thirteen municipalities in Connecticut that are 51 to 81 percent developed are in the Valley. The other municipalities located in this central region are 31 to 50 percent or 21 to 30 percent developed. A comparison of the map showing percent development in each Connecticut municipality with the map of prime farmland soils in the state shows an approximate geographic correlation between the two. Those communities

¹¹ Farmers tend to prefer loamy soil because it is well-drained and high in nutrients and organic matter, important for the production of crops.

¹² Prime farmland, defined by U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustainable high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they do not flood frequently or are protected from flooding (Soil Survey Division Staff, 1993).

Figure 3.1: Connecticut Prime and Important Farmland Soils (from USDA NRCS)



Figure 3.2: *Percent Development in Connecticut Towns* (from University of Connecticut Center for Land Use and Research)



Percent Developed 4% to 10% 11% to 20% 21% to 30% 31% to 50% 51% to 81%

The area of each municipality was divided by the area of the Developed class to determine the percent Developed. This map in intended to be used with the Percent Developed in 1985 map. in the Connecticut River Valley that have retained the most prime farmland soils are generally located in the northern part of the state. Agriculture in municipalities such as Suffield mostly consists of tobacco farming, a lucrative business, though a tobacco field is hardly representative of the iconic New England small farm.

The alignment of development with prime farmland soils is the result of many factors. Because the fertile soils of the Connecticut River Valley are located near the Connecticut River, they were in competition with early urban and industrial development; most successful early cities took advantage of the maritime trade coming up from Long Island Sound, and many industries were situated near the river to take advantage of water power. Flat agricultural land is also the easiest location for building. Already cleared and easy to build on, it was ideal for development. Interstate 91, which opened in 1958, runs through the Connecticut River Valley. The highway increased the ease of north-south transportation through the state, connecting Connecticut with urban centers in New York and Massachusetts and enabling more development in this corridor.

When the fabric of agricultural life fades due to the conversion of some lands to developed uses, the speed of farmland loss tends to increase. Non-agricultural land surrounding a farmland parcel tends to have a higher real estate value, and may surpass the productive value of the farmland. If given the option to sell or subdivide agricultural land parcels, many farmer owners may begin to do so if demand for land is strong and the real estate market is active. Development opportunities make it increasingly attractive for farmers in urbanizing areas to sell part or all of their land for residential or commercial development, especially as they near retirement age.

Farmers also like to be near other farmers. Primarily agricultural communities have key concentrations of agriculturalists with similar needs who can lobby to address their grievances and desires with the town. Also, because farmers sometimes cultivate several parcels, they need not travel as far between parcels or keep track of multiple sets of town regulations if they live in a town with lots of farmland. When many farmers live in a town together, there are likely to be fewer nuisance complaints due to agriculture. While many people enjoy the picturesque vistas they can provide, farms can produce bad smells from animals and fertilizer, they can produce loud sounds from tractors or irrigators, and they can make dust that blows against houses in the wind. People unaware of these aspects of agriculture can make it difficult for farmers to conduct their business. For all of these reasons, farmers have a harder time sustaining their production in an increasingly urbanized environment. Thus, as a few agricultural fields are converted to other uses, adjacent parcels are more likely to convert to developed uses.

Agricultural Land Preservation in Connecticut: Preserving Historic Rural Character

Farmland preservation advocates in Connecticut want to curb the speed of agricultural land conversion, though state, municipal, and private actors have different reasons for promoting conservation. State-level public funding for preservation is usually couched in terms of safeguarding both the economic pursuit of agriculture as an industry and the continuation of food production in Connecticut. There is little mention in the literature for the State of Connecticut Farmland

Preservation Program of preserving a landscape aesthetic. Yet all of the other preservation supporters – state and local nonprofits, citizen coalitions, and municipal governments – cite preservation of a historical pastoral landscape as a primary motivation for farmland preservation. Moreover, all of the images displayed on the state website show idyllic dairy farms on rolling hills, so aesthetics cannot be completely disregarded in their mission (Connecticut Department of Agriculture, 2007).

Connecticut's "rural character" is central to its history and also central to the farmland preservation movement. Most of the state's 169 towns and cities, in their statements of goals, particularly in their Plans of Conservation and Development (POCD), refer to the preservation of "rural character" as a particularly important goal.¹³ This "rural character" comes from a long history of settlement and intensive land use that is anything but natural.

While many preservation efforts in the United States are focused on wilderness conservation, there is a growing focus on the American rural landscape. People are interested in preserving a variety of land uses that represent the cultural and historical patchwork of a region. John Stilgoe, in his book *Common Landscape of America*, emphasizes that the term "landscape" generally refers to land that has been shaped by

¹³ According to the Connecticut General Statutes, a POCD is: "(A) a statement of policies, goals and standards for the physical and economic development of the municipality, (B) provides for a system of principal thoroughfares, parkways, bridges, streets, sidewalks, multipurpose trails and other public ways as appropriate, (C) is designed to promote, with the greatest efficiency and economy, the coordinated development of the municipality and the general welfare and prosperity of its people and identify areas where it is feasible and prudent (i) to have compact, transit accessible, pedestrian-oriented mixed use development patterns and land reuse, and (ii) to promote such development patterns land and reuse."

human activity; this is what makes it unique.

"Landscape means shaped land, land modified for permanent human occupation, for dwelling, agriculture, manufacturing, government, worship, and for pleasure. A landscape happens not by chance but by contrivance, by premeditation, by design: a forest or swamp or prairie no more constitutes a landscape than does a chain of mountains" (Stilgoe, 1982, p. 3).

Agriculture is a prime example of a land use that creates a landscape by design. And in much of New England, farming is the creator of not just a physical landscape, but a cultural landscape.

The American Society of Landscape Architects' committee on historic preservation defines cultural landscapes as "those that are altered through human interaction on the vernacular level, often related to a desired function and with a discernable pattern." A historic landscape is defined as "one which has had associated with it an event or series of events of historical note. A historic landscape may also be the visual perception of a particular period of civilization, a way of life or patterns of living" (Murtagh, 1997, p. 125). The preservation of historic, cultural landscapes in Connecticut is particularly associated with a concern about vernacular landscapes: barns and farmhouses, churchyards and pastures, and other "artifacts" of rural life (Bunce, 1994, p. 4).

Many town POCDs strive for a "rural character" that embodies this vernacular landscape ideal. The conservation goals of Lebanon, Connecticut provide one example of how rurality is prioritized in town language. The POCD seeks "the preservation and protection of valuable natural features, the conservation of important historic and cultural resources, and the preservation of the community' s rural

character and identity" (Town of Lebanon, 2000). Lebanon's POCD illustrates how town officials frame farmland preservation efforts in terms of protecting a beloved natural and historical legacy.

Disappearing farmland is one facet of the changing American historical and cultural landscape. As industrial, commercial, residential, and even natural land uses predominate, the historical resonance of wheat fields or vernacular architecture is lost. Residents of these changing areas see "McMansions" sprouting up in fields that were formerly cow pastures, and recognize more acutely how landscape contributes to their sense of place and the rural character of their town.

What is this "rural town" character? Connecticut is composed of many small municipalities, but there are many definitions of "rural." The U.S. Census Bureau defines an urbanized area as a densely settled territory of at least 50,000 people (U.S. Census Bureau, 2000). Bridgeport, Hartford, New Haven, Stamford, and Waterbury, all with populations well over 100,000, are the largest municipalities that meet that description. Any place that lies beyond the density of a city or suburban population and is relatively sparsely settled could then be considered rural. The key, in terms of the motivation for local Connecticut land preservation, is not the official definition, but rather the perception of rural character by town residents.

Connecticut has some municipalities that fall in between urban and rural definitions. Middletown is one of those places whose mix of urban and rural elements that make it difficult to define. With a population of approximately 45,000 people, it is approaching the size of a city, but still has enough open space and farmland that rural characteristics are apparent when traveling through town.
Middletown developed fairly early; much of its farmland was developed by 1970, so the municipality's altered rural character is not as obvious today as it is in other towns. That being said, there are still 56 farms in Middletown, and the successful passage of three bonds for open space or farmland preservation in 1989, 2002, and 2007 indicates interest in agrarian and natural landscape preservation ("Land Vote Database," 2009). While the bonds (discussed later in the chapter) do not necessarily halt overall farmland loss, they are a strong indication of local interest in preserving rural character.

The "rural character" preservation focus of many New England town-dwellers has not gone without criticism. Attempting to create collective meaning through landscape preservation has been criticized as a misguided parochial endeavor. Sociologist Diane Barthel discusses aesthetic places as a consumer commodity, speaking of preservation as part of a realm of "Staged Symbolic Communities" (SSCs). Places such as Historic Williamsburg, Virginia or the Amish town Amana, Pennsylvania represent secluded oases, fostering a certain aesthetic that does not represent the social reality of their surroundings (Barthel, 1996, p. 45). These places combine the defining characteristics of utopia: planned form, emphasis on community, lack of conflict, and separation from the rest of the world. This insular nature in turn has the potential to create a place that is elitist and divorced from reality.

Historic and rural preservation can have the effect of increasing segregation from unwanted societal and aesthetic elements. SSCs are clearly delimited spatially (Barthel, 1996, p. 75), usually accomplished by small signs delimiting borders or

billboards welcoming people to the town. These boundaries allow the cultivation of a certain historical and aesthetic character; residents are generally interested in keeping only the cleanest, most beautiful examples of "authentic" land or architecture. According to Barthel, "SSCs are clean beyond reason and out-of-keeping with historic reality. They also don't smell bad" (Barthel, 1996, p. 40). Agriculture often smells bad. Connecticut's 157 dairy farms do not always smell like freshly-cut hay; even though their pastures look pretty and picturesque, they often reek of manure. This can pose a dilemma for preservationists. Town residents must decide how much they want to prioritize "authentic" landscapes, even if generally preferred land uses, such as agriculture, sometimes smell bad or use industrial machinery. Preserving non-aesthetically pleasing agricultural land is a difficult task because residents might choose to use town funds to protect a natural wildlife preserve, rather than an unattractive farm.

Staged Symbolic Communities attract both tourism and families looking for safe communities for child-rearing or retirement. Their subjective portrayal of history is designed to be "fun for the whole family," meaning it is *safe* for the whole family. When sex and violence are depicted in SSCs, it is in characters such as frontier madams or events such as cowboy shoot-outs; they provide more color than conflict, new experiences that do not threaten family security (Barthel, 2006, p. 41). Many of the Connecticut towns whose residents advocate for farmland preservation are selfselecting; they are composed of residents interested in living among others who can afford a certain level of spending on education and other services. Residents are likely to share similar ideas of what their town should look like – what makes it the

safest and most pleasant environment. However, even if a community wishes to preserve a certain look through the preservation of farmland, they might not be able to accomplish that goal because of political, social, or economic barriers.

III. Impediments to Farmland and Natural Open Space Preservation in

Connecticut

While many Connecticutians may be interested in preserving farmland, either for its productive or aesthetic values, a number of factors impede efforts to preserve remaining farmland. Of the conditions making Connecticut an especially difficult place in which to promote land preservation, four come to the forefront: Connecticut's high median income level and population density, the lack of cooperation between Connecticut towns, the absence of regional systems of governance and planning, and competition between different kinds of land preservation funding.

Population Density and Growth

Connecticut is the most densely populated state in the U.S., with 722.9 people per square mile. The state has grown by approximately one million people since 1960 (U.S. Census Bureau, 2007). Connecticut's population growth has leveled out in the past twenty years, so it is no longer a significant driver of farmland loss. Even if the rate of population growth was still high, population density need not be a driver of farmland and open space loss, as more people can live in increased denser urbanized regions. Higher median incomes are a more likely cause of the recent

conversions of farmland to residential uses. Elevated incomes allow to own larger properties and to live further away from their place of work. Population and income growth, combined with falling commuting costs, lead to urban spatial expansion (Breuckner et al., 2001, p. 71).

Higher incomes may lead to sprawl of a more specific manner: the creation of mono-cultural, insular communities. This is another fiscal effect, which arises from the process of "voting with one's feet." This phrase refers to the tendency of highand middle-income consumers to form separate jurisdictions for the provision of public goods such as education, public safety, and parks. Such jurisdictions tend to arise on the urban fringe, which exacerbates the tendency toward urban expansion. As explained by economist and geographer Charles Tiebout in what is now known as the "Tiebout Model," the goal of well-off consumers in forming such separate jurisdictions is to gain control over the level of public spending, which can then be set high enough to provide the high-quality schools and public services that such consumers demand (Tiebout, 1954). An additional benefit comes from avoiding the need to subsidize public services for lower-income households, who contribute less to the local government tax revenue. To protect these benefits, the residents of such communities may utilize large-lot zoning and other regulations to discourage families below a certain income level from moving into town.

While the desire for green public space near home drives local land preservationists, it can lead to an ironic result: preserving this space in a town actually encourages a sprawling pattern of development. More open space within a municipality can push town boundaries outward to accommodate it. Thus, arguments

in favor of open space preservation as a controller of sprawl are not necessarily well founded. A more convincing argument for the preservation of public open space at the local level is to cultivate a certain town character. At a regional level, however, preserving open space from town to town is not always the most effective strategy in the long-term.

Lack of Inter-Town Cooperation

The independent town has long dominated New England politics and society. Alexis de Tocqueville said of New England towns in 1835 that they seem "to come directly from the hand of God" and provide "the common center of interests and affections of the [New England] citizens" (Bell, 1985, p. 76, citing Democracy in America). While de Tocqueville pointed out that town jurisdiction was limited under the state, he also noted that "not a man is to be found who would acknowledge that the state has any right to interfere in their town affairs." Connecticut land use policy is quite fractured, due to its focus on municipal power.

Efforts to preserve rural character through land preservation happen mostly at the local level in Connecticut. While the state and federal government supplies funding to preservation efforts, the people who advocate the loudest for maintaining a particular parcel of land as open space or farmland are those who see it everyday. The local preservationists are those for whom the creation of a "symbolic community" – in the tradition of Diane Barthel's Amana, Pennsylvania or Williamsburg, Virginia – is meaningful and essential to their sense of place and identity.

The motive to preserve the historic "rural character" of a community's surroundings is an important driver of conservation, but at the same time, small town rule can be detrimental in planning for preservation. A focus on local jurisdiction leads to a fractured system of management that is detrimental to efforts at land preservation. On the other hand, municipalities have independence in deciding how to shape the character of the space within their borders. Yet because many towns do not have sufficient funds or administrative capacity to make rapid change in their land use policies, autonomy comes at a cost. Lack of regional regulations and standards also means no pooled resources and no overarching plan for preservation of land and other resources.

A study done by Myron Orfield in 2003 of Connecticut metropolitan patterns categorized communities by population, income, and services provided (Orfield, 2003). The comparisons found that numerous municipalities in the state are struggling to provide services to growing populations because of low average income levels, and thus low tax bases. A growing number of small cities and older suburbs have tax bases are 25 to 35 percent below average; poverty in schools is growing even more quickly in these places than in the major cities (Orfield, 2003, p. 1). Many municipalities with average or slightly below-average tax bases are also struggling to provide schools and infrastructure. There is growing disparity between the highest- and lowest-income communities in Connecticut; the disparity between low and high tax base communities increased by more than 50 percent during the 1990s (Orfield, 2003, p. 3).

Connecticut city borders often sharply define their ability to spend on services.

If the communities categorized in the Myron Orfield study were part of larger regional government entities, sharing of resources might allow more progressive action in the provision of school lunches and libraries, as well as amenities such as public green space.

Lack of Regional Planning

Recent news articles cite the lack of regional planning capacity in Connecticut. A February 2009 article from Guilford and Madison's Shoreline Times explored the intense parochialism of Connecticut towns (Vahl, 2009). The town of Essex has two libraries less than three miles apart, due to a merging of three villages: Essex, Centerbrook, and Ivoryton. The libraries are both privately run, but each receives up to 70 percent of its operating budget from the towns. The article argues that such parochialism is a hallmark of Connecticut, whose 169 towns and cities are all fiercely independent, each often running individual police forces, fire departments, and school systems.

A December 2008 New York Times article addresses a new awareness in Connecticut of the benefits of regional cooperation, spurred by the economic downturn. In November 2008, Governor Rell of Connecticut announced a state budget deficit of \$6 billion over the next two years. In response, Robert DeCrescenzo, a regionalism advocate profiled in the article, decided to push for more sharing of resources. DeCrescenzo cited precedents of cooperation among Connecticut towns: in 1985, 33 towns in the capital area closed their incinerators and joined the effort to make a trash-to-energy plant possible (37 more have joined since),

and in 1995 several communities near Hartford pooled resources to install computers in police cars (Bloom, 2008). Now is the time, according to DeCrescenzo, to expand upon these historic examples of resource sharing and cooperation at the regional level. Media coverage of this advocate's efforts illustrates the increased focus on regionalism issues.

Although Connecticut was the first state to create a public planning body in 1907 (State of Connecticut, 2009a), it generally lacks systems of regional cooperation. The county system was abolished in the 1960's. Counties are still used as geographical dividers, especially for data collection such as the U.S. Census and for the court system, but county governments no longer exist. Towns are responsible for all local government activities, including fire and rescue, snow removal and schools. In some cases, neighboring towns will share certain activities, such as schools, health facilities, or a police force, but not as a rule.

What Connecticut does have are Regional Planning Agencies, which are important as forums for inter-municipal dialogue, but the Agencies have no clout politically except as conduits for grants. The Capitol Region Council of Governments (CRCOG, pronounced "crog"), a group of 28 Hartford-area municipalities, is perhaps the most active of the Regional Planning Agencies. CRCOG developed a set of model regulations for towns planning for agriculture. Rebecca Augur is a former planner at CRCOG, and she discussed the preservation actions taken by the Agency in an interview in August 2008. CRCOG has recently tried to leverage its position as a regional organizing force in the interest of preserving farmland and open space (Augur, 2008).

"Regulating the Farm," CRCOG's guidance document, discusses land preservation from a farm-friendly perspective, suggesting measures such as changes to the Plan of Conservation and Development (POCD), and zoning regulation changes related to signage or farm stands. Some of the 11 participating municipalities were receptive to CRCOG's recommendations regarding farmland viability plans. While they were not required to adopt the recommendations, some towns did: East Windsor and Tolland adopted recommendations related to signage, while Ellington adjusted other aspects of its zoning regulations (*Regulating the Farm: Improving Agriculture's Viability in the Capitol Region*, 2007).

The recent economic downturn has also led some state legislators to encourage a regional approach to services, land use and preservation. A bill introduced in the Connecticut legislature February 2, 2009 would help towns work together and ease the property tax burden borne due to each municipality operating independently others. The bill aims to return a portion of the state's \$3.5 billion annual sales tax to towns on a regional basis as an incentive to cut costs by combining services. Representative Sharkey said of jurisdictional fragmentation: "Duplicating services and competing against each other for grand list growth is inefficient and it leads to really bad decisions about how to grow your town" (Vahl, 2009). Interest in this bill may be a step toward increased regional cooperation, even for goals such as landscape preservation.

IV. Responses to Farmland and Natural Open Space Loss at the State Level

Given current and historical data demonstrating land use change and general

demographic and settlement patterns, what organizations and initiatives in Connecticut address these trends? County and municipal governments, and concerned nonprofits in the region have been working to establish strategies to combat farmland loss. State and local leaders have relied on land use policies and ballot referenda to raise funds for the purchase of open space assets, while land trusts have been using conservation easements, direct purchase of land, education, and advocacy strategies to prevent farmland loss. Tools available to government entities and land trusts to preserve open spaces may not be able to keep pace with the current rate of conversion, but those that are being utilized are gaining more attention and momentum.

State Expenditures

State-legislated farmland preservation began in Connecticut in the 1970s, when an increased awareness of food needs and a visibly changing landscape prompted a surge in state action addressing farmland loss. In 1974, a Governor's Task force determined that 325,000 acres of farmland was needed in order for the state to produce enough food so that one-third of the food consumed in Connecticut would be produced locally. Today, the goal is to preserve 130,000 acres, but with the requirement that an average of 65 percent of farmland in the PDR program is prime agricultural soil, so that conservation is targeted at the most productive land. In order to gauge support, the government commissioned a study of farmland owners in 1977. This study found that approximately one-half of the farmers surveyed were willing to sell their development rights to the government or a private land trust (Martin, 2008).

Following these initial exploratory actions, the first public act to preserve Connecticut farmland, Public Act 78-232, was passed in 1978. The Act designated funds and created an infrastructure for state-level purchase of development rights in the Connecticut Farmland Preservation Program.

The major state-level programs for farmland preservation use public money to purchase development rights on farms. Connecticut's PDR program, the Farmland Preservation Program, seeks to preserve 130,000 acres of farmland, 85,000 of those in cropland (a subset of agricultural land, different from pasture or forested land, which are also considered agricultural land by some definitions). As of December 8, 2008, the state has protected 34,500 acres on 254 farms statewide. Farmers interested in the program apply to the Connecticut Department of Agriculture, which ranks the properties according to criteria such as geography and soil quality (Connecticut Department of Agriculture, 2009).

Money for the Connecticut programs comes from two primary sources: state bond funds and the Community Investment Act, which provides funding through a \$30 fee on documents recorded in town land records. Public Act 08-174, passed in 2008, designates more money to preservation and makes the PDR program more easily applicable. The legislation establishes a separate General Fund account for acquiring, restoring, and maintaining open space, urban parks, farmland, and historic resources. The process of getting money for the Farmland Preservation Program was slow before Public Act 08-174; funding levels changed yearly, or were not granted at all. Now there is lump sum bonding, meaning that twice annually the State Bonding Commission gives \$5 million to the preservation program, which makes land

acquisitions easier. In 2008 alone, 20 farms on approximately 2,000 acres were placed into conservation easement (Connecticut Department of Agriculture, 2007, 2009).

The 2008 Act gives a few more incentives to preserve farmland. It exempts nonprofit organizations from paying property taxes on open space land it holds and preserves for that purpose. The Act also allows the agriculture commissioner to acquire development rights to farmland with less than 65 percent prime agricultural soil. One aspect of the 2008 legislation was contested by preservation groups such as American Farmland Trust: the Act capped the amount the agriculture commissioner can spend to buy development rights under the existing program at \$20,000 per acre. AFT saw this as too big a limitation on agricultural preservation spending power.

The goal of the state Farmland Preservation Program is primarily to preserve farmland as the base for a food-producing industry, and as a natural resource that Connecticut residents feel it is the government's responsibility to protect. These goals are made clear by its mission statement: "The main objective of the farmland preservation program is to secure a food and fiber producing land resource base, consisting primarily of prime and important farmland soils, for the future of agriculture in Connecticut" (Connecticut Department of Agriculture, 2009). This statement makes no mention of the aesthetic value of farmland, which shows the divide between state and local goals.

Farmland is usually put into an aesthetic context in town documents, rather than referring to its economic or food-producing value. For instance, in the town of East Haddam, the stated aim of the most recent POCD was to "review regulations to better

preserve rural character" (Town of East Haddam, 2008). Another town, Guilford, states broad goals for land protection, but its main focus is to maintain a specific character: "The general thrust of this Policy is to protect Guilford's natural, archeological, cultural, historic, scenic, marine, and other important resources, habitats, and features in order to preserve the Town's unique character" (Town of Guilford, 2002). People are most concerned about preserving aesthetically pleasing farmland when they can see it on a daily basis. At the broader state level, however, state residents may be more swayed by overall production numbers since the visual benefits of statewide land preservation are not as easily observed.

The Community Investment Act of 2005 allows towns to apply for state grant money to preserve farmland in accordance with their individual aesthetic, economic, or cultural goals. It provides a new source of \$3-4 million annually and additional funds from a document recording fee. As of 2005, there is a \$30 dollar additional fee for the recording of land records. The town where the document is filed retains \$4, and the remaining \$26 goes to the State Treasurer for deposit in the "land protection, affordable housing and historic preservation account" (Connecticut Public Act 05-228). Community Investment Act revenues are reliable; they are distributed each quarter, creating predictability for time-sensitive projects. In three years, more than \$33 million in grants have been awarded in 130 municipalities. The Agriculture Viability Grant, part of this Act, fosters agriculture in the state and increases awareness among Connecticut municipalities innovative options for sustaining agriculture. Projects funded include the creation of new or expanded farmers markets, writing strategic plans for agriculture and food, and community food

education programs.

As of March 2009, the Community Investment Act of 2005 is in danger. The farmland preservation advocates lobbied to rescue this Act on March 18, 2009. Though the account has shrunk with the real estate market, to a projected \$14 million in 2009, it still provides the only source of funding for planning grants to restore mills and historic properties, technical assistance to towns to develop affordable housing, agriculture business promotion, and municipal planning grants for land preservation (Martin, 2009).

State of Connecticut funds are also designated to open space acquisitions for public benefit. While farmland and natural open space advocates are sometimes in competition for scarce resources, support for both of these goals is essential for raising overall awareness of land preservation. Often these similar goals can work together. Open space, including farmland and green public space, is more likely to stay undeveloped if it is not fractured. An isolated farm will have more difficulty continuing to function when surrounded by residential neighborhoods rather than open space. Thus, a discussion of open space preservation efforts in Connecticut can provide a parallel and integral story to that of farmland preservation.

The Department of Environmental Protection (DEP) oversees the Open Space and Watershed Land Acquisition Grant Program which provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, including farmland. DEP can also buy open space land outright under the Recreation and Natural Heritage Trust Program. So far, Connecticut has achieved 72 percent of its 672,000-acre open-space goal, set by the legislature in 1997. In 2008,

twenty-nine Connecticut cities and towns were awarded grants by the state Department of Environmental Protection totaling \$10.2 million towards the purchase of 2,440 acres as open space (Connecticut Department of Environmental Protection, 2009). Grant allocations range from \$490,000 for the Nature Conservancy to buy 370 acres of forested land in Salem to \$27,440 for the Goshen Land Trust for purchase of 14 undeveloped acres with wetlands and a stream to serve as an outdoor classroom for pupils of the Goshen Center School next door (Seay, 2008).

Private Expenditures and Organizing

While state and federal funding provides significant monies for Connecticut preservation, state funding in particular can be unpredictable due to changing public interest and variable results of state-level bonding. This is where private organizations – small citizen preservation campaigns, large and small land trusts, and other advocacy organizations – enter into the preservation movement. Acting at the state level, several nationally-based and state-based non-governmental organizations work toward farmland and open space preservation, including American Farmland Trust, Connecticut Farmland Trust, The Farm Bureau, and Working Lands Alliance. Each of these groups has unique assets and skills that they bring to state land conservation. They offer a number of planning tools for private landowners and public officials to help prioritize open space resources and plan for future growth. All of them work closely in various capacities with county and municipal governments to affect changes in land use policy that slow unwanted urban expansion and conserve open space resources.

American Farmland Trust (AFT) is a national-level organization with a field

office in Connecticut. The Trust focuses primarily on lobbying national, state, and local governments to pass laws and ordinances to enable the preservation of farmland. AFT was founded in 1980 by farmers and ranchers, partly in response to the 1979 *National Agricultural Lands Study*, commissioned by the USDA and the President's Council on Environmental Quality (American Farmland Trust, 2009). This study confirmed that the U.S. population was increasingly moving into rural areas, and that farmland loss was a reality across the U.S. (shortly after the publication of this report, in 1981, the federal Farmland Protection Policy Act was passed).

Today, AFT directs a lot of attention to education, focusing on town officials. The organization's Connecticut Chapter just published *Planning for Agriculture: A Guide for Connecticut Municipalities*, written in collaboration with several state preservation groups. In December of 2008, the Guide was presented in ten different city halls across Connecticut to try to get the information out about the types of actions AFT recommends a town take if it wants to prioritize the preservation of agriculture. AFT is the largest private land preservation organization in Connecticut specifically focused on agricultural land preservation, and its sway at the national level helps it influence policies in Connecticut.

Connecticut Farmland Trust (CFT), established in 2002, holds agricultural conservation easements on 1,195 acres of farmland on 15 Connecticut farms. The Trust is the only private Connecticut conservation organization "dedicated solely to permanently protecting Connecticut's farmland" (Connecticut Farmland Trust, 2009). CFT is an organization specific to Connecticut, so while it does not have AFT's national reach, it has goals that are tailored specifically to this region. CFT hosts the

Celebration of Connecticut Farms, a well-publicized fundraiser for farmland preservation. Every summer and fall, farms, restaurants, and vineyards come together to throw a series of lavish dinner parties in white tents in the middle of a Connecticut farm.

The Connecticut Farm Bureau (CFB) is a private nonprofit organization formed in 1919 with the goal to make farming more profitable and viable (Connecticut Farm Bureau, 2009). The American Farm Bureau was founded at the same time, and shortly after, the Connecticut counties of Fairfield and Litchfield started their own Bureaus. Connections between local, state, and national interests are important for Farm Bureau efforts. CFB does most of its work through advocacy at the state level, as well as in partnership with other organizations.

AFT, CFT, and CFB have similar goals and methods of accomplishing them: they seek to preserve land through acquisition, education, and policy advocacy. They are key members of the Working Lands Alliance (WLA), which has been the most consistent force behind farmland preservation in Connecticut. WLA is primarily a lobbying group, and represents an attempt by these farmland preservation-focused organizations to join forces and avoid a frequent problem in the nonprofit world: redundancy and lack of cooperation (Martin, 2008).

These organizations, judging from interviews and review of websites and literature, have the knowledge, expertise, and membership to lead the state in cooperative efforts in farmland preservation and land use planning. Nongovernmental organizations in the Working Lands Alliance might be best suited for coordinating and leading efforts to improve land use and planning policy, given the

fragmented nature of regional governance and unpredictable state and federal funding for preservation. Adrian Phillips, former Chair of the International Union for the Conservation of Nature, makes a good point in his article, *Turning Ideas on Their Head – The New Paradigm for Protected Areas* when he states that many governments are too stressed financially and overwhelmed with the protected lands they already possess to offer additional support for community and regional land protection initiatives (Phillips, 2003). Land trusts generally fill the voids created by government inefficiencies and therefore might be the best advocates for initiatives and programs that work to correct the imbalances inherent in current land use planning policy.

By sharing information, technical resources, and preservation strategies and techniques these land trusts have the potential to become regional leaders in advocating for cooperative and coordinated efforts in open space conservation and land use planning. The creation of the Working Lands Alliance appears to represent the first attempt to consolidate resources. However, individual organizations working under this umbrella are still competing among themselves for specific project funding (Martin, 2008).

Planning Guidance

While parcels of land can be preserved directly through PDR or direct acquisition, preservation is also affected by planning and regulation. The state has several important planning policies pertaining to land preservation; most notably, the Plan of Conservation and Development, and the official definition of agriculture.

State statutes require that every town in Connecticut have a POCD that is updated at least every ten years (State of Connecticut, 2009b). Agriculture is defined broadly in Connecticut, even including activities such as forestry or lobstering as agriculture. Preservation groups generally approve of this definition because they want the official definition of agriculture to be as expansive as possible, allowing many types of activities to qualify for public agricultural assistance.

Local comprehensive plans increasingly incorporate a conservation section, in accordance with state requirements. Additionally, town development is dictated somewhat by the state POCD because towns wishing to develop into "conservation" areas set out in this document receive no state funding assistance for sewage systems. This provision is one direct way the State of Connecticut can impede development at the town level.

V. Responses to Farmland and Natural Open Space Loss at the Town Level

The town of Lebanon was awarded the 2008 Green Valley Institute Green Neighbor Award "for valuable steps taken to protect Lebanon's rural character and agricultural resources in many ways – by establishing a planning department, hosting workshops for residents, budgeting for open space protection, and working with the Conservation and Planning and Zoning Commissions to achieve the town's goals" (Town of Lebanon, 2000).¹⁴ Like most towns in Connecticut, Lebanon values its

¹⁴ The Green Valley Institute is a private organization whose goal is to maintain and improve Connecticut's the environmental quality. The goal of the Green Valley Institute is to broaden the base of information from which local land use and natural resource use decisions are made, as well as increasing local ability to protect and

rural landscape. Lebanon has been hailed as a model in farmland preservation efforts, yet towns need not enact all of the measures used by Lebanon to promote agricultural land preservation; indeed, very few do. Many of the private organizations discussed in the last section have been advocating small changes in town policies related to or affecting agriculture.

As with businesses generally, a supportive municipal environment is important for the success of local farms. Programs and regulations that address issues specific to agriculture and provide the flexibility needed to accommodate growth and change in farm businesses can help encourage new generations of farmers. Connecticut is increasingly embracing the philosophy that more planning creates an environment favored by all in the town. "Towns are starting to plan more," J. Dippel, the director of Connecticut's Farmland Preservation Program, wrote in an email. "It's not about preserving everything at any cost. It's about planning for their services and where they have their support systems. There's more and more thought about it on a local level" (Dippel, 2008).

Because Connecticut towns have so much sway over land use decisions, municipal-level planning is one of the most integral processes in farmland preservation; and town planning is not complete without the POCD. The state of Connecticut requires every town to develop a plan, addressing needs from main street development to wetlands conservation. The process of creating the POCD can be a uniquely democratic one if the town strives to involve as many parties as possible in the process. This can be accomplished through "visioning sessions," and other citizen

manage natural resources, notably water resources (New England Regional Water Program, 2009).

forums, as well as preference surveys. A POCD that shows a town prioritizes farmland will also include a section specifically for agriculture and give a broad definition of agriculture in the town. It may also create an Agricultural Commission, which like a Conservation Commission or Wetlands Commission meets monthly to discuss issues important to agriculture and to advise the town government.

POCDs are implemented through the efforts of conservation commissions and other town groups, and through regulations put in place by town officials. Zoning, subdivision and inland wetlands regulations are some of the primary regulatory techniques towns use to implement their POCDs. These regulations can impact farmland preservation in a variety of ways. Zoning regulations designate where people live, do business, and enjoy recreational activities. The density and geographic dispersion of these activities impacts where farms can easily continue to exist given their special needs (i.e. roads to drive tractors and set up farm stands for the sale of produce). Regulations can help reduce potential conflicts between farms and non-farming neighbors by creating buffers between the two. They can also permit certain uses that help in marketing and money-making, such as allowing structures, signage and retail sales. Communities can establish zoning districts or overlays that protect open or farmland spaces and specific natural features. Zoning districts have been fashioned to regulate and restrict development within forests and woodlands, floodplains, agricultural areas, and other natural lands.

Expenditures

Land acquisition through public spending is often enabled by a municipal bond,

and may be augmented by contributions from land trusts. More than two thousand land trusts have been formed throughout the nation to hold donated or purchased land and easements for conservation purposes. Connecticut has 128 land trusts, according to the Trust for Public Land, the third highest number in the nation.

The recent Hartford Courant Article "Towns, Local Trusts Buying Development Rights" highlighted the recent actions by towns, small land trusts, and partnerships between the two in Connecticut. "What's new about this is that towns and local land trusts are using agricultural easements for the first time," said Henry Talmage, executive director of the Connecticut Farmland Trust, a private statewide land trust (Griffin, 2008). Municipal and land trust cooperation makes the task of preserving land and then maintaining it more manageable. The partner land trust often takes on the responsibility of taking care of the land if it is purchased in partnership with a town government.

One of the best-known organizations promoting land acquisition by trusts is The Nature Conservancy (TNC), an international nonprofit group that works in twenty-seven countries and has protected 15 million acres in the United States alone, many of them preserved in cooperation with federal, state, and local government agencies. TNC has mostly protected wildlife habitat or waterways in Connecticut, but it has also protected a few farms. One farm preserved by TNC is in New Milford, Connecticut, where the organization partnered with a local land trust to facilitate the preservation of the parcel, putting it into a conservation easement. Twenty acres of that land are now leased to an organic farmer. TNC is open to cooperating with different preservation groups, but its main focus is natural land preservation

(Whelchel, 2008). Natural land preservation goals worked hand-in-hand with farmland preservation goals in this example, but such a coincidence is rare relative to the number of non-farmland parcels protected by the organization.

Many land trusts use conservation easements as their primary method of land preservation. A Lincoln Institute of Land Policy report describes the boom in this use of conservation easements as "the perception that conservation easements are a winwin strategy in land protection, by which willing landowners work with private land trusts or government agencies to provide lasting protection of the landscape" (Pidot, 2005). However, the report observes that the terms of conservation easements are "infinitely variable," that legal standards and public oversight are lacking, and that easement cost-benefit values are uncertain at best (Porter, 2008, p. 135).

Yet a conservation easement is a better option for permanent preservation than is direct acquisition. Directly purchased land is not explicitly permanent – the land use can be changed at any time by the owner – whether it be owned by the town or privately. The town of Tolland is an example of a case where a municipality decided that conservation easements were more effective for meeting their goals than simply purchasing the land outright. Before 2006, although Tolland had been actively acquiring open space — passing two bond referendums of \$2 million each for an Open Space Fund — these funds had been used to acquire land in fee, not the purchase of conservation easements. In 2006, the town partnered with the federal Farmland Protection Program to permanently protect a 155-acre farm using an easement (American Farmland Trust, 2008).

Innovative Planning and Zoning for Development

Randall Arendt, noted rural landscape designer and author of the book *Rural by Design: Maintaining Small Town Character*, suggests hundreds of ways towns can preserve "rural character" and maintain farmland and public open space through planning and zoning. Some of them have already been mentioned in the previous chapter. A few innovative techniques that have been implemented in Connecticut include cluster development, conservation subdivision, and agricultural zoning.

Cluster Development

Cluster development is one way, often promoted by planners and developers alike, to conserve natural resources as well as reduce infrastructure costs in new developments. Clustered development allows developers to place smaller-thanstandard lots on one part of a site to save the remainder of the site for permanent open space. The conserved area then may be used for common recreation space or for protecting environmentally sensitive lands or agricultural uses. Clustered development can be permitted through zoning provisions, subdivision regulations, or special ordinances. Generally, standards and procedures for designing clustered development are written to allow the overall amount of development on the entire tract to be concentrated in one area (Porter, 2008, p. 135).

Clustering could have saved a large tract of farmland in Lebanon, CT, according to Joan Nichols at the Connecticut Farm Bureau ("Connecticut," 2009; Nichols, 2009). A recent sale of 225 acres of prime farmland resulted in a subdivision of sixty houses on 2-acre lots. If the houses had been on 1-acre lots, 60 acres could

have been put in conservation easement. "It was a beautiful field," Joan said in an interview, "120 acres of prime farmland. The farmer did what he did; but it could have been different." Cases such as this occur all the time, and the challenge for municipalities and preservation advocates is to facilitate the conversation between the potential seller, the buyer, and the town to come to a solution that works best for all, rather than just for some.

Clustering has acquired a negative reputation in some communities that have poorly designed groupings of homes that devalue neighborhoods. Some people also object to small yards as being "un-American"; clustering in many communities is opposed by residents fearful of any form of development other than single-family, detached houses on large lots. In Middletown, for instance, cluster development has not taken off because many residents are suspicious of any type of development that diverges from the familiar 2-acre lot. These concerns have been expressed in public forums such as Planning and Zoning Meetings (Warner, 2008).

The Connecticut General Assembly approved legislation in 2001 requiring all municipalities to consider cluster development in their plans of conservation and development. Previously this requirement applied only to towns where over 20 percent of the land was identified as undeveloped (Hocker, 2000). The Town of Kent was an early implementer of cluster development: in 1986, 30 solar-heated units were built on a 17-acre tract near Kent Falls State Park in a cluster (Hamilton, 1984). "We feel this type of housing is going to do less to destroy the rural nature of Kent than the traditional checkerboard type, where there is a house every two or five acres," said Dale O. Mitchell, the builder. There was much dissent when the development was put

in, however, and speculations that cluster development would not take off: "People don't want to be clustered up when they move to a town like that," he remarked. "If they wanted to be clustered up, they'd move to Danbury. They go up to Kent when they want a little more room." This comment is astute in that cluster development has rarely been implemented in Connecticut since then.

Conservation Subdivisions

Subdivisions are another frequently discussed town planning and design tool that can make the difference between losing hundreds of acres of farm or open land or preserving half or more of that land. Developers can garner positive publicity by highlighting the areas that they have conserved or the developments they built that embrace principles of sustainable development. The term "conservation subdivision," popularized by Randall Arendt (author of the book Rural By Design), refers to planned residential communities that are centered around public green space, incorporating streams and wetlands, working farms, parks, and recreational facilities.

The town of Windsor, Connecticut is one example of conservation subdivision implementation. According to the zoning regulations, the intent of the town's agricultural zone is to "provide for the retention of suitable areas for agricultural uses" (American Farmland Trust, 2008) alongside houses. The zone limits the size of subdivisions and encourages farmers to grow their business alongside residential areas, allowing permanent farm stands for the sale of produce as well as the sale of nursery products.

Agricultural Zones

Agricultural zoning is a special application of this regulatory tool and is used by communities wishing to encourage and protect agricultural production in a designated area. This type of regulation explicitly states the prioritized land use in a certain area. Striving to prevent farmland from being converted to non-farm uses, agricultural zoning can prevent the fragmentation of farms and prevent land-use conflicts, since any person buying a house next to an agricultural zone should have the expectation of experiencing common agriculture nuisances, such as dust or smells ("Fact Sheet: Agricultural Zoning," 2009).

There are no zones in Connecticut that are exclusively agricultural. However, some towns that designate areas in which the primary land use is agriculture. Lebanon, Suffield, and Windsor have "Agricultural Zones;" while Newtown has a "Conservation and Agriculture Zone", as does Suffield (Bowell, 2009).

Taxation

Taxes have a significant effect on the ability of open space or farmland owners to retain their land. Programs that reduce the amount of taxes that an owner of such land must pay recognize the public value of open land. Public Act 490 is Connecticut's milestone use-value legislation in the farmland preservation movement. In the late 1950s and early 1960s many towns in Connecticut saw significant new development and, with that development, higher assessments and property taxes. This in turn led to additional pressure on landowners to sell farm and forest land for other uses. As a consequence, in 1963, the General Assembly passed Public Act 490 (PA 490), one of the first programs of its kind in the country. Public Act 490 provides for the assessment of farm, forest and open space land on the basis of its current use rather than its market value.

There have been legal challenges to PA 490, generally with regard to its application to natural open lands. Some towns try to limit the use of PA 490 because it reduces tax revenue, but the courts have generally ruled in favor of the landowners. The recent court case *Cecarelli v. Board of Adjustment Appeals of Town of North Branford* (CT Appellate Court, 2005) upheld the broad application of PA 490. The town tried to reduce the number of parcels qualifying for a PA 490 tax reduction by raising the minimum acreage requirement for a conservation parcel. In the 2005 case, the court decided that restricting PA 490 use by imposing a large minimum acreage requirement is not allowed.

Many municipalities get the majority of their farmland preservation funding directly from citizens, through municipal bonds. Referenda for bonds have become increasingly popular in recent years, and have a significant effect on the ability of rural towns to permanently preserve land.

VI. Municipal Bond Measures: A Study

Federal and state programs to fund land preservation purchases can be unpredictable, in that their funding and goals may fluctuate frequently, leaving municipalities without a reliable outside source for open space or farmland preservation funding. Voter-approved ballot measures, increasing in number since the mid-1980s, have expanded state and local investments in open and farmland

spaces. The Trust for Public Land has tracked these ballot measures in U.S. communities since 1988. Referenda that finance preservation have passed in urban and rural communities in nearly all fifty states, raising money for building playgrounds, preserving farmland, protecting watersheds, and maintaining trails and greenways. In 2008 there were 127 ballot measures for land preservation voted on in the U.S., 90 of which were passed. In total \$11,102,328,340 was raised for land conservation in 2008 (Trust for Public Land, 2009b).

A number of studies have used econometric methods to analyze open space referenda at the municipal level. Many focus on particular communities in order to determine what factors influence the implementation of preservation measures (see Howell-Moroney, 2004; Kotchen, 2006; Nelson et al., 2006; Romero & Liserio, 2002). Others, such as Nelson, Uwasua and Polaskya (2006), look at general preservation trends across the U.S. These papers seek to determine the types of communities most likely to vote on, and pass, open space referenda. The findings suggest that communities that are larger, wealthier, more racially homogeneous, and have experienced significant population growth or significant losses in open space are more likely to pass referenda. Nelson, Uwasua and Polaskya find that increases in median household income up to \$100,000 raise the likelihood of a vote, but further increases in income beyond \$100,000 decrease the likelihood, and for municipalities holding an open space referendum, factors that increase support for passage of the referendum include rapid growth, low unemployment rates, and highly educated residents. These studies do not test the acreage of land that actually remains farmed or undeveloped.

Connecticut towns have made use of bond measures. Since 1988, there have been 69 ballot measures in 36 Connecticut municipalities, 61 of which passed. While 36 of 169 municipalities is not a large proportion, referenda are increasingly prevalent; 56 of the 69 open space bonds were voted on after 1995.

Using referenda for land preservation is an immediate way to ensure land preservation; a parcel can be targeted and funds levied to purchase that specific acreage. However, little evaluation has been done on whether open space bonds have a significant effect on actual change in land cover over time.¹⁵ Thus, this section will attempt to shed some light on the trends observed in land cover change over the period 1988 to 2006, when bond measures in Connecticut by municipality and land cover trends have been tracked.

Town study discussion

In this section, I look at the correlation between bonding for open space and the change in land cover (undeveloped land, agricultural land, and developed land in acres) in each Connecticut town. A bond is passed in order to preserve open space in a town, and sometimes more specifically to preserve farmland, in a town. However, because referenda usually occur when citizens become concerned about trends in land change, it seems that bonds would be reactive to a loss of open space or farmland, rather than prevent significant loss. In addition, because most bonding in Connecticut is specifically aimed at preserving open space, rather than farmland, I predicted that a

¹⁵ This section will use the term "land cover" to refer to different land uses or types of open space because it uses satellite imagery data from the University of Connecticut that records the current "cover" of a parcel of land (i.e. forested, agricultural field, or waterway).

bond might actually have a negative effect on the amount of farmland in a town. I believe that a bond, holding constant a town's land area, population density, population in 1980 and population change, median household income, and percent employed, has an insignificant effect on land use change because it is reactive, rather than actually preventative. This hypothesis will be tested against the alternative possibilities that the effect of a bond on the percentage of land in a town in agricultural or open space uses has either a negative impact on acreage, or a positive impact.

Data

In order to test the validity of my hypothesis, my first task was to collect data on the number of bonds passed in Connecticut towns. This data was found at the Trust for Public Land (TPL) website. TPL has been compiling a history of all bonds passed for open space in many American states since 1988. I counted all the bonds passed in each Connecticut municipality (there were 69 in all) from 1988 to 2006. I also found data on land use change in each town from 1985 to 2006 from the University of Connecticut's project CLEAR (Center for Land Use Education and Research). This data is compiled through the use of remote sensing and geographic information systems (GIS) technologies to map changing landscape in Connecticut over the time period 1985 to the present. These maps are based on the type of vegetation or building covering the ground, or land cover. Agricultural land cover is defined as active agricultural land, including hayfields, crop land, grazing areas,

barns, and pastures. Data on population come from the U.S. Census Bureau and data on driving distances between the town and closest city are from Mapquest.

The difficulty of using data from CLEAR is due to the potential errors in mapping land use. Because CLEAR data comes primarily from aerial photographs, it is not 100% accurate (Prisloe, 2008). According to Sandy Prisloe, a GIS specialist at CLEAR, the team working to refine the data from the aerial photographs had to use their judgment, as well as some historical and current research, to draw the best conclusions they could about certain areas of land cover. Agricultural land cover can be especially difficult to determine because it often looks like other grasses in an aerial photo. For these reasons, it must be emphasized that the change in agricultural land cover observed by CLEAR is not one hundred percent accurate. Additionally, CLEAR data indicates a smaller amount of agricultural land cover than is reported by the USDA Census of Agriculture, which is probably due to their different data collection methods (image analysis versus landowner survey).

Another discrepancy is the start date of the land use change data compared to the bond data. The Trust for Public Land Database started tracking bond measures in 1988, while the first date that CLEAR lists for land cover is 1985. This study, then, cannot account for any effects by bond measures that were passed before 1988, so the data could be skewed.

Using the information I collected, I compiled a spreadsheet of town-level data including the above-mentioned variables: percent change (1985-2006) in agricultural, developed, and undeveloped land in each town, number of bond measures in each town in that period, and a town's land area, distance from nearest city center,

population density, population in 1980 and population change, median household income, and percent employed. The data contains detailed information on the effects of bonds in every municipality (of which there are 169) from 1985 to 2006. Using this dataset, I can analyze whether the occurrence of bonds, and the number of bonds, has any affect on change in agricultural, undeveloped, or developed land.

My null hypothesis is that the bonds have no effect on change in land cover in Connecticut towns. My alternative hypothesis is that, with all other factors held constant (town's land area, population density, population in 1980 and population change, median household income, and per cent employed), the occurrence of one or more bonds in a Connecticut town will have a significant, either negative or positive, effect on land cover change.

Variable Name	Variable Description ^a *	Mean	Standard Deviation	Minimum	Maximum	
1 (unite	2 coch prion		Dermeion			
Undevel	Percent change in undeveloped land (1985-2006)	-3.75	17.99	-67.19 (West Hartford)	211.32 (Newington)	
Devel	Percent change in developed land (1985-2006)	20.09	10.69	1.67 (Bridgeport)	62.60 (Oxford)	
Ag	Percent change in agricultural land (1985-2006)	-18.50	20.95	-100.00 (Bridgeport)	88.12 (Newington)	
Bond	Number of bonds passed in the town (1988-2006)	0.41	1.16	0	10 (Cheshire)	
Pass	Percent of bonds passed	17.10	37.14	0	100	
Funds	Conservation funds approved (in dollars)	964236.69	2576286.97	0	17,000,000.00 (Glastonbury)	
Trust	Number of Land Trusts based in the town	0.50	0.56	0	2	
Area	Land Area (sq. mi.)	28.70	12.62	5.00 (Derby)	61.60 (New London)	
Popdens	Population per square mi. (2000)	879.90	1315.33	21.60 (Union)	8623.30 (Bridgeport)	
Pop80	Town population (1980)	18389	24350.10	546 (Union)	142546 (Bridgepo rt)	
Pop95-05	Town population change (1995-05)	4.1	0.052	-5.1 (Cornwall)	22.8 (Hartford)	
Dist	Distance from nearest city center (mi)	24.13	0.56	0	89.25 (Groton)	
MHI	Median Household Income (1997)	9250	14858.074	90 (Warren)	116790 (Hartford)	
Emp	Percent employed (1997)	33.72	14.06	10.2 (Plainville)	74.4 (Weston)	

Table 3.1: Variables and Descriptive Statistics

Equations

My primary dependent variable is town-level land cover. Land cover is split into agricultural, undeveloped, and developed categories. Table 3.1 provides definitions and summary statistics for the variables used in the equations.

It is important when viewing the equations to keep in mind that there are many other independent variables that affect land cover change not included in my regressions. Also, the decision to put forward an open space bond measure in a certain municipality may be influenced by the amount of open space currently present in a municipality. If there are already a large number of open acres creating "rural character" in a town that people want to preserve, the town might be more likely to pass a bond to save land than it would otherwise. Thus, it could be that land change is influencing whether there is a bond, rather than the other way around.

Table 3.2: *Equations**Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level

Variable	(1)			(2)			(3)		
	Devel	Undevel	Ag	Devel	Undevel	Ag	Devel	Undevel	Ag
Constant C	19.21*** (22.57)	-3.42*** (-3.08)	- 18.57*** (-10.09)	21.19*** (5.39)	-11.00** (-2.07)	9.77 (1.30)	25.26*** (5.66)	-4.75 (-0.78)	11.77 (1.38)
Number of bonds passed in the town (1988- 2006) Bond	2.14*** (3.07)	-0.78 (-0.86)	-2.20 (-1.47)	2.29*** (3.40)	-1.04 (-1.15)	-1.51 (-1.18)	2.13*** (3.20)	-1.25 (-1.38)	-1.72 (1.35)
Land Area (sq. mi.) Area				-0.02 (-0.38)	0.15* (1.81)	0.28** (2.34)	-0.15** (-1.96)	0.02 (0.28)	0.31** (2.15)
Distance from nearest city center (mi) Dist				0.08* (1.63)	0.07 (1.19)	0.06 (0.66)	0.07 (1.59)	(0.06)	0.03 (0.29)
Town population (1980) Pop80				-0.00*** (-4.61)	-0.00** (-2.09)	-0.00*** (-7.38)	0.00 (0.75)	0.00 (0.10)	-0.00*** (-4.07)
Median Household Income (1997) MHI				-0,00 (-0.16)	0.00** (0.78)	-0.00*** (-5.07)	-0.00 (-0.78)	0.00 (0.20)	-0.00*** (-4.93)
Town population change (1995-05) Pop9505							31.42** (-2.40)	8.95 (0.42)	-26.19 (-0.88)
Population per square mi. (2000) Popdens							-0.00** (-2.40)	-0.00** (-1.98)	0.00 (0.26)
Employment (1997) Emp							-0.00 (-0.59)	0.00 (0.96)	0.00*** (2.97)
Adjusted R- squared	0.048	-0.002	0.007	0.15	0.05	0.31	0.19	0.06	0.34
The Results

The regression of the equations discussed above yielded results that generally corresponded to my null hypothesis that the number of bond measures in a town does not have a significant effect on developed, undeveloped, or agricultural land cover. Summary statistics for the regressors are reported in Table 3.1, while Table 3.2 provides regression coefficients for the variables used in different equations. My linear regression results show no significant correlation between bond measures in a town and its land cover.

Each of the three equations was divided into its respective dependent variables: percent change (from 1985 to 2006) in developed land, undeveloped land, and agricultural land in each town. The equations were split up in this fashion because the bonds could have a different effect on each of those land covers. The intention of a bond is to slow the positive percent change in developed land while stopping or reversing the negative percent change on undeveloped land and/or farmland. It was important to test these latter two land types separately because they might compete for the same funding. Because most of the bonds passed in Connecticut are directed at open space preservation, and not specifically farmland preservation, I wanted to test whether an open space bond actually had an adverse effect on the amount of farmland in a town because of the transfer of scarce preservation funds away from that category.

All of the equations have very low adjusted R-squared values, meaning they are not explaining very much of the variability in the model. In an economic model, the R-squared value is the proportion of variability in a data set that is accounted for

by a statistical model, while the adjusted R-squared accounts for the number of terms in the model. The R-squared term always increases when a new term is added to a model, but adjusted the R-squared increases only if the new term improves the model more than would be expected by chance. Thus, there is only so much that can be taken away from these regressions. Nonetheless, it is worthwhile to explore the general trends of these equations because they can suggest whether bond measures are useful for farmland or open space preservation in Connecticut.

Equation 1 in Table 3.2 controls only for the number of bonds passed in the town from 1988 to 2006. When percent change in developed land is the dependent variable, the bond variable is significant at a 99% level with a positive coefficient of 2.135. The test demonstrates a somewhat unexpected effect of bond measures: that they are correlated with increased development. This seems unexpected because the bonds, being for open space, might logically be associated with a negative change in the percentage of developed land in a town. However, because the coefficient is positive, this suggests that the bonds are reactive rather than preventative. Such a result would be consistent with the general trend in "rural character" preservation: as people see undeveloped and agricultural land disappearing they are more likely to support and vote on a bond for land preservation. There is less motivation if development does not visibly change town character.

These observations are consistent when compared to the other two Equation 1 variations, with undeveloped land and agricultural land as the dependent variables. The coefficient of the bond measure in both the undeveloped and agriculture versions of Equation 1 are negative, meaning that the bond measures correspond to a decrease

in the acreage of undeveloped and agricultural land. All of the Equation 1 variations have the lowest adjusted R-squared values of the group, so they should not be looked at as closely as Equations 2 and 3.

Equations 2 and 3 introduce more independent variables that could hold constant other factors affecting change in land cover. The variables that seem to have the most effect on the three categories of land cover change are town population in 1980, land area, and median household income. Median household income has a significant and downward effect on agricultural land change, although the coefficient is very small, so it does not show a large influence either way. The negative coefficient is interesting because one would expect a town with a higher median income to care more about preserving an elite image of rural character. However, this only applies to a few communities in Connecticut; most communities with higher median incomes are more urban. In order to see whether median household income has an effect on preservation, one would have to test only the rural towns in Connecticut. I would be interested to see whether median household income and number of bond measures are correlated with each other, as this would make sense; wealthier people tend to be more supportive of efforts to "preserve rural historic character."

Because the town population at 1980 has a negative effect on agricultural land cover change, this signifies that towns that were already somewhat populated in 1980 started out with less farmland, and this trend continued. Many of the towns that have retained the most farmland have had a consistently low population, meaning that population pressure has an impact on the change in agricultural land. This is

consistent with the high and significant coefficient for the 1995-2005 population change variable in the Equation 3, developed land equation. With a higher percent population growth in that period, the percentage of developed land also increases, a logical result, emphasizing the power of population pressure on land cover change.

One can also gain insight into the municipal bond measures through an evaluation of the years in which the bonds took place. The pattern suggests that the bonds react to land cover change. 56 out of 69 of the bond measures (in the period 1988 to 2006) occurred after 1995 (and 38 out of the 69 happened after 2000). This suggests two things: the bonds may not have had a significant period of time to show any effects on land cover change; and if they are correlated at all with the change from 1985 to 2006, it is more likely that the change in land cover is affecting the bonds, rather than the other way around.

In addition to a study of bond measures, I also tested the correlation of the presence of local land trusts with land cover change. Information on the number and location of local land trusts was taken from the Trust for Public Land 2005 National Land Trust Census. When tested against change in developed, undeveloped, and agricultural land in each town, I found that number of land trusts had adjusted R-squared values of approximately zero, so I decided not to use this test in the general discussion. However, the results, as far as they can be trusted, have interesting implications. In a simple equation with land cover type as the independent variable and number of land trusts as the dependent variable, the presence of land trusts resulted in a -21 percent change in agricultural land cover and a 20 percent change in developed land. This suggests that the presence of a land trust may also be in

reaction to increased development and decreased agricultural land, since many (though not all) of the local town land trusts were started quite recently.

VII. Conclusion

Connecticut cannot hope to support the world through food production. Residents want to preserve farmland for aesthetic, historical, environmental, and cultural reasons as well as for growing crops. Connecticut's changing landscape has caught the attention of citizens, town and state officials, and national and local nonprofit organizations. The state has a long history of settlement and land use, and much of that was dominated by agricultural use. Today, only about 13 percent of Connecticut's land is agricultural (according to USDA).¹⁶ Although much of the conversion of farmland happened before 1970, the recent change in landscape is still noticeable and motivates interest in farmland preservation.

The pattern of landscape change in Connecticut has been relatively consistent across towns; agricultural land has decreased while developed land has increased. The rate at which this change has occurred in municipalities from 1985 on has much to do with factors like population growth, increased housing demand and altered development patterns, industry changes, developing forms of transportation, and changes in the market for agricultural goods. These trends can be seen in the data from CLEAR and the USDA, as well as by observing visual changes in the landscape over a period of several years.

¹⁶ CLEAR, with a narrower definition of agricultural land than USDA, puts Connecticut agricultural land at 8 percent of the total.

Efforts to preserve Connecticut farmland and open space abound (although these two goals sometimes compete for limited resources). These include the state PDR program and the Community Investment Act. Private organizations, including American Farmland Trust and Connecticut Farmland Trust, are also working towards preservation through purchase of land and through education. Town officials are key players in this process as well; they are crucial advocates for land preservation because they are in a position to cause drastic change at a local level. In particular, town officials may shape policies favoring land preservation through regulation and expenditures.

Voting on a bond that allocates money for land preservation is common in Connecticut towns. This chapter looked specifically at all bond measures in Connecticut towns from 1988 to 2006 and evaluated their influence on agricultural, undeveloped, and developed land cover change. A model was created, accounting for town land area, population density, population in 1980 and population change, median household income, and percent employed. The regression done on the model discussed in this chapter suggests that the passage of a bond does not have a significant effect on land cover change. This information has potential policy implications; town residents might rethink the passage of a bond if it does little to stop open space loss. However, the study should be done over a longer period of time to draw more decisive conclusions. While there was no significant influence on land cover change, however, the pattern was consistent with a formulation of bond patterns: bonds are reactive, implying that people are most likely to utilize open space bonds when they are concerned about recent changes in land cover.

This evaluation of bond referenda in Connecticut municipalities was also helpful in determining which towns might reveal nuances in the farmland preservation movement through closer study. Chapter Four will take a qualitative look at four municipalities. Through this qualitative analysis, the chapter will attempt to paint a more detailed picture of how and why farmland preservation measures are implemented in Connecticut.

CHAPTER FOUR Preserving Historic Rural Character: Four Connecticut Towns

I. Introduction

This chapter will consider four towns – Cheshire, Glastonbury, Lebanon, and Middletown – in order to probe more deeply into why Connecticut town residents are concerned with preserving farmland, as well as to assess how private and governmental actions, coupled with town-level socioeconomic realities, influence land preservation in Connecticut towns. Residents and officials often take for granted that too much change is undesirable. Each of these four communities has certain attributes it wants to preserve, and particular forces of change altering the status quo. All of the towns, in the interest of maintaining something of their historically rural character, want to conserve farmland and open space and prevent too much industrial, commercial, and (certain types of) residential development, while still gaining enough tax revenue to provide services for residents.

Chapter Three studied land use and preservation patterns in Connecticut's 169 municipalities. This chapter will explore the realities behind the geographic, demographic, and monetary values associated with four towns to give a fuller picture of why certain preservation techniques are used and why some are more effective than others. Because the primary independent variable in the study was the number of bonds passed from 1988 to 2006, I used this as one criterion for choosing the four towns in this chapter. Cheshire and Glastonbury voted on the most bonds in that period, with 10 and 6 bonds during those 18 years respectively, but both had

significant agricultural land cover loss, at -36 and -34 percent. In contrast, the town of Lebanon had no bond measures, but lost the least of its farmland, only 7 percent. Middletown had 2 bonds (and just passed one more in 2007), slightly above the state average, and agricultural land decreased by 35 percent, comparable to Cheshire and Glastonbury.

I wanted to explore some interesting patterns in these towns' statistics. Overall, I was curious to know what other preservation efforts these towns were taking. In particular, if Lebanon's primary means of protecting its farmland is not through bonds, what actions, or other external factors, have kept the farmland base intact? I was also interested in why Cheshire voted on open space bonds almost every year for over ten years, but stopped abruptly in 2002. A final question was whether it is the case in these towns that farmland preservation measures react to visible changes in the community landscape.

A sub-theme in this chapter is a consideration of the role played by income and demographics in town land preservation efforts. While Cheshire and Glastonbury are fairly homogenous suburbs with median incomes considerably above the Connecticut average, Lebanon and Middletown's median incomes are right around the state level; they are slightly above and slightly below it, respectively. Middletown has the most diverse population of the four and spends the most town funds on services for lower-income residents. How have these characteristics influenced land use and expenditure decisions?

A final consideration in choosing these four towns was geography. They are all in the Connecticut River Valley, the area with the highest concentration of prime

farmland soils in the state (with the exception of Lebanon, which has a large proportion prime soils, even though it is not in the Valley). This region gets considerable attention from Federal- and State-level leaders because of its productive value; thus, these towns have a number of preservation program options whose implementation and effects can be studied.

A qualitative study of a few towns thus will give additional insight, beyond the regression analyses of the last chapter, into the factors affecting farmland preservation in Connecticut towns. I find that each municipality endeavors to preserve a certain cultural and landscape aesthetic. While Cheshire wants to maintain its status as a small, elite town with open space, agricultural land, and historical identity, it is trying to avoid overdevelopment and suburbanization. Lebanon is the most rural and sparsely populated of the four, with a population that is heavily involved in agriculture. At the same time, a large proportion of Lebanon residents commute out of the town for work. Farmland preservation in Lebanon is thus both motivated by dual desires: protecting an active industry and maintaining a rural escape from the urban workplace. Glastonbury is a wealthy community with a large amount of farmland and undeveloped land; because it is near Hartford it must take certain actions to maintain its character as a distinct historic community, rather than become another suburb of a large metropolitan area. Middletown wishes to preserve urban qualities of economic and social diversity. It offers varied housing options and a thriving downtown. At the same time, residents value green open spaces and farmland, a consideration that must be kept in the balance. In all four municipalities, farmland and open space preservation measures are implemented to maintain some

elements of the town desires.

Table 4.1: Town Comparisons Data from: U.S. Census Bureau, Mapquest, Land Trust Alliance, CERI, CLEAR, 2002 Census of Agriculture

	Cheshire	Lebanon	Glastonbury	Middletown
Population	29,601	7,168	33,318	45,035
Land Area (square miles)	33	54	51	41
Population per square mile	899	132	649	1,101
Median Household Income	\$100,673	\$76,205	\$103,058	\$60,542
Per capita tax (as percent of state average)	\$2,245 (107.4%)	\$1,623 (77.7%)	\$2,921 (139.8%)	\$1,639 (78.4%)
Median housing price (2007)	\$344,000	\$239,900	\$380,000	\$245,000
Subsidized housing units	322	75	742	3,376
Percent white	85%	93%	90%	76%
Nearest city (with population over 100,000) and driving distance from town (in miles)	Waterbury, 11	Hartford, 32	Hartford, 7	Hartford, 17
Residents commuting outside the town to work (and as percent of town labor force)	6,036 (41% of 14,651)	1,694 (39% of 4,320)	7,439 (41% of 18,263)	7,091 (27% of 26,655)
Number of open space bonds passed in the town (since 1988)	10	0	7	3
Number of local land trusts based in the town	1	0	2	1
Number of farms	46	110	51	56
% change in agricultural land cover (1985-2006)	-36%	-7%	-34%	-35%
% change in developed land cover (1985-2006)	30%	17%	33%	19%

Figure 4.1: Locations of Towns within Connecticut



II. Preserving Historic and Rural Character: Four Communities in Central Connecticut

The four towns are located roughly in central Connecticut. Table 4.1 shows comparisons between the towns in terms of land area and land cover, population demographics, geographic position, and selected land preservation efforts, while Figure 4.1 shows the locations of the towns within the state. Middletown and Glastonbury are the largest towns by population, while Lebanon and Cheshire remain smaller communities. According to Census 2000 data, they are widely distributed in the rankings of per capita income in Connecticut. Glastonbury was 26th in the state, out of 169, followed by Cheshire at 58. The Lebanon and Middletown median income levels are much lower, at 151 and 152 or 169. In terms of size, location, and income level, these case study towns can speak to trends in a range of Connecticut municipalities.

Each of these locales is located in different Connecticut counties,¹⁷ yet they share certain common characteristics. Glastonbury is in Hartford County, Middletown in Middlesex County, Lebanon belongs to New London County, and Cheshire to New Haven County. They are all roughly in the center of the state. One of the common characteristics of these towns, as seen in the "Prime and Important Farmland Soils" map, is their claim to a high concentration of the state's prime and important farmland soils (see Appendix A). Agriculture has been important in the towns historically, as well as today. Cheshire calls itself the "Bedding Capital of Connecticut" because of its 24 nursery, greenhouse and floriculture operations (Town of Cheshire, 2009). Lebanon has the highest number of active agricultural operations of the four, with 110 operating farms (USDA). It also boasts a town green that is still used for pasturing cows. Glastonbury has farms with such idyllic names as Rose's Berry Farm and Sleepy Bee Lavendar Farm (Town of Glastonbury, 2009). Middletown, although it is the most urban of the case studies, is home to 56 agricultural operations, producing anything from flowers to goats to organic vegetables.

Many people commute out of (and sometimes into) these towns between home and place of employment. Middletown is the most self-contained in terms of

¹⁷ Although the county system was officially abolished in 1965, it is still a useful geographic designation as well as a continued data-gathering unit.

offering local employment; while Cheshire, Lebanon, and Glastonbury all have about 40 percent of their residents commuting out of the town limits for work, less than 30 percent of Middletown residents commute outside the town for work (Connecticut Economic Resource Center, (CERC)). Each municipality wants to be more than simply a commuter town.

One notable attribute of all of these communities is their importance as historical Connecticut places. Europeans settled them in the seventeenth century, on land purchased from American Indians. Cheshire was settled in 1694, Lebanon in 1663, Glastonbury in 1636 and Middletown 1650; all of the towns were officially incorporated slightly after these dates (according to the town websites). Glastonbury is home to the oldest continuously operating ferry in the United States, while Lebanon has the nation's largest town Green, and the only one still used partially for agriculture (Chamberlain, 1998; Town of Glastonbury, 2009). Middletown was an important port city on the Connecticut River, and the wealthiest and most prosperous settlement in Connecticut in the eighteenth century. References to early American history as well as typical "American" ideals of democracy, home-rule and liberty, appear in local rhetoric and contribute to the area's identity. The historic nature of these places also makes them different from suburban communities in the U.S., whose histories generally date back to the post-War building boom or later.

The colonial legacy imbued the communities with a dedication to home-rule, apparent in many of the functions of town decision-making. The "town meeting" form of government that has been practiced in Connecticut for over 300 years is the best example of this carry-over. It is a form of government that is unique to New

England. Of Connecticut's 169 cities and towns, 106 still use the selectmen-town meeting form of government (Connolly, 1992). Connecticut shares the town meeting form of government with other New England communities, although they are not quite as influential in legislative decisions as those in other states such as Massachusetts. For example, while many Massachusetts towns adopt and modify land-use and building zoning regulations at a meeting, in Connecticut the zoning is adopted as a concept at the meeting, but the actual writing and adopting of specific regulations falls to an elected Planning & Zoning Board (Gordon, 2005). Nevertheless, the town meeting format is indicative of the high level of input many Connecticut town residents expect to give their decision-makers.

The local autonomy the towns prize means that they all have particular ways of controlling or influencing land use. One way to gauge involvement in land use issues is to look at citizen reactions to the entrance of particular properties. Cheshire is home to two large state prison facilities located in the northern section of town. There was discussion two years ago of expanding the larger prison, but it did not happen due to citizen outcry. Cheshire residents sometimes feel that they bear an unfair burden of regional services, and are not interested in providing more than necessary, especially if it mars the peaceful image of their town (Turmelle, 2007). While this is an extreme case, it is indicative of residents speaking out to defend an idea of characteristics essential to their town's character.

In Lebanon, some of the most contentious issues involving land use surround the treatment of the town Green, prized dearly by residents. Efforts to keep the Green intact date back hundreds of years, and still continue today. A proposal to place a

pharmacy within sight of the Green was quickly vetoed. Melissa Fawcett, town resident and owner of a historic house, told the New York Times reporter that the general town feeling is, once they let something modern on the green, "it could totally destroy its 18th-century character" (Hamilton, 1988).

Glastonbury, whose close proximity to Hartford makes it attractive to an array of people from different socioeconomic backgrounds, has had conflict over affordable housing development. A 1999 New York Times article highlighted a state court case that upheld the Glastonbury planning and zoning commission's decision to deny various developers' applications that conformed to Connecticut's affordable-housing law. While applications were rejected primarily because of a shortage of sewers and of potable water, many town residents were against the development because they saw locating "affordable housing" in their community as an invitation to undesirable and unresponsible new residents who could mar a town's community feel (Charles, 1999). Moreover, town residents claimed that developers take advantage of the affordable housing provision, building large, out-of-scale projects.

Middletown was recently chosen as the location for a new Connecticut Army Base. It is currently being planned for an area of Middletown known as Maromas, a 16-square mile section of the city along the Connecticut River. In a 2007 Wesleyan University school newspaper article, many people were interviewed at a town meeting, and most took the NIMBY (Not In My BackYard) approach to the proposal: "I would welcome the Army to Middletown—but not at the Freeman Road site," said State Representative Gail Hamm. Several residents said they supported the military in general, but also strongly encouraged the Army to reconsider the location of the

base. Others had ecological reasons for opposing the base. "Putting the base there and extending the sewer line will encourage sprawl and so the environment will be permanently damaged for people as well as the water, birds, plants and animals," said Megan Hearne, River Steward at the Connecticut River Watershed Council. "We need to preserve the Connecticut River it because it's part of our New England identity" (LaSelva, 2008).

These cases offer contentious examples of efforts by town residents to preserve certain beloved town characteristics. They reveal the general stance people in these towns take towards potential change in appearance, character, or demographics in their municipalities. The next section will identify specific features the municipalities want to preserve.

III. What Do These Municipalities Want to Preserve?

Cheshire

Each town has certain things that give it a unique character. Residents try to maintain particular landscape characteristics, both real and imagined, through preservation. Cheshire residents want to maintain a small New England residential feel. Located in New Haven County with a population of 29,601, it is primarily a wealthy residential community. Cheshire, along with Glastonbury, has the highest median household income of the four, around \$100,000. 85 percent of Cheshire's dwellings are owner occupied, which means home-ownership is prioritized in this community (CERC). In fact, the first words Cheshire uses to describe itself on its website are "residential community" (Town of Cheshire, 2009). An unspoken result

of Cheshire's high cost of living is its fairly homogenous population: it is 85 percent white. The town has a dense population, with 899 people per square mile on its 33 square miles. Cheshire wants to preserve its wealthy, family-friendly atmosphere alongside pockets of open spaces and farmland.

Originally a part of Wallingford, Cheshire was settled in 1694 and incorporated as a town in May of 1780 (Town of Cheshire, 2009). For its first 170 years, Cheshire was predominantly a rural farming community. During the past 50 years, it became the dense residential community it is today. In the post-war period, Cheshire began to suburbanize as residents of New Haven began moving outwards from the urban core. It has also had significant industrial and commercial growth; the largest employment sectors in the town are services, trade, construction, and mining. The town website deemphasizes these elements of the town, however, stating that "commercial and industrial businesses unobtrusively round out the composition of the community" (Town of Cheshire, 2009).

Despite this significant industrial, commercial, and residential development, Cheshire retains its agricultural sector. The website states that it has "remained a highly agricultural town that has found an economic niche in producing bedding plants for local and national consumers" (Town of Cheshire, 2009). Cheshire does retain some rural characteristics; approximately 75 percent of the town land area is undeveloped (according to data from CLEAR), and it has been designated the "Bedding Plant Capital of Connecticut" by the Connecticut General Assembly because of its abundance of bedding plant growers. According to the 2002 Census of Agriculture, 24 of Cheshire's 46 farms are nursery, greenhouse and floriculture

operations; by comparison, in Middletown and Glastonbury these businesses make up no more than 15 percent, and in Lebanon only 6 percent.

Whether these numbers qualify the town as "highly agricultural" is up for debate. Bedding plants are not the typical New England agricultural business, compared to dairy or maple syrup production. Additionally, the production of bedding plants is a land intensive operation; it looks more industrial than pastured cows or vegetable patches, mainly because it requires large greenhouses. It also uses a lot of chemicals, water, and fertilizers, and removes valuable topsoil from the town when sold with the flowers or sod. Thus, bedding does not provide the additional amenity values (picturesque vistas and ecological benefits) that other forms of agriculture offer. The production of flowers and sod is a viable economic pursuit nonetheless. If the business of agriculture is a facet of the town that citizens believe defines its character, the aesthetic and ecological reality does not matter greatly. However, it is telling that all of its ten bond measures are specifically targeted at the preservation of "open space;" the purchase of farmland is a secondary goal in the language of the bonds (Trust for Public Land, 2009b). Picturesque green land is a higher preservation priority than industrial agriculture.

While Cheshire residents enjoy the town as an historic small community, it is also very much a commuter suburb. It borders Waterbury, one of the five cities in Connecticut with a population over 100,000. It characterizes itself as a primarily residential community, with 9,932 housing units. The 2007 median house price, \$344,000, is significantly higher than the state average: 295,000 (CERC). Although for comparison the median housing price in Weston, the richest community in

Connecticut and just 40 miles away is \$935,000, Cheshire is still an expensive place to own property. 40 percent of Cheshire's residents commute to work. According to Cheshire's POCD, "automobiles and good roads have given the opportunity for country living to a great many people who work in nearby industrial cities" (Town of Cheshire, 2002, p. 5). The town's residents are subject to the traffic and isolation that comes from commuting to work, so they are more apt to preserve rural elements of their home.

Besides industrial greenhouses and the hassle of a commute, other elements mar the town's rural character. Cheshire is home to two large state prison facilities: the Cheshire Correctional Institution, and the Manson Youth Institution. While these facilities provide jobs, they also serve as a reminder to many residents that Cheshire is far from a peaceful hamlet. Indeed, the POCD does call attention to the intention of the town to accommodate a diversifying population: "Promotion of a wide range of housing choices, population trends and the aging of the population are all planning issues that are gaining importance" (Town of Cheshire, 2002, p. 5). However, judging by the number of referenda and the community input about open space and farmland preservation (Cheshire has passed 9 of 10 ballot measures for open space preservation since 1988, and continues to fund preservation through direct Town contributions to an open space fund), Cheshire's efforts to diversify its housing stock or improve public transportation, are smaller. Cheshire residents may be more concerned about preserving a rural ideal than about addressing demographic realities.

Lebanon

While Cheshire has experienced suburbanization and industrialization, Lebanon remains an archetypal New England farming town. With 110 farms, according to the 2002 Census of Agriculture, Lebanon is the most agriculturallyfocused of the towns. It is also a place with a long and central role in Connecticut history, and far enough away from the biggest metropolitan regions that it has managed to escape a certain amount of development pressure and preserve farmland, open spaces, and historic sites.

Lebanon has a lower median household income than Cheshire, at \$76,205, but one that is slightly above the State of Connecticut's average of \$67,236. Lebanon's per capita income level is lower than Connecticut, which the town POCD speculates is a result of larger family and household sizes in Lebanon compared to the state average. The median housing price, \$239,900, is lower than that of Glastonbury and Cheshire, but Lebanon, with only 7 percent of its population non-white, is not in the lower bracket of Connecticut incomes because of a diverse population. Rather, the town is primarily agricultural, with little industry, and its distance from a large city means that there is less commercial development than in the other locations.

Lebanon is approximately 30 miles by car from Hartford and 60 miles from New Haven. There are no major highways to either of these cities, so the commute is considerable. Because land rent per acre falls as distance to a central business district increases (Breuckner et al., 2001, p. 5), this may partially explain the lower median value of houses in Lebanon compared to the other communities.

The overall aesthetic of Lebanon is agrarian. Driving in, one passes mostly uninterrupted crop and grazing lands. Even the center of the town is dominated by agriculture; the town Green stretches a mile long and often plays host to grazing cows. The Lebanon website was actually funded by Connecticut's Agriculture Viability Grant program. "Farms" is the first link on the homepage, leading to a series of pages of farms with pictures, describing local, mostly small family, operations. For instance, Oakleaf Dairy's page describes a farm that is "located on charming Bogg Lane and is made up of one hundred and fifty acres that has been in the same family since the 1920's." While The West Green Farm "is located amid pastoral views on the beautiful Lebanon Green" (Town of Lebanon, 2009).

Lebanon residents value the town's farming history and heritage. In a recent survey conducted of Lebanon residents, 96 percent of respondents asserted that having active farms makes their town a better place to live, and 93 percent agreed that preserving open space and farmland is important. According to Joan Nichols, Government Relations Specialist at the Connecticut Farm Bureau and resident of Lebanon, people in Lebanon have recently woken up to the potential development pressures on land in their town. A few large parcels of farmland have been sold off in recent years and developed into tracts of residential units. Joan thinks that there was not enough opportunity for input from town residents on how the developments should look, and as a result, they were built in such a way that left no public open space or farmland available (Nichols, 2009).

Developments like these, in a town where many residents even fear the placement of a modern-looking pharmacy too near the Green, serve to remind

residents that the rural, sparsely populated feel of their town is not guaranteed into the future. Thus, Lebanon's farmland preservation efforts are spurred by a population interested in keeping rural aesthetics part of the town's character. More than the other towns, moreover, Lebanon still has a vital agricultural industry that is more than a part-time job for many residents. 16 percent of the workforce is employed by the agricultural sector, while less than 3 percent make their living through farming in Cheshire, Glastonbury, or Middletown. Thus, farmland preservation has a great economic benefit to Lebanon residents as well as character-creating benefit.

Glastonbury

Unlike Lebanon, Glastonbury is close to a city; it is only seven miles from Hartford. Yet it retains a good deal of rural character, both in reality and in its citizens' depictions of the town. The Glastonbury Photo Gallery section of the Glastonbury webpage states that "Glastonbury is well known for its picturesque farms, orchards, streams, and woods" (Town of Glastonbury, 2009). None display such realities as the large highway connecting Glastonbury to Hartford, the bustling downtown area, the residential districts, or the large shopping mall located on the outskirts of Glastonbury. Visitors to the website are rather supposed to get an impression of the town as a place of historic, rural, and natural beauty.

Glastonbury was settled in 1636, when thirty families from what is now Wethersfield moved to the eastern bank of the Connecticut River. The town's long agricultural history began at this same time, and has been distinguished by innovation. It was been home to a famous peach orchard, selling fruit all across the

country in the nineteenth century. The orchard owner, John Howard, was one of the founders of Storrs Agricultural College, now the University of Connecticut. One of the first farms to use genetic engineering on chickens in the 1940's was also located in Glastonbury (Town of Glastonbury, 2009).

True to its pioneering involvement in early Connecticut history, the Glastonbury Historical Society asserts: "Glastonbury is a town which is always changing and growing. It has participated in all the great movements of American history and continues to make a mark today" (Town of Glastonbury, 2009). Glastonbury has experienced continuous rapid growth since the 1950s, and was on the edge of Hartford's urban sprawl until the mid-1990s, when growth moved beyond Glastonbury and the municipality began buying back open space (Town of Glastonbury, 2007, p. 6). This preservation of open space is one factor in the municipality's increased real estate values. Indeed, Glastonbury is the wealthiest community in Connecticut east of the Connecticut River, a significant fact due to the historic divide in income levels on either side of this natural barrier.

Yet Glastonbury residents, as evidenced by the seven successful open space bonds passed in the town since 1990, are concerned with making the community more than a residential town close to Hartford. Farmland and open space preservation is one way of addressing this potential change, by permanently taking parcels of land out of the possibility of development. Glastonbury has voted on seven bonds for open space preservation since 1988, the second-highest number in the state. It is also home to two active land trusts. These efforts are costly, and most Glastonbury residents are able and willing to pay for them. Comparing Glastonbury

to a more diverse and urban community such as Middletown may offer insight into why Glastonbury residents are so willing to pay for land preservation, while Middletown has put less effort into permanently preserving so many large parcels of public open land and farmland.

Middletown

Middletown was one of the first cities in America to establish a planning board, in 1931, and today the town planners face a large task: balancing Middletown's many community identities. One of the largest municipalities in Connecticut, Middletown is also one of the state's twenty cities. As a city, Middletown is a unique mix of downtown, suburban, and rural areas. It has a bustling Main Street as well as government administration buildings, as it was once the county seat of Middlesex County. At the same time, it is home to 56 active farms. According to its POCD, Middletown planning "has focused on balancing the needs and comforts of its residents with the commercial development required to help fund services" (Town of Middletown, 2000, p. 6).

Middletown has a diverse array of housing options, from historic houses to low-income rental units to more innovative planned communities. Middletown is in the midst of an effort to revitalize its historically disadvantaged North End, with the building of Wharfside Commons, a new 96-unit mixed-income housing unit. The town also boasts a clustered community. Located on the western border of the city, The Farms is an 84-house community developed in 1969 by George Achenbach, and

was one of the first clustered developments in Connecticut, with open areas designated as common land.

Significantly fewer people from Middletown commute to work than in the other three communities, with only 30 percent of the workforce traveling to jobs outside municipal borders, compared to approximately 40 percent in the others. This says something about the priorities of town residents. People buying a house in Middletown may not be in search of a rural retreat. Property values reflect this different set of priorities. The median housing price in Middletown is \$245,000, significantly lower than Glastonbury and Cheshire.

Yet public open spaces are available; Middletown has a number of parks and nature trails including the Middletown Nature Gardens, Wadsworth Falls State Park, a large natural area located next to the historic Wadsworth Mansion. It is also one of few cities in Connecticut with active, or "working" agricultural properties, including dairy farms, beef farms, alpaca, goat, beefalo and horse farms as well as crop production such as hay and corn. Middletown has 10,312 acres of farmland soils (20th of 169 towns in the state). Middletown started, like most towns in Connecticut, as an agricultural center. According to the town's POCD, "agriculture remained an important aspect of Middletown's economy even in the face of new industrial development, preserving its status as an agricultural center until the 1960's" (Town of Middletown, 2000 Section 1.2). Today's Middletown farm is mostly a part-time affair, however.

A recent survey of Middletown landowners performed at the Agriculture Viability Grant Workshops asked what respondents considered the typical

"Middletown farm." It is considered small, usually involving one family, with a limited market. At best, the farmers hope that farming covers the land and building taxes and provides the means to use the land productively. Nonetheless, farmers and their supporters have a significant voice in Middletown decision-making processes, and their needs are one of the many things town planners must take into account when drafting town priorities.

IV. Farmland Preservation: Wishing to Keep a Landscape Aesthetic and an Industry

While preservation of farmland and open space may sometimes be at odds with other community objectives or ideals, Connecticut residents increasingly advocate for measures to protect this type of land. Judging by the impressive number of land trusts in the state, there is interest in land preservation close to home. It is clear from town literature and interviews with people in each locale that the preservation of historic rural spaces is widely desired, but the four locales fall on a spectrum of interest and involvement. Land conservation techniques accord with both the town's vision of itself and its budgetary and demographic realities.

This thesis has already addressed some state-level measures that can assist towns to preserve land. The Community Investment Act is one such measure. The Act's fund has awarded more than \$33 million to 130 municipalities for projects related to Farmland Preservation, Land Protection, Affordable Housing and Historic Preservation (Martin, 2009). Also helpful are state and private organizations specifically designed to preserve land. The state Farmland Preservation Program is

one of these governmental organizations. Private state-wide land trusts that own development rights to land alone or in partnership with towns, individuals, or other organizations include the Connecticut Farmland Trust, based in Hartford, Connecticut Forest and Park Association of Rockfall, Connecticut, The Nature Conservancy, whose Connecticut Field Office is in Middletown, and the New England Forestry Foundation and the Northeast Wilderness Trust, both based in Massachusetts but holding land in Connecticut.

There are many ways that towns can protect farmland and other open spaces. The town hall is an important player, with the ability to affect change through zoning regulations and planning, and the organizing capacity to initiate town-wide fundraising to purchase development rights through bonds or other means. Towns are also some of the primary recipients of state funding for land preservation, with a staff of people able to write grants and instigate programs once funding is awarded. Local private land trusts are important in galvanizing interest in land preservation; approximately three out of every four towns in Connecticut have their own local land trust (Land Trust Alliance, 2005).

This section will discuss some of the initiatives undertaken by Cheshire, Lebanon, Glastonbury, and Middletown. It will also speak to how these efforts align with each town's image of itself. The intentions and actions of town residents and planners are not always aligned, thus, some attempt will be made to compare the intentions of local jurisdictions, as reflected in the language of their plans, with the facts that illustrate how well those intentions are being fulfilled.

Cheshire

Cheshire has had the most bond referenda of any Connecticut town. According to data from the Trust for Public Land, Cheshire has voted on ten bonds (9 of which passed) since 1988 for open space or farmland preservation. Open space referenda in Cheshire actually started in 1986, two years before the Land Vote Database began tracking votes; in those two years there were three referenda and approximately \$3,400,000 in town money designated for the purchase of development rights. Since 1986, citizens have approved over \$14 million for land acquisition, and over 1,000 acres have been purchased. An Open Space Land Use Advisory ranks open space in terms of community value and appropriate use, which informs acquisitions (Town of Cheshire, 2002, p. 22).

After fourteen years of almost annual bonds, Cheshire now mostly raises money for land preservation through an annual or every-other-year contribution to an open space fund (Augur, 2009). This represents less cash flowing into the fund, and with no town-wide attention, potentially indicating decreased interest in the issue at the town government level. The energy that is focused on land preservation is mostly for natural lands. All ten of the bonds in Cheshire from 1988 to 2002 were for open space and recreation. None mentioned farmland purchase specifically. Moreover, Cheshire's Open Space Map from the Planning and Zoning Department does not differentiate between farmland and other types of open space in the key. On the other hand, Cheshire's POCD highlights farmland as a community asset.

Two sections of the POCD specifically address agriculture and open space. The Plan states that "farms provide area residents with open space and aesthetic

relief, plus help to define our cultural identity" (Town of Cheshire, 2002, p. 42). The Plan also recognizes that many farms have been lost in Cheshire, and the ones still existing are under pressure from increased development in the area: "During the 1980's, Cheshire's farms came under extreme pressure from developers. Development continues to be the single most important threat to the future of Cheshire farms" (Town of Cheshire, 2002, p. 42). The Plan puts the number of PA 490 landowners in 2000 around 150, and it states "the continued use of Public Act 490 is vital to the preservation of agricultural land, open space and woodland in Cheshire" (Town of Cheshire, 2002, p. 43). Clearly, land preservation has support from the town planners, though "open space" – rather than farmland – preservation is labeled as a top priority.

The zoning regulations in Cheshire are also not oriented specifically towards agriculture, even in areas where many farms are located. According to the POCD: "Although farmland is scattered throughout Cheshire, the majority of it is located in the northern end of town on land that is predominantly zoned industrial" (Town of Cheshire, 2002, p. 27). The town acknowledges the industrial nature of many of its agricultural producers; as large-scale nursery, greenhouse and floriculture productions, they are less picturesque than the stereotypical New England dairy farm. This is apparent in the designation of much of the farmland in the town to an "industrial" zone. The zoning regulations do allow farm stands to sell related products provided they are secondary to the farm operation, and they allow for offsite directional signs, seasonal signs and permanent on-farm signs. These provisions

are important for encouraging lucrative business operations, but not land preservation specifically.

Yet the work of the private Cheshire Land Trust indicates interest in farmland preservation in addition to natural public green space preservation. The Trust is active in advocating for land preservation in the town, and it has acquired the development rights to a few agricultural properties. Since it was founded in 1969 the Cheshire Land Trust has acquired properties outright or preservation easements on 29 parcels totaling 525 acres. Four of these properties, or 245 acres, have active farming operations (Cheshire Land Trust, 2009).

Lebanon

While Cheshire has passed many bonds for land preservation, it has still lost a considerable amount of undeveloped land since 1985. In contrast, the town of Lebanon has not held any referenda for land preservation, yet it has maintained most of its agricultural and undeveloped land over that same period of time. This variation is likely due to a general agreement in Lebanon that agricultural and public open land is a crucial aspect of the community's character, and proactive preservation measures accompany this mindset.

Lebanon's POCD characterizes agriculture as the dominant economic activity in the town (Town of Lebanon, 2000, p. 4). Indeed, Lebanon's top two employers are Prides Corner Farms, Inc. and Earthgro, a mulch and potting soil company (CERC). The POCD does indicate some change in land use: "in recent years much traditional land-based farming has given way to residential development, with a 265 percent

growth between 1950 and 1990," however, "the regional centers of Willimantic, Colchester and Norwich and the highways that connect them roughly ring the town and are more likely sites for intensive economic activity, thus supporting the view that Lebanon' s foreseeable future is as a rural agricultural and bedroom community" (Town of Lebanon, 2000, p. 4). Thus, unlike Cheshire, Lebanon feels less threat of development of its agricultural land, but, like Cheshire, town residents recognize that they live in a residential community.

Philip Chester, the Town Planner, stated in an interview that "Lebanon has the most active farmland in the state. It has the most protected farmland and also the most unprotected farmland" (Chester, 2008). Chester's role in the town in the last several years has been to initiate programs that prioritize the preservation of this land. These efforts range from changing tax policy to speaking directly to farmers to revamping the town website.

Discussions with farmers have been central to Chester's approach to farmland preservation. When he first came into the role of planner (he was hired specifically as a "farm-friendly" planner by the town, having come from Suffield, another heavily agricultural Connecticut town), Chester sent letters to all the agricultural landowners in Lebanon inviting them to be in close communication with him about any issues they might have. His rationale: "This can go a long way towards improving the relationship between town and farmers and encouraging landowners to put easements on their land. The town is often the last to know when a farmers sells their land to a developer" (Chester, 2008). Additionally, Lebanon held a workshop in January 2007

called the Land Preservation Options Seminar, attended by 100 farmers interested in learning how to use easements and other conservation tools.

Lebanon has initiated several studies to determine the best way to use land and preserve its resources. These include a "Build-Out Analysis," which estimates what the town would look like in a certain number of years if growth continued at its current rate. According to Chester, this has been a good tool to rally support for conservation provisions, as many fear more residential build-out. The town recently completed a survey that quantifies residents' interest in preservation, another good tool informing policy decisions, and lending those decisions legitimacy because town leaders can cite support for preservation actions. For instance, 7 in 10 residents say Lebanon should focus its planning efforts on preserving farmland and open space, and 3 in 4 favor establishing architectural guidelines for the Town Green and adjacent properties (Town of Lebanon, 2008). On the other hand, opinions are mixed about bond referenda, of which Lebanon has had none. 70 percent would favor a \$2 million, 20-year bond referendum to support land preservation, with a cost of \$50 in additional property taxes. Fewer (59 percent) would favor a bond referendum double that size.

The town conservation commission is responsible for farmland preservation, among other things. Instead of raising money through referenda, Lebanon sets aside funding annually in its operating budget for open space and farmland preservation. Like Cheshire, Lebanon incorporates funding for open space into its routine annual budget, making funding for preservation less vulnerable to the uncertainties of the ballot and giving it legitimacy in the normal workings of town government. However

public referenda would allow the town to raise larger sums in a manner that rallies town-wide support for preservation.

Lebanon is one of only two Connecticut towns (Suffield is the other) with agricultural zoning. When Philip Chester began as Town Planner, development on many parcels was already restricted, but their official zoning district designation did not reflect their use as agriculture. According to Chester, when he came to Lebanon "we just put the parcels with easements in their own zones, and also included state land. We changed the districts because a zone should reflect underlying use" (Chester, 2008). Re-labeling a zoning district to reflect its current use does not significantly change any policies. It is important, though, in that it gives current or potential neighboring landowners notice that their land may smell like pigs or blow hay seeds into their yard in order to avoid nuisance complaints.

The tax laws in Lebanon are farm-friendly, meaning many of the landowners in the town pay lower taxes because their land is cultivated. Any agriculture or open space parcel above 2 acres may qualify for PA 490. An astonishing 75 percent of the land in Lebanon is PA 490, meaning that many landowners take advantage of this clause. However, this also means that the town of Lebanon gains less in tax revenue from these lands. While the parcels require less in terms of public services (such as sewer systems), this could still be construed as a loss for the town, so it is especially revealing of town priorities that Lebanon is so active in promoting the measure.

Lebanon has been granted a great deal of money from the state Agriculture Viability program. The town itself received funds in 2006, 2008, and 2009 for various projects. The money has been used for the promotion of Lebanon's farm

economy, the preservation of farmland via town policies, and for improving the website to highlight agriculture. The state grant funded Land Use Leadership Alliance meetings, teaching comprehensive planning techniques to regional leaders. It also made possible a 2008 resident attitude survey, appraisal of farm property, and expansion and promotion of a town farmers market. In addition, individual farms have received the grant. Most notably, The Farmer's Cow has been given money for its operation as an all-Connecticut-raised milk producer.

Private organizations have worked to preserve land in Lebanon, although there is no land trust based officially in the town. The closest land trust is the Joshua Land Trust, based in nearby Mansfield, Connecticut. This group has worked closely with the town hall to preserve land. Lebanon is currently working on preserving a 100 acre parcel where the town, Joshua Land Trust, and Connecticut Forest & Parks will each pitch in funding and hold the easement. The Trust currently owns two other parcels in town. Local interest in the Trust is clear; membership is well over six hundred (Joshua Land Trust, 2009).

Lebanon has little development pressure from urban sprawl, a homogenous and supportive population, and an already-strong agricultural sector, so there is less conflict between land uses than in the other towns. However, Joan Nichols of the Connecticut Farm Bureau made clear in an interview that there is by no means universal support for land preservation: "It is interesting that there is a small contingency in Lebanon that think that farmers are getting "too much" and run the town, which to some extent, they do." However, she said, this is tempered by fears of encroaching development: "We started to see the creep from towns like Colchester

and Hebron that have experienced more than their fair share of subdivisions and after two large subdivisions in town, there was a major wake up call" (Nichols, 2008). A study of Glastonbury serves as a counterpoint to Lebanon, as a town that has experienced more pressure from urban sprawl over a longer period of time.

Glastonbury

Glastonbury characterizes itself as "an environmentally conscious town" in its POCD (Town of Glastonbury, 2007, p. 18). The town has long pursued a policy to preserve and protect natural features of ecological and aesthetic significance. These include streams, wetlands, forests, floodplains, agricultural land, and lands providing unique vistas. Glastonbury has been quite active in prioritizing certain ecological and aesthetic goals through town hall and private actions. Notably, documents related to planning for agriculture and open space preservation have been recently updated: the POCD was updated in 2007 and the Inland Wetlands and Watercourses regulations, which are important for ecological preservation of critical natural areas, were updated in June 2008 (Town of Glastonbury, 2009). The town has a long-term goal of creating open space links between existing public and private open spaces.

The zoning regulations have a section on agriculture, with a fairly broad definition favored by farmers and their supporters: agriculture is "the cultivation of ground, including the harvesting of crops, rearing and management of livestock, tillage, husbandry, farming, horticulture and forestry" (Glastonbury Zoning Regulations, p.3; found at Town of Glastonbury, 2009). More innovative zoning
options do not exist in the regulations, although the POCD shows interest in at least encouraging transfer of development rights and cluster zoning.

Glastonbury has been successful in permanently preserving landscapes, with several hundred acres put into easements in recent years through acquisition and donation. The town's land acquisition committee uses bond money to purchase open space land, including farmland. Seven bond measures were passed between 1997 and 2007 for open space and farmland preservation; two of these raised funds specifically for the acquisition of agricultural land. The land acquisition committee advises the town council, and often collaborates with private groups to preserve land (LADA, Associates, & Resor, 2008 Section A-8). For instance, in 2007, the development rights of the 26-acre Tryon farm in South Glastonbury were purchased. A citizens' group, the Friends of Nayaug, raised \$200,000 to add to the town's contribution (American Farmland Trust, 2008).

Glastonbury has two local land trusts: Great Meadows Conservation Trust and Kongscut Land Trust, Inc. The Kongscut Land Trust manages ten nature preserves totaling 300 acres. It characterizes these parcels as "plant and animal habitat." Unlike Kongscut, the Great Meadows Conservation trust does include farmland in its list of preserved parcels. The group's mission is to "save the floodplain's vital agricultural, scenic, archeological and wetland resources, and are committed to working with like-minded groups and landowners" (Great Meadows Conservation Trust, 2009). The Trust's website language speaks to the fear of development pressure on the minds of certain local residents. One passage from its "About Us" page is particularly potent:

"HEED THE WARNING SIGNS

The meadows are already scarred. Acres have been mined for sand and gravel. Highways and industrial and urban development have usurped other of its space. There is vandalism, dumping and misuse of wetlands which can cause irreparable damage. Pressures to develop in the Great Meadows and along the river intensify each year. Without action to protect it, this oasis will disappear" (GMCT, 2009).

The Trust is not merely talk; it has done a great deal to preserve land in the Great Meadows. As of 2007 it owned 46 parcels occupying 172 acres, and holds conservation easements on 3 parcels. Some of these parcels are agricultural land; the Trust tries to embrace any land use type that will facilitate a healthier floodplain than more land-intensive types of development. It also organizes educational programs, including talks and nature walks.

The town of Glastonbury, according to its POCD, recognizes "the importance of balancing development with environmental protection in an equitable way." It acknowledges the difficulty of giving adequate weight to these two objectives, but believes that they are "not incompatible." However, "as Glastonbury continues to grow and development reaches the truly sensitive environmental areas identified herein, the balancing act becomes more difficult, and often quite technical" (Town of Glastonbury, 2007, 18). Indeed, this "balancing act" requires ingenuity and resourcefulness.

Glastonbury has taken some innovative steps in finding this balance, not only in the interest of environmental protection, but also to preserve agriculture and agricultural land. For instance, Glastonbury public schools purchase fruit from a local orchard and vegetables from a local farm, both raising awareness of community agriculture and supporting the industry. Other such awareness events include

participation in Connecticut's 2007 Tour des Farms, a bike ride through agricultural fields (Tour Des Farms, 2009), and hosting Connecticut Farmland Trust's wellpublicized fundraising event Celebration of Connecticut Farms in 2007 at Belltown Hill Orchards in South Glastonbury.

Unlike Middletown and Lebanon, the municipality of Glastonbury has not been awarded an Agriculture Viability Grant, but two individual farms have applied for and received funding. Old Maid's Farm, primarily an orchard, received \$7,500 in 2006 for a refrigerated storage facility, and \$30,200 in 2009 for cider mill processing renovations and equipment. Dondero Orchards, in South Glastonbury, was granted \$49,925 in 2007 for a greenhouse addition. Individual resourcefulness and grantwriting ability is quite important for any Connecticut farmer. Beyond that, a farmer's best hope is for support from the community through farm-friendly zoning regulations and planning measures. Glastonbury has generally provided that.

While it is similar geographically and demographically to Cheshire, Glastonbury has put more energy into regulating and spending specifically for farmland preservation. This may be attributed to two main differences: Glastonbury has more picturesque dairy and vegetable farms than Cheshire, and its website and official documents emphasize these rural qualities more than Cheshire's, suggesting that Glastonbury residents want to preserve a self-image in which agriculture features prominently. Glastonbury is more like Lebanon in this respect, although Lebanon's desired landscape character is a more visible reality.

Middletown

In contrast to Cheshire, Lebanon, and Glastonbury, Middletown does not put great emphasis on agricultural land in its town documents or website, though according to the 2002 Census of Agriculture, it has more farms than either Cheshire or Glastonbury (56, compared to 46 and 51). Though they are not always as well publicized or visible, Middletown's efforts at farmland preservation are worth noting, especially considering that this small city is relatively diverse and densely populated, unusual characteristics for a place that promotes land preservation.

Town hall has facilitated the passage of three bonds for open space and farmland preservation in the past ten years. Like Cheshire, the focus has mostly been on open space in terms of the actual parcels purchased. The bond in 1989, however, designated funds specifically to farmland preservation. According to Bill Warner, Middletown Planner, people in the town are generally in favor of bonds for infrastructure or open space preservation (which is considered "green infrastructure" by some). The passage of these bonds has not been controversial; every bond passed with approximately 75 percent support from voters (Trust for Public Land, 2005). The 2007 bond funds have been used to purchase two parcels of natural land, totaling 231 acres, with matching funds from the DEP, and the development rights on two farms were purchased, totaling 60 acres. Approximately \$1.2 million of the \$2 million referendum money was spent (plus appraisal, attorney and surveyor fees) (Dodge, 2009).

Middletown, as a municipality, has taken advantage of the state Agriculture Viability Grant. Like Lebanon, Middletown's town hall has requested funds with the

specific goal of trying to become more helpful to local farmers and encouraging of land preservation. Middletown was awarded \$50,000 to fund a plan for farmland and open space preservation and examine marketing opportunities for local farmers. The report that came out of this grant made 22 recommendations for changes at the town level that would ameliorate the position of agriculture in the town. This report was officially published about a year ago, and the town has not yet taken significant steps towards meeting many of the recommendations.

The report recommends that the Plan of Conservation and Development and the zoning regulations should be updated with language that makes agriculture preservation a town priority. The Middletown POCD now specifically identifies some priority agricultural parcels, but this is the extent of the town fulfillment of this recommendation (Dodge, 2009). Similarly, the zoning provisions do not give agriculture its own category in the list of town land uses. The report also suggests that the phrase "preservation of farming and farmland" should be added to the "Intent" section of the regulations (LADA et al., 2008, p. 33). The Middletown zoning regulations do innovate in some respects: Middletown allows cluster zoning, a technique for open space preservation recommended by McHarg in his book *Design With Nature*, the Bible of environmental and conservation planning.

The Middletown Agriculture Viability Report encourages the local cultivation of fruits and vegetables. In response to the recommendation: "The City of Middletown should work with Neighborhood Groups to design and implement a City wide Community Garden Initiative," Matt Dodge, Environmental Specialist at Middletown Planning and Zoning, just started preparing for a community garden

initiative (Dodge, 2009). In early 2009, the town applied for and secured a small amount of funding from a private foundation to hire a consultant who will gauge community support, elicit feedback and find out who wants to get involved with the community garden initiative.

There is also some private initiative for land preservation in Middletown. The Middlesex Land Trust holds 44 properties in East Hampton, Portland, Middletown, Middlefield, Durham and Cromwell, each parcel ranging from less than half an acre of land to over thirty acres. The Trust also organizes events ranging from "fundraisers to work parties, hikes and get-togethers" (Middlesex Land Trust, 2009). Because Middletown plays host to this land trust and larger state and national preservation organizations, town preservation efforts benefit from increased attention and awareness.

Still, many of Middletown's preservation provisions remain symbolic, designed to make the town attractive but still prioritizing development interests. Middletown, formerly the county seat, is an important hub for the Middlesex county area, so it often shoulders the burden of ensuring that regional services are available, such as a hospital, a courthouse, a mental health facility, and affordable housing options. The town priorities contrast with those of the rural town Lebanon, and the wealthy suburban communities of Cheshire and Glastonbury; its more smaller preservation efforts reflect these differences.

Compared to the other towns, Middletown residents have conflicting desires; they want to preserve farmland and public open space, but they also want to encourage a diverse array of industries, businesses, and populations. Providing

housing, services, and jobs for a diverse range of residents while prioritizing the preservation of farmland and open space, the task is difficult. Farmland and open space preservation often coincide with a desire to maintain a certain socioeconomic level. Open space parcels near residential areas tend to drive up the price of housing, creating a difficult environment for new, especially lower-income, residents looking to move into the area. Watching Middletown's choices in the future may reveal whether a continued balance of all of these factors is possible, or whether the more recent spate of land preservation efforts will force out some of its industry and lower-income residents.

V. Conclusion

The four studies in this chapter point to ways that farmland and open space preservation efforts can be used to serve different town goals. The "Constitution State," taking pride in its history, has an interest in preserving historic rural character. Connecticut also has a reputation for self-contained towns; encouraging local food and unique community landscapes is one manifestation of municipalities' desire for self-sufficiency.

While land preservation has become a priority for these towns, many of the measures currently in use respond to visible losses of open space that instill fear of change in residents. Most changes to POCDs and zoning ordinances (if they have been made at all) are very recent, generally within the last five years. Philip Chester, the "farm friendly" planner of Lebanon, was hired only in the past few years, and the town zoning regulations were just changed on August 25, 2008. Middletown is only

beginning to adopt recommendations made in a 2008 report about the state of agriculture in the town, while Glastonbury adopted its new conservation-oriented POCD in 2007. It is difficult to determine the effects of new measures on the rates of farmland preservation in these towns. The best measure is to look at how current actions align with stated intentions and aesthetic, cultural, and economic visions. While the political process is slow in all of these municipalities, it is clear that they have all taken significant recent measures to preserve historic rural character.

Beyond town-level changes, regional cooperation for farmland preservation is crucial. Coordination helps not only with resource pooling, but also with standardizing regulations related to agriculture across town lines. According to Jiff Martin of the American Farmland Trust, one of the biggest problems facing farmers in Connecticut comes from the fact that they lease land in different municipalities, a result of the continued fracturing of agricultural parcels (31 percent of the state's farmers (or about 1,300 farmers) lease land for their operations (Census of Agriculture, 2007)). Learning and remembering different sets of rules and regulations in each town is time-consuming and often prohibitive of many routine activities, such as driving a tractor between fields or selling fresh produce from a stand next to the farm (Martin, 2008).

Connecticut towns, at the forefront of landscape preservation, are uniquely placed to implement new innovative programs and foster coordination with other municipalities. Governmental and private organizations in Cheshire, Lebanon, Glastonbury, and Middletown have developed some effective strategies for land preservation. The next step will be to facilitate discussion about how these strategies

can be implemented throughout the Connecticut River Valley, the State of Connecticut, and the Northeast.

CHAPTER FIVE Conclusion: Promoting Preservation through Regional Cooperation

During the twentieth century, the preservation movement in the United States has broadened from a preoccupation with nationally significant landmarks to include the towns and local landscapes that shape peoples' daily lives. The focus is not only on grand and patriotic places, but also on aesthetics, planning and economics. Farmland preservation is one embodiment of the expanded agenda of the movement. Approaches to conserving farmland discussed in this thesis represent some promising strategies for preventing undesired landscape change while advancing broader placemaking goals. These strategies integrate community aesthetics into a framework of public action through regulatory and fiscal techniques. A distinctly human project, the preservation movement is subject to constant change, regional biases, and bureaucratic difficulties. Preservationists must work incrementally, as public and private leaders need to balance the competing demands of growth versus historic character preservation, private rights versus public goods, recreational land versus productive land, and many other dual goals at the center of land use decisions.

Cris Coffin, New England Policy Director for American Farmland Trust, claims her preservation organization helps "communities looking for ways to sustain agriculture, rural heritage and their quality of life. Increasingly, communities are recognizing the value of conservation programs that keep farmland in production and help keep farmers in business" (American Farmland Trust, 2007, p.v). At the heart of Coffin's statement are three ideas that chart the direction of my thesis. I analyzed the

following propositions: that farmland is integral to the American landscape and society; that the transaction of agricultural land represents a positive externality, providing societal benefits not apparent in the land's productive value, that should be accounted for through public channels; and that public intervention is valuable in stopping farmland conversions that do not reflect communal desires. Because Coffin is a well-known spokesperson for farmland preservation, I wanted to test some of her conclusions. While her statement was a good jumping-off point, I found it necessary to reframe some of her positions.

Farmland is integral to many American communities. Preference studies and farmland preservation referenda demonstrate the truth of Coffin's assertion about the valuable role agriculture plays in the landscape. For example, the Plans of Conservation and Development of many Connecticut towns – highlighted by the study in Chapter 4 of Cheshire, Lebanon, Glastonbury, and Middletown – underscore the centrality of rural landscape in community character. These four towns have actively sought to maintain a certain amount of rural landscape to preserve a (real or imagined) landscape aesthetic.

Preservation goes beyond aesthetics, and aesthetic issues are complicated by the fact that the ideal landscape varies widely from individual to individual. The success or failure of preservation efforts often has a class dimension. Only those regions of a certain income level can afford to pay for land and acquire development rights in order to preserve a countryside ideal. Preservation of land at a local level, though it allows autonomy and individuality in decision-making, can create a

patchwork of segregated towns within one region that might be able to accomplish shared goals more effectively through cooperation.

Coffin asserts that agriculture has a value beyond crop production. Actions by public and private groups demonstrate that farmland is indeed valued for more than its cost as productive land. Current federal government programs support the preservation of agriculture and agricultural land as an important facet of American life. Federal subsidies support the business of agriculture and provide funding for farmland preservation. At the town government level, many municipalities have utilized land-use regulatory provisions and fundraising tools to preserve parcels of great community importance. Private organizations such as American Farmland Trust purchase land for conservation and advocate for farm-friendly policies.

The government, at the national, state and municipal levels, is active in implementing programs to preserve farmland – federal and state money makes up a large percentage of the financial support for land conservation – but these programs have uncertain long-term results. My study of municipal bonds and land use change does not provide conclusive information on whether public intervention actually influences the shape of the landscape, although more effects may be seen in the future. Thus, Cris Coffin's third assumption – that public intervention is valuable in stopping farmland conversion that does not reflect communal desires – cannot be supported strongly by empirical evidence. The most effective strategy for long-term change will result from innovative partnerships between the government and private organizations. Conservation organizations, including The Nature Conservancy, Connecticut Farmland Trust, and local town land trusts, have made the most

significant progress in advocacy and community engagement. This thesis studied a few of these organizations, and suggests that their role is crucial, as governmental funding and regulation can be uncoordinated and unpredictable from year to year.

Land or development rights acquisition for public benefit is a major strategy used by land preservationists. The current economic downturn in the United States may endanger this and other land preservation efforts. As of March 2009, funding sources are uncertain in states struggling to meet even the most basic needs. Many states are currently scrambling for sources of revenue, and Connecticut is no exception. Special funds available under programs including the Community Investment Act, earmarked for farmland preservation, may instead be used to fill a \$220 million deficit in the current budget. Governor Rell has proposed subtracting \$12 million from the \$16 million expected to be generated by the Community Investment Act in the next two years. "You have Gov. Rell attempting to use some, but not all, of the historic preservation funds to close a gap of \$6 billion or more in funds [projected for 2009-2010 and 2010-2011]" (Labossiere, 2009). Farmland preservation may not be the foremost priority for governments under financial pressure.

At the same time, land acquisition is cheap in this economy. While the collapse of the real estate market is at the heart of the current financial downturn, cheap property prices may be the silver lining for preservationists. If funds can be found, they should be used now for acquisition.

Even without state monies, there are ways to encourage land preservation now. Lebanon, Connecticut stands as one example of the positive impact of

innovative programs. Lebanon has employed numerous strategies to maintain its farmland without utilizing referenda, a common tool for preservationists. The town hired a farm-friendly planner who spear-headed actions that include working with land trusts to purchase land and development rights, raising awareness about the farms in the area through its website and a new farmers market, and utilizing state and federal funds for programs and land conservation.

Preservation efforts will not significantly affect the look and use of landscape unless coordinated at the regional level. Private organizations – including the American Farmland Trust (AFT) and the Land Trust Alliance (LTA) – rather than governments, are key vehicles in bringing together disparate conservation efforts and goals and holding government accountable for land management and funding. Such institutions have already been effective in fostering partnerships and shaping a comprehensive landscape management and preservation scheme. Non-profits and other non-governmental groups have both the focus and the freedom to change the way local landscapes are managed. Their main constraints are funding and staff shortages, which, though significant, may be overcome through collaboration and innovation.

The Connecticut Land Conservation Conference, convened at Wesleyan University on April 4, 2009, may provide a successful model. The Conference drew over 200 attendees, including private individuals interested in learning about conservation easement options, land trust board members looking to improve their organization, and conservation-minded municipal officials. Workshops were held on subjects ranging from designing websites for land trusts, engaging the community,

monitoring easements, navigating IRS requirements, and effective lobbying for land trusts. This April 2009 gathering was organized by the Connecticut Land Conservation Council (CLCC), a newly formed organization that provides technical assistance and referrals for land trusts and other conservation groups, training and education, advocacy at the state capitol, and a forum for discussion (The Nature Conservancy, 2009).

Kevin Case and Hunter Brawley, two CLCC members instrumental in organizing the Conference, both offered views that neatly contextualized the work of this thesis and offered recommendations aligned with my findings. Kevin Case administers the Northeast division of the Land Trust Alliance, and is working on expanding funding for and partnerships between small Northeastern land trusts. Hunter Brawley is a conservation trust consultant who also serves on a land trust board. Case and Brawley believe that Connecticut can reach an ideal allocation of natural and cultivated open spaces, but not without more targeted goals, improved information-gathering and -sharing, and cooperation (Brawley, 2009). These recommendations resonate powerfully with my conclusions, and are illustrated through examples from the Northeast.

Hunter Brawley works with land trusts to clarify their missions. Clear objectives are essential for choosing parcels to conserve with a community-oriented, long-term perspective, for maintaining the parcel appropriately, and for securing funding from granting organizations. Brawley advises trusts to adopt two goals in their mission that he believes are most critical: protecting watersheds through buffer

parcels and conserving farmland, as agricultural acreage has decreased in recent years.

Kevin Case, spearheading Northeastern programs for The Land Trust Alliance, has begun a grant program for land trusts to encourage effective goal- and strategy-making and implementation. In order to qualify for funds, a land trust must adhere to certain standards and practices. The first standard requires a clear mission statement that will direct all the actions of the trust. LTA looks for missions that target the preservation of specific natural resources or geographic areas, and narrow criteria defining the process for selecting land and easement projects. Also important to LTA is that the land trust clearly specify the public benefit that can be gained from holding land or an easement and how that benefit is consistent with the trust's mission (Land Trust Alliance, 2009). Once the specific mission is established, the conservation organization or other regional leader can decide how to allocate resources towards defined goals.

Private and public organizations are increasingly utilizing new data resources to better understand the geographic terrain of their conservation efforts and present those efforts clearly to lawmakers and local residents. Global Information Systems (GIS) programs can pinpoint the locations of farmland and natural open space parcels of high value to communities, information that can be shared on the web in publications. Reliable and understandable data and imagery greatly enhances the visibility of preservation initiatives. The work of the University of Connecticut's CLEAR project is a good step for improving knowledge of land use trends, providing information on land change that can be used to inform policy. The information from

CLEAR may bring viewers, Connecticut residents and legislators alike, to sobering realizations about how much landscape has changed over time.

The Trust for Public Land and the Housatonic Valley Association have developed a GIS program that tracks different types of open spaces in Litchfield Hills, in northwest Connecticut. Viewing the online "living map" called Greenprint for Litchfield Hills, visitors can easily see important natural landscapes, land use patterns, and protected versus unprotected parcels in the area. The unprotected open space parcels are ranked according to the priorities of municipal and private groups from most critical to least critical for preservation (Trust for Public Land, 2009a). This data display model can be applied to many regions. Improved information allows preservation advocates to better coordinate as they prioritize what regions and land parcels are most important to preserve locally and regionally. However, collaboration requires the additional step of identifying regional leaders and forming strategic partnerships for implementing coordinated policies.

The Land Trust Alliance is a good example of an umbrella organization that offers support and structure to scattered groups working toward a common goal. In New York, LTA is the conduit for preservation grants from the State of New York. In 2009, New York designated \$1.4 million in grant funding, which LTA will be giving to 70 land trusts (Case, 2009). Most of these are professional development grants, meaning they pay for a staff position, a crucial asset for continuity and management. The role that LTA plays in New York is important for coordination and regional leadership; land trusts are held to a certain level of standards, and they

receive technical and advocacy resources in return for their proof of accountability and planning.

The Cape Cod Compact is another example of a regional land trust organizing body. The Compact works with 25 local and regional land trust and watershed associations on their projects to acquire and manage important natural areas as protected open space. It advises its members on non-profit administration, tax, and legal questions and provides full-time staff support to volunteer-run trusts. As a regional organization, The Compact also conducts research and promotes regional land protection projects (Cape Cod Compact, 2009). Though this model has been implemented on Cape Cod and in New York, Connecticut has taken few steps toward regional cooperation.

LTA is trying to foster some regional land trust leaders in Connecticut by focusing its funding and advisory resources on a few well-chosen trusts. Kevin Case is currently looking for groups with land holdings in multiple towns, with broad but clear missions, and with a capacity to grow. One of these groups is the Weantinoge Heritage land trust holding approximately 8000 acres of land easements in 25 different communities in eastern Connecticut (Weantinoge Heritage Land Trust, 2009). Organizations such as Weantinoge have the resources and connections to impact land use and preservation in a large region. Targeted funding by LTA of Weantinoge and a few other regional conservation organizations may encourage Connecticutians to plan for preservation on a larger geographic scale.

The regional cooperation facilitated by the Land Trust Alliance provides a model for managing land preservation efforts. Alliances of private conservation

organizations may offer an important structure that can inform planning and decisionmaking about land use. In comparison to the fractured system of regulation and subsidy by the government, private land trusts and advocacy groups have targeted goals that are direct reflections of community and group desires. Regional organizations can provide a structure for navigating the complex network of forces informing landscape policy.

Models for government and private action will evolve as the farmland preservation movement matures. Accountability and the demonstration of successful outcomes is key to justify expenditures. If conservation is supported by government funds, legislators and their constituents are likely to demand more assurances about how scarce public dollars are being spent and to expect that private groups and officials demonstrate what they have accomplished and what has not worked. Landscape formation is ultimately a matter of national identity, lying at the heart of what Americans value in landscape. Because it is such a public concern, farmland preservation will best thrive with meaningful public involvement. Politics, the art of compromise, joined with long-term planning, can preserve landscapes that speak to all levels of value: economic, social, aesthetic, and historic.

APPENDIX A Map of Prime Agricultural Soils in Connecticut (from USDA NRCS)



APPENDIX B Maps of Land Cover Change by Connecticut Town

(from University of Connecticut Center for Land Use and Research: http://clear.uconn.edu/projects/landscape/statewide.htm)

- 1. Percent Agricultural Land Cover 1985
- 2. Percent Agricultural Land Cover 2006
- 3. Percent Change Agricultural Land Cover
- 4. Percent Developed Land Cover 1985
- 5. Percent Developed Land Cover 2006
- 6. Percent Change Developed Land Cover

1. Percent Agricultural Land Cover 1985





3. Percent Change Agricultural Land Cover



-100% to -54%
-53% to -30%
-29% to -15%

Percent Change in Ag. Field

-14% to 0%

🗌 +1% to +88%

The percent change was determined by subtracting the 1985 Agricultural Field area from the 2006 Agricultural Field area and dividing the difference by the 1985 Agricultural Field area.

(2006 area - 1985 area)/1985 area

Note that there is a blas to towards towns with less Agricultural Field where a small loss of Agricultural Field can result in a large percentage.

4. Percent Developed Land Cover 1985



5. Percent Developed Land Cover 2006



6. Percent Change Developed Land Cover



Percent Change in Dev. +2% to +10%

+11% to +18%

+19% to +26%

🔳 +27% to +35%

■ +36% to +63%

The percent change was determined by subtracting the 1985 Developed area from the 2006 Developed area and dividing the difference by the 1985 Developed area.

(2006 area - 1985 area)/1985 area

Note that there is a blas towards less developed towns where a small area of development can result in a large percentage.

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