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Developing a Cohesive Urban Agriculture Policy for Burlington, VT

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DEVELOPING A COHESIVE URBAN AGRICULTURE POLICY

FOR BURLINGTON, VT

A Thesis Presented

by

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Abstract

A growing interest in urban food production has prompted many North American cities to revise their municipal policies regarding agricultural activities. In March 2011, the City Council of Burlington, VT, created the Urban Agriculture Task Force to investigate and recommend policies to provide city officials with tools to effectively govern urban agriculture. In coordination with the Task Force as a community partner, I used a governance framework and participatory action research (PAR) to analyze: (1) the needs of local stakeholders, including urban agriculture practitioners, the general Burlington community, and government officials; (2) the policy tools available to the City of Burlington, including the direct provision of services, regulation, public information, and partnerships with other organizations; (3) the actors and relationships present in Burlington's urban agriculture governance network; and (4) policy approaches used in other cities.

Based on this analysis, over 50 policy recommendations were developed for the City of Burlington, ranging from ordinance revisions to the development of new urban agriculture initiatives. Key findings include that (1) a balance must be struck between stakeholder needs (e.g. practitioners desire that regulations be minimal, while municipal officials need measurable standards to ease implementation); (2) a legal basis for governing some aspects of urban agriculture, such as the humane treatment of livestock, is needed, but other aspects, such as managing neighbor conflicts or connecting people to available land, are not easily regulated and require innovative programming; and (3) the City has an opportunity to partner with other organizations that are better suited to provide technical expertise to practitioners. These recommendations lay the groundwork for the City to better govern and support current and future urban agriculture activities.

Dedication

This thesis project is dedicated to those who work for justice against all odds and find solace in the soil, and to those who "see the day beyond the horizon and do what must be done." [1]

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[1] Greenway, G. 2010. What Must Be Done [Video file]. Retrieved from http://www.youtube.com/watch?v=-P6r1fgiUcU

Acknowledgements

This thesis project benefited from the encouragement, support, and positive affirmations from many people in my life, including family, friends, professors, colleagues, and fellow students. A special thanks is due to the members of Burlington's Urban Agriculture Task Force, especially Will Robb, Jimmy DeBiasi, and Jess Hyman, who invested countless hours in researching policies and coordinating Task Force activities. Many others supported the Task Force work by attending meetings, volunteering, and spreading the word about the effort.

I would also like to thank Hillary Archer, who so beautifully captured the spirit of urban agriculture in Burlington on film; members of the Gund graduate student group SMART SHEEP, who helped me to advance my work when I was struggling to stay afloat; and Meg Klepack, who suggested this project to me in the first place.

My committee members offered invaluable academic guidance and challenged me to expand my intellectual boundaries. I especially appreciate the support of Dr. Lini Wollenberg, who served as both my co-advisor and my supervisor during grad school, and who provided me with many opportunities for professional and academic growth.

Finally, none of this would have been possible without the unending love and support of my parents, John and Jamelle, and my sister, Heather, who talked to me when I had doubts and believed in my abilities even as our family lived through joys and sorrows during the two years over which this project spanned.

To these and so many other people I am not able to mention here, I extend my deepest gratitude.

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Chapter 1. Introduction

In cities and towns throughout the world, urban residents engage in food production in their yards, on balconies and rooftops, and in community spaces. In North America, this tradition dates back to community garden projects in the late 19th century and home victory gardens during the first and second world wars. Despite this tradition, some city policies, as well as some basic challenges inherent to the urban context, make it difficult for urban food production to thrive. Recently, many municipalities have undertaken policy revision processes to address some of these barriers out of an interest in proactively supporting urban food production for the many benefits it can provide.

The city of Burlington, VT, has a strong local food culture, and many residents and urban farmers grow food within the city. However, the city lacks clear municipal policies on various practices related to growing food and keeping animals. In late 2010, the Burlington Food Council[2] began to work with several City Councilors to address this issue. In March, 2011, Burlington's City Council created the Urban Agriculture Task Force, charged with "generating a cohesive urban agriculture policy informed in part by current research, best practices, and the needs of City residents" (Burlington City Council, 2011).

This thesis reports on research generated together with the Task Force as a community partner to understand how current municipal and state policies affect urban agriculture in Burlington and to identify policy recommendations to support the production of food in the city. A multistakeholder process informed an assessment of

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[2] The Burlington Food Council is "an open community group exploring ways to ensure that Burlington, Vermont and its surrounding communities create and nurture a healthy, equitable and sustainable food system for all people" (Burlington Food Council, n/d).

current policies, identified barriers, and guided the creation of policy recommendations. The Task Force also looked at policy examples from other cities to inform the policy development process.

Qualitative data collection methods included semi-structured interviews with local urban agriculture practitioners, Burlington city officials, and local policy experts, in addition to active participation in and observation of stakeholder meetings and public meetings with Burlington residents. Semi-structured interviews were also conducted with municipal officials in other cities.

Analysis utilized a policy tools theoretical framework from the governance literature, as well as a characterization of feedback across stakeholder groups. Poultry laws from four other cities were also analyzed.

Action outputs from this research include a Task Force report to City Council, delivered in September 2012, with policy recommendations for governing and supporting urban agriculture in Burlington[3], as well as a short digital film profiling several urban agriculture projects in Burlington, created in conjunction with a media professional at the University of Vermont[4].

Burlington's Urban Agriculture Task Force

As noted above, the Burlington Food Council collaborated with City Councilors to create the Urban Agriculture Task Force (henceforth referred to as the "Task Force") in March of 2011. The Task Force included representatives from city government, community members, an undergraduate intern from the University of Vermont, and me. Interested community members also attended several meetings. Although not an official

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[3] See Appendix A for an executive summary of the Task Force report. The full report is available at www.burlingtonfoodcouncil.org.
[4] See http://www.youtube.com/watch?v=godg7xefPvQ

Task Force member from the start, one organizational stakeholder became integral to the process during the second half of the project.

The Task Force commenced meeting in May of 2011 and submitted its final report to City Council in September of 2012. During this time, the Task Force met approximately ten times, hosted two community forums, presented at ten Neighborhood Planning Assemblies (NPAs), and met with almost 30 local stakeholders.

I was engaged with the project from start to finish, having been involved in the Food Council before the Task Force commenced work, and remaining involved throughout the report production process and the presentation to City Council. My research process was guided by the needs of the Task Force and my own academic interests in governance and values related to urban agriculture.

Research objectives

In order to support the Task Force process, my primary research objective was to identify policies that support and remove barriers to urban agriculture in Burlington through a critical analysis of current policies, governance approaches used in other cities, and the needs of stakeholders. Specific objectives included:

- Assess current policies affecting urban agriculture in Burlington
- Analyze urban agriculture policy approaches used in other cities
- Produce policy recommendations that meet the needs of stakeholders

Research questions

My overarching research question for this project was "How could Burlington better govern urban agriculture?" The following specific questions guided inquiry:

1. Which current policies affect urban agriculture in Burlington, and how are issues currently handled?
2. What are the needs and concerns of local urban agriculture practitioners and their neighbors?

3. How have other cities handled complex policy challenges related to urban agriculture user conflicts, land use, and governance?
4. What opportunities exist for the City to support urban agriculture in Burlington?
5. Where might implementation responsibility lie within Burlington city government?

Organization of this thesis

This thesis is organized into chapters that follow the standard flow of a research report, starting with background on the project and context, a review of the literature, methods, results, analysis, and conclusion.

Chapter 2 comprises a review of the literature, including work from the urban agriculture and food systems world, as well as policy tool and network frameworks from the governance literature. Chapter 3 provides a theoretical framework for the role of community values in public policy. Chapter 4 provides an overview of the methods used for research design, data collection, and analysis, as well as the subsequent policy recommendation development process undertaken with the Task Force.

Chapter 5 is the first of two findings chapters and provides an introduction to urban agriculture in the Burlington context, including an overview of the types of activities currently happening. Chapter 6, the second of the two findings chapters, looks at stakeholder views, current policies, and policy examples from other cities and analyzes these results using a policy tools framework to understand current policy, as well as a governance network framework to understand how actors within the current urban agriculture governance network relate to one another. Chapter 7 outlines the policy recommendations developed by the Task Force, applies the policy tools framework to all the recommendations, and identifies the ways that the stakeholder process informed policy development. Chapter 8 concludes the thesis with a discussion of key findings and

the implications of this work for the Burlington community. Supporting materials are included in appendices, which are referenced in relevant places in the text.

Commonly used terms

Throughout this text, I use several terms worth briefly defining here for the sake of clarity. These definitions are expanded upon in the literature review.

Governance is the translation of community interests into public policy and the coordination of multiple actors, including government, businesses, institutions, nonprofit organizations, and individuals, in the implementation of that policy. Government is involved in governance, but government is an entity whereas governance is an act, process, or system.

Public policy is an official governmental response to a given public issue.

Urban agriculture is the production of food in an urban context. Food processing and sales may be included, so long as the food being processed and sold was produced in the same urban context.

Values are belief systems, ideas, and worldviews held by individuals or groups. In this context values are not related to material or monetary worth, but rather an individual's or group's sense of the inherent importance of a concept.

All other terms used in more specific contexts are defined in the text upon first mention.

Chapter 2. Literature Review

My review of the literature is comprised of four main sections. The first outlines the scope of activities that fall into the category of urban agriculture and locates urban agriculture within the context of the modern food system. The second describes why urban agriculture is important by describing the values that motivate urban agriculture activities, the potential positive and negative outcomes of urban agriculture activities, and common challenges faced by urban agriculture. The third section looks at governance of urban agriculture at the municipal level and uses two governance frameworks as means of characterizing governance. The fourth and final section discusses the role of academic research in the development of alternative food systems.

What is urban agriculture?

The term "urban agriculture" can embody a range of activities, including home, school, rooftop, and community gardens, urban livestock (e.g. chickens, goats, bees, etc.), farming on vacant lots, farm stands, and greenhouses and hoophouses (Masson-Minock & Stockmann, 2010). Some expand the term to encompass post-production activities such as processing, distribution, and marketing (Bingen, Colasanti, Fitzpatrick, & Nault, 2009; Hodgson, Caton Campbell, & Bailkey, 2011). Urban agriculture can be commercial, noncommercial, or a hybrid (Hodgson, et al., 2011). In terms of scale, urban food production can occur in a space as small as a container on a balcony all the way up to agricultural fields many acres in size.

Food may be consumed by the person who grew it, shared with their family, friends, or neighbors, or sold to other urban consumers. People who grow food may also

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have flower or rain gardens, but these are not technically urban agriculture since they do not produce food.

Urban agriculture practitioners include commercial farmers, residents, neighborhood centers, recent refugees and immigrants, school children, and the elderly. Many urban agriculture projects are run by businesses, restaurants, government entities, or nonprofit organizations. People grow food in urban areas motivated by a wide range of reasons (see section on values below).

Spatially, food production occurs in urban areas, rural areas, and an in-between "peri-urban" zone, characterized by larger tracts of land and lower density. Urban agriculture happens at a range of scales throughout city environments and some scholars extend the definition of urban agriculture to include food production in peri-urban areas. To a large degree, the predominant land use pattern determines the scale of food production, a concept visualized in the food transect model (Figure 1). In dense downtowns, food production occurs primarily on rooftops, in window boxes, and in container gardens. With more open space, residential yards and community gardens appear. Moving further towards the rural zone, we see small scale production agriculture and tractor farming.

Figure 1. The rural-urban food transect[5]

Urban agriculture occurs on land held under a variety of property ownership models, including private property, public property, or institutional land. Some urban land trusts hold property for community gardens to protect the spaces from competing land uses.

Backdrop: the modern food system

The 20th century witnessed a fundamental shift in the way Americans are connected with their food, both literally and figuratively. A predominantly rural, agrarian society moved to a primarily urban, industrial, and subsequently technological society. After World War II, chemical weapons companies reconfigured their equipment to manufacture pesticides and synthetic fertilizers, which agricultural specialists promoted, unaware of their environmental hazards. The availability of cheap fossil fuels allowed for

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[5] Source: http://www.dpz.com/Thought/AgrarianUrbanism

agricultural mechanization, which reduced the need for on-farm human labor. Such technological advances resulted in significant yield increases. As some farmers recognized the profitable advantage of economy of scale, land was consolidated into large corporate agricultural enterprises, which resulted in corporate farmers making a great deal of money while small farmers struggled to make ends meet (Lyson, 2004). Food and agriculture businesses continue to integrate both vertically and horizontally, resulting in the concentration of power at certain points of the food system supply chain (Hendrickson, Wilkinson, Heffernan, & Gronski, 2008).

Long distance transportation, refrigeration, and large-scale operations allowed for centralized processing, and as farms failed to economically compete with other land uses near cities, farmland loss near urban areas increased (APA, 2007). Currently, the U.S. (and, increasingly, global) food system is characterized by a bizarre paradox: an economically efficient system that produces an abundant amount of inexpensive food and significant financial returns for some food and agriculture companies, and simultaneously contributes to obesity, diet-related diseases, animal mistreatment, farm worker abuse, and significant environmental degradation from production practices, processing, and transportation.

The production of food is now separated both geographically and culturally from the consumption of it (Mendes, Balmer, Kaethler, & Rhoads, 2008). As a result, many people **lack knowledge** of where food comes from, how it is grown, and when it is ready to eat (Nordahl, 2009). Even people who live in rural, agricultural landscapes may have little familiarity with the production of crops other than the predominant commodity

grown in their region. In addition, nationally, the average age of farmers is increasing, which may result in a shortage of farmers in the future (APA, 2007).

Racial and economic disparities exist in access to healthy, culturally appropriate, sustainably produced food (Allen, 2008; Mares & Alkon, 2011). Despite a surplus of production, millions go hungry each year due to issues of wealth distribution. Individuals and households can be food secure or food insecure, a designation that is primarily a matter of economic security. **Food insecure** households are defined as households that "at times during the year […] were uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food" (USDA, 2011). In the U.S. in 2010, 48.8 million people (16.1% of the U.S. population) lived in food insecure households (Coleman-Jensen, Nord, Andrews, & Carlson, 2011).

In urban areas, food insecurity is often compounded by a geographic factor – many low-income neighborhoods lack grocery stores and other sources of healthy food (Raja, Changxing Ma, & Yadav, 2008). These areas are often characterized as "**food deserts**." The United States Department of Agriculture (USDA) Economic Research Service (ERS) defines a food desert as "a *low-income census tract* where a substantial number or share of residents has *low access* to a supermarket or large grocery store." Food deserts can occur in any urban or rural area that lacks proximate sources of healthy or affordable food (McEntee & Agyeman, 2010). Food deserts often overlap with areas defined by high rates of poverty (Corrigan, 2011). The concept of food deserts highlights a geographical facet of inequity in the food system.

In addition to food insecurity, food-related **health discrepancies** exist between socioeconomic groups (Allen, 2008; Mares & Alkon, 2011). Food insecurity and urban food deserts negatively affect public health as people with limited income and food options often frequent inexpensive fast food restaurants, which offer energy-dense, nutrient-poor food, contributing to obesity (Corrigan, 2011; Drewnowski & Specter, 2004; Nordahl, 2009).

Additionally, although the U.S. food system is highly regulated for safety and in general produces very safe products, the centralized nature of the system does occasionally result in threats to food safety, such as e. coli and salmonella outbreaks, which, due to the highly connected nature of our food system, can be distributed widely and with little traceability (Nordahl, 2009).

Economic power in the modern U.S. food system is increasingly concentrated at certain points in the supply chain, including among the producers of agricultural inputs, corporate farms, food processors, and grocery chains. This concentration negatively affects the economic power of both small farmers and consumers (APA, 2007; Hendrickson, et al., 2008). As the agricultural input and food processing industries have become less competitive, they have caught farmers in an economic squeeze, where the majority of the money consumers spend on food goes to marketing and farm inputs and a decreasing portion goes to agricultural producers (Figure 2). While some large farmers are financially successful, most small farmers are economically challenged to survive in this situation. Industry concentration has also had a disempowering effect on consumers. While the industrial food system offers a seemingly wide variety of inexpensive food

products, the centralized nature of food producers and retailers leaves consumers with very little say in what is offered in their local supermarket (Halweil, 2004).
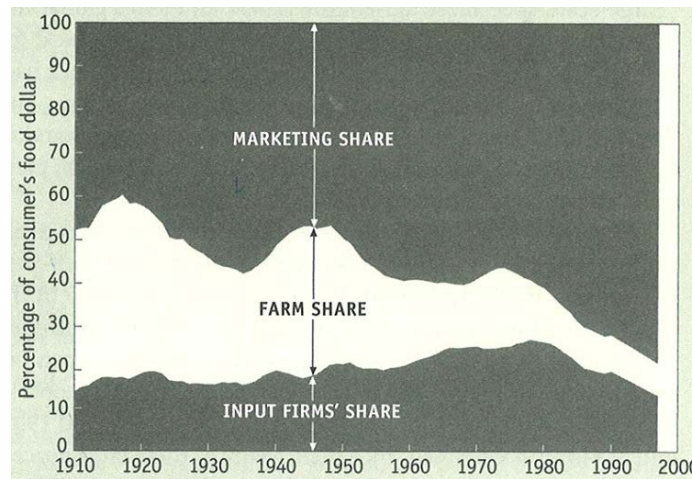
Figure 2. Farmer's declining share of the food dollar, 1910-19976

The majority of the **negative environmental impacts** from conventional agriculture result from the use of synthetic fertilizers, pesticides, mechanization, and the separation of animals and plants in agricultural systems. These practices result in agrochemical and nutrient pollution, soil erosion, depletion of water resources, and degradation of local landscapes (Gliessman, 2007).

Conventional agriculture reduces agrobiodiversity in a number of ways. At the organism level, consolidation of agricultural input companies has reduced the genetic variety of seeds available to farmers (Hendrickson, et al., 2008). This represents a threat to species diversity, as well as the global food supply, because we rely on an increasingly homogenized diet. This loss of diversity means less nutritional diversity in our diets, and is a threat to culinary diversity as well.

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[6] Source: Halweil, 2004

At the farm level, specialization (for the purposes of economic efficiency and mechanization) results in vast monocultures that are susceptible to pest and disease (Beus & Dunlap, 1990). Monocultures in rural communities result in rural food deserts—communities surrounded by farmland producing crops they cannot eat (McKibben, 2007). Additionally, the separation of plants from animals in industrial agriculture results in a deficit of nutrients in agricultural soils and a surplus of nutrients (in the form of waste) in animal operations. Berry (1977) implicates specialization as the cause of a wide range of cultural and environmental misfortunes.

Current agricultural policy encourages exploitation of resources by prioritizing short-term production over all else (McKibben, 2007). Farm income is directly linked to crop yield, and agricultural subsidies reward increased production. Although federal conservation programs do provide funding to farmers for putting a certain percentage of their lands in fallow every year, it should be noted that this accounts for a very small acreage of agricultural land. For example, in 2007 only 6,752 acres (0.55%) of VT agricultural land was enrolled in conservation or wetlands programs (USDA, 2012).

In response to concerns about the modern food system, including social and economic disparities, negative health impacts, and environmental degradation from unsustainable agricultural practices, many people have become interested in re-connecting with their food. An increasing number of consumers want to know where their food was grown, how it was grown, who grew it, and how to cook it. This trend has spawned a growing number of farmers markets, community supported agriculture (CSA) programs, and a renewed interest in growing one's own food (Lyson, 2004). In urban

areas, where most people in the U.S. now live, one way this interest has manifested is as a growing urban agriculture movement.

Why urban agriculture?

Many people participate in urban agriculture because of the values associated with the potential positive social, economic, environmental, and health outcomes that can result from urban agriculture. These values inspire urban agriculture activities, which may result in positive outcomes (consistent with values), or unintended negative outcomes (not consistent with values). Despite the many success stories from urban agriculture projects across the country, many urban agriculture activities face common challenges inherent to food production in urban areas.

Values

Values are belief systems, ideas, and worldviews held by individuals or groups. Some urban agriculture practitioners are motivated by social, economic, and environmental values that have come to characterize the alternative food movement in the U.S. in response to concerns about the industrial food system[7]. Such values are indicative of an ideological worldview that contrasts sharply with that of proponents of industrial agriculture with its paradigm of production and economic efficiency (Beus & Dunlap, 1990). Many people see urban agriculture as a means to address issues related to individual health, community wellbeing, and environmental sustainability (Bingen, et al., 2009). Urban agriculture projects may attempt to address "issues central to community food security, neighborhood development, environmental sustainability, land use

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[7] I recognize that not all urban agriculture practitioners hold the same values, but for the sake of understanding recent trends in urban agriculture, I focus here on the motivators of urban agriculture that align with alternative food movement values.

planning, agricultural and food systems, farmland preservation, and other concerns"
(Hodgson, et al., 2011). People who fall into this category believe that urban agriculture
offers means to reduce hunger, promote strong communities, live in more ecologically-
sensitive ways, and prevent threatened peri-urban farmland from being developed. Some
definitions of urban agriculture incorporate these aspects to show the ideological
foundations of some urban agriculture activities.

Practitioners may be motivated by one or several values. One review of published
research on community gardens identified 11 themes that motivate community gardeners,
including health benefits, food source/food security, economic development, open space
use and preservation, crime prevention, leisure and recreation, neighborhood
beautification, social interaction/cultivation of relationships, cultural preservation and
expression, and community organizing and empowerment (Draper & Freedman, 2010).
My analysis of the literature groups these and other themes into the overarching
categories of social values, economic values, and environmental values.

Social values

In response to concerns about a lack of food and agricultural knowledge, food
insecurity, disparities in access, and corporate control over the food system, many people
participate in urban agriculture projects motivated by interests in education and social
justice. These values are outlined below, organized around the topics of food and
agricultural literacy, food justice, community food security, and food sovereignty.

The concepts of **agricultural and food literacy** promote knowledge of the
production, preparation, and nutritional aspects of food. Agricultural literacy is a well-
established concept among educators concerned about the implications of a lack of

knowledge about the food system (Powell, Agnew, & Trexler, 2008). Agricultural

educators consider that agriculture is too important a subject for only a small percentage

of the population to learn about (Frick, Kahler, & Miller, 1991). The Farm to Plate

Initiative has identified food system education, both in K-12 and at the university level,

as a means to address workforce development needs (Kahler, Perkins, Sawyer, Pipino, &

St. Onge, 2011).

The nutritional and well-being aspects of food literacy stems from the idea of

health literacy. Food literacy emphasizes the importance of more than just knowledge: it

also encompasses an active understanding of that knowledge through application of

knowledge to food decision making and the accompanying practice of shopping and

preparation. Food literacy also considers the motivational aspects of food decision

making (Block et al., 2011).

The concept of **food justice** focuses on aspects of social equity in the food

system, with a special emphasis on racial and economic disparities in access to healthy,

culturally appropriate, sustainably produced food (Allen, 2008; Mares & Alkon, 2011).

Food justice seeks to "identify eaters primarily as citizens as opposed to consumers" with

the goal of relocating corporate power to the people who produce and eat food (Levkoe,

2006).

The issue of **food security** operates at multiple scales, and is directly related to

issues of household economic security, community resilience, and national security. In an

urban context, food shelves play an important role for household food security. The

concept of community food security incorporates issues of equity, health, and social

justice. Food security has also been used in the context of national or global threats in the food system.

The Community Food Security Coalition defines community food security as "a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Maretzki & Tuckermanty, 2007). The community food security movement has two primary areas of focus: *production* efforts focus on supporting sustainable small-scale farms, while *consumption* efforts focus on the needs of low-income consumers (Allen, 1999). The movement recognizes that these goals may not always be compatible but seeks to find solutions that address one or both goals. In this way, community food security projects aim to find creative ways to "dissolve the double bind" of producing food that is both affordable food and gives the farmer a fair price, such as outfitting farmers' markets with Supplemental Nutrition Access Program (SNAP) Electronic Benefits Transfer (EBT) debit machines (Schattman, Nickerson, Berlin, Kahler, & Pipino, 2011).

By challenging inherent inequity in the corporate food system, the concept of community food security also seeks to return food system power to local communities. The community food security movement aims to increase long-term food security by connecting production and consumption through a whole systems approach, which includes increased self-sufficiency through urban agriculture (Allen, 1999).

Some writers have framed food security as an issue of national security, citing concerns about industrial agriculture's reliance on foreign oil (Nordahl, 2009) and the risk of a centralized food system vulnerable to terrorist sabotage (McKibben, 2007).

Because the U.S. food system is highly centralized and dependent on long distance transportation, it is vulnerable to fluctuations in oil supply and price (Nordahl, 2009). Because it is non-diverse and highly connected, it is also vulnerable to changes in international trade, weather, pest outbreaks, and other factors (Fraser, Mabee, & Figge, 2005).

These three concepts of food security, while they differ in problem definition, all highlight the basic necessity of food. Household and community food security emphasize social justice considerations with a focus on the fact that our current food system fails to meet the food needs of many people. National food security is a matter of economic and national security. They all highlight that the majority of people have very little control over their personal food systems, let alone the global food system.

Food sovereignty is linked to the idea of community food security in that it seeks to democratically shift power from corporations to local food producers and consumers. La Via Campesina, the international peasant movement, defines food sovereignty as "the right of peoples to healthy and culturally appropriate food produced through sustainable methods and their right to define their own food and agriculture systems" (La Via Campesina, 2011). Food sovereignty has also been defined as "the freedom of states and communities to decide production, marketing and consumption strategies and policies" (Koc, MacRae, Mougeot, & Welsh, 1999). Although food sovereignty is a concept often used in the context of international trade, it is applicable at the individual, household, and community levels as well.

The concept of food sovereignty is closely linked with ideas of autonomy and self-governance. When people rally in the name of sovereignty, it is likely because they

feel that another entity holds unjust power over them. In this case, that entity may be the market (through market failures), the state (through inequitable agricultural policy), or corporations (through the concentration of economic and political power). At the municipal level, the idea of food sovereignty has been applied through municipal policies adopted by several Maine towns, which exempt local producers from food safety regulations (Huff, 2011). The intention is to make it easier for small producers to reach consumers, thereby supporting the local food economy. However, the food safety risks of such a policy have not gone unnoticed by state regulators, and one farmer is now in a lawsuit over the sale of raw milk (Miller, 2011).

Economic values

Similar to the goals of food sovereignty, local food system advocates aim to build closer and more direct economic connections between producers and consumers, bypassing the middleman and allowing farmers to receive a higher share of the money spent on food (Norberg-Hodege & Gorelick, n/d).

Lyson (2004) suggests that consumers have an opportunity to redefine the food economy, and that "civic agriculture" can lead to economic empowerment at a personal and community level. Urban agriculture is a piece of this puzzle, as it directly involves and exposes people to agriculture, thus reconnecting the links between production and consumption. Examples of civic agriculture include community supported agriculture (CSA) models that leverage monetary commitments from consumers in exchange for produce throughout the growing season, thus distributing the financial risk across a community.

Environmental values

In response to the negative environmental consequences of the modern agricultural production, some urban dwellers see the potential for greater sustainability through urban food production, as evidenced by the recent trend in "urban homesteading" (Wood, Pyle, Rowden, & Irwin, 2010). Urban homesteaders raise produce and livestock out of a desire to live more sustainably by obtaining food from outside of the industrial food system.[8]

Potential positive outcomes resulting from urban agriculture

Although they sometimes differ in problem definition, many of the values above share similar qualities in that they identify a problem with the current food system and locate solutions in actions taken at the community level. These solutions often aim to create positive outcomes associated with an alternative food system. Many urban agriculture projects aim to provide health, social, economic, and environmental benefits. While these benefits may not always be realized, the values associated with these potential positive outcomes often drive urban agriculture activities.

Health benefits

Urban agriculture can address obesity and other diet-related diseases by offering opportunity for physical activity and access to healthy food, and can also provide positive mental health benefits (Hodgson, et al., 2011; Nordahl, 2009). Some programs aim to leverage the therapeutic benefits of growing food: Renewal Farm (NYC) caters to recovering drug and alcohol addicts, and Growing Home (Chicago) offers job training for homeless and low-income people (Hodgson, et al., 2011). Brown and Jameton (2000)

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[8] Also see section below on the potential positive environmental outcomes associated with urban agriculture.

also outline the potential for positive public health outcomes resulting from urban agriculture, including short- and long-term urban food security and personal wellness through the therapeutic effects of gardening. Additionally, the decentralized nature of growing food for local consumption mitigates the risk of widespread illness resulting from one source.

Social benefits

Food has the power to create cultural vitality. Food draws people, who draw more people, which can build community connections and give an area of a city a vibrant feeling (Nordahl, 2009). Community gardens can play a role in community development through the development of social capital by providing a gathering place for residents (Brown & Jameton, 2000). They can also provide opportunities for residents to foster leadership skills through organizing and managing logistical aspects (Saldivar-Tanaka & Krasny, 2004). As a natural social gathering place, they can maintain cultural diversity, empower communities, and increase neighborhood security by building relationships among neighbors (Hodgson, et al., 2011; Saldivar-Tanaka & Krasny, 2004).

Many urban agriculture and community garden programs incorporate specific social goals into their mission. DeLaney Community Farm (Denver Urban Gardens) and Alemany Farm (San Francisco) have social and health goals such as increasing access to fresh food for low-income residents, as well as environmental and nutrition education (Hodgson, et al., 2011).

At an individual or household level, urban agriculture can increase access to healthy food either through self-production or knowing someone who is growing food. Urban agriculture can also increase the food security of a community. For example, a

study of a community garden in Baltimore showed that participation in the garden increased the food security of the participant, as well as the food security of the neighborhood, as a good deal of the food grown in the garden was shared with neighbors (Corrigan, 2011). The case has even been made that municipalities should grow food on city-owned land and provide it free to anyone who wants it in an effort to combat inequitable distribution (Nordahl, 2009). Although this may not be economically of politically feasible in all cities, this idea highlights the potential link between the role of local government, urban food production, and food security.

Urban gardening programs can also positively affect elderly populations. A Canadian urban garden program that targeted participation by elderly immigrants succeeded in its goal of helping to integrate seniors into their new home, even though the commercial enterprise did not result in substantial income. Participants experienced an increase in their overall health and wellbeing through increased nutrition and physical activity, as well as a reduced sense of isolation. They also participated in collaborative decision-making, reported a sense of contribution and pride, and appreciated the opportunities to develop and strengthen social ties (Beckie & Bogdan, 2010).

Another program in St. Louis targets refugees to assist them in starting farming enterprises (Moore, 2011). An added cultural component of urban agriculture programs that involve immigrants is the opportunity to cultivate traditional culinary plants that are not commonly available in supermarkets (Nordahl, 2009; Saldivar-Tanaka & Krasny, 2004).

Education is a core goal of many organizational urban agriculture programs, particularly those targeting youth, and urban gardening programs can have a measurable

impact on the relationship that young people have to the food they eat. A study in Minneapolis/St. Paul, Minnesota, showed that youth participants in a community gardening program consistently demonstrated greater knowledge of and familiarity with gardening and cooking techniques, nutrition, and the food system in general, as well as a higher tolerance of cultures other than their own (Lautenschlager & Smith, 2007).

Economic benefits

From an economic perspective, urban agriculture offers the possibility to reduce household expenses, boost economic exchange, provide education and skills training, and even create successful food enterprises (Mendes, et al., 2008).

While there is a paucity of quantitative evaluations of the economic impacts of urban agricultural production, a few studies have undertaken efforts to do so. In 2008, urban agriculture in Philadelphia produced an estimated $4.9 million in produce (Hodgson, et al., 2011). In Madison, Wisconsin, the Community Action Coalition provides fresh produce to nearly 2,000 low-income households by supporting community garden efforts. (Hodgson, et al., 2011). Although not quantified, it has been suggested that urban agriculture has the potential to decrease cost of maintaining public land, increase local employment opportunities, and take advantage of underutilized resources (Kaufman & Bailkey, 2000).

Community gardens can also have positive effects on property values, which can lead to better neighborhood conditions and increased tax revenues over time (Tranel & Handlin, 2006; Voicu & Been, 2008). By reducing the amount of food that needs to be purchased outside the home, urban agriculture has the potential to reduce food

expenditures at the household level (Hodgson, et al., 2011), although such production

does require some financial investment and time commitment on the part of gardeners.

Environmental benefits

In terms of environmental benefits, urban agriculture can provide open space

benefits and an opportunity for people to obtain food not grown in the conventional food

system—a system associated with adverse environmental impacts. Urban agriculture is

recognized as a viable sustainable development tool in both developed and developing

countries (Holland, 2004; Irvine, Johnson, & Peters, 1999). However, few studies have

quantified or analyzed the environmental benefits of urban agriculture (Hodgson, et al.,

2011). Literature touching on the environmental sustainability aspects of urban

agriculture centers around two themes: the ecologically restorative nature of urban

agriculture as an urban greening method; and, from a food systems perspective, the

comparative advantage of sustainably-produced local food as opposed to industrial

produce from distant farms.

The **ecological restoration** theme focuses on benefits such as the restoration of

degraded (e.g. abandoned or contaminated) land and reduced stormwater runoff (e.g.

green roofs decrease impervious surfaces) (Halweil, 2002; Hodgson, et al., 2011;

Mougeot, 2006; Signer, 2011). Urban agriculture has the potential to increase local

biodiversity, both in terms of agrobiodiversity (diversity of agricultural crops and

animals) and native biodiversity (by providing open space habitat for native plants and

animals). Urban agriculture project designs can intentionally include ecological elements

such as native plant species (Irvine, et al., 1999). Urban agriculture can also provide

green space micro-climate benefits such as mitigation of the urban heat island effect,

humidity regulation, wind reduction, and shade provision (Lovell, 2010; Pearson, Pearson, & Pearson, 2010). Beekeeping can support local pollination.

Rooftop gardens have the potential to reduce stormwater runoff, though significant engineering is required to ensure building integrity is maintained. Many also note the contribution urban agriculture can make in diverting organic waste from the solid waste stream and returning it to the soil (Cofie, Adam-Bradford, & Dreschel, 2006; Lovell, 2010; Pearson, et al., 2010).

The **food system** theme perspective suggests many potential sustainability advantages of growing one's own food, including reducing one's carbon footprint, recycling organic waste, and growing food with ecological methods that do not contribute to air and water pollution (Halweil, 2002; Hodgson, et al., 2011; Mougeot, 2006; Viljoen, Bohn, & Howe, 2005). Potential ecological benefits can be gained at the food system scale by offsetting industrial food production with sustainable urban food production. However, without quantitative measures of the amount of food produced in a city, and without a mechanism to link increased urban food production to decreased industrial food production, the claim cannot be made that sustainable urban food production actually reduces industrial rural food production. Therefore, this set of potential environmental benefits is necessarily hypothetical.

While industrial agriculture relies extensively on fossil fuels and mechanization, urban agriculture, because of its smaller scale, tends to rely on human labor.[9] Technically, industrial agriculture in a city could be considered urban agriculture, though

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[9] Though of course urban agriculture depends on fossil fuels to the extent that they are used to manufacture inputs, transport products, and power supporting systems.

such manifestations of urban food production are unlikely considering that industrial agriculture generally requires large areas of land. Most urban agriculture projects promote sustainable and small scale production for the associated environmental and social benefits.

If agroecological practices are used, urban agriculture has the potential to eliminate the negative environmental impacts associated with industrial agriculture production. Agroecology draws from ecology as inspiration for agronomic practices by using ecosystems processes to manage agronomic challenges (Gliessman, 2007). By maximizing natural processes, the use of external inputs, such as pesticides and synthetic fertilizers, can be minimized (Mendez, 2010). Due to its generally small scale, urban agriculture has the opportunity to utilize closed-loop production systems such as composting, integrated animal systems, and rainwater capture. This is contrast to industrial agriculture, with its specialization and reliance on monoculture and external inputs.

Some note the potential for urban agriculture to provide food with less climate impact. However, the concept of "food miles" has been criticized as an inaccurate proxy for understanding the relative greenhouse gas (GHG) impact of local versus imported food, and lifecycle assessment has been suggested as a more accurate measure (Coley, Howard, & Winter, 2009; Edwards-Jones et al., 2008; Weber & Matthews, 2008). Data on lifecycle emissions have been used to criticize claims by the local food movement that locally-produced food is more climate-friendly than imported food, because only 11% of lifecycle emissions occur during transport. Critics of the idea of eating local food for its supposed climate benefits note that the majority of GHGs are emitted during production;

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therefore diet choices can have a more significant effect on GHG emissions than transport distance (Weber & Matthews, 2008). However, considering that urban agriculture production likely occurs very close to where it is consumed, GHGs from transportation are likely significantly less than with conventional food (Lovell, 2010).

Another consideration is that analyses of the GHG impacts of food typically pit either one type of food against another (e.g. beef is more GHG intensive that chicken, see Weber & Matthews, 2008) or local versus imported sources of the same type of commercially-produced food (Morgan, Renzi, Cook, & Radenovic, 2007). Considering that embodied energy in all industrial food is significant, urban agriculture has an opportunity to produce food with less fossil fuels (Viljoen, et al., 2005).

In addition to using fewer fossil fuel inputs than industrial agriculture, it has been suggested that urban agriculture provides climate change mitigation benefits through vegetative cover, though it should be noted that animals are likely net emitters (Pearson, et al., 2010). However, because agricultural mitigation is largely dependent on production practices, it is difficult to hypothesize whether urban agriculture in general mitigates CO_2 through soil and vegetation. Additionally, because land tenure in urban agriculture is sometimes limited, long-term mitigative capacity is not guaranteed.

Potential negative outcomes resulting from urban agriculture
Despite the many potential positive outcomes resulting from urban agriculture, there is also the risk of negative outcomes due to issues inherent to growing food in urban contexts or unintended consequences of urban agriculture activities. Potential negative outcomes include risks to health, social systems, economic wellbeing, and the environment.

Health risks

Although the literature does not contain much information on public health or food safety concerns in the context of urban agriculture, risks can arise from historical land use patterns or unsafe practices. Urban soils are often contaminated with lead or industrial chemicals. Practitioners may use pesticides, with the risk of exposing themselves or their neighbors to unsafe levels of toxins. Gardens may be at risk for contamination from human or pet fecal matter. Home processing of food for sale requires safe food preparation practices.

In dense urban areas, there can be an increased risk of disease transmission from livestock (Mougeot, 2001; Schiere, Rischkowsky, Thys, Schiere, & Matthys, 2006). Some also cite the importance of animal health and note the risk of neglect of urban livestock (Bellows et al., 2000). Some urban residents object to urban livestock keeping specifically on the grounds of animal welfare (Elwood, 2011).

Social risks

Negative social outcomes include nuanced assessments of the potential unintended impacts of urban agriculture projects. Social risks include the promotion of privilege, inequity, and oppression, the cooption of emancipatory projects for non-emancipatory purposes, and the degradation of community relationships.

Culinary differences exist along lines of class, race, gender, and ethnicity. These differences in food culture can complicate the idea of food literacy because of the power dynamic of one set of people trying to "correct" an information asymmetry. In some places, the "eat local" movement is associated with being white, middle-class, and female (Mallory, 2012). This can have a significant impact on whether someone who does not

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identify with one or all of those labels is willing to shop in certain places or eat certain

foods. Food literacy projects should ask the question, "Whose foodways are being

advocated?" Without a mind to this dynamic, efforts to "improve" food literacy could

risk reinforcing existing oppressive social power dynamics. An emphasis on "what is to

be gained" ("community", "connection") is a cultural argument. Therefore, care must be

taken when food literacy advocates sustainable foodways. Food education curricula can

incorporate ethnic food traditions in order to promote cultural acceptance (Lautenschlager

& Smith, 2007).

Proponents of local food systems suggest that participation in an embedded local

food economy can contribute to a sense of connection to a broader community and a

resulting willingness to pay a higher price that reflects the true cost of what it took to

produce the food (McKibben, 2007). However, the importance of farmers getting a fair

price for sustainably and fairly produced food is at direct odds with anti-hunger and food

security values. Programs that aim to support alternative agriculture must also

intentionally integrate those most affected by social inequality in order to achieve lasting

social change, otherwise social exclusion is likely to occur (Macias, 2008).

Some food system scholars note the subtle but important distinctions between

discourses around local food, community food security, food justice, and food

sovereignty (Mares & Alkon, 2011). Although the movements share similar analyses of

the industrial food system and the need for people to have access to food, they tend to

promote varying solutions to problems. Mares and Alkon (2011) critique the local food

movement for a lack of attention to issues of structural inequality in the food system and

also for attempting to use market mechanisms to address problems resulting from neoliberal policies.

Throughout history, community gardening projects have emerged in waves during economic and social transitions. The latest trend has produced a wide range of programs with different motivations. Pudup (2008) draws an important distinction between gardening programs with goals of social resistance versus institutional garden programs that aim for individual transformation. Pudup notes the ways in which nonprofits and third sector initiatives have stepped in to mitigate the negative consequences of neoliberalism while simultaneously adopting neoliberal ideals through goals of "transformation of individuals in place of collective resistance and/or mobilization" (pg. 1230). For example, Pudup notes that one of the unspoken aims of the Edible School Yard program in Berkeley, CA, is to produce consumers who prefer locally and sustainably produced food, reinforcing the idea that the primary avenue for civic engagement is through the market.

Mares and Alkon (2011) note the inherently problematic aspects of a narrative that places responsibility on low-income and marginalized people to help themselves through organized community garden projects aimed at individual transformation. This approach effectively avoids placing blame on the structural economic inequity that results in widespread food insecurity. In this way, urban agriculture becomes a coping mechanism to deal with structural inequality rather than a transformational means of restructuring the food system.

Jamison (1985) notes a similar tension between collectivist urban garden organizations and the bureaucratic agencies providing them with resources. Despite a

shared interest in promoting urban food production, Jamison explores the differing

organizational cultures associated with both organization types that result in different

narratives about the benefits of community gardens. While the garden organizations were

more likely to stress community self-reliance and the development of democratic

participation, the bureaucratic organizations were more likely to focus on individual self-

reliance and personal improvement.

Finally, user conflicts can arise from conflicting values and cultural norms. The

practice of keeping animals, regardless of whether it is in an urban or rural area, can

cause noise (such as roosters crowing, hens clucking, and goats bleating) and odor

nuisances (from manure) (Hodgson, et al., 2011), even when proper practices are

employed. Some people don't mind these conditions or are willing to live with them

because of the benefits they receive, while others find them offensive either because they

do not gain value from them or because of some concept of urban propriety (Schiere, et

al., 2006). Cultural conflicts can arise in relation to animal slaughtering, disagreements

on what constitutes the best use of land, or simply because some people choose an urban

lifestyle because of the status associated with it, and they see farming as beneath them

(Holland, 2004). User conflicts can result when residents hold conflicting values, such as

when one resident has a garden that is dug up by a neighbor's dog, or when one gardener

uses pesticides that drift to a neighbor's organic garden. Some may object to the

aesthetics of urban food production because of concerns related to real estate values

(Bartholow, 2011)

Economic risks

Although the literature does not dwell on the potential economic downsides of urban agriculture, it is relatively easy to imagine the ways in which urban agriculture projects could negatively affect participants or others. Individuals, organizations, municipalities, or lending agencies could invest in projects that do not generate the expected economic returns due to any number of factors, including crop failure, loss of interest, or lack of agricultural knowledge. Unlike industrial agriculture, city farming and gardening are labor intensive (Bingen, et al., 2009). For this reason, it may be difficult for enterprises to run a successful business. One urban agriculture project that had the goal of generating revenue for participants (along with other social goals) was able to generate only $100 per participant over the season (Beckie & Bogdan, 2010). Urban agriculture could even have an unintended negative effect on the local agricultural economy; i.e., if people grow more food for themselves, they may buy less from local farmers.

Environmental risks

Although there is little written on the potential negative environmental impacts from urban agriculture, urban agriculture can contribute to environmental problems as well. For example, although many urban farmers are inclined to use organic methods of production (Kaufman & Bailkey, 2000), it would be unwise to assume that all urban farmers are committed to using sustainable agriculture methods. Inappropriate use of fertilizers, insecticides, herbicides, and pesticides can threaten local ecosystems and put human health at risk (Armar-Klemesu, 2001). In addition to pollution from agrochemicals, manure or compost could enter stormwater runoff, which could have a

negative impact on water quality through the addition of nutrients or pathogens (Bellows, et al., 2000).

Given the negative environmental impacts of conventional agriculture, it is certainly conceivable that similar production techniques could be used in urban areas and yield similar results. The majority of the negative environmental impacts from conventional agriculture result from the use of synthetic fertilizers, pesticides, mechanization, and the separation of animals and plants in agricultural systems. These practices result in agrochemical and nutrient pollution, soil erosion, depletion of water resources, and degradation of local landscapes (Gliessman, 2007). Although there is potential for commercial agriculture on large open tracts in post-industrial cities like Detroit, most urban land in many cities (including Burlington) is allocated to existing land uses and available land is only available in small, scattered pieces.

Without a mind to urban design, the use of urban space for agriculture could reduce urban density, thereby contributing to sprawl. In terms of climate change, the need to design cities for both climate change mitigation and adaptation can result in a tension between the need for open space and the need for dense settlements for sustainable community considerations. Open space should achieve multiple benefits, including the use of green space for urban agriculture (Hamin & Gurran, 2009). This view is consistent with the idea of multifunctional urban agriculture (Lovell, 2010). It has also been noted that regional planning and design for incorporating agricultural production into cities may reduce the encroachment of urban areas into farmland (Condon, Mullinix, Fallick, & Harcourt, 2010).

I would be remiss to not mention one potential wildcard in the debate on the potential positive and negative environmental outcomes from urban agriculture, which is the concept of vertical farming. Although no examples of this technology currently exist, several popular press articles debate its relative risks and virtues (Monbiot, 2010; Nelson, 2007). The most vocal promoter of vertical farming, Despommier (2010), advocates the use of urban skyscrapers for food production through hydroponic or aeroponic production techniques, arguing that indoor intensification of agriculture will be better suited to an urban population, eliminate weather-related risks associated with extensive agriculture, and eliminate pollution from fertilizers and pesticides. The major ecological argument for using this technology is that it could preserve ecological habitat in rural areas, and perhaps even allow some currently cultivated land to return to a natural state, an argument consistent with the theory of land sparing as justification for the intensification of agriculture (Green, Cornell, Scharlemann, & Balmford, 2005). However, no studies have attempted to quantify the potential environmental benefits or drawbacks of vertical farming. For example, would rural lands actually be spared from conversion to farmland? Would the energy intensity of maintaining the internal environment be greater or less than the energy used by extensive agriculture? The embodied energy and environmental impacts of constructing the building alone might be significant enough to negate any environmental benefits from future food production within the building. Additionally, there would be the potential for light pollution from greenhouse lights. Until more study is undertaken, it is difficult to ascertain the potential impacts of this technology.

Common challenges for agriculture in an urban context

Common challenges for urban agriculture relate to the inherent difficulties of growing food in an urban environment, including soil contamination, land access, water access, and user conflicts.

Soil may be contaminated due to current or past industrial use, lead paint on residential buildings, or pollution from any number of other sources such as auto exhaust, asbestos, or gasoline (Bingen, et al., 2009; Hodgson, et al., 2011; Nordahl, 2009). Means of exposure include direct skin contact with soil, inhalation of airborne contaminants, or ingestion of produce that has absorbed contaminants from the soil (Hodgson, et al., 2011). A variety of factors affect the risk of transmission of soil contamination to humans, including plant type, soil structure, and soil pH.

In post-industrial cities, **land** is often readily available, but may be burdened with legal complications such as back taxes (Hodgson, et al., 2011). In built-out cities (Burlington would fall into this category) it is often difficult to locate spaces appropriate for urban agriculture (Hodgson, et al., 2011; Mendes, et al., 2008). In such cities where development pressures are high, urban agriculture is vulnerable to changing investment priorities (Bingen, et al., 2009; Nordahl, 2009). On its own, urban agriculture cannot compete with private development opportunities from an economic viewpoint, but it can be integrated into development plans (Hodgson, et al., 2011). "Squatters" (people who grow food on land without a legal agreement) are vulnerable to trespassing charges and being evicted from their sites (Hodgson, et al., 2011). Secure land tenure is necessary for long-term success of community gardens projects (Holland, 2004).

Without access to **water**, urban agriculture projects cannot succeed. Municipalities can provide access to water for community gardens and urban agriculture through new infrastructure and affordable use permits. Cleveland offers seasonal permits to unmetered access to fire hydrants for irrigation at community gardens. Technical support from USDA and extension agencies can determine appropriate watering techniques for specific contexts (Hodgson, et al., 2011).

The community values and potential positive outcomes associated with urban agriculture indicate that efforts should be made to support urban residents in producing their own food and promote the growth of urban agriculture projects. Given the risks and challenges noted above, there is a need to alleviate barriers and reduce the risks of negative outcomes. Municipal governments have an important role to play in meeting this need. This governance and policy support is the subject of the next section.

Governing urban agriculture

This section outlines how municipalities can support and govern urban agriculture by providing examples of municipal urban agriculture policies from the literature and introducing two theoretical frameworks that will carry through the remainder of this thesis. The first is a policy tools framework that characterizes governance approaches and their associated attributes. The second is a network governance framework that illuminates the actors and relationships at play in a policy context.

Historically, food system governance has primarily been the responsibility of the federal government with a fair amount of latitude left to the market. State agencies deal with some aspects of agricultural production, but municipalities have not engaged in food or agriculture policy. However, municipal governments have a role to play in urban food

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production because urban agriculture involves land use, human health, neighbor relations, animal wellbeing, and environmental issues (among other things), all of which fall under the purview of municipal governments.

Defining governance

In a general sense, *governance* can be thought of as the social arrangements by which any entity or group of entities coordinates the actions of individuals and groups. Government is involved in governance in the public sphere, and is an entity whereas governance is an act, process, or system. Many scholars propose various definitions for governance, including as "a conceptual or theoretical representation of co-ordination of social systems and, for the most part, the role of the state in that process" (Pierre, 2000, as quoted in (Koliba, Meek, & Zia, 2011) p. 46); as "the sum of the many ways individuals and institutions, public and private, manage their common affairs" (Commission on Global Governance, as quoted in (Webb, 2005) p. 147); and as "the process of coordination and control as an integral dimension of public policy making and implementation" (Koliba, et al., 2011, p. 46).

For the purposes of this thesis, I define governance as *the translation of community interests into public policy and the coordination of multiple actors, including government, businesses, institutions, nonprofit organizations, and individuals, in the implementation of that policy*.

Policy tools

In a general sense, *policy* refers to any number of methods by which a governmental or nongovernmental organization systematizes a response to a given situation, whether in the form of laws, organizational processes, the sharing or

withholding of information, or the collection or distribution of money. *Public policy* generally refers to policy in the governmental realm. Cochrane et al. (1999) define public policy as "the actions of government and the intentions that determine those actions" (as quoted in (Birkland, 2005) p. 18). For the purpose of this thesis, I define public policy as *an official governmental response to a given public issue*.

Policy (or governance) tools are the specific mechanisms employed as a result of public policy including laws, taxes, and economic incentives, to name a few. The public policy literature offers many frameworks for understanding the various policy tools available to policy makers to achieve policy goals (Eliadis, Hill, & Howlett, 2005; Salamon, 2002b; Stone, 2002). While the classic public administration field focused on the public agency as the unit of analysis with the goal of increasing bureaucratic efficiency, and the implementation studies field focused on specific programs as the unit of analysis with the goal of identifying why programs fail, the "new governance" field considers policy tools and technologies as the unit of analysis with the goal of explaining how tool choices affect the structure of governance networks (Salamon, 2002a).

Using a policy tools framework can assist in an understanding of how governance bodies employ different tactics to address a certain policy issue. For this project I use Salamon's framework from his seminal review of policy tools used by governmental bodies and implementing agencies in the United States (2002b). Although Salamon identifies a broader and more complex range of tools usually utilized at the state or federal levels, the tools framework can be applied to municipal governance. It is also successful at highlighting the ways that policy tools are utilized through interactions between multiple governance actors at different levels of government. The nature of the

actors themselves and the interactions between them are better understood through a

network governance analysis (see section below on network governance).

The following tools are the most salient to Burlington's urban agriculture context,

of which the city's current governance role in urban agriculture is currently limited to the

first three tool categories:

- Direct government
- Social regulation
- Public information
- Grants

Salamon (2002) provides a framework for analyzing policy tools based on the

following tool attributes:

- Coerciveness – the extent to which behavior is regulated
- Directness – the extent to which authorizing agency is involved in implementation
- Automaticity – the "extent to which a tool utilizes an existing administrative structure for its operations" (p. 32)
- Visibility – "extent to which resources devoted to a tool show up in normal government budgeting" (p. 35)

These attributes are useful to consider because they can shed light on the political

feasibility and implications of tool choices. In the following sections I summarize these

tools and their associated attributes.

Direct government is a policy tool described by Leman (2002) as "the delivery

or withholding of a good or service by government employees" (p. 49). Examples of

direct goods and services include:

- Production services (e.g. education, water, social security, forest and parks)
- Police services (e.g. national defense, prisons, taxes)
- Facilitative functions (e.g. courts, currency, postal service, economic management)

Direct government is (not surprisingly) a very direct tool because it is the direct provision from the government, not mediated by another entity. It is, however, the least automatic tool because the government is creating from scratch a means to achieve an end. Direct government can be, but is not inherently, highly coercive, because it is administered with the authority of the state. Finally, direct government is highly visible to the public, as the cost of direct government is borne directly by taxpayers.

Social regulation is described by May (2002) as "rules that identify permissible and impermissible activity […] aimed at restricting behaviors that directly threaten public health, safety, welfare, or well-being" (p. 157). Zoning and land use are major categories of local government regulation. May describes as the attributes "good rules" as:

- Commonly viewed as necessary
- Appropriate to the situation being addressed
- Provide for consistent application with reasonable exceptions
- Sets forth predictable expectations
- Can be understood by affected entities (p. 165)

Social regulations tend to be highly coercive (due to threat of penalties for noncompliance) and can by highly intrusive if there is a cost associated with compliance. They are limited in their directness because they are implemented by other agencies or third parties. In addition, they are not very automatic because there is a need to induce or compel compliance. Finally, social regulation tends to be relatively invisible because regulatory costs specific to specific rules are not usually known (May, 2002).

Weiss (2002) describes **public information** as "a tool for eliciting desired policy outcomes" (p. 218). The use of this tool is generally intended to change the way people behave by providing them with information that changes the way they think about or understand an issue. Top-down approaches include information campaigns and technical

assistance. In the extreme, public information can indoctrinate through propaganda (Weiss, 2002; Stone, 2002). All public information approaches are predicated on a certain level of rationality—the assumption that people will change their behavior in response to information. However, in reality people may not have all the information they need to change their behavior, or they may not respond to that information even if they do (Weiss, 2002).

Public information can be used as a direct tool (e.g. promoting awareness on lead in soils) or indirectly (e.g. requiring farms to label uninspected meat). In terms of automaticity, this tool may utilize existing communication venues to deliver a message, but the message itself requires development by a government agency. Depending on the approach taken, the budgetary aspects of public information may be visible or invisible to the public. Finally, although some people see public information as a "soft" way to influence behavior (as opposed to changing behavior through threat of force), others regard any government involvement in the free exchange of ideas to be highly intrusive. (Weiss, 2002)

Grants are "payments from a donor government to a recipient organization (typically public or nonprofit) or an individual" (Beam & Conlan, 2002). With this tool, grantors offer the financial means for a grantee to provide a service. Although the service may be rendered through a government agency, grants are indirect means of governance (Beam & Conlan, 2002).

Grants are indirect tools, since they rely on an intermediary entity to perform a function. They are relatively automatic, since they take advantage of other organizations' infrastructure. Although grants are inherently non-coercive, they may be impossible to

reject in certain situations. Finally, grants are usually relatively visible because funding

appears in the public record. (Beam & Conlan, 2002)

Governance networks

Governance networks are a conceptual framework for describing how societies

self-organize around complex issues and deliver public goods and services (Koliba, et al.,

2011). Recent trends in public administration represent a shift to indirect government,

where many governance activities are carried out by third parties (Koliba, et al., 2011;

Salamon, 2002a). Urban agriculture is a policy domain in the city of Burlington that

involves actors in the public, private, nonprofit sectors, as well as individuals, operating

at various scales and performing a variety of functions. The urban agriculture governance

network has aspects of both direct and indirect government.

In the context of network governance, governance is viewed "as a property of the

interorganizational network […] a matter of systems dynamics" (Koliba et al., 2011, p.

54). Thus, *governance* is the means by which a network manages the processes to create

and implement policies around common goals, while *government* is an entity—one of the

actors in that network.

Koliba et al. (2011) describe governance networks as "interorganizational

networks comprised of multiple actors, often spanning sectors and scale, working

together to influence the creation, implementation, and monitoring of public policies"

(xxv). Governance networks themselves are not new. Democracy (with its separation of

powers, structures with corporations, and nonprofits) is inherently networked. In fact,

because societies establish governments to help manage the complexity of living in social

groups, "our first governments emerged out of informal social networks" (Koliba et al., 2011, p. 4).

A more elaborate definition of governance networks includes functional and structural characteristics:

Governance networks are defined as relatively stable patterns of coordinated action and resource exchanges; involving policy actors crossing different social scales, drawn from the public, private, or nonprofit sectors and across geographic levels; who interact through a variety of competitive, command and control, cooperative, and negotiated arrangements; for purposes anchored in one or more facets of the policy stream (Koliba et al., 2011, p. 60).

Actors in governance networks can be conceptualized as nodes with organizational goals and roles to play in the system. Actors in governance networks may be characterized in a variety of ways, including organizational goals, social sector, geographic scale, and the types of resources they bring to the network (Koliba, et al., 2011).

Relationships among actors (nodes) can be conceptualized as ties. The nature of the ties in governance networks varies by actor. Koliba et al. (2011) describe the types of resources (which can be conceived of as types of capital) that may be exchanged between network actors: financial, natural, physical, human, social, political, cultural, knowledge (p.100).

Functions performed by network actors can be divided into operating, policy stream, and policy domain functions (Koliba, et al., 2011).

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Koliba et al. (2011) provide an overview of the **structures** networks take, depending on the nature of the relationships between the actors. Self-governed networks are the most collaboratively structured type of governance network. These networks are characterized by actors with strong ties to many other actors in the network, where authority and power is diffused among the actors. Lead organization networks are more hierarchical, and are characterized by strong ties between the lead organization and other network actors, and weaker ties between non-lead organizations. Network administrative organization is characterized by similar relationships, but in this case the lead organization exists for the sole purpose of coordinating the network.

Integrating governance theory

The policy tools framework intersects with the governance network framework in a few ways. Tool choices affect the structure of governance networks (Salamon, 2002a). For example, the decision to manage a community gardening program through a nonprofit organization will result in a different governance structure than managing the same program through a governmental department. Additionally, networks participate in the preenactment phases of policy design, therefore affecting the choice of governance tools (Koliba, et al., 2011). This project is a perfect example of this dynamic, as most of the actors in the Burlington urban agriculture network participated in the policy development process.

Municipal urban agriculture policy examples

As recent interest in urban food production has grown, many cities are in the process of revamping their ordinances and zoning regulations to address the agricultural activities happening in their jurisdictions. Cities as diverse as Vancouver, British

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Columbia; San Francisco, California; Oakland, California (Kuruvila, 2011); Edmonton, British Columbia (Sands, 2011); Raleigh, North Carolina (Garfield, 2011); and Lacey and Tumwater, Washington (Hulings, 2011) have developed policies to govern and support urban agriculture (Coté, 2011; Mendes, et al., 2008). Many have also pursued food system planning initiatives and innovative projects to support urban agriculture projects.

Redefining acceptable uses

A growing number of cities allow some forms of urban agriculture, for example, residents may keep chickens, in Ann Arbor, Michigan; Spokane, Washington; Boise, Idaho; Portland, Oregon; Seattle, Washington; and Missoula, Montana (Bingen, et al., 2009). Municipal regulations commonly include measures to address nuisance and other concerns, such as regulations regarding the number of birds allowed, the regulation of roosters, coop restrictions, slaughtering restrictions, and distance of coops from homes or property lines (LaBadie, 2008).

Wood et al. (2010) note the balance that must be struck when it comes to conflict among neighbors and how they view acceptable uses of land. In an urban context, it is important for practitioners to be mindful of reducing the risk of nuisance, since smells and noise are possible outcomes from urban agriculture, especially urban livestock. However, Wood et al. (2010) also emphasize that in light of problems caused by the modern food system, these concerns should not warrant a prohibition on those activities:

> Revising the land use code to expand such use of private property will have tradeoffs. Some homeowners will undoubtedly object. But the objections of a few must be analyzed carefully to determine if they are truly suffering substantial harm, and, if so, whether such impacts warrant abandoning the strategy of urban food production to create a more secure, resilient community for the rest of the citizenry. A private property owner does not have the right to invoke the regulatory arm of local government

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for every irritation or as a means to resist a cultural shift toward self-
sufficiency. In any event, the objections of one homeowner must be
balanced against the rights of the other homeowner to make productive
use of his or her private property. Nevertheless, the city must have in place
basic safeguards against excessive noise, disruption, smell, or disease
caused by raising any animals within city limits (p. 75).

Promoting urban agriculture through innovative projects

Beyond regulation, many municipalities actively promote urban agriculture

through education and outreach programs. The city of Portland, OR, sponsors

demonstration gardens, and the city of Davenport, IA, has a program to educate residents

on square foot gardening techniques (Nordahl, 2009).

Land inventories—using GIS to map land and categorize it by its suitability for

agriculture—can identify city land and vacant lots with potential for urban farming

(Bingen, et al., 2009; Mendes, et al., 2008). Once viable land has been identified, land

matching programs can connect available land with people who want land on which to

grow food (Mendes, et al., 2008). Even small plots can be highly productive through the

use of intensive agriculture techniques (Hodgson, et al., 2011).

From a land tenure perspective, nonprofit land trusts can protect land from

development pressures. Such plots can then be leased to other organizations (e.g.

Southside Community Land Trust in Providence, RI, and Madison Area Community

Land Trust in Madison, WI) (Bingen, et al., 2009; Hodgson, et al., 2011; Nordahl, 2009).

However, leases or temporary use permits can provide access when land ownership is

prohibitively expensive (Hodgson, et al., 2011). In such cases, flexible and temporary

agriculture techniques can provide solutions to relocation challenges (Hodgson, et al.,

2011).

Public land offers a prime opportunity for urban agriculture because there is not pressure to find a future higher and better (tax-generating) use. Historically, agriculture has not been considered an appropriate use of public land. However, explicitly including community gardens and urban agriculture in municipal redevelopment plans can legitimize the use of public land for growing food (Hodgson, et al., 2011).

Planning for local food systems

Food systems have not historically been included in the urban planning agenda. However, within the last decade, the urban planning field has taken a new interest in food system planning, recognizing that food, like land use, the environment, transportation, and housing, is a basic human need and a public good worthy of incorporation into community planning considerations (Pothukuchi & Kaufman, 1999, 2000).

As food is a crosscutting issue that does not clearly fall into the jurisdiction of any single governmental department or office, planners see themselves as having the opportunity to draw connections between food system issues and other community development opportunities (Clancy, 2004). The American Planning Association has identified community and regional food as a means to address a wide variety of public issues, such as hunger, obesity, economic development, farmland loss, environmental pollution, food deserts, and community building. Their *Policy Guide on Community and Regional Food Planning* outlines several recommendations related to urban agriculture, including "ensuring that zoning barriers to [agricultural] activities are addressed or removed" (APA, 2007).

Engaged research for sustainable food systems

University researchers involved in a wide range of projects related to

sustainability and food systems have advocated the importance of engaged research with

community partners (Bacon, Mendez, & Brown, 2005; Feenstra, 2002; Henry-Stone,

2008; Whitmer et al., 2010). As the urgency of sustainability research continues to

escalate, it is increasingly vital that academic inquiry attempts to develop thoughtful and

sustainable solutions to the world's most complex and pressing problems. The co-

construction of knowledge with non-specialist partners ("engaged" research) is a

powerful way for university resources to have direct and meaningful impacts on social

and policy institutions, as conducting research in collaboration with non-academic

partners increases the likelihood that such knowledge will be incorporated into action

(Whitmer, et al., 2010).

Participatory action research (PAR) models offer useful principles for engaged

scholarship. Although the epistemology of engaged research includes many variations on

a theme, PAR methods have been used across a range of disciplines, primarily in

qualitative research approaches. PAR emerged primarily out of a desire to engage

marginalized people through a "counter-hegemonic approach to knowledge production"

(Kindon, Pain, & Kesby, 2007). For many researchers, PAR is an attractive approach

because it attempts to address the power discrepancy between researcher and subject, as

the subjects become active drivers in the research process.

PAR is theoretically positioned at the opposite end of the spectrum from research

that involves one expert researcher attempting to objectively study a subject (Greenwood,

Whyte, & Harkavy, 1993). PAR is instead an embedded and iterative process in which

the members of the community under study are collaborators in the research (McIntyre, 2008). Key aspects of participatory action research include collaboration, incorporation of local knowledge, eclecticism and diversity (multidisciplinary in nature), an orientation to a specific case, an emergent process, and a link between scientific understanding and social action (Greenwood, et al., 1993).

PAR has been defined as a recursive process of exploration (looking), reflection (thinking), and action, often represented by a cyclical or spiral graphic highlighting its iterative nature (Figure 3) (Bacon, et al., 2005; McIntyre, 2008).
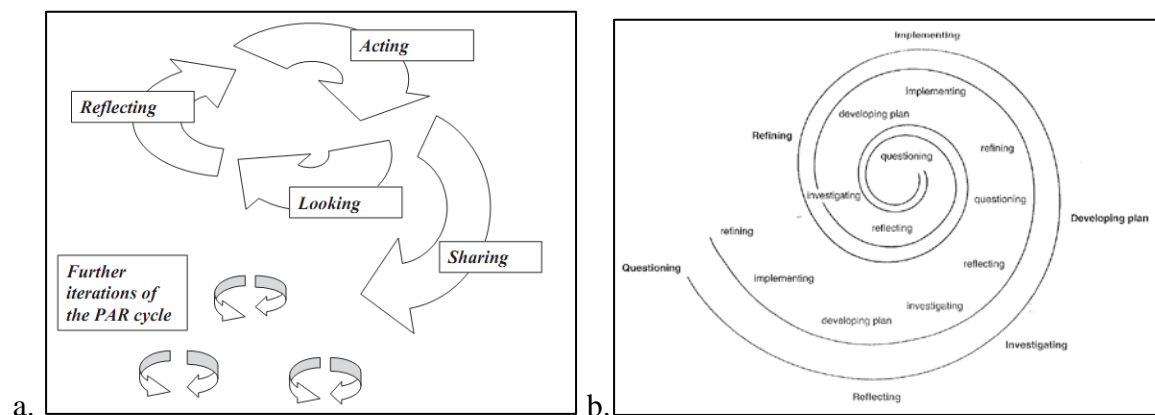
Figure 3. Graphical representations of the PAR cycle[10]

PAR approaches attempt to create a more equitable dynamic between the researcher and the study subjects by emphasizing the value of knowledge generated by non-experts (Kindon, et al., 2007). This is in contrast to traditional research modes where the "expert" researcher extracts information from the subject in order to gain the "truth."

I incorporated aspects of engaged research and PAR when designing this research project. This is discussed in greater detail in my methods section (Chapter 4).

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[10] Source: a. Bacon et al., 2005; b. McIntyre, 2008

Chapter 3. Theoretical framework: integrating values in policy

The social, economic, and environmental values that drive many urban agriculture activities should be reflected in policy content and in the choice of tools through which policy is implemented. Developing successful urban agriculture policies for Burlington requires identifying 1) the values and needs of different stakeholders, and 2) how to best govern activities with policies that meet the needs of stakeholders without undermining the values the inspire many urban agriculture activities. In addition to these considerations, policies must be politically feasible and possible within current resource constraints. In this chapter I propose a theoretical framework that links values, urban agriculture activities, and outcomes as a basis for developing policy. Below I discuss these principles and how they relate to my research questions.

At its best, public policy arises from community values, thereby reflecting the social norms and collective interests articulated by a community (J. M. Berry, Portney, & Thomson, 1993).[11] It is a premise of responsive democratic governance that policies that reflect community values will best serve the community and be respected, understood, and followed. Policies that do not reflect community values will be resented, resisted, and ignored, leading to potential social instability and costly conflict.

When community values shift as a result of new social priorities and norms, policy needs to adapt. In this way, the process of policy development will never be "done"—it is an evolving and ongoing process of competing interests and ideas (Stone,

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[11] At its worst, public policy arises from the will of a very influential minority at the expense of the larger community, environment, and justice, as is the case with regulatory capture and the type of corruption that can occur at all levels of government.

2002). The process of changing municipal policy to accommodate urban agriculture is in this way a response to a changing culture. One challenge in policy design is the aggregation of diverse interests to the level of the community values. For example, historically, an urbanizing population interested in distancing itself from farming considered the city an inappropriate place for farm animals. However, recent interest in food relocalization has reoriented urban residents to be more accepting of farming activities in proximity to where people live, including support for urban livestock production.

The current policy of many cities, including Burlington, does not yet intentionally incorporate the social, environmental, and economic values that motivate many of its residents to grow food. However, Burlington has an opportunity to actively respond to community values associated with urban agriculture by adapting its policies to actively support alternative food production systems within its boundaries. Figure 4 provides a representation of current policy. Values motivate many urban agriculture activities, which can result in both positive and negative outcomes (i.e. some that are consistent with values and some that are not). Current policy intervenes in the cycle at urban agriculture activities, but is not informed by an understanding of the values that drive urban agriculture activities, the needs of stakeholders resulting from the particular context of urban food production, or the potential positive and negative outcomes resulting from urban agriculture activities. As a result of this lack of intentionality, current policies that negatively affect practitioners may be resented and resisted, as has been seen in Burlington in the case of chickens, goats, and urban agricultural structures.
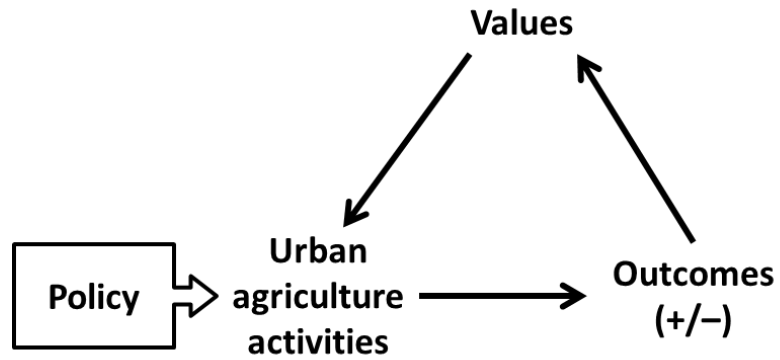
Values

Figure 4. Current policy affects activities without consideration of values or outcomes
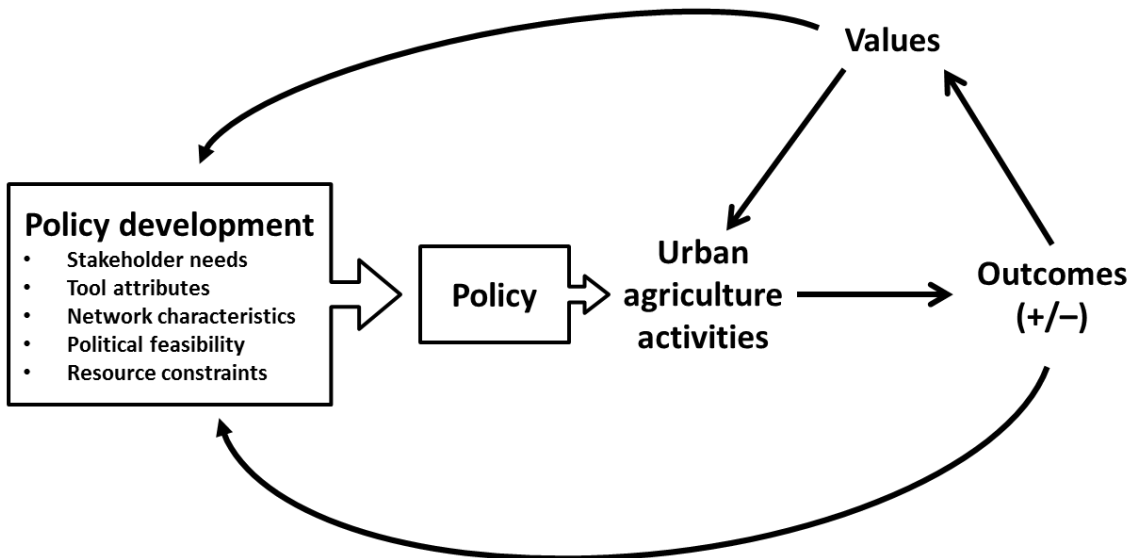
Figure 5. The development and function of future policy

In contrast, Figure 5 shows how policy can be designed to be more responsive to community values, urban agriculture activities, and outcomes. The integration of community values in policy development can include consideration of whether policies support or undermine issues related to environmental sustainability, social equity, and local economic resilience. Stakeholder needs and potential outcomes of activities associated with urban agriculture inform policy development, as does an understanding of

which policy tools and governance configurations are best suited to maximize positive outcomes, minimize negative outcomes, and support the community values that inspire urban agriculture activities. To determine the correct policy tool to support values and outcomes, policy development should consider the attributes associated with the various tools (e.g. automaticity, coerciveness, etc.), the political feasibility of the tools, and the resource constraints present.

For this project, examining current policies allowed for an assessment of whether they supported or undermined values, stakeholder needs, and outcomes. Looking at policy approaches used in other cities helped in the identification of policies that have successfully or unsuccessfully integrated stakeholder needs and values. This framework for understanding responsive policy development informed the research objectives (as stated in Chapter 1) to:

- Assess current policies affecting urban agriculture in Burlington
- Analyze urban agriculture policy approaches used in other cities
- Produce policy recommendations that meet the needs of stakeholders

In summary, the translation of community values into public policy enables responsive governance. Changes in community values necessitate the revision of previous policies to reflect current needs. In the case of urban agriculture policy, the values of different stakeholders, urban agriculture activities, and outcomes need to be considered when policy decisions are made.

Chapter 4. Methods

This project used qualitative research methods and a participatory action research study design. Primary data collection methods were a document review, semi-structured interviews, and participant observation at local public meetings. Data analysis included using urban agriculture activities as the unit of analysis, applying a policy tools framework to urban agriculture policies in Burlington and other cities, using a network governance framework to understand the Burlington urban agriculture governance network, and multi-stakeholder feedback analysis. Policy development was conducted through a participatory process with the Task Force. Limitations included time and resource constraints, as well as methodological limitations.

Research design commenced when the Task Force was created in March of 2011. Data collection began during the summer of 2011 and continued until May of 2012. Policy development began in March of 2012 and continued through August of 2012. A report to City Council was submitted in September of 2012 (see Table 1).

Table 1. Timeline of research activities

Research activities	2011										2012								
	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Task Force milestones	Created		First meeting								Livestock workshop								Report
Document review				░	░	░	░	░	░	░	░	░	░	░	░	░	░	░	░
Municipal official interviews					░	░													
Local practitioner interviews					░	░	░												
NPA presentations					░	░		░											
External city official interviews							░	░					░						
Local policy expert interviews										░	░	░	░	░	░				
Policy development													░	░	░	░	░	░	░

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Research design

Due to the collaborative nature of this project, it was designed as a participatory action research (PAR) project, with the Urban Agriculture Task Force as the community partner. Although it incorporated aspects of community participation in the research process, the design of the project could not accommodate city residents as community partners. In addition to partnering with the Task Force as a community partner, other PAR aspects of this project included engaging in a participatory process with stakeholders and contributing to the production of a policy report for Burlington's City Council. The ultimate objective of this action project was to generate policy recommendations for the city with the expectation that adoption of new policies specific to urban agriculture would result in outcomes such as the reduction of barriers to urban agriculture and increased city support for current and future initiatives (Figure 6).

Engaging with the Task Force as my community partner was logical as the project grew out of the formation of the Task Force in the first place. The group, made up of a range of community stakeholders and city officials, represented a variety of perspectives and areas of expertise.[12] Although the Task Force comprised a group of seven people total (including me), my interactions were primarily with the most involved two people (chair and intern), plus another committed urban agriculture practitioner who became a key advisory Task Force member by the end of the process.

The members of the Task Force were my collaborators in setting the research agenda, collecting data, and developing recommendations. The stakeholder engagement

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[12] A full list of Task Force members is included in Appendix B.

process included vetting the research and policy development process with a group of

urban agriculture practitioners and experts, interviews with municipal officials,

interviews with urban agriculture practitioners, and a community engagement process

(see "Public participation process" section below).

Upon the release of the draft Task Force report, the Task Force held a community

meeting and two meetings with city officials to gather input on the draft

recommendations. That feedback was then evaluated and some of it was incorporated

into the final report as deemed appropriate by the Task Force.
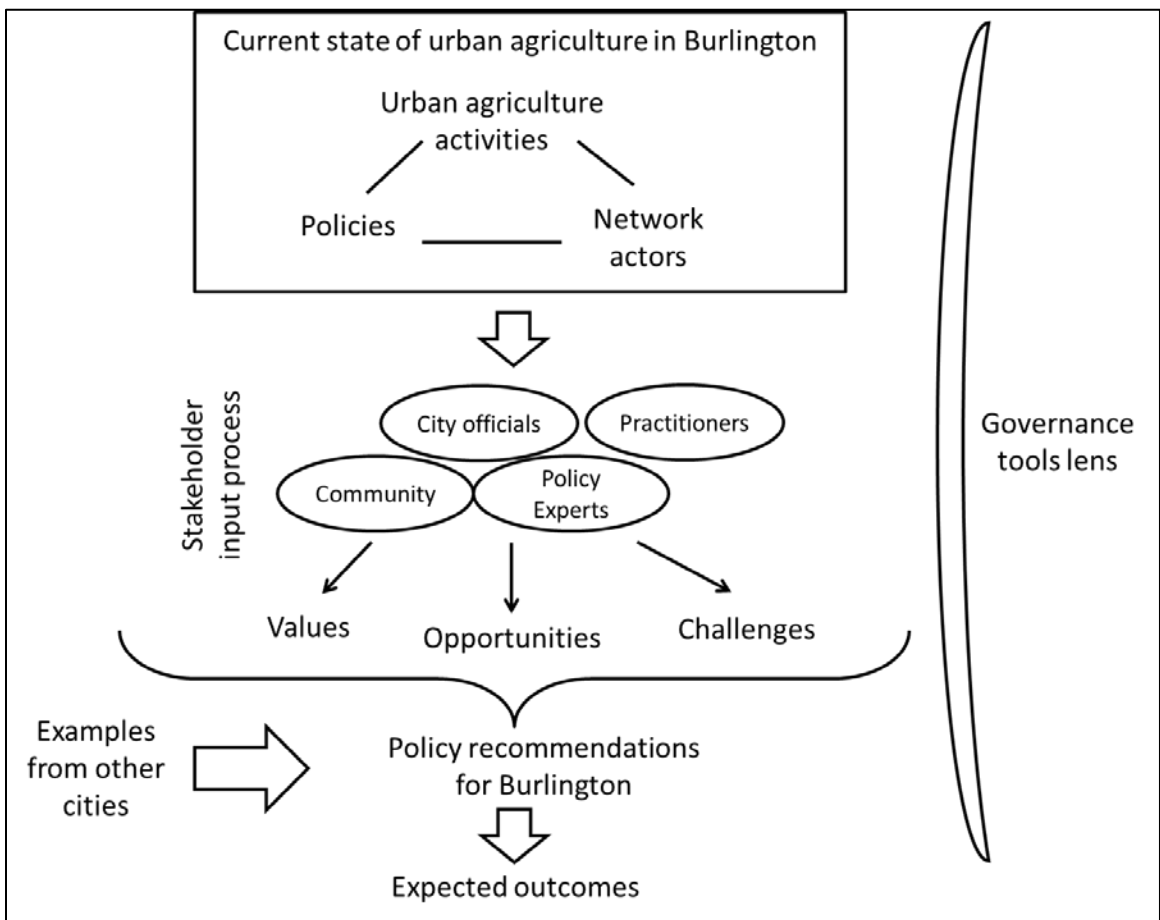
Figure 6. Policy development process for urban agriculture in Burlington

Positioning myself as an action researcher

Coming into this project, I carried some assumptions that informed the way I developed my problem definition and research design. These assumptions included a belief that urban agriculture can play an important role in the food production system, that urban agriculture offers social benefits beyond basic food production (e.g. the potential to build community skills and knowledge), and that city government has a proactive role to play in responsibly governing and actively supporting urban agriculture.

The first assumption arises from a view that the industrial food system has failed to produce sufficiently healthy, sustainably-produced, and accessible food; that the vast majority of food production has become psychologically and physically separated from urban areas; and that urban agriculture offers the opportunity for urban residents to produce food that is more healthy, sustainable, and accessible. The second assumption arises from an understanding that the rise of industrial agriculture has been accompanied by a widespread loss of agricultural skills and knowledge, and that urban agriculture can provide a means for people to connect both physically and psychologically to their food; to rebuild some of those lost skills and knowledge; and to support basic community structures. The final perspective is that the city has a role to play in the governance of local food production because of its jurisdiction over land use, the potential for neighbor conflicts, and health concerns associated with food production in urban areas, yet that the city should not impose undue restrictions on urban agriculture and should in fact take an active role in promoting it. A different set of assumptions would have resulted in a different research project. For example, if my perspective was that government has shown itself to be aligned with the interests of corporate agriculture and therefore the city

should have nothing to do with governing urban agriculture, I may have studied "guerilla gardening" tactics in order to understand how people employ urban food production tactics as a means of political activism and social liberation.

Ultimately, my interest in working across stakeholder groups to consider the ways that urban agriculture can both provide benefits and pose potential risks led to a project design that allowed these issues to be intentionally considered at a community level in order to generate policies that meet the needs of multiple stakeholders. The PAR process thus offered the ability to combine policy research with advocacy and community engagement.

From my position as an "academic-activist" (Chatterton, Fuller, & Routledge, 2007) for this project, I aimed to be a vehicle through which people and issues could be advocated for and supported. Although my initial thinking about this project was that my role was basically as an unpaid consultant because the city employees lacked resources to take it on, I have since realized that the PAR process allowed some very important social issues to emerge that might not have been considered if the project was managed by the city. For example, the Task Force made a special effort to reach the new Americans who represent a significant portion of urban agriculture practitioners in Burlington, but who do not usually participate in NPA meetings. Although the emancipatory implications of this work are different than those traditionally associated with PAR (Selener, 1997), the results of this project do have social change implications for the Burlington community. When practitioners of urban agriculture face policy challenges from the city, it limits their capacity to grow food outside of the unsustainable corporate food system. Additionally, there is sufficient political will in Burlington to use city resources to

support and promote urban agriculture, effectively lending support to the community

food movement. By using my role as a researcher to develop policies that both support

the needs of urban agriculture practitioners and govern urban agriculture practices in a

community-minded way (i.e. cognizant of conflicting views and needs of neighbors), this

project has the opportunity to increase local food production, foster relationships between

practitioners and city officials, and ultimately advance the agenda of the urban food

movement.

Chatterton et al. (2007) highlight the importance of the researcher reflecting on

the questions of "For whom is research produced? Whose needs does it meet?" In my

case, whether I saw my research as produced for the city government, for urban

agriculture practitioners, or for non-practitioner residents affected my perspective on the

development of policies, and at times it was quite difficult to find a balance between the

needs of these three stakeholder groups. Because I was aware of my biases in favor of

urban agriculture practitioners, I actively attempted to understand and communicate the

needs and concerns of other stakeholder groups.

My role within the Task Force

When the Task Force formed, I was invited to be one of the members in a

researcher position. Thus, from early on I was able to establish some parameters around

the scope of my involvement as a Task Force member. As with any project, maintaining

these parameters through the course of the research process proved difficult, and at times

my boundaries were pushed. For example, although I attempted to limit my involvement

in non-research activities, I sometimes engaged in outreach and communications to

promote Task Force events and organize presentations at the NPAs. I engaged in

administrative and logistical work (e.g. scheduling Task Force meetings and booking meeting venues) as little as possible. Setting such parameters allowed me to focus my efforts on the research activities themselves.

Over the course of the project, the scope of my research grew or shrank as research topics and activities were reprioritized. An early attempt to set boundaries for my research was to limit my investigation to the regulatory roles of city governance (ordinances and zoning). However, one of the themes that emerged early on in the process (and continued through to the end) was that effective governance of urban agriculture activities seems to require a suite of policy approaches. Thus, my research was reframed and my investigation became organized by activity and policy tool. To prevent further scope creep, I limited my research to only the highest priority topics. As a result, my research ended up focusing on home gardens, community gardens, livestock, bees, hoophouses and greenhouses, and greenbelts. Although my work touched on other urban agriculture activities to a small degree, other Task Force members or community volunteers were enlisted to do research and write up the recommendation sections for the other activities included in the report, including composting, rooftop gardens, urban food forestry, school gardens, food processing, and food sales. In terms of the policy development process, I was most intimately involved in developing policy recommendations for my areas of focus, though I contributed to the deliberations and policy development for crosscutting recommendations (e.g. education and outreach, mediation, and land matching) and to a lesser extent for the other activity areas included in the report.

Public participation process

Even though Burlington residents were not my direct collaborators, ensuring their participation was a priority from the beginning and was integral to the process. The original City Council resolution that created the Task Force contained language mandating that the Task Force should "generate a cohesive urban agriculture policy informed in part […] by the needs of city residents". This demonstrates commitment on the part of elected officials to consider their constituents' needs and feedback.

The Task Force attempted to document resident feedback through the following avenues:

- One Burlington Food Council meeting to obtain stakeholder input on the research design
- One Burlington Food Council meeting on issues specific to chickens and bees (with practitioners and city officials)
- Eight NPA meetings (of which I was at seven)
- One community workshop on livestock policy (50 participants)
- Contact info for the Task Force Chair and me on the Task Force website (with a request that people contact us with input)
- One public meeting to collect feedback on the draft report
- Website survey to collect feedback on the draft report
- Video project on urban agriculture in Burlington with the Project Manager of Media Communications at the Gund Institute (stakeholder interviews)

The Burlington Food Council (BFC), as the group from which the Task Force process emerged, served as a useful venue for discussing Task Force work. Within the first month of the Task Force process, the Chair of the Task Force and I presented to the BFC on our research design and solicited input.

Vermont has a strong civic tradition, with a notably accessible citizen legislature and a statewide Town Meeting Day held annually on the first Tuesday of March. Since 1982, Burlington residents have used Neighborhood Planning Assemblies (NPAs) to engage with the city government, which are led by a steering committee and organized by

city ward. Although the NPAs do not have administrative responsibility, the model

provides a community forum for direct in-person access with elected officials and city

administrators. The Task Force presented at eight NPAs in the course of a nine-month

period, of which I presented at seven. This proved to be the best way to access non-

practitioner stakeholders, as most residents who attended were not there for the Task

Force presentation.

In January 2012, the Task Force hosted a livestock policy workshop with over 50

participants in order to gain input from the community on our initial recommendations

and launch a deliberative policy development process. The other organizers and I were

intentional about facilitation of the event, including room setup and the use of ground

rules. When participants broke into discussion groups on a variety of issues, each

participant was provided with a packet of information on their group's topic, and each

group had a facilitator, timekeeper, note taker, and rapporteur. The workshop generated a

great deal of valuable stakeholder input, likely because the structure allowed residents to

effectively communicate values and concerns during the small group discussions and

when reporting back to the large group. Another factor of success may have been that this

was a meeting of one stakeholder group (mostly practitioners, some non-practitioner

residents) rather than a multi-stakeholder meeting. Enayati (2002) notes the value of

meeting with different stakeholder groups separately to determine each group's values.

Through my University of Vermont connection to the Gund Institute for

Ecological Economics, the Gund Project Manager of Media Communications became

interested in doing a film about urban agriculture in Burlington[13]. Although the film includes excerpts from an interview with me, we decided not to use the film as a means to promote the Task Force recommendations. Rather, the film showcases several urban agriculture activities currently happening in Burlington with the hope that this celebration of local food production will serve as an important piece in support of the Task Force recommendations without actually delving into the policy issues themselves.

A report to City Council was the ultimate action output from the research process. Given the response from community members, city officials involved in the research process, and initial discussions with staff from the mayor's office, it seems highly likely that many of the recommendations in the report will be considered and moved forward as the political process unfolds. The adoption of any of the policies in the report will have tangible, on-the-ground impacts for urban agriculture practitioners in Burlington.

Data collection

Data collection methods included textual analysis of municipal and state laws, semi-structured interviews with local stakeholders and external informants, and participant observation at stakeholder and public meetings (Table 2). Textual analysis of current municipal and state policies affecting urban agriculture in Burlington and other cities was conducted throughout the research process. A total of 27 semi-structured interviews with local stakeholders, policy experts, and key informants from other cities were conducted between July 2011 and May 2012. A total of 11 public meetings were held during the same time period, with additional public meetings held in June and July of 2012 to solicit feedback on the policy recommendations generated by the Task Force.

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[13] Available at: http://www.youtube.com/watch?v=godg7xefPvQ

Document review

      At the beginning of the research process, documents and websites were reviewed

for information on local and state policies affecting urban agriculture in Burlington.

Interviews with local key informants expanded the breadth of this review, and the review

continued throughout the research process. Documents included ordinances and zoning

codes from other cities, research reports on urban agriculture policies, and literature from

the food systems and urban planning fields.

Table 2. Overview of research activities and methods

Research Activities/Stakeholder Groups	Methods		
	Textual Analysis	**Semi-Structured Interviews**	**Participant Observation at Meetings**
Review of Municipal and State Policies	x		
Local Urban Agriculture Practitioners		7	3
Local Urban Agriculture Policy Experts		7	
Burlington City Officials		6	
Review of External Policies	x		
External Municipal Officials		5	
External Policy Experts		2	
Local Community			7
Total	-	27	11

Defining local stakeholder groups

      The local urban agriculture practitioner stakeholder group included committed

hobbyists and people involved in urban agriculture in some professional capacity. The

Task Force collected feedback from this stakeholder group through semi-structured

interviews with four nonprofit organizations and three urban farm businesses, as well as

from practitioners who participated in the public meetings, forums, and livestock policy

workshop.

Local policy experts were people in the Burlington and broader Vermont community who have a professional or personal expertise related to some policy aspect of urban agriculture, even if they do not participate in urban agriculture per se. The specific policy issues covered in this group included nutrient runoff, pesticides, bees, animal welfare, and neighbor conflicts. The Task Force collected feedback from this group through semi-structured interviews with three representatives from nonprofit organizations and four representatives from the state Agency of Agriculture, as well as participation by a few of these people in public meetings.

The municipal officials involved in the Task Force research process were employees of the City of Burlington whose area of responsibility deals with urban agriculture in some regard. The Task Force collected feedback from representatives of this group through six semi-structured interviews and participation by a broader group of city officials in several public forums.

Members of the Burlington community were people who live in Burlington but do not identify as urban agriculture practitioners. Members of the Burlington community participated in the Task Force research process through attendance at the seven NPA meetings at which the Task Force presented.

Identification of local informants

Key informants were first identified by generating a list of representatives from organizations and city departments that interact with urban agriculture activities in some capacity. This list was shared with the Task Force and amended throughout the research process as issues were reprioritized. After each interview, informants were asked to suggest other groups or individuals to talk to, which resulted in a small amount of

snowball sampling. Additional informants were identified as the research process

unfolded and expertise was sought for specific policy issues.

A total of 20 semi-structured interviews were conducted with local informants,

including seven local practitioners, seven local policy experts, and six city officials.

When possible, interviews were conducted in person. In a few cases this was not possible

and interviews were completed over the phone. Interviews generally lasted between 45

minutes and one hour.

Identification of external informants

Example cities were identified based on a review of the literature. Initial selection

criteria were based on a review of chicken laws from a range of cities. Cities were chosen

because they utilized a variety of policy approaches rather than for being comparable to

Burlington's demographic and size.

A total of seven semi-structured interviews were conducted with five city officials

in four other cities that have urban agriculture policies, as well as two urban agriculture

policy experts. Interview questions focused on urban livestock policies, specifically

chickens (and other fowl) and bees, though other urban agriculture activities were

discussed in some cases where the city had policies specific to those activities. Interviews

were conducted over the phone and generally lasted between 45 minutes and one hour,

though one interview with a very committed informant lasted one and a half hours.

Interview protocol

Key informants were contacted via email with an explanation of the Urban

Agriculture Task Force project, my role as a graduate student researcher, and a request to

meet or speak on the phone with an overview of the type of information we were hoping

to gain from talking to them. Once an affirmative reply was received, an interview time was scheduled. Prior to the interview, the IRB Interview Information sheet was shared with the informant. The Task Force Chair and Intern attended some of the local in-person interviews.

Interview questions were developed prior to the interview. Within each stakeholder group, the majority of the interview questions were consistent, and some questions were similar across stakeholder groups. However, some questions were tailored to the specific expertise or jurisdiction of the informant. In the case of both local and external policy experts, questions were crafted to address issues specific to certain activities or policies.

Burlington officials were asked to explain their role and the jurisdiction of their department, and to explain their past experiences dealing with urban agriculture issues. The interview included a review of a list of urban agriculture activities to discuss ways in which that person's responsibility does or does not touch on issues associated with each activity. Municipal officials were asked to explain how they interact with other city departments or local organization and whether they perceived any barriers or opportunities for urban agriculture. We also asked whether there were any specific things we could find out during our conversations with municipal officials in other cities and how information could be included in the Task Force report in a way that would ultimately support the implementation of policies by their department.

Local practitioners were asked to explain their involvement in urban agriculture in Burlington, whether they perceived any barriers or opportunities for urban agriculture, and how they thought municipal policies could address the issues they identified. They

were also asked to share their unmet needs or successful activities, how they were affected by state laws, and to identify valuable resources (people, organizations, forums, and information). Finally, they were asked for suggestions regarding funding opportunities, other cities we should look at, or people we should talk to.

Local policy experts were asked questions related to their area of policy expertise, specifically regarding current implementation, current issues, and potential future policies.

Key informants from other cities were asked how their urban agriculture policies were developed, how their policies work in practice, and what their role was in policy implementation. They were asked about the challenges they had encountered implementing the policies, what aspects they considered to be successful, and whether they anticipated any changes to the policies in the future. They were also asked to share any lessons learned and advice for Burlington in the policy process.

For in-person interviews, notes were taken by hand and typed up within 24 hours. For phone interviews, notes were taken on a computer. After the notes were complete, they were sent to the interview subject in a thank you email message with an invitation to review the notes and ensure that their responses were captured correctly. Some interview subjects took advantage of this opportunity; others did not.

Participant observation protocol

My role in public meetings was that of participant observer because I was presenting information on behalf of the Task Force as well as soliciting stakeholder feedback from attendees. I met with the Task Force chair, and sometimes other Task Force members, prior to the events to define our objectives for the meeting, develop a

PowerPoint presentation, and develop questions to prompt participant discussion. During the meeting, we took notes on flip charts when available, and I would take my own notes when possible. After the meetings, another Task Force member or myself typed up the flip chart notes. I typed up my own notes and added any other observations from the meeting.

Data analysis

Data was analyzed using four primary avenues of investigation. Preliminary analysis used urban agriculture activities as the unit of analysis.[14] Subsequent analysis examined current and future policies using a policy tools framework, considered relevant actors using a network governance framework, and characterized stakeholder feedback based on emergent themes.

As the ultimate goal of the research was to generate policy recommendations to address the unique considerations of a variety of urban agriculture activities, data was first sorted by activity, which allowed for an in-depth understanding of the issues specific to each activity. For example, all data on keeping chickens was collected into one document, including current policy, stakeholder feedback, examples from other cities, and ideas for policy development. A similar approach was used for each topic I was responsible for researching.

In order to understand the governance tools affecting urban agriculture, data on current policy was sorted by type of tool using the governance tools framework proposed by Salamon (2002a). The same framework was applied to data on policies from other

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[14] I do not report on this preliminary analysis in this thesis. Although it was a foundational building block for this project, this thesis reports on the subsequent application of governance frameworks and the integration of stakeholder feedback.

cities. Once policy recommendations were developed, they were also organized by type of tool.

Although not an original research objective of the Task Force, my exposure to the governance network framework proposed by Koliba et al. (2011) inspired a network analysis of Burlington's urban agriculture governance network. For this analysis, data on the various actors within the network was organized first by actor sector and geographic scale, then ties between actors were organized by type of relationship. This analysis was developed into a visual representation of the network. It should be noted that no quantitative data was collected on the actors and their ties, so the analysis is not able to indicate the strength of ties or the level of resource or informational flows between actors.

To organize and understand feedback from each stakeholder group, stakeholder interviews and meeting notes were first organized by stakeholder group (local urban agriculture practitioners, local policy experts, municipal officials, and the Burlington community), then coded for common themes (Table 3). Some codes were developed prior to analysis, and some codes emerged from the data. Once data had been coded, the codes themselves were organized by macro-level themes, and the following schema emerged. Coded text was organized using Microsoft Excel so that themes could be quickly accessed by stakeholder group. These codes thus provided the basis for organizing the data by stakeholder group, as data from each code was synthesized to communicate stakeholder feedback in a more concise way.

Table 3. Codes used during data analysis

Activities/ Infrastructure	Current Policy	Future Policy
Aquaculture Animal Welfare Bees Community Gardens Chickens Commercial Farming Composting Farmers' Market Greenbelts Hoophouses and Greenhouses Land Use Livestock Predators Processing Rooftop Gardens Sales School Gardens Slaughtering Structures Urban Food Forestry	Burlington Policy Current Implementation Federal Policy Policy Barriers State Law	Coordination Funding Future Implementation Incentives Policy Development Politics Partnerships Registration Regional Connections
Issues/Risks	**Opportunities**	**Values**
Challenges Neighbor Relations Pesticides Risks (general) Soil	Community Development Economics Education Landmatching Mediation Needs Opportunities (general) Public Produce Successes	Equity Goals Motivation Values (general)

Policy development process

As mentioned above, one step of the data analysis process was to organize data by urban agriculture activity in order to understand the issues and opportunities specific to that activity. This process formed the foundation of the policy development process. The Task Force deliberated potential policies informed by an understanding of how current policies apply to each activity, the examples identified in other cities, policy guidance from urban agriculture policy organizational experts, feedback from Burlington stakeholder groups, and the attributes associated with each policy tool.

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The deliberations resulted in policy recommendations that were based on an understanding of available resources, political feasibility, and tool suitability. The availability of resources included consideration of what both local organizations and city government could offer with current resources, as well as suggestions for actions that could be taken with additional resources obtained through new partnerships and funding opportunities. The political feasibility of recommendations was based on Task Force members' understanding of the types of actions likely to be adopted with little effort and those that might be adopted given sufficient political support, with less emphasis on actions that are likely unachievable given Burlington's political climate. The consideration of tool suitability included deliberations on the adoption, resource demands, and implications of implementing certain tools to achieve specific goals.

The policy development process generated a set of recommendations for a broad range of urban agriculture activities[15]. In some cases, multiple activities shared similar policy recommendations, and these were additionally identified as crosscutting recommendations because they can apply to a range of issues. Crosscutting recommendations were specifically noted as such in the Task Force report.

Once initial recommendations were developed, the Task Force released a draft report online and accepted comments from the community for a two-week time period, during which the Task Force held two meetings with city officials and one community

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[15] See Appendix C for a table summarizing the recommendations.

meeting, and posted an online survey to solicit feedback to refine the recommendations for the final report.[16]

Limitations

As with any research endeavor, this project was limited by constraints on researcher time and resource availability, as well as by methodological and theoretical limitations. Below I outline these limitations, as well as how I attempted to address them when possible. I also outline limitations specific to the project that arose during the research process.

Time and resource constraints

I was limited in my ability to collect and analyze data due to the timeline provided to the Task Force by City Council, as well as the timeline of my master's program. Although I had some flexibility regarding the deadline for completing my thesis, the goal and expectation of finishing my degree within a two-year window limited my scope of work. City Council originally gave the Task Force a one-year timeline to complete the report; however, given the scope of the work and competing demands on my time, as well as on the time of other Task Force members, the report was completed after one and a half years.

Although some research responsibility was assumed by the Task Force chair and intern, the potential scope of work for this project was much greater than the Task Force was able to accomplish. With more time or a larger team, the Task Force could have looked at additional cases from other cities, examined the legal, political, and social contexts of those cities in comparison to Burlington, done additional interviews with

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[16] See Appendix D for a table summarizing the public feedback.

more local practitioners and non-practitioners, and identified additional policy

recommendations for the report, such as a set of metrics for tracking progress on goals.

Additionally, in-person interviews would have been preferable to phone interviews, but

this was not feasible for interviews in other cities.

Methodological limitations

 This project was limited by the methods employed to gather data and the

theoretical assumptions and frames used to analyze the data. In general, qualitative

findings are limited by context and case (Patton, 2002). Also, as a qualitative researcher, I

am the instrument and thus any selection bias I have may be exhibited in the data and

affect interpretation. One of the benefits of PAR is that including other people in the

research process can keep researcher bias in check (though of course partner biases are a

factor in this case as well).

 As a project rooted in place, this project was highly contextual. Results cannot be

generalized, although some of the findings, and certainly the multi-stakeholder process

used by the Task Force, could be transferable to other places and contexts.

 Additionally, each data collection method carries its own limitations. Document

review is limited in that it only offers information that has been intentionally captured in

text and made publically available. I also may not have identified every current policy

affecting urban agriculture, though I attempted to be as thorough as possible by asking

informants to share what they knew about local and state policies. Participant observation

is limited in that my presence could have affected participant responses (Patton, 2002). In

an attempt to gather a broad representation of responses, I asked open-ended questions

(e.g. "please share your concerns/ideas") and also prompted discussion on potentially

contentious issues (e.g. slaughtering). Interviews are limited by the fact that they capture

someone's responses based on what they are thinking and feeling in that moment in time,

and thus represent a snapshot of that person's experience (Patton, 2002). I offered

informants the option of reviewing my notes and following up by email with any

additional information they wanted to provide. Some informants took advantage of this

opportunity; others did not.

In addition to data collection methodological limitations, this project was limited

in its review of urban agriculture policy approaches used in other cities. The sample size

was small (only four other cities were interviewed) and I was limited in my ability to

understand the ways that these cities differed in legal, social, and political contexts from

Burlington. Additionally, the original plan was to conduct a set of interviews on policy

approaches for each urban agriculture activity identified by the Task Force, but this

proved to be unfeasible. I had also hoped to interview practitioners in those cities to

understand how policies affected people on the ground, but I had to similarly omit this set

of interviews due to time and resource constraints. Finally, some of the external

municipal officials were not involved in the policy development process in their city, so

they could not speak to the reasons that the policies were developed as they were.

Theoretical limitations

Theoretical limitations include implicit assumptions in the problem definition and

the use of theoretical frameworks. In an attempt to surface implicit assumptions, I

reflected on my underlying reasons for engaging in this project, for framing the issue as I

did, and for approaching the problem as I did. These assumptions were addressed at the

beginning of this chapter in the section titled "Positioning myself as an action researcher"

and include my perspectives on the industrial food system, the role that food production can play in urban communities, and the role that city government should assume regarding food production within its jurisdiction.

The application of the policy tools and network governance frames were limited in that they utilize only a slice of the data collected and cannot address issues related to cultural norms or social barriers to participation in urban agriculture. The subsequent development of recommended actions was limited to those that can be undertaken by a municipal government due to the project goal of providing Burlington City Council with actionable policy recommendations.

Diversity and representation of non-practitioner interests
One of the objectives of the Task Force research was to identify the needs and concerns of Burlington residents who do not practice urban agriculture, with the goal of intentionally incorporating their perspectives into the policy development process. The original research plan included a set of eight semi-structured interviews with Burlington non-practitioners. However, due to limited time and resources, this research activity was removed. As a result, our primary venues for gathering input from this group were the NPAs and the livestock policy workshop. At the NPAs, some people came specifically because urban agriculture was on the agenda, but the majority of the people there were regulars. Thus, obtaining meaningful feedback from the NPAs was sometimes very limited, as people were not necessarily ready for the questions—they had not necessarily sat with the ideas or thought through the potential consequences of their suggestions.

As accessible and unintimidating as the NPAs attempt to be, public meetings do not necessarily provide a voice to the marginalized people they may intentionally be

trying to include (J. M. Berry, et al., 1993). For example, immigrants and refugees were not in attendance at any of the NPAs that we attended. We viewed new Americans as an important stakeholder group, so we arranged an in-person interview with New Farms for New American program participants, and visited the project on a day when a large group of participants was doing work in the fields so we could talk with them directly.

This project was limited in its ability to reach marginalized people who do not participate in public processes for reasons of poverty, disability, language barriers, social or cultural norms, or access issues. As a mono-lingual person, my interactions participants from the New Farms for New Americans program were limited by the ability of participants to speak English and the ability of a translator to translate information from non-English speaking participants.

When the Task Force was created, one city councilor mentioned several times that there are people in his ward who fundamentally dislike the idea of livestock in backyards, but we did not hear this feedback at any meetings. The project would have been strengthened if we had asked him for specific people to talk to in order to better understand their perspective.

For the livestock workshop, the Task Force advertised in Burlington area newspapers, but even this did not result in a diverse turnout. Almost everyone at the workshop was a strong proponent of urban agriculture. Additionally, we made a specific effort to reach out to the New Farms for New Americans program, but only one new American attended. We also found that participants preselected themselves based on a strong interest in food production, usually because they were growing food or keeping animals themselves. For this reason, although my original intention was to consider the

livestock policy workshop as feedback from the Burlington community, in the end I included it as practitioner feedback.

In summary, this project approached questions related to urban agriculture policy in Burlington through the use of PAR principles, including engaging with a community partner and a multi-stakeholder process. Qualitative data collection methods provided information on current policies, stakeholder perspectives, and policy experiences in other cities. Analysis offered the opportunity to assess the data by urban agriculture activity, current and potential policy tools, the current Burlington urban agriculture governance network, and stakeholder group. Limitations included those common to qualitative research, as well as those unique to this project.

Chapter 5. Findings: Urban agriculture activities in Burlington

The City of Burlington has a population of approximately 42,000 (United States Census Bureau, 2010). Land use patterns on its 10.6 sq. miles of land range from compact urban development in the downtown area to suburban residential neighborhoods, commercial agricultural fields, and conservation open space (Figure 7).

Vermont has a strong agricultural heritage and is culturally characterized by images of red barns and the back-to-the-land movement of the 1970s. In 2009, the state legislature approved funding for the Farm to Plate Initiative, a ten-year, statewide strategic plan for Vermont's food system. The plan, created through a broad participatory process conducted by the Vermont Sustainable Jobs Fund (VSJF), aims to "increase economic development in Vermont's food and farm sector, create jobs in the food and farm economy, and improve access to healthy local foods" (VSJF, 2011). It has identified opportunities and challenges for agriculture in the state, has set the goal of increasing local food consumption to ten percent by 2020 (current estimates place statewide local food consumption around five percent), and has outlined an exhaustive list of high priority strategies to get there (VSJF, 2011).

The city of Burlington has a similarly strong local food culture and contains many of the state's most successful community food system models, including community supported agriculture from the city's peri-urban farms, a year-round farmers' market (several others operate on a seasonal basis), a downtown food co-op that sources a significant amount of local produce and meat, restaurants featuring local food and seasonal ingredients, and a variety of community garden and food security organizations.
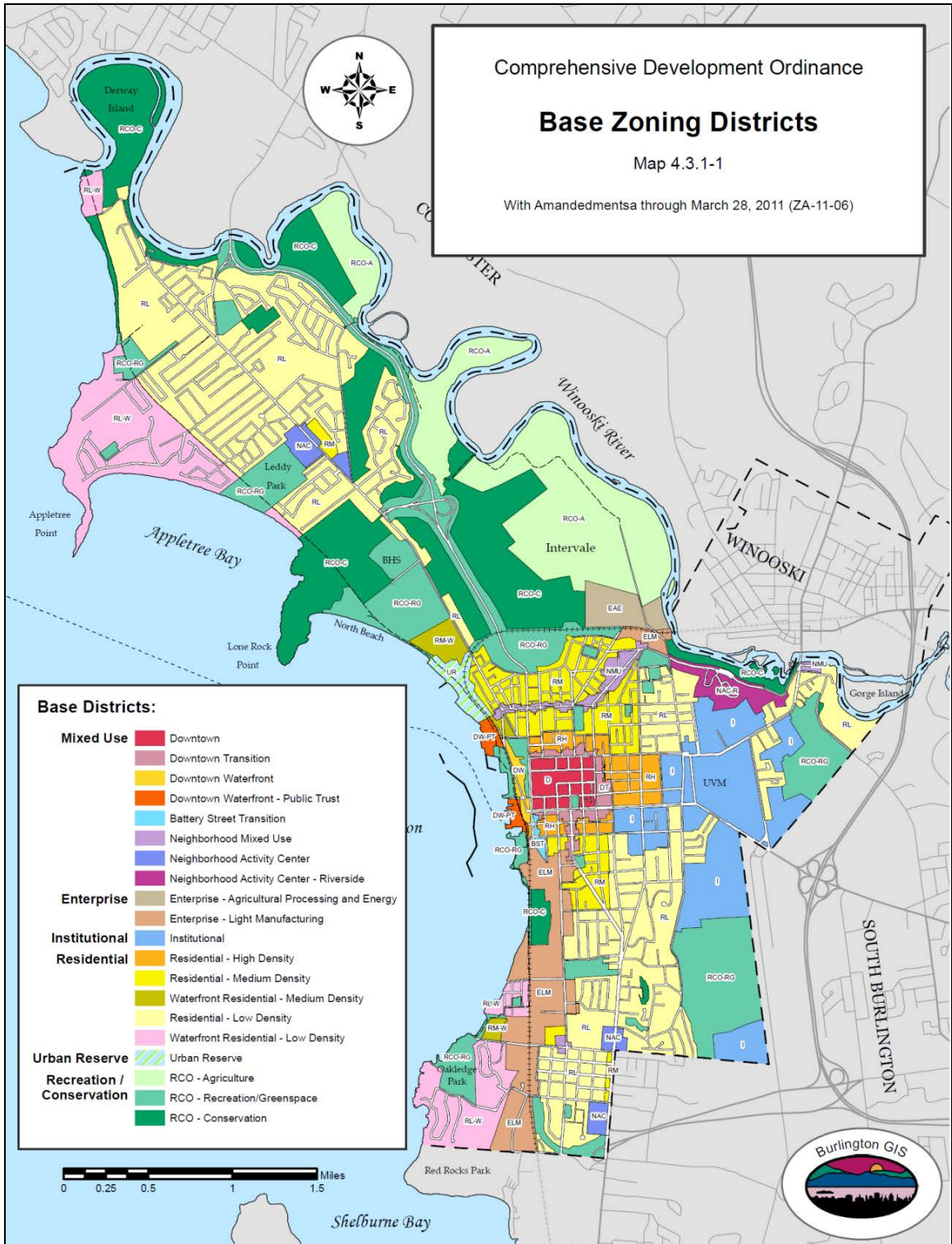
Figure 7. Zoning map of Burlington, VT

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The value of local food systems is widely appreciated, and it is no surprise that many Burlington residents cultivate their own food.

In addition to a strong local food culture, Vermont's civic tradition values participation in local governmental decision making. The state has a citizen legislature, and all towns (with the exception of the city of Burlington) hold an annual "Town Meeting Day" on the first Tuesday of March for residents to vote on town budgets and ballot initiatives. The city of Burlington has Neighborhood Planning Assemblies (NPAs), organized by ward, which operate as a mechanism for public participation in city governance. Out of this context of support for local foods and civic participation in government, the Task Force emerged as a citizen-led food policy project.

A vibrantly agricultural city

Burlington residents currently participate in a wide variety of urban agriculture activities ranging from residential gardens and chickens to community gardens and commercial scale farms (Table 4). The city manages a community gardening program. A number of nonprofit organizations provide gardening and agriculture coordination and education, including Friends of Burlington Gardens, Grow Team ONE, City Market, the Intervale Center, Burlington Permaculture, and the New Farms for New Americans program. The University of Vermont offers many technical resources for practitioners. Commercial farmers vend their produce at four weekly farmers markets during the growing season and one biweekly winter market.

Although it is fairly straightforward to gauge the scope of commercial urban agriculture activities in Burlington (e.g. the Intervale Center tracks data on farm sales), and through the city's community gardening program we can track of the number of

people involved in and the amount of space devoted to community gardens, the city lacks

data regarding the scope of residential urban agriculture activities. While there is a

general agreement that many residents throughout the city grow food-producing plants

and keep chickens, there is no quantitative data to explain the extent to which this occurs.

Urban homesteading

Burlington residents participate in urban agriculture activities at their homes by

gardening, practicing permaculture (Podhaizer, 2008), and keeping bees, livestock, and

poultry (Bromage, 2010). A few incidents have arisen related to the keeping of animals

by residents. A few years ago one household was ordered by an Animal Control Officer

to stop keeping goats in its yard (Ives, 2008). In another recent incident, a resident was

ordered by a Code Enforcement Officer to reduce his chicken flock from ten to four hens

based on a city ordinance intended to regulate dog kennels (Bromage, 2010)[17]. Such an

ordinance was never enacted with urban agriculture in mind.

Table 4. Scope of urban agriculture in Burlington

Activities	Infrastructure
Home, community, school, and rooftop gardens Commercial farming Poultry and livestock Beekeeping Composting Preservation & processing Produce sales	Small-scale infrastructure (raised beds, cold frames, etc.) Hoophouses Greenhouses Livestock structures Community kitchens Farm stands Farmers' markets

Commercial farming

Burlington's peri-urban commercial agriculture is located predominately in the

Intervale. Once home to Abenaki tribes and later the famous Vermont Revolutionary,

Ethan Allen, the Intervale comprises 350 acres of agricultural land, trails, and wildlife

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[17] This particular incident generated the initial impetus for this project.

corridors along the along the Winooski River. The Intervale is home to 11 organic farms, a community garden, and a garden supply store. The Intervale land is managed by the Intervale Center, a nonprofit organization that supports the Intervale's independent farms through its Farms Program, and runs a conservation nursery and a multi-farm delivery CSA. Much of the Intervale land is part of the Winooski River floodplain, which both imposes some regulatory issues from the federal level and also offers highly fertile soils. In addition to the Intervale, commercial farming occurs at the Ethan Allen Homestead (see section on New Farms for New Americans, below) and privately-held farmland to the north. Both these areas are also in the Winooski River floodplain.

Local commercial farmers sell their products through both retail and direct market outlets. City Market, a cooperatively-owned grocery store in downtown Burlington with over 7,000 member-owners, features a wide range of locally produced food, including a significant amount from Intervale farms. The co-op actively promotes the local agriculture and offers community classes on gardening and cooking. Many urban farms sell directly to residents through community supported agriculture (CSA) shares. One farm operates a produce truck that vends in the Old North End once a week (Slota, 2010). Four weekly farmers' markets operate throughout the growing season; the downtown farmers' market operates every other week throughout the winter.

Community gardens

The City's Parks and Recreation Department administers the Burlington Area Community Gardens program, which was founded in 1972 and currently comprises 12 community gardens with approximately 500 allotment style plots.
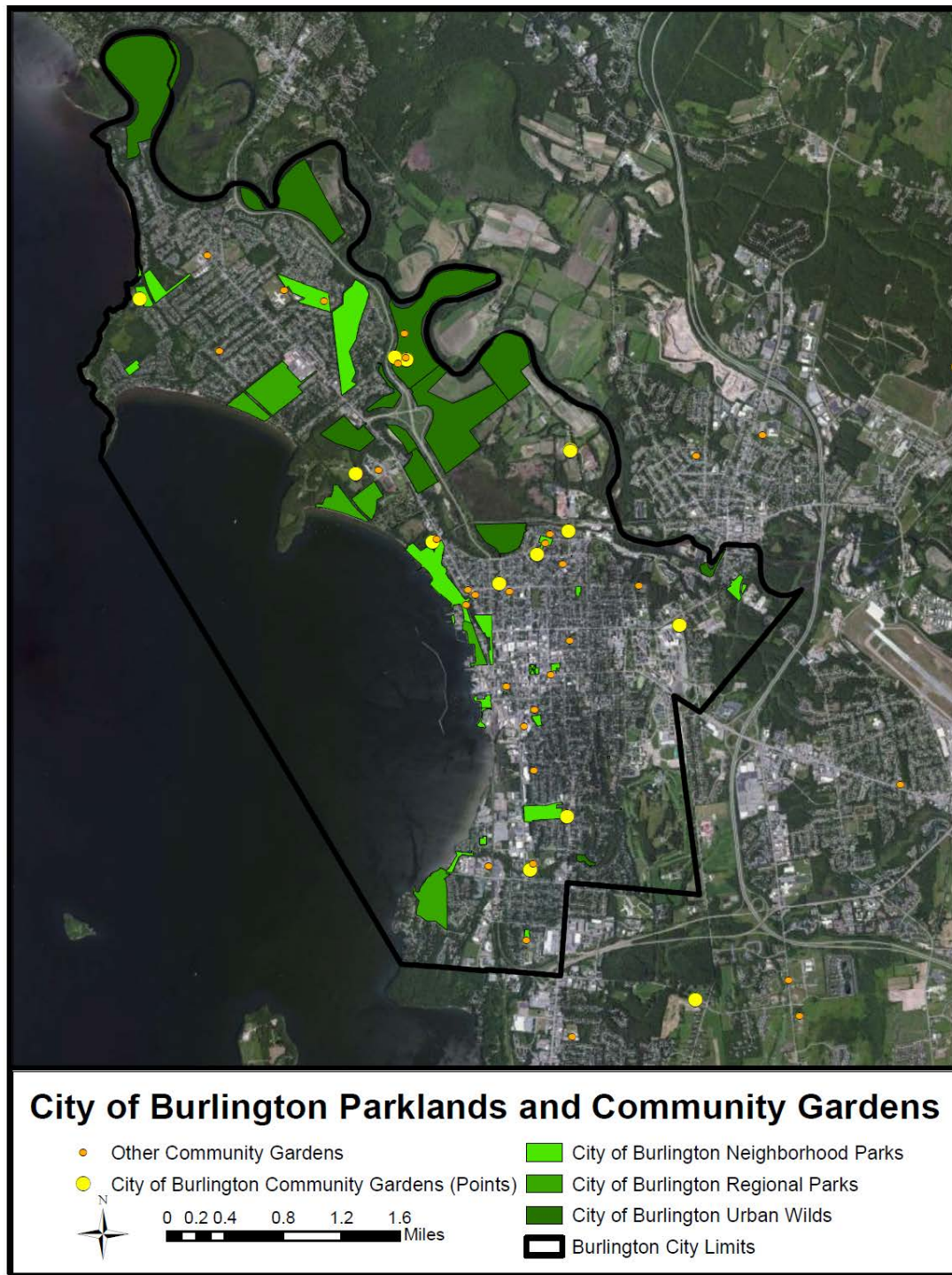
Figure 8 Current community garden locations in Burlington[18]

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[18] Map created by Elizabeth Brownlee, Field Naturalist Program, University of Vermont.

The program is run by one staff member and a network of volunteer site coordinators and has the goal of providing people with the opportunity to benefit from the recreational and community-building aspects of community gardens. Residents pay for garden space based on plot size (low-income participants are eligible for a 50% scholarship). The city's oldest community garden still in operation, founded in 1980, is located in the Intervale, and other gardens are scattered throughout the city. Most garden sites are on privately-owned land; only two are on city-owned land (Starr Farm and Callahan).

The city is also home to several independent gardens, including the Archibald and Riverside neighborhood gardens managed by Grow Team O.N.E., a grassroots community group in the Old North End. The two gardens on reclaimed land have space for 33 households.

New American integration through farming
The Association of Africans Living in VT (AALV) administers the New Farms for New Americans (NFNA) program, which aims to support refugee and immigrant households in growing food for their own use and support new farm and food-based enterprises. The program connects new Americans to agricultural land at the Ethan Allen Homestead and the Intervale, and offers educational programming on farming and business management. Over 90 families farm six acres, many of whom have agricultural expertise from their home countries. Around 40 households grow food for a mixed vegetable CSA and a Bhutanese CSA, and the program has plans to offer a West African CSA.

NFNA is notable for its successful efforts to provide new Americans with access to agricultural land and resources. Participants have the opportunity to grow culturally-appropriate food, save money on food, generate supplemental income, and achieve accelerated social integration and job outcomes. Many new Americans have extensive agricultural experience from their home countries, and have the potential to be productive members of Vermont's agricultural economy. In addition, NFNA is uniquely positioned to connect low income and marginalized communities to affordable local produce due to the low cost of production and personal connections to customers.

NFNA faces some unique challenges due to the nature of its work. The biggest challenge has been managing rapid program growth due to the popularity of the program. Although the program has expanded onto new land each year, it would benefit from access to more land with infrastructure for agriculture that is close to Burlington or Winooski. Transportation is a perpetual barrier, as most participants lack their own transportation, and the program van makes multiple trips from the AALV office to the fields at the Ethan Allen Homestead several days each week. Participants would benefit from permanent market infrastructure such as farm stands in public housing, which would facilitate sales of fresh produce to neighbors. In general, the community would also benefit from more community gardens sites in the Old North End and Winooski.

Organizational support for urban agriculture

Many local institutions and organizations provide land and resources for urban agriculture in Burlington. Burlington Permaculture is a community organization that facilitates education on permaculture and gardening by connecting neighbors, offering workshops, and sharing resources. The group aims to build a community and knowledge

base in support of urban agriculture and a sustainable community in general. Other local

organizations and institutions operate gardens or provide garden space to local

practitioners, including Burlington College, the Visiting Nurse Association Family

Room, Friends of Burlington Gardens, the Ethan Allen Homestead, and many of the

city's public schools.

Food security

Despite this array of urban food production activities, many Burlington residents

live in food insecure households. In Vermont, 14% of households, and one in seven

children in Chittenden County, are food insecure (Hunger Free Vermont, 2011). The

Farm to Plate Initiative has identified goal that by 2020 "all Vermonters will have access

to fresh, nutritionally balanced food they can afford" and has identified community

gardens as means to support this goal (Kahler, et al., 2011).

According to USDA calculations[19], Burlington, which has one grocery store

downtown and additional grocery stores on the outskirts of town, has one census tract

that qualifies as a food desert (Figure 8). Although this data is useful, it is important to

note that the USDA-identified food desert in Burlington includes the UVM campus,

which may affect the calculations in unexpected ways. Additionally, Burlington's Old

North End neighborhood is characterized by a high percentage of low-income residents

and is farther from the downtown food co-op than the western edge of the census tract

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[19] USDA calculates food insecurity by census track and considers factors such as income level, percentage of residents without access to a car, and distance from grocery stores. This approach is limited by the spatial coarseness of using the census tract as the base unit and the lack of incorporation of other relevant factors. I use the USDA estimate here due to a lack of other research on food deserts in Burlington.

identified in the figure. For these reasons, it is unclear whether such calculations produce spatial data at a fine enough grain to be useful for a city the size of Burlington.
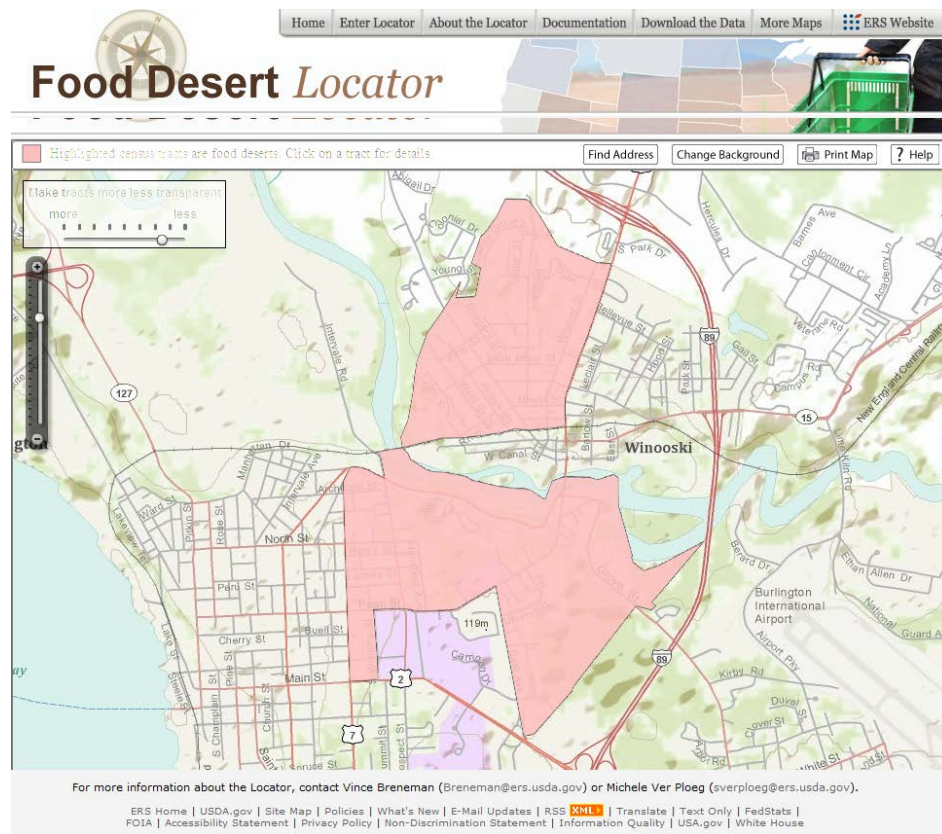
Figure 9. USDA-defined food desert in Burlington (shaded areas)[20]

Governmental and nongovernmental organizations provide important food safety nets for food insecure individuals and families. In Burlington, the Chittenden Emergency Food Shelf serves over 12,000 people each year (Chittenden Emergency Food Shelf, n/d). Additionally, several Burlington farmers' markets accept SNAP and WIC benefits.

In summary, Vermont's agricultural heritage and civic tradition provide an appropriate backdrop to the Task Force work to develop policies to support and govern

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[20] Source: USDA Economic Research Service, available from http://www.ers.usda.gov/data/fooddesert/documentation.html

urban agriculture in Burlington. Burlington residents participate in a broad range of urban

agriculture activities, including home gardening and keeping livestock, commercial

farming, organized farming programs, and community gardens. Many organizations

support agricultural activities in the city, including several nonprofit organizations, the

food co-op, and city departments. Despite this array of urban food production activities,

many Burlington residents live in food insecure households.

Chapter 6. Findings: Laying the groundwork for urban agriculture policy in Burlington

This section provides an overview of stakeholder views, current policies affecting urban agriculture in Burlington, and how other cities have adopted policies to support urban agriculture. This section addresses research questions 1-3:

1. Which current policies affect urban agriculture in Burlington, and how are issues currently handled?
2. What are the needs and concerns of local urban agriculture practitioners and their neighbors?
3. How have other cities handled complex policy challenges related to urban agriculture user conflicts, land use, and governance?

Stakeholder perspectives

This section addresses research question 2: What are the needs and concerns of local urban agriculture practitioners and their neighbors? The research question was expanded to include municipal official and local policy expert stakeholder groups, as well as stakeholder views on specific issues and opportunities. The "neighbors" stakeholder group was considered as feedback from the general community rather than specific people who live next door to urban agriculture activities.

The multi-stakeholder process included seven semi-structured interviews with local practitioners, seven semi-structured interviews with local policy experts, six semi-structured interviews with officials from a wide range of city departments and four representatives from the VT Agency of Agriculture, presentations at seven Neighborhood Planning Assembly meetings, two forums held at Burlington Food Council meetings, and one community workshop on urban livestock policy.

Once initial recommendations were developed, the Task Force released a draft report online and accepted comments from the community for a two-week time period, during which the Task Force held two meetings with city officials, and one community meeting to solicit feedback to refine the recommended actions for the final report. Feedback was also collected via an online survey. From these conversations held over a 14-month time period, the following general themes emerged.

Each stakeholder group had varying degrees of interest in different urban agriculture activities and policy considerations. For this reason, some stakeholder groups provided copious and rich data on certain topics, but thinner data on other topics. These trends are reflected in the varying levels of information provided in each theme below.

Local urban agriculture practitioners
The local urban agriculture practitioner stakeholder group included committed hobbyists and people involved in urban agriculture in some professional capacity (such as commercial farmers and organizational representatives)[21]. The Task Force collected feedback from this stakeholder group through semi-structured interviews with four nonprofit organizations and three urban farm businesses, as well as from a variety of practitioners who participated in the public meetings, forums, and a livestock policy workshop hosted by the Task Force in January of 2012.

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[21] Although the issues faced by commercial practitioners are different than those faced by non-commercial practitioners, they were grouped together because their interests were common enough that they could be abstracted to common themes. In the analysis of activities, policy recommendations were developed that were specific to the either commercial or non-commercial contexts. For the most part, recommendations focused on non-commercial agriculture due to the state statutes limiting a municipality's authority over commercial agriculture.

The people from this stakeholder group who participated in the Task Force research process articulated a set of values associated with their practice, identified issues with current policy, identified non-policy challenges and risks associated with urban agriculture, and advocated for policy approaches that support their efforts, remove existing barriers, and do not create new barriers. They also provided invaluable information regarding the technical ins and outs of urban agriculture activities.

Many local practitioners we spoke to expressed that their interest in urban agriculture is motivated by a variety of personal and community **values**[22]. Personal values included having control over where their food comes from and enjoyment of the recreational aspects of gardening. The community values articulated focused on the importance of place-based food production with the goal of addressing fractured community and building an environmentally sustainable, resilient, socially just, and secure food supply. Those residents involved in self-provision from their own gardens tended to focus on the recreational and sustainability aspects of urban food production. One participant specifically mentioned that he is motivated to use urban food production as a way to proactively address economic transformation and resource depletion resulting from threats of peak oil and climate change. While social justice does not appear to be a driving factor for all urban agriculture practitioners in Burlington, those involved in community or commercial food production noted social justice ideals in addition to environmental values. Informants involved in community gardens identified the social

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[22] Participants in the local practitioner stakeholder group were the only ones to explicitly mention the values that motivate their practice. A few participants from other stakeholder groups alluded to an understanding of why people may practice urban agriculture, but as they were not practitioners themselves, their primary feedback related to other themes.

capital benefits of sharing a space with neighbors, including fostering a neighborhood community and involving children and others who would not usually be involved in gardening and agriculture. Community gardens were also identified as important spaces for people who cannot afford houses with large lawns for growing food. In addition, some commercial practitioners we spoke with mentioned that their production and marketing practices are inspired by an ethic of environmental stewardship and social justice ideals. All of Burlington's urban farms follow organic practices; one even uses animal traction instead of tractors. While Intervale farmers are well-supported by the local "foodie" community, some also intentionally keep prices low, market to low-income neighborhoods, and donate food to the food shelf. The New Farms for New Americans program has inherent social integration and self-provisioning goals in addition to its revenue-generating CSA program.

The practitioners we spoke with identified a variety of barriers created by **current policy** at the municipal level. Barriers identified included a lack of laws specific to urban agriculture, a lack of agricultural expertise within city government, burdensome permitting processes, insurance requirements, and confusion about who is responsible for enforcing existing policy. Additional barriers were identified at the state and federal levels, including that state slaughter laws limit on-farm slaughter for sale and that federal FEMA policies restrict agricultural structures in the Winooski River floodway. Additionally, land in the Intervale purchased with federal conservation funds is unavailable for agricultural use due to federal policy.

The practitioners we spoke with identified a variety of **challenges and risks** associated with urban agriculture that do not result from current municipal policy,

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including information deficits, land access challenges, soil contamination issues, neighbor conflicts, economic challenges, and retail policy. Information challenges included that people lack information on city policies and that non-English speakers lack access to information they can understand. Land access challenges include that there is limited open space currently available for food cultivation in the city. Many city residents lack access to space for gardens, as yards are often compacted, polluted, and shaded. For those who do have access to space at home, property ownership factors may limit renters from investing in landscapes they do not own. Some practitioners expressed concern about how to handle potential neighbor conflicts, such as if a neighbor's dog attacks a chicken. One practitioner noted the challenge of making urban agriculture projects economically viable. Another commercial producer identified a potential threat from grocery stores requiring HACCP[23] adherence for produce. Risks identified by the urban agriculture practitioners we spoke with included soil contamination, nutrient contamination in stormwater runoff, and the risk of certain activities becoming a nuisance.

The local practitioners we spoke with identified a variety of **opportunities** for the city of Burlington to better support and govern urban agriculture, including opportunities to support economic development, promote education, connect low-income residents with resources, foster a community of practice, and utilize public land for food production. In terms of economic development, Burlington could promote farmers markets, the Community and Economic Development Office (CEDO) could expand its

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[23] http://www.fda.gov/food/foodsafety/hazardanalysiscriticalcontrolpointshaccp/default.htm

support for food and agriculture micro-enterprises, and the city could provide a market outlet for local farms by providing city employees with a wellness benefit for a CSA membership. Educational opportunities include that the city could promote information on the benefits of urban agriculture, outline the risks of soil contamination, promote best practices, and connect practitioners to technical resources. Some practitioners specifically identified opportunities to support low income residents with raised beds and farm stands in public housing, more community gardens close to the Old North End and Winooski, scholarship money for community garden and farmers' market participation, access to production inputs including infrastructure and seeds, and gleaning for the food shelf. Others identified that public land could be used for haying or grazing animals, which would reduce city expenditures on turf maintenance.

The practitioners that participated in the Task Force research process provided feedback on **policy development** for a variety of urban agriculture activities. At an abstract level, feedback included that new policies should remove current barriers and not pose new barriers. Regulations adopted should be minimal, scale-appropriate, and flexible so that local residents may continue to meet their local food production needs using a variety of techniques and approaches. However, some practitioners expressed that in cases where an absence of regulation creates problems (e.g. in the case of the lack of animal cruelty laws for livestock), regulations should be adopted. Some practitioners would not like to see fees implemented for any urban agriculture activities, as this would pose new barriers to participation, especially for low-income practitioners. Others noted that the implementation of some policies will require an administrative commitment on the part of the city that should be supported financially, perhaps through fees.

The practitioners we spoke with expressed that urban agriculture best practices should be encouraged and promoted by the city, but that the city should not get involved in regulating them. Some practitioners suggested that the best way to address a lack of agricultural expertise among producers is to foster a community of practice. The idea of a community of practice was likened to hunter training courses, where experienced hunters pass on their knowledge and best practices to new hunters. Supporting a community of practice could involve facilitating events, workshops, and educational materials. Participants from this group identified that the Burlington Food Council, or a point person within the city, could serve as a hub for resources and facilitate the exchange of information.

In summary, the local practitioners we spoke with were motivated to practice urban agriculture for the personal and community benefits it provides, but they perceived barriers arising from both current policy and issues inherent to growing food in urban areas. They saw opportunities for the city to support urban agriculture activities through a variety of policy and coordination efforts.

Local policy experts
Local policy experts were people in the Burlington and broader Vermont community who have a professional or personal expertise related to some policy aspect of urban agriculture, even if they do not participate in urban agriculture per se. The specific policy issues covered in this group included nutrient runoff, pesticides, bees, animal welfare, and neighbor conflicts. The Task Force collected feedback from this group through semi-structured interviews with representatives from three nonprofit organizations and four representatives from the state Agency of Agriculture, as well as

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participation by a few of these people in public meetings. The policy experts we spoke with provided valuable insight on how current policy affects many urban agriculture activities, identified issues and risks specific to urban agriculture, identified opportunities for urban agriculture policy, and provided input on potential future policies.

Participants from this stakeholder group identified the ways that **current** policy affects specific urban agriculture activities, including definitions for agriculture, apiary laws, animal cruelty laws, slaughtering laws, pesticide laws, and Accepted Agricultural Practices (AAP) regulations. They also articulated the implementation processes for policies they are responsible for enforcing.

The policy experts we spoke with identified some of the cultural and interpersonal factors that create **challenges** for urban agriculture. Cultural challenges include that some urban residents have different attitudes about slaughtering and eating animals. Interpersonal factors relate to similar differences in opinion about which activities are appropriate in urban areas, and the risk of resulting neighbor disputes.

Participants from this stakeholder group identified a variety of **opportunities** to support and govern urban agriculture in Burlington, including the use of mediation, outreach on relevant state laws, and the promotion of best practices. Mediation may be able to mitigate some of the abovementioned disputes that can come up between city residents. Outreach can prevent urban agriculture practitioners from unintentionally breaking state law. Educational opportunities can be coordinated with partners, such as the Humane Society of Chittenden County and the VT Beekeepers Association.

The policy experts we spoke with provided input on the development of **future policy** for urban agriculture in Burlington, including recommendations on policies

specific to certain urban agriculture activities and recommendations for implementation. Feedback on future policy included that animal welfare should be governed with regulations (enforcement cannot happen without them), that Burlington could adopt management policies that limit the use of pesticides on public land, and that the mediation function may be best managed through a nonprofit organization.

In summary, the local policy experts who participated in the Task Force research processes offered information on a variety of current state laws, provided insight on issues related to neighbor conflicts, identified opportunities to address neighbor disputes and information deficits, and provided input on potential municipal policies for animal welfare, pesticides, and the implementation of a mediation mechanism.

Municipal officials

The municipal officials involved in the Task Force research process were employees of the City of Burlington whose area of responsibility deals with urban agriculture in some regard. The Task Force collected feedback from representatives of this group through six semi-structured interviews and participation by a broader group of city officials in several public forums.

Participants from this stakeholder group offered valuable insight regarding the current state of policy in Burlington, experiences related to past implementation, challenges and risks associated with urban agriculture governance, perceived opportunities for the city to govern urban agriculture, and recommendations on the development of future policy.

The municipal officials we spoke with provided insight on **current policies** that affect urban agriculture, how implementation of those policies is handled, and how state

and federal policies interact with municipal jurisdiction over urban agriculture activities. Discussions of current municipal policy and implementation were based on the jurisdiction of the participant.

Some of the municipal officials who participated in our research process identified specific **challenges and risks** they perceive for urban agriculture, including neighbor relations, a lack of agricultural expertise within the city, lack of access to land, soil contamination, and nuisances. One city official noted that because he lacks agricultural expertise, he does not feel qualified to resolve disputes between neighbors when it comes to agricultural issues. Another noted that with a lack of community garden space, some people end up planting in contaminated soil. Another official noted the risk for nuisances resulting from keeping animals in close proximity to people.

Participants from this stakeholder group identified **opportunities** for future urban agriculture policies and economic development. Two enforcement officers noted that having measurable ordinances specific to livestock would ease enforcement. Another city employee noted that best practices may offer business opportunities. For example, the need for nutrient cycling could offer a business opportunity for organic waste collection.

The municipal officials who participated in the Task Force research process provided a significant amount of feedback on potential **future policies**, including how the city could coordinate departments and organizations, funding ideas, how future implementation could work, and a wide range of recommendations for specific urban agriculture activities. The officials we spoke with explained the purview of their department, the ways in which future policies could adhere to or differ from current policies, and how future policy could be implemented. They also provided suggestions on

where we should look for guidance when developing new policies and they identified the ways in which certain policy approaches would affect their work.

In summary, the municipal officials we spoke with explained the ways that current municipal, state, and federal policies affect urban agriculture in Burlington, identified non-policy challenges and risks they perceive with urban agriculture, highlighted opportunities they see for future urban agriculture policies to address current issues, and provided input on a wide range of potential policy approaches to address the urban agriculture activities currently happening in Burlington.

Burlington community

Members of the Burlington community are people who live in Burlington but do not identify as urban agriculture practitioners. Members of the Burlington community participated in the Task Force research process through attendance at the seven NPA meetings at which the Task Force presented. Members of the Burlington community who participated in the Task Force research process generally expressed support for urban agricultural activities, though they did express some concerns regarding potential risks.

Regarding **current policy**, one community member noted the difficulty Burlington faces not having a dedicated Animal Control Officer at the Police Department. Another indicated that they understood the city has not been supportive of the Old North End Farmers' Market.

Participants from the Burlington community perceived **challenges and risks** from pollution, both affecting and resulting from urban agriculture. Some expressed concern about the contamination of urban soils and the associated health risks of eating food grown in that soil. Others noted the potential threat of nutrient runoff from gardens,

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manure, and compost, especially on impervious surfaces, and agricultural chemicals along the lakefront.

Members of the Burlington community we spoke with noted the **opportunities** that urban agriculture can provide. One community member noted that garden tours can inspire and educate people. Another suggested that landless people could be connected to people who have large yards they are willing to share. The lack of a Burlington composting facility was also noted as a potential opportunity for a new project.

Participants from this stakeholder group suggested a variety of considerations for **future policy** development, including that new policy should be flexible for different property contexts, such as lot size, rental properties, and owner-occupied properties. Several community members expressed interest in ensuring that urban livestock are treated humanely and protected from predators, including dogs. One community member discouraged the use of fees in the permitting process, as this poses a barrier to participation. Another expressed concern that policies would result in overregulation, given Burlington's reputation for tight regulation of land use activities. Another community member suggested that considering the difficulty involved in changing ordinances, we might consider a trial period for new regulations.

Comparing stakeholder perspectives

The stakeholder groups we spoke with provided sometimes consistent and sometimes opposing perspectives on urban agriculture activities and policy considerations (Table 5). Local urban agriculture practitioners and community members were adept at identifying how current policies impede their efforts, while local policy experts and municipal officials focused more on how current policies work in practice.

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All the stakeholder groups identified critical challenges and risks for urban agriculture, though practitioners tended to focus on technical challenges while local policy experts, municipal officials, and community members tended to focus on the potential for neighbor disputes and the risk of negative outcomes. Local urban agriculture practitioners and community members were the most visionary in their articulation of the opportunities for urban agriculture, while local policy experts and municipal officials focused on governance opportunities.

Each stakeholder group advocated for future policies that would be to their best advantage. For local urban agriculture practitioners, this meant the removal of policy barriers, keeping future regulations to a minimum, and the active city support of their efforts. Local policy experts focused on the governance mechanisms best suited for addressing issues, while municipal officials focused on the implementation considerations of new policies. Non-practitioner members of the Burlington community were most concerned with the implications of new policies for the broader community. Local urban agriculture practitioners were the only stakeholder group to emphasize the social, environmental, and economic values that motivate their work.

Table 5. Summary of stakeholder perspectives

Stakeholder group	Current policy	Challenges and risks	Opportunities	Future policy	Other notes
Local urban agriculture practitioners	Barriers from municipal, state, and federal policy make urban agriculture difficult; lack of municipal policies specific to urban agriculture creates confusion	Lack of information on policy and best practices; lack of access to land; risk of user conflicts, soil contamination, water contamination, nuisances	Economic development; education on policies and best practices; connecting needs and resources; fostering a community of practice; utilizing public land for food production	Remove current barriers and don't impose new ones; regulations minimal, scale-appropriate, and flexible; no fees; promote best practices through community of practice	Personal and community values motivate many people
Local policy experts	How implementation of current policies does (and does not) work	Cultural and interpersonal factors, e.g. neighbor disputes about appropriate activities in a city		Regulate animal welfare; regulate pesticides on public land; mediation for issues regulation can't resolve; outreach on relevant state laws and best practices; coordinate with local organizations on promoting best practices	
Municipal officials	How implementation of current policies does (and does not) work; how policies at different levels of government interact	Neighbor relations; lack of agricultural expertise within city; lack of access to land; soil contamination; nuisances	Economic development	Coordinate departments and organizations; exempt from permit processes where possible; specific recommendations on urban agriculture activities; straightforward ordinances specific to livestock	
Burlington community	Lack of animal control officer makes livestock enforcement difficult; city does not support farmers' market	Soil contamination; nutrient runoff; agricultural chemicals	Gardens inspire and educate; connect land with people who need land; address lack of composting in Burlington	Flexible policies for a variety of contexts; regulate humane treatment; no fees; don't overregulate; change ordinances for a trial period	

Current governance of urban agriculture in Burlington

A variety of state and municipal policies affect urban agriculture in Burlington.

This section addresses research question 1: Which current policies affect urban agriculture in Burlington, and how are issues currently handled? The original intention of this question was to examine municipal laws affecting urban agriculture and understand how they are implemented. However, this question was expanded to include the wider range of policies that apply to urban agriculture (e.g. state laws and the city's community gardening program) and the network of governmental and nongovernmental actors involved in the implementation of urban agriculture governance in Burlington. Current policies were analyzed using the governance tools and governance network frameworks to characterize the policies and actors involved in their implementation.

Current policy tools

The policies affecting urban agriculture in Burlington can be conceptually categorized according to Salamon's policy tool framework (2002a). Current policy tools applicable to urban agriculture in Burlington include direct government, social regulation, public information, and grants. Policies affecting urban agriculture are generated at municipal, state, and federal levels.

In Burlington, **direct government** is used in the direct management of school and community gardens. School gardens are an extension of the public education system, and community gardens are managed by the Burlington Area Community Gardens (BACG), a program run by Burlington Parks and Recreation.

BACG is essentially a recreation program run by volunteers, with one city employee overseeing the program. The city manages sign-up, coordinates volunteers,

identifies new garden locations, and provides free seeds. The Department of Public Works (DPW) provides water access for the gardens.

Social regulation is the most significant policy tool currently affecting urban agriculture in Burlington, as a variety of state agricultural laws and municipal ordinances apply to production, infrastructure, and rules about the sale of produce. Many state laws affect urban agriculture directly or interact with municipal laws affecting urban agriculture (Table 6). Although several of the laws were designed for commercial agriculture, the generous definitions associated with "agriculture", "farming," "agricultural practices," and "agricultural structures" result in applicability at a wide range of scales, and many hobby urban agriculture practitioners are affected by these laws. The stakeholder feedback outlined in the previous chapter provided insight on the direction of change needed for these laws. Appendix E describes these state laws in detail.

The city of Burlington uses two regulatory mechanisms: a Code of Ordinances, with general codes for the city, and a Comprehensive Development Ordinance, the land use and zoning code for the city. Many provisions designed for other situations currently apply to urban agriculture contexts for lack of a more appropriate method (Table 7). Penalties for noncompliance include tickets and fines. The stakeholder feedback outlined in the previous chapter provided insight on the direction of change needed for these laws. Appendix F describes these municipal ordinances in detail.

Table 6. State laws affecting urban agriculture in Burlington

Policy	Major provisions	Implications for urban agriculture	Change needed
Burlington Municipal Charter (24 V.S.A. § 3-48)	Limits regulatory authority over direct farm sales	Indicates city cannot regulate the sale of produce directly from producers	Clarification about sales of produce from commercial and hobby producers
Limitations on Municipal Bylaws (24 V.S.A. § 4413)	Limits regulatory authority over accepted agricultural practices	City cannot regulate nutrient management or commercial agricultural structures	Clarification from state on how to deal with managing for water quality in an urban context
Accepted Agricultural Practices (6 V.S.A. § 4810)	Regulates nutrient management for water quality	Urban agriculture practitioners must meet requirements designed for commercial scale farms, or get a variance	Clarification from state on how to deal with managing for water quality in an urban context
Apiary Law (6 V.S.A. § 3021)	Regulates professional and hobby beekeeping	Hobby beekeepers must register with the state	Increased urban beekeeper awareness of the law; coordination with the State Apiculturist
Slaughtering and Meat Inspection Laws (6 V.S.A. § 3301)	Regulates humane slaughtering; allows on-farm slaughtering for personal use and whole poultry	Applies to urban livestock because "farm" is not defined	Increased awareness of the law among urban livestock producers
Animal Cruelty Law (13 V.S.A. § 351)	Regulates humane treatment of animals, but exempts "livestock and poultry husbandry practices"	Limits ability of humane officers to enforce humane treatment	A legal basis for humane treatment of livestock

Table 7. Municipal laws affecting urban agriculture in Burlington

Policy	Major provisions	Implications for urban agriculture	Change needed
Animals and Fowl (Chapter 5 of Code of Ordinances)	Focus on dogs; nuisance animal clause; prohibits "illegally killing" an animal	Mostly doesn't apply to livestock or poultry; roosters regulated as nuisance animals; slaughtering ambiguous	Clarification on categories of animals; what is/is not allowed for poultry and livestock; clarification on legality of slaughtering
Buildings and Construction (Chapter 8 of Code of Ordinances)	Outlines requirements for obtaining building permits for any structure to be constructed in Burlington	Agricultural structures are not required to be designed by a registered architect or engineer; chicken coops, hoophouses, and garden sheds must go through costly and lengthy permit process	Clarification on applicability of permits to agricultural structures; exemptions for some agricultural structures
Health (Chapter 17 of Code of Ordinances)	Regulates the sale of "fruit, vegetables or other foodstuffs"	Anyone selling produce must follow provisions	Increased awareness for hobby producers
Vegetation (Chapter 29 of Code of Ordinances)	Prohibits planting of trees in public parks or right-of-ways without prior approval from Board of Parks Commissioners	Any food producing fruit trees on public property must get approval	Support of Board for urban food forestry initiatives
Comprehensive Development Ordinance	Defines "animal boarding" as having more than 4 animals greater than 3 months of age	Residents may not keep more than 4 animals in total without being considered a boarding operation	Higher allowed numbers to accommodate a combination of poultry, livestock, and pets
Comprehensive Development Ordinance	Requires zoning permit for structures larger than 16 sq. ft.; requires one parking spot for every ten garden plots	Chicken coops, hoophouses, and garden sheds must go through costly and lengthy permit process	Exemptions and expedited processes for agricultural structures
Comprehensive Development Ordinance	Regulates "Home Occupations" for people operating businesses out of their homes	Food businesses must go through costly and lengthy permit process	Exemptions for food enterprises using Burlington produced agricultural products
Comprehensive Development Ordinance	Regulates farmers' markets through the definition of "Open Air Markets"	Limits zones where farmers' markets are allowed	Increased zones permitted for farmers' markets

Public information is provided by the city and local nonprofits. In Burlington, the Community and Economic Development Office (CEDO) provides information on lead contamination in soil to reduce the risk of childhood exposure. Additionally, nonprofits disseminate knowledge and information regarding various urban agricultural practices; however, this information is not the result of public policy.

The New Farms for New Americans program operates with **grant** funding from the Federal Office of Refugee Resettlement and the USDA. The program has been expanding, both in terms of number of participants and acres managed, every year since it began in 2008.

Although somewhat ancillary to urban agriculture, Burlington's Community and Economic Development Office provides community planning functions with federal grant money. For example, Burlington's Legacy Project, a sustainability plan for the city, includes mention of the need to prioritize local food and community gardens. The Legacy Project was also integral to establishing the Burlington Food Council and Burlington School Food Project. An update to the plan is being coordinated with the Chittenden Regional Planning Commission's ECOS Project, funded by a $1 million grant from the United States Department of Housing and Urban Development Sustainable Communities Project. The ECOS plan draft includes goals and indicators for local food production and access.

In summary, a variety of policy tools currently affect urban agriculture in Burlington, at both the state and city level. The most significant of these, social regulation, includes a number of laws that were not designed with the intention of being applied to an urban agriculture context. Given the current consensus that these laws are

confusing and ambiguous, future social regulation for urban agriculture should consider

what May (2002) describes as the attributes "good rules."[24]

Burlington's urban agriculture governance network

The following section provides an overview of Burlington's urban agriculture

governance network, describes its structure, and outlines the functions it performs. A

governance network analysis can assist in understanding the multi-dimensional

organizational relationships that currently affect the governance of urban agriculture

activities in Burlington.

The Burlington urban agriculture governance network includes **actors** from

public, private, and nonprofit sectors, operating at local, state, and federal levels involved

to various degrees in the governance of urban agriculture activities in Burlington (Figure

9):

- ten city-level government entities
- two state-level government entities
- four federal-level government entities
- nine (+) nonprofit organizations
- four (+) business enterprises
- countless urban agriculture practitioners

I have noted the nonprofit organizations and business enterprises with a + symbol

to denote the fact that additional actors in these categories exist, but are either grouped

together in my analysis (as is the case with farmers markets, Intervale farmers, and food

entrepreneurs) or are omitted because they are not tightly linked to the Burlington

network (e.g. additional nonprofit or regulatory food system actors related, but not

integral, to urban agriculture governance, such as the Chittenden Emergency Food Shelf).

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[24] See page 40 for the attributes of "good rules."
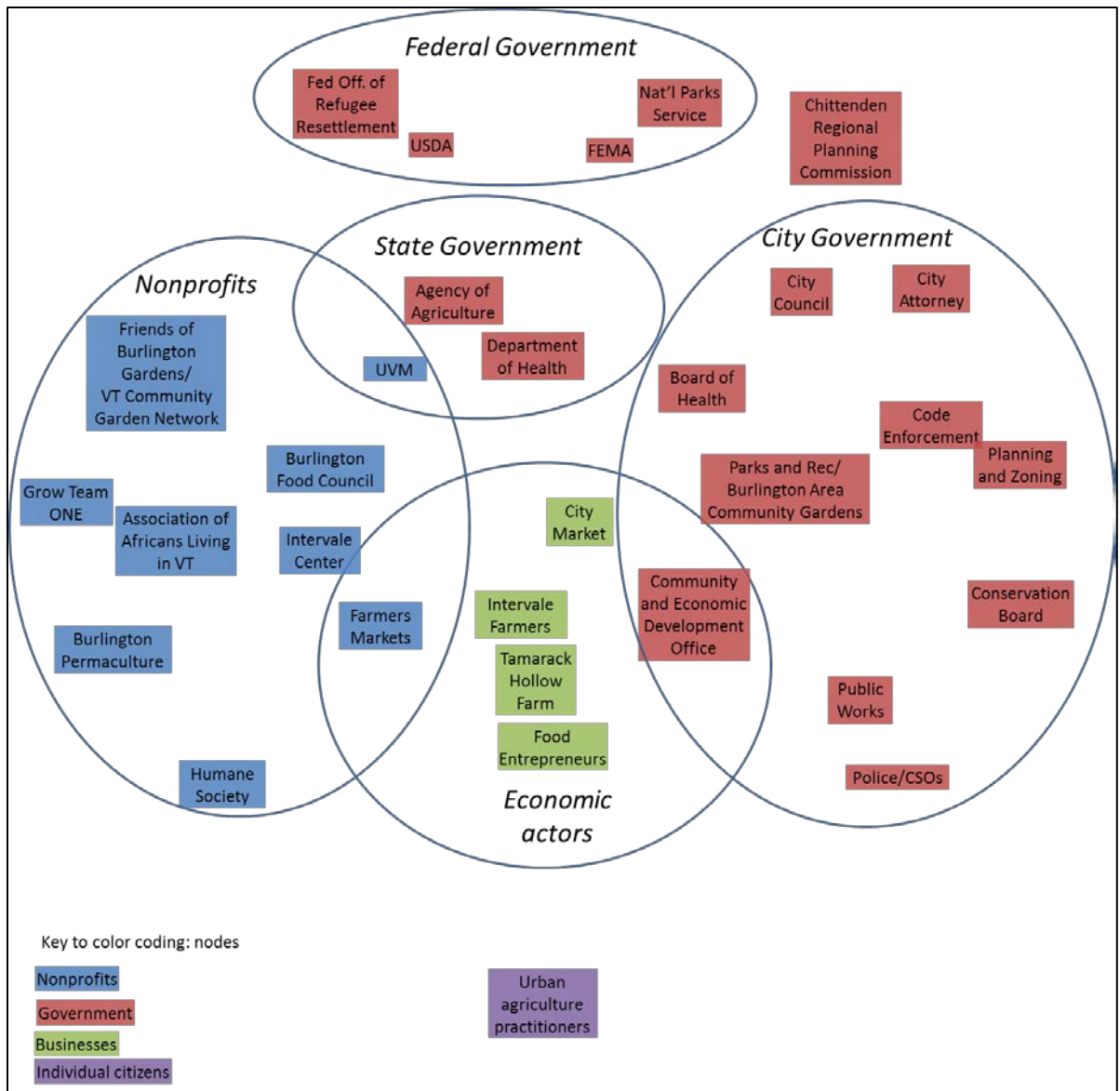
Figure 10. Actors and sectors in Burlington's urban agriculture governance network

As mentioned above, this governance network contains examples of both direct government and indirect governance. An example of direct governance is the City-administered community gardening program. An example of indirect governance is the New Farms for New Americans program, an agricultural program for refugees and immigrants funded by the Federal Office of Refugee Resettlement and the USDA.

In Burlington's urban agriculture governance network, some **ties** are regulatory, some represent financial relationships, and some are partnerships where multiple forms of capital may be exchanged[25].

The majority of the actors in Burlington's urban agriculture governance network primarily perform regulatory and service delivery **functions**, both of which are defined as policy stream functions (because they result from the implementation of existing policies). Some actors perform operating functions. Here I have divided the actors based on their primary functions.

Regulatory functions are performed by the following actors:

- USDA (funds New Farms for New Americans program)
- National Parks Service (regulates use of McKenzie Park)
- FEMA (regulates structures in Intervale floodplain)
- VT Agency of Agriculture (defines Accepted Agricultural Practices)
- VT Department of Health (regulates farmers markets)
- City Council (creates ordinances)
- Code Enforcement (enforces city ordinances)
- Parks and Recreation (regulates park used for farmers market)
- Planning and Zoning (processes zoning permits)
- Public Works (enforces building codes)
- Police/Community Service Officers (CSOs) (enforces animal ordinances)
- Board of Health (limited statutory authority on health issues)
- Humane Society (responds to animal cruelty complaints)

Service delivery functions are performed by the following actors:

- Parks and Recreation/Burlington Area Community Gardens (manages city-run community garden program)
- Community and Economic Development Office (CEDO) (administers soil lead awareness program and Legacy Project planning)

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[25] It should be noted that although I collected some data on the nature of the relational ties between these actors, I did not do so in a quantifiable way. Therefore, any inferences as to the nature of the relationships and the strength of those ties should be taken cautiously. The visual conceptualization of Burlington's urban agriculture governance network is meant to aid in understanding actor roles as they relate to this research.

- Friends of Burlington Gardens/VT Community Garden Network (manages school-based farm and provides community garden resources)
- Association of Africans Living in VT (manages agricultural program for immigrants and refugees)
- UVM (administers agricultural extension services, offers technical resources including Master Gardeners program, plant pathology lab, etymology lab)
- Chittenden Regional Planning Commission (ECOS planning project in coordination with CEDO)

Multiple operating functions (coordinating actions, mobilizing and exchanging resources, sharing information, building capacity, learning and transferring knowledge) are performed by the following actors:

- Burlington Food Council
- City Market
- Intervale Center
- Friends of Burlington Gardens/VT Community Garden Network
- Grow Team ONE
- Burlington Permaculture

Burlington's urban agriculture governance network appears to express characteristics of a self-governed network structure, with pockets of network administration structure. The self-governed characteristics of this network are apparent in the fact that many actors within the network have ties to many other actors, independent of one lead organization (Figure 10). No organizations play a lead role because authority and power are not held by any one organization. However, a few organizations in the network perform network administrative functions (e.g. the Burlington Food Council currently provides a low level of network coordination and is considering ways in which it can increase its role).
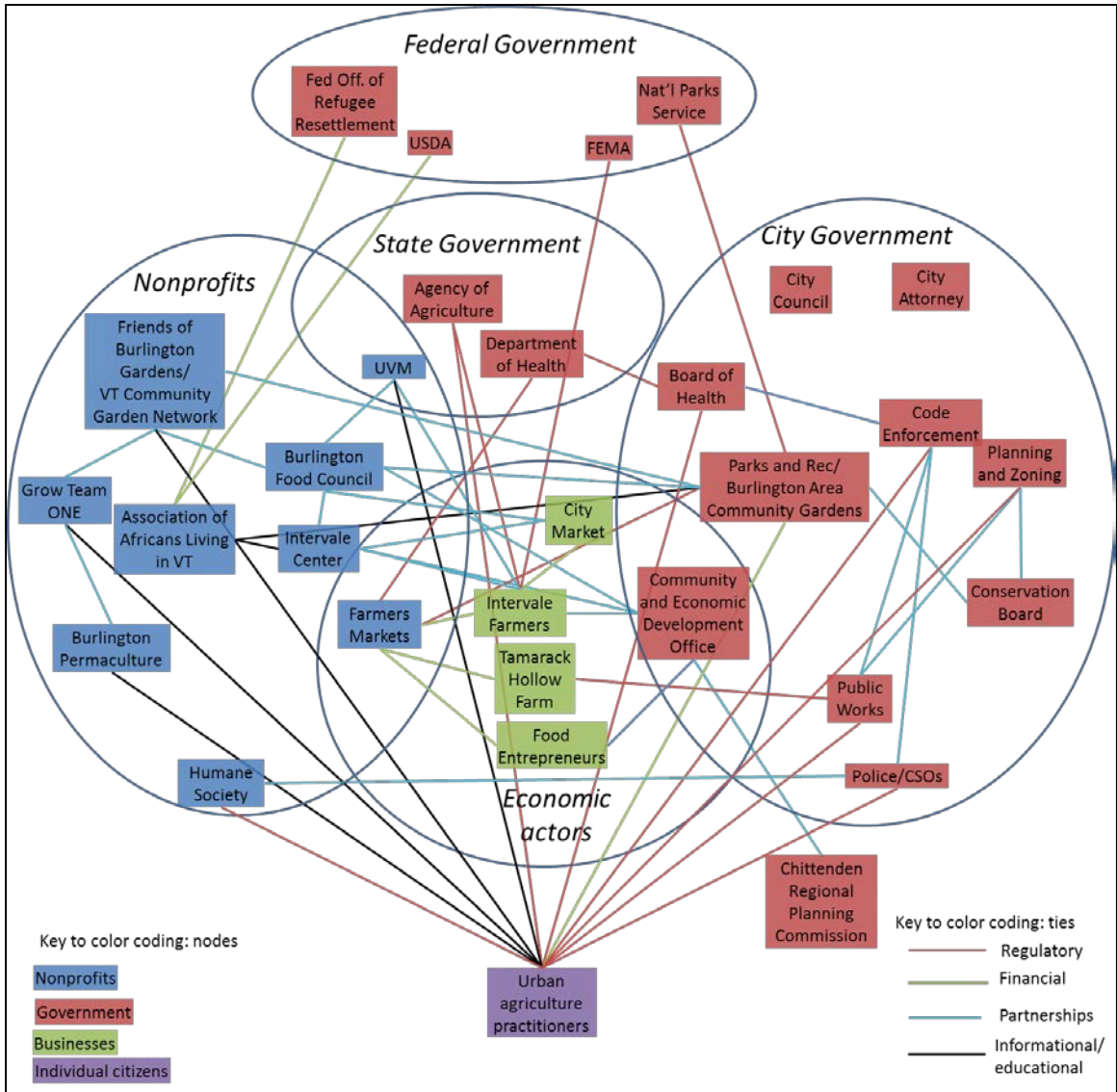
Figure 11. Burlington's urban agriculture governance network[26]

In summary, Burlington's urban agriculture governance network is comprised of public, nonprofit, and private actors, which operate at local, state, and federal levels. The relationships among these actors can be characterized as regulatory, financial, or

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[26] Note that Burlington's City Council and City Attorney are included because they participate in defining the scope of the city's involvement in urban agriculture governance, but I have omitted including the lines that would connect them with every city office and department in the figure.

partnerships depending on the power relations between actors and the types of resources exchanged. The actors perform a variety of functions based on their responsibility within the network, including regulatory functions, service delivery functions, or multiple functions. The structure of the network can be characterized as self-governed, though some parts of the network demonstrate a network administration structure.

Policy examples from other cities

In order to support the informed development of new policies, I reviewed urban agriculture policies used in other cities. This section addresses research question 3: How have other cities handled complex policy challenges related to urban agriculture user conflicts, land use, and governance? Although the initial goal of this question was to have a broad understanding of the policies that other cities have used to address the wide range of issues under consideration in Burlington, this turned out to be infeasible given the available time and resources. Therefore, the question was narrowed for the sake of feasibility and focused on chicken and poultry laws, which themselves are quite complex because they cover many aspects of urban agriculture (e.g. manure, structures, nuisance, humane treatment, etc.).

Semi-structured interviews were conducted with five city officials in four other cities that have urban agriculture policies, as well as two urban agriculture policy experts. Cities were chosen because they represented a variety of policy approaches rather than for being comparable to Burlington's demographic and size, thus the selection criteria were based on whether the city had a unique set of policies related to urban poultry. Interview questions focused on urban livestock policies, specifically chickens (and other fowl) and bees. The discussions with the urban agriculture policy experts provided an

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opportunity to touch on policy approaches for other urban agriculture activities, though a review of multiple cities was not conducted for those policies.

Chicken, fowl, and poultry policies

To understand how other cities approach the governance of poultry and fowl (and chickens in particular), I conducted an in-depth analysis of the policy approaches used by four cities: Albuquerque, New Mexico, Seattle, Washington, South Portland, Maine, and Vancouver, British Colombia. These cities were identified based on a review of the literature on chicken laws and because they utilized a variety of policy approaches.

Albuquerque regulates the keeping of "poultry" exclusively through its zoning code[27] and animal cruelty ordinance[28] (both social regulation). Albuquerque's law has been on the books since 1959, so the rules were not developed in response to the recent urban agriculture trend. Poultry are allowed in single family residential and agricultural zones only, but there is no limit on the number of animals allowed. Coops are exempt from permitting, as only structures greater than 120 sq. ft. need a building permit. The location and size of coops is regulated through accessory structure provisions, which limit the placement to side or rear yards and limit the size to less than 20% of the side and rear yards. Each household is allowed to have one rooster, and the slaughtering of poultry for food is exempt from the animal cruelty law. Albuquerque also allows non-poultry livestock in its open space and rural zones, subject to minimum space requirements. The

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[27]

http://www.amlegal.com/nxt/gateway.dll/New%20Mexico/albuqwin/chapter14zoningplanningandbuilding?f=templates$fn=default.htm$3.0$vid=amlegal%3Aalbuquerque_nm_mc$anc=LPTOC16
[28] http://www.cabq.gov/pets/rules-tools/heart-ordinance/heart-ordinance-text/

Code Enforcement division of the Planning Department is responsible for enforcing the laws.

Seattle regulates "domestic fowl" through its land use code[29] (social regulation) and provides outreach on chicken policy and resources (public information). The policy was developed through a three-tiered approach: an internal process with the Department of Planning and Zoning (DPD) and individuals responsible for permitting; a broader interdepartmental city team; and a community stakeholder group. The policy was adopted in 2010. Up to eight birds are allowed in all zones, including on lots with community gardens and multi-units. Lots greater than 10,000 sq. ft. may have 1 additional bird for every 1,000 sq. ft. Coops must be a distance of at least 10 ft. from dwellings on adjacent lots, and must be located in the side or rear yard. Coops are exempt from permitting, as only structures greater than 120 sq. ft. need a building permit. Roosters and slaughtering are not allowed, though residents may sell eggs. DPD issues "Client Assistant Memos" that provide an accessible overview of the Land Use Code, by topic, including one for urban agriculture[30] that outlines the requirements for keeping fowl in the city. DPD is responsible for enforcing issues related to the number of birds, location of coop, and the presence of roosters; the King County Department of Public Health is responsible for issues related to noise, odor, and the attraction of pests; Seattle's Animal Control Department is responsible in cases when birds get loose. Seattle's urban agriculture law

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[29] http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?s1=23.42.052&s2=&S3=&Sect4=AND&l=20&Sect3=PLURON&Sect5=CODE1&d=CODE&p=1&u=%2F~public%2Fcode1.htm&r=1&Sect6=HITOFF&f=G
[30] http://www.seattle.gov/DPD/Publications/CAM/cam244.pdf

also includes provisions for "small animals", farm animals, miniature goats, miniature potbelly pigs, and bees.

South Portland regulates "hens" through its Animal Control Code[31] (social regulation). Only female chickens are allowed, and although there are not restrictions on the zones in which they are allowed, the intention of the law is for residential use. Up to six hens are allowed, on both single family properties and multi-unit lots. The code includes many provisions regarding the materials, structure, and visual appearance of the chicken pen. The pen must be set back 20 ft. from the property line, though it is possible to get a variance. The pen must be located in the rear yard. The intent of the law is for noncommercial use, and the sale of eggs is prohibited. Slaughtering of chickens is also prohibited. Many provisions outline the humane and sanitary treatment of hens. South Portland requires an annual $25 registration in addition to a one-time $25 building permit for the henhouse.

Vancouver regulates "hens" through its Animal Control [32]and Zoning and Development By-laws[33] (social regulation) and provides educational information on educational resources on keeping hens[34] (public information). Only four female chickens are allowed in residential and agriculture zones (birds less than four months of age are not counted). The zoning code includes many provisions regarding the construction of the henhouse to maintain a sanitary and predator-free environment. The henhouse must be located in a side or rear yard only (special provisions are included for corner lots) and

[31] http://www.southportland.org/vertical/Sites/%7B7A5A2430-7EB6-4AF7-AAA3-59DBDCFA30F2%7D/uploads/CH_03_Animals_and_Fowl_01-18-12.pdf
[32] http://vancouver.ca/bylaws/9150c.PDF
[33] http://vancouver.ca/blStorage/10065.PDF
[34] http://vancouver.ca/commsvcs/licandinsp/animalcontrol/chicken/index.htm

must be located at least one meter (3.28 ft.) from property line and three meters (9.84 ft.)

from a residential door or window. Regulations regarding humane treatment are included.

Slaughtering is not allowed, roosters are not allowed, and the sale of eggs is not allowed.

Vancouver requires a one-time, no-cost registration, which can be completed online.

Vancouver's Animal Control By-law specifically prohibits other agricultural animals,

with the exception of such animals in the agriculture zone.

In summary, the four cities analyzed primarily utilize social regulation as a tool to

govern the keeping of chickens, poultry, and fowl, through the use of land use and animal

control ordinances. The particulars of the regulations vary a great deal among the cities

(Table 8). Three of the cities offer public information on the code, and one of the cities

offers educational information on best practices.

Table 8. Poultry, fowl, and chicken laws from four cities

	Albuquerque, NM	Seattle, WA	South Portland, ME	Vancouver, BC
Law	Zoning code; Animal cruelty ordinance	Land Use Code	Animal Control Code	Animal Control By-law; Zoning and Development By-law
Year adopted	1959	2010	2008	2010
Species regulated	Poultry	Domestic Fowl	Female chickens only	Female chickens only
Zoning	Single family residential and agriculture zones only	All zones	No mention, though intent is for residential use	Residential and agriculture zones only
Number allowed (Residential)	No limit	8+ (lots >10,000 sq. ft. can have +1 for each additional 1,000 sq. ft.)	6	4, not including birds < 4 months of age
Multi-units	Not allowed	One coop per lot	6 per complex	4 hens per lot
Community gardens/ Urban farms	Allowed in agriculture zones	Allowed, same lot size rules	No mention	No mention
Coop/ Henhouse construction	Accessory structures less than 120 sq. ft. exempt from building permit	Accessory structures less than 120 sq. ft. exempt from building permit	Building permit required; Many provisions	Many provisions
Protection from predators	No requirements	No requirements	Required	Required
Setbacks	Accessory structures: 10 feet to a house or other living quarters; no closer than 5 feet to any other accessory building	10 ft. from dwellings on adjacent lots	20 ft. from property line; variance possible	1 m (3.28 ft.) from property line; 3 m (9.84 ft.) from residential door or window
Size	Accessory structures less than 120 sq. ft. exempt from building permit; Accessory structures can't exceed 20% of rear and side yard	Accessory structures less than 120 sq. ft. exempt from building permit	No requirements	Per hen min: 0.37 m² (3.98 sq. ft.) of floor area, and at least 0.92 m² (9.9 sq. ft.) of roofed outdoor enclosure - BUT no more than 9.2 m² (99 sq. ft.) or more than 2 m (6.56 ft.) high
Location on property	Accessory structures allowed in side and rear yards only	Side and rear yards only	Rear yard only	Side and rear yards only; special provisions for corner lots

	Albuquerque, NM	Seattle, WA	South Portland, ME	Vancouver, BC
Food storage	No requirements	No requirements	Must be unavailable to rodents, wild birds, and predators	No requirements
Manure management	No requirements	No requirements	Fully enclosed; <3 cubic ft.	Fully enclosed; <3 cubic ft.
Humane treatment	No requirements	No requirements	Standards of care included in code	Standards of care included in code
Slaughtering	Allowed	Not allowed	Not allowed	Not allowed
Roosters	1 per household	Not allowed	Not allowed	Not allowed
Loose birds	Not allowed	No mention	Birds must be in enclosure or fenced area at all times	Birds must be kept in enclosed area at all times
Permits/fees	None, though structure > 120 sq. ft. requires building permit	None	Annual $25 registration; One-time $25 Bldg. permit; Impoundment fees: 1st time $15; 2nd time $30; 3rd+ time $50	One time no-cost registration; Impoundment fees: $16 per bird and $5/day
Selling eggs/meat	Allowed in agricultural zone; not allowed in residential zones	Selling eggs allowed	Not allowed	Not allowed
Public information	Zoning FAQ brochure outlines what's allowed[35]	Brochure outlines code requirements[36]	None	Educational brochures and links to code[37]

Assessing policy from other cities

The exercise of looking at other cities required some rapid assessment of the

policy approaches used to govern urban agriculture in those cities. This meant making

some judgments about the relative usefulness of such approaches for the Burlington

context. One interesting observation from reviewing the small sample of poultry and

chicken laws in other cities was that all the informants indicated satisfaction with their

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[35] http://www.cabq.gov/planning/zoning/pdf/zonebrochure.PDF
[36] http://www.seattle.gov/DPD/Publications/CAM/cam244.pdf
[37] http://vancouver.ca/commsvcs/licandinsp/animalcontrol/chicken/index.htm

cities' policies, despite the fact that they varied a great deal in their treatment of different issues. For example, the person involved in developing Seattle's poultry policy was insistent that the rooster clause was a very important element because people in cities don't want roosters next door.[38] Yet, Albuquerque allows roosters (one per household) and a recent attempt to change the law to outlaw them failed. Perhaps the urban poultry community is less present in Albuquerque than Seattle, in which case it could be argued that the rule is not creating a controversy because few people take advantage of the opportunity to keep roosters. Certainly any other number of variables could be a factor, including density.

Another example of divergent policies is the difference in requirements to keep poultry protected from predators. Both South Portland and Vancouver have such clauses; Albuquerque and Seattle do not. The person involved in policy development in Seattle stressed that the group that developed the policies did not want to get into regulating animal welfare. In Burlington, this issue came up repeatedly from the stakeholders with whom we spoke, and it would have been blatant to ignore the feedback, even though humane treatment laws would create additional regulatory requirements for practitioners and poultry policies that do not address humane treatment appear to be functional in other cities.

Similarly, the setback distances from property lines varied from one meter (3.28 ft.) in Vancouver to 20 ft. in South Portland, yet neither city noted that this aspect had been a point of contention with practitioners. South Portland does offer a variance for

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[38] The informant noted that she had a personal interest in this issue because she lived next door to a rooster and strongly disliked the noise.

setbacks, so it may be that those who were not able to meet the requirement have been able to obtain a variance.

How can it be that such different policies all seem to meet the needs of their communities? It may be that, similar to what we have attempted in Burlington, the policies were developed to suit the context, and thus reflect the culture and governance structures of those places. Or it may be that the power dynamics of those developing and enforcing the policies prevents objections from those adversely affected by the policies. Perhaps if I had spoken with practitioners in those communities, I would have heard that poultry owners are not happy with the policies. A comparative analysis of practitioner satisfaction with urban agriculture laws is certainly a potential area for future research.

A city ripe with opportunity

The Burlington stakeholders we spoke with generally supported the concept of urban food production, though the stakeholder feedback process illuminated some of the challenges inherent in mitigating risks and balancing conflicting stakeholder needs. A variety of state and municipal policies currently apply to urban agriculture activities in Burlington, though the level of applicability varies, as many of the policies were not specifically developed for urban agriculture contexts. A variety of organizational actors are involved in implementing these policies, interact at various levels of government, and exchange a variety of resources through partnership relationships.

A review of other cities demonstrated that a variety of policy approaches can address urban agriculture activities, with associated trade-offs depending on the policy tool utilized in order to address various governance goals. The following chapter

discusses the implications of these results and demonstrates how this research informed

the development of policy recommendations for the city of Burlington.

Chapter 7. Discussion: Informed policy development

The overarching research question for this project was "How could Burlington better govern urban agriculture?" The culminating objective of the project was to identify policies that support and remove barriers to urban agriculture in Burlington and provide them as a set of recommendations to City Council.[39] The research process identified many opportunities for the city of Burlington to better govern and support urban agriculture.

The analysis of stakeholder needs provided a deep understanding of the Burlington context so that policy recommendations could reflect the concerns and needs of those who will be affected by future policies. Policy recommendations were informed by the participatory process by reflecting on stakeholder feedback throughout the policy development process. This included reflecting on how potential policies could affect each stakeholder group, and whether potential policies supported or opposed the needs and concerns expressed by the people who participated in the Task Force process.

The assessment of the current state and municipal policies identified a variety of policies affecting urban agriculture in Burlington, the majority of which were not designed to address urban agriculture. With the exception of the administration of the Burlington Area Community Garden program and CEDO's occasional soil lead testing program, the remaining policies were developed either for rural agricultural contexts or for nonagricultural urban contexts. The assessment confirmed the original problem definition for the project—that the lack of policies specific to urban agriculture in

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[39] Appendix A contains an executive summary of the report. The full report to City Council is available at www.burlingtonfoodcouncil.org.

Burlington poses barriers—and indicated that there is an opportunity to carve out a space for urban agriculture in both municipal and state policy. Although this project was limited to the development of municipal policy recommendations, understanding how state laws affect urban agriculture can provide the basis for creating synergistic municipal policies, or for working with the state to revise, if possible, agricultural laws that affect urban contexts.

Looking at current policies and those used in other cities through the governance tools lens contributed to an understanding of the way different policy tools can be used to achieve different objectives. This analysis is extended to the policy recommendations developed by the Task Force in the following section.

The governance network analysis provided an understanding of how the various actors in the Burlington urban agriculture network are affected by the policy tools or use partnerships to exchange resources and information. The governance network analysis contributed a frame for understanding how the actors in Burlington's urban agriculture network interact. Visually mapping the nature of the ties offers the ability to see the flows of information and resources, thus illuminating the power relations in the network. Characterizing the functions present in the network clarified the roles that different actors play. In practice, the network model can help in identifying key partnerships among organizations. It can also be used to identify key organizations that may be missing from representation in the network. Understanding the flow of information and resources could indicate how the flow could be changed to achieve different goals. Therefore, although the analysis focused on the "what is" of the network, it also provided an opportunity to imagine what the network "could be."

The identification of urban agriculture policy approaches used by other cities

provided an in-depth glimpse into how different contexts lead to different governance

approaches. This underscored that there is no "correct" or "incorrect" way to govern

urban agriculture activities, but that policies arise from a variety of political, cultural, and

social contexts, dictated by the structure of the local governance arrangement. Hearing

from people involved in the development or enforcement of those policies provided

insight into how the use of different policy tools can meet policy needs in different ways.

These results provided inspiration for policy recommendations based on approaches used

in other cities as well as a sense of liberation to develop policies that arise out of

Burlington's unique context.

Policy recommendations by activity

The Task Force developed over 50 policy recommendations to address urban

agriculture broadly as well as specific activities. For a summary of the recommendations,

see Appendix C. The following sections outline the policy recommendations developed

by the Task Force; indicate how, if adopted, the recommendations would affect urban

agriculture practitioners; and note how they do or do not address the needs and concerns

expressed by the stakeholders who participated in the Task Force process.[40]

Crosscutting recommendations

The Task Force identified a series of crosscutting recommendations that apply to

many different urban agriculture activities. These include revisions to the zoning code,

revisions to the general ordinance, outreach on urban agriculture policies, education on

urban agriculture resources, encouraging communities of practice, adopting a mediation

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[40] In this section I have limited my discussion to the urban agriculture activities for which I was most involved in researching and developing policies.

mechanism, coordinating with the state Agency of Agriculture, research needed to support future policy and measure progress against goals, incorporating food and agriculture into local planning efforts, adopting a Burlington Food Charter, and supporting access to land.

Zoning code revisions include adopting definitions to distinguish food production activities and structures, exempting urban agriculture structures up to a certain size (24 ft^2 for livestock and poultry structures; 400 ft^2 for other urban agriculture structures) from permitting processes, exempting small scale infrastructure, facilitating urban agriculture on public land, and creating an incentive system to encourage the incorporation of gardens into development projects. Such revisions would reduce the regulatory burden associated with building urban agriculture structures and create opportunities for food production in areas that do not ordinarily offer it. These recommendations address concerns from practitioners that zoning and building permits create barriers and interest from city officials that certain structures be exempt to remove the administrative burden from city departments.

General ordinance revisions aggregate ordinance recommendations specific to urban agriculture activities including the humane treatment of livestock, livestock slaughtering, beekeeping, and greenbelt garden. Details are provided in the respective sections on those activities, below.

Outreach on urban agriculture policies refers to raising awareness of the various state and local policies that apply to urban agriculture in the form of print and online media. This would provide clarification to practitioners looking to understand the laws that apply to them. Education on urban agriculture resources refers to the city's role in

guiding people to technical resources for gardening and raising animals in an urban context, thereby reducing the likelihood of problems arising from poor management. By fostering communities of practice, the Task Force suggests that the city could similarly reduce some of the risks associated with improper management because local residents could draw from a community of other practitioners to share best practices and technical resources. This recommendation arises from the fact that multiple stakeholder groups cited a lack of knowledge on best practices as a key risk for urban agriculture. City officials specifically noted that outreach on policies and education on best practices could reduce their administrative burden.

Community mediation offers the opportunity to resolve conflicts between neighbors on a case-by-case basis rather than adopting restrictive ordinances that are not flexible enough to adapt to a variety of situations. This type of conflict management is not unique to urban agriculture and to a certain extent, this neighbor-to-neighbor conflict resolution happens on an informal basis without the city's involvement. Whether specific to urban agriculture or not, community mediation could address complaints outside of the legal system and provide an opportunity for city officials to bring in expert advice rather than relying on legal frameworks that may not be appropriate to the situation at hand. Such a program would not need to be complicated or involve the city very much. Community mediation could be as simple as having a list of volunteer community members or urban agriculture experts willing to help resolve those issues on which the city need not spend its scarce resources. This recommendation was developed based on input from community members and feedback from city officials that it would be helpful to have a mechanism for addressing issues that are not covered in an ordinance.

Coordination with the Agency of Agriculture, Food and Markets is a strategic recommendation to strengthen the relationship between city officials and this regulatory arm of state government. Because many of the state laws that apply to agriculture were not designed for urban contexts, some of them impose barriers. Although this recommendation would not directly affect practitioners in the short-term, a stronger line of communication between these two levels of government could result in future state-level policies better suited to urban agriculture contexts.

Research needed to guide future policy and measure progress against goals includes maintaining maps of urban agriculture activities, available open space, and prime soils to identify potential locations for future food production and developing food system metrics to track key indicators, such as the number of livestock in the city or the number of acres of community gardens. Although these activities will not directly affect practitioners, they will provide city officials, planners, and decision makers with important information on the state of food production in Burlington.

The incorporation of food and agriculture into local planning efforts will similarly support the development of future initiatives, which, while they may not have immediate on-the-ground implications, may allow more Burlington residents to benefit from urban agriculture activities. A Burlington Food Charter can serve as a community vision to guide future policy, a model that has been adopted by many other cities including Toronto, Philadelphia, and Vancouver.

Supporting access to land is a critical recommendation that will directly affect practitioners who do not have access to space for food production. Matching land opportunities with people who are looking for access to land can operate on various

scales, including matching gardeners with homeowners or matching commercial farmers with institutional landowners. These recommendations specifically address the need for access to land articulated by practitioners and local policy experts. Burlington's available land opportunities greater than one acre were mapped by a recent UVM PhD student and included in an appendix of the report to City Council.

Home gardens

Home garden policy recommendations include that the zoning code include a definition for home gardens and allow them in all residential zones to specifically protect the use of private yards for food production; that the city should facilitate soil testing for contaminants; that the city should promote sustainable management practices; and that the city should explore ways to connect home food production practices to stormwater management. The soil testing and sustainable management recommendations will increase practitioner access to resources for safe food production, hopefully reducing the potential for negative health outcomes from eating urban produce.

Home garden policy recommendations aim to protect home gardens as a viable use for residential lots, address soil contamination concerns, and promote sustainable management practices, all of which were issues identified by the local practitioners we spoke with. Home gardens were not a significant source of concern for any of the stakeholder groups that participated in the Task Force process, so the Task Force did not have to balance trade-offs for this activity.

Community gardens

Community garden policy recommendations focus on expanding the amount of community garden space in the city to accommodate the number of people interested,

especially in underserved neighborhoods. The Task Force recommended also expanding the zoning definition for community gardens to include the sale of produce and encouraging the incorporation of garden space into new developments. Other recommendations include partnering with local experts and organizations to leverage access to land and educational programming, streamlining permitting for structures to reduce barriers to building garden sheds, and providing infrastructural support to community gardens for water and soil testing.

These recommendations will increase access to space available for food production for practitioners, allow interested participants to engage in micro-enterprise., and eliminate or reduce barriers to building garden structures at community gardens. The soil testing recommendation will hopefully reduce the potential for negative health outcomes from eating produce from community gardens.

These recommendations address the challenge identified by practitioners that there is often a lack of available land for gardening in some neighborhoods, an issue also identified by the city official responsible for managing the city's community gardening program. Many of these recommendations would incur land acquisition and operational expenses, for which the city would need to either allocate or obtain funding. The report includes some recommended funding sources in an appendix.

Livestock and poultry

The livestock and poultry recommendations include that the city should adopt an animal welfare general ordinance to regulate humane treatment, that livestock and poultry structures should be regulated through zoning, that the city should create a registration system for urban livestock and poultry to track metrics and communicate with

practitioners, that the city should adopt a general ordinance clarifying that slaughtering is legal as long as certain provisions are followed, and that roosters should continue to be regulated using the nuisance ordinance. Other recommendations include that the city should promote education on livestock care and slaughtering by disseminating information on resources through print and online media, and manage neighbor conflicts through the mediation mechanism.

These recommendations will increase the regulatory burden on practitioners to a certain degree, and may cause some degree of confusion due to the complexity of the zoning regulations, but the new policies will clarify the parameters within which livestock and poultry are legal, thus eliminating many of the grey areas currently faced by both practitioners and enforcement officers. Clarification regarding the legality of slaughtering in the city will eliminate confusion over this issue, thus reducing practitioner concern over whether they are operating within the law. Outreach in the form of print and online media on these policies will help reduce confusion.

The development of the livestock policy recommendations required a significant amount of balancing and weighing of trade-offs, as some of the needs expressed by the stakeholders we spoke with were at odds with each other. Some practitioners wanted flexible policies with as little regulation as possible, while enforcement officials wanted some hard and fast parameters to determine whether practitioners were operating within acceptable limits. Some people in the Burlington community were very concerned about animal welfare, but the city does not currently have such expertise on staff, as the animal control position at the police department was recently eliminated and replaced by community service officers who do not have expertise in animals. Many felt that a city

registration system (similar to dog licensing) would be useful, but practitioners felt strongly that there should not be a fee associated with keeping livestock so as not to impose additional barriers to participation. Some stakeholders liked the idea of allowing roosters; others were adamant that they had no place in a city.

Ultimately, the livestock and poultry policy recommendations took the middle road in some cases, erred in favor of practitioners in some cases, and erred in favor of city officials in other cases. The livestock welfare ordinance recommendation is a legal basis for minimum standards of care, which provides enforcement officers with the ability to determine whether someone is treating their animals humanely. The ordinance includes minimum space requirements (the enforcement of which does not require animal welfare expertise) and the ability of enforcement officers to utilize the expertise of the Humane Investigators (in cases where expertise is needed). The zoning recommendations for structures associated with urban livestock provide additional parameters for permit exemptions up to 24 ft^2, and associated numbers of animals allowed, by species, based on the minimum space requirements from the animal welfare ordinance. This combination of considerations may be potentially confusing for practitioners, but it balances some of the conflicting needs we heard from participants, while still accommodating some flexibility. A requirement to register livestock is another burden for practitioners, though the Task Force did decide to recommend that registration be free or incentivized, so the city will need to identify resources to support this functionality.

The recommendation for a slaughtering ordinance addresses concerns from city officials that people will dispose of wastes improperly by including requirements to keep waste materials out of the stormwater system and prescribes appropriate disposal

methods. It also protects neighbors by requiring livestock owners to notify their

neighbors one week prior to slaughtering. The recommendation to continue to regulate

roosters through the nuisance ordinance is a response to the conflicting viewpoints on

roosters, as well as the fact that this method seems to be working well now. Thus,

practitioners with amenable neighbors will be allowed to keep roosters, while

practitioners with neighbors who are bothered by roosters will not be allowed to keep

them. This is a similar approach to how nuisance dogs are regulated.

The recommendations for the city to promote education and outreach on livestock

issues addresses concerns heard from a variety of stakeholders that practitioners lack

access to good information on livestock care and policies. The mediation

recommendation offers a way to deal with neighbor conflict issues not included in the

ordinance, which means that the ordinance does not need to attempt to cover concerns

that are difficult to regulate, such as aesthetics. However, the mediation function would

be a new city function, thus placing implementation and funding burden on the city.

Bees

The recommendations for beekeeping policies include that the city should revise

the zoning code to specifically allow beekeeping and a certain number of hives outright

(more allowed pending review) and set a minimum setback from property lines. A

general ordinance recommendation includes additional requirements for beekeepers, such

as requiring renters to obtain permission from their landlord and displaying the name and

contact information for the beekeeper on each hive, thus placing some minimal additional

burden on beekeepers for the sake of reducing risks. Other recommendations include that

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the city should promote outreach on policies, provide educational resources, and consider bees and other pollinators when making city landscaping decisions.

These recommendations will place some additional regulatory burden on practitioners, but the inclusion of beekeeping as an accepted use may result in beekeeping being allowed in places it was not previously accepted, such as community gardens.

These recommendations address concerns from the community about the ecological carrying capacity for honeybees in Burlington (by restricting the number of hives and using the state registration system to track hive numbers) and concerns from city officials that hives should not impose undue risks on neighbors (through setback requirements and the promotion of best practices). As with livestock, the promotion of education on beekeeping practices and outreach on beekeeping policy addresses concerns from multiple stakeholder groups that practitioners should have easy access to resources and a community of practice to support growth in knowledge and skills. The educational piece would also direct beekeepers to register with the state, per state apiary laws, thus utilizing an existing function rather than requiring administration of a new registration system in Burlington.

Hoophouses and greenhouses

The recommendations for hoophouses and greenhouses include that the city should adopt definitions specific to these structures to differentiate them from buildings and that these structures should be exempt from zoning and building permits up 400 ft^2.

These recommendations would fill what is currently a regulatory gap for structures associated with food production, namely for smaller agricultural structures that do not qualify for the state's agricultural structure exemption but which should not be

subject to regulations designed for buildings. This will reduce the regulatory burden on practitioners, especially related to the cost of permitting these structures, and will also reduce the implementation burden on enforcement officials.

These recommendations address concerns from practitioners that these structures should not be subject to building permit requirements, as well as the interest expressed by city officials that the city not be involved in regulating urban agricultural structures smaller than a certain size. It is not yet clear whether the recommended square footage exemption will be either politically feasible or sufficiently flexible for the variety of contexts in the city. This issue will likely be deliberated further between zoning officials and community members as the zoning change process unfolds.

Greenbelts

The use of the term "greenbelt" in Burlington refers to the strip of land between the sidewalk and the street, which is a public right-of-way. The Task Force recommendation for greenbelts is that the city should adopt an ordinance that prohibits food production in the greenbelt. While this places a restriction on practitioners, the Task Force felt that it was warranted due to the health risks associated with soil contamination in these areas, as well as the important stormwater mitigation role that greenbelts play.

Other urban agriculture activities

Although I was not directly involved in researching and developing policy recommendations for the other urban agriculture activities included in the report, I provide a short overview the recommendations, how they will affect practitioners, and how the recommendations do or do not address stakeholder needs.

The composting recommendations suggest that the city should explore a community composting system in response to the need to close the nutrient loop at a community level and the recently adopted state law (H.485) that phases in mandatory composting of organic waste by 2020. These recommendations will provide city residents and businesses with an alternative to home scale composting or taking compost a Chittenden Solid Waste District transfer station. These recommendations were based on stakeholder input that with the departure of Intervale Compost from the Intervale in 2011, there is a niche to be filled.

Rooftop garden recommendations task zoning with exploring the use of incentives to encourage rooftop gardens and suggest that the city should explore the feasibility of putting rooftop gardens on city properties and Burlington Town Center Mall. Both these recommendations are focused on the opportunity for innovative projects based on some of the community values we heard expressed by stakeholders.

The urban food forestry recommendations similarly suggest that the city could initiate projects to map existing trees, identify potential tree planting locations, and establish an edible landscaping demonstration site. The recommendations also include funding suggestions to financially support these new activities. If adopted, these recommendations would address some of the community values we heard expressed by local practitioners regarding food security and education.

The school garden recommendations address the feedback heard by the Task Force that the extent of garden education varies greatly between schools in Burlington. Although City Council does not have authority over school district curricular decisions, the Task Force felt that it was important to include recommendations for this important

urban agriculture activity. Recommendations included that the school district should establish curricular support for school gardens and promote local awareness of program successes.

Recommendations for food processing and sales largely focus on providing support and permit exemptions to small-scale food processing outfits and anyone wishing to sell food grown in the city. If adopted, these exemptions would remove barriers to food microenterprise. These recommendations favor the interests of food producers, though future policy development efforts will likely identify clear parameters for these activities to address concerns from city officials that such commercial activities not significantly affect surrounding residential neighborhoods.

The Task Force recommendations conclude with some implementation recommendations, including that the city should establish a Burlington City Food Office, utilize existing departments to adopt and implement new policies, support the Burlington Food Council, and partner with local experts and organizations. Finally, the Task Force collected a variety of funding opportunities, presented in an appendix of the report, which include Vermont-based foundations and urban agriculture funders from across the country.

Recommendations by policy tool

This section synthesizes the recommendations using Salamon's (2002b) policy tools framework, which provides a useful lens to understand how tool selection can be guided by the policy goal, the attributes associated with each tool, resource constraints, and political feasibility. The table summarizing policy recommendations in Appendix C includes a column for policy tool category.

As outlined in the literature review, the attributes associated with each policy tool make certain tools more or less appropriate to address specific policy goals. These attributes include coerciveness, directness, automaticity, and visibility. During the policy development processes, the Task Force considered these attributes with regards to each policy recommendation, though discussion was framed in more lay terms, such as the level of restriction resulting from policy and the ease of implementation given current governance structures, resources available, and political feasibility. The level of coerciveness was of specific interest due to the feedback from local stakeholders that new policies should not impose undue restrictions for urban agriculture and that they especially should not create financial barriers to urban agriculture. The level of automaticity (the utilization of existing administrative structures) was also of specific interest because of the practical considerations associated with implementing new policies.

In addition to Salamon's policy tool categories of direct government, social regulation, and public information, I have characterized some of the Task Force recommendations into two other categories: network coordination and public action. Network coordination is a policy function identified by Koliba et al. (2011). Public action is my own categorization for initiatives that do not fall into the realm of traditional policy approaches.

Direct government

The Task Force identified two recommendations in the policy tool category of direct government: increasing the number of community gardens and considering bees and other pollinators in landscaping decisions. The first of these is more significant, so I

will provide an analysis of that here. The recommendation to expand the city's community gardening program would increase the city's role in administering the program. Because participation in the program is voluntary, this form of direct government is not coercive. The program is somewhat direct, as the DPW director and BACG board would authorize the expansion of the program and a DPW employee would implement it. It would be very automatic, as it would build on existing administrative structures. The program is somewhat visible, as it is funded partially through the city's Parks and Recreation budget; however, it is also partially funded through program fees from participants.

Social regulation

The Task Force identified 20 recommendations in the policy tool category of social regulation through general ordinances and the zoning code.

General ordinances apply across all areas of the city, and thus are an appropriate way to regulate activities that may occur across all types of land use. The Task Force identified general ordinances as an appropriate tool to regulate slaughtering, beekeeping, greenbelt gardening, the keeping of roosters, the humane treatment of livestock, and livestock registration.

Zoning, as a land use regulation, carries different rules for different zones. The Task Force identified zoning as an appropriate tool for defining urban agriculture uses, incorporating food production into specific land uses such as public parks and new developments, supporting farmers markets, and permitting and exempting urban agriculture structures and businesses.

Both general and zoning ordinances are highly coercive because they require compliance and noncompliance can result in compulsory fees and legal action. Both are indirect because although the implementing body (Code Enforcement and Zoning) may contribute to the development of regulations, City Council has the ultimate authority in authorizing the laws. In both cases, these policy recommendations are somewhat automatic because they make use of many existing administrative structures; however, some recommended actions (e.g. a livestock registration system and new zoning requirements) would require the creation of new administrative processes, thus making them less automatic. Zoning and Code Enforcement budgets are highly visible, but the administration of the specific actions around urban agriculture would not likely appear as a distinct budget line.

Public information

The Task Force identified five recommendations in the policy tool category of public information for the purposes of outreach on urban agriculture policies and education on urban agriculture best practices. The first, outreach on urban agriculture policies, serves to promote awareness about the legal issues related to growing food and raising animals in the city in an accessible and easy-to-understand format, so that people can identify how state and municipal laws affect urban agriculture activities without needing to read the code itself.

The second, education on urban agriculture best practices, serves to connect people with "how-to" resources so that people have the information they need to grow their own food safely and humanely, therefore reducing the risk of problems arising. Education on best practices would include technical resources for urban agriculture so

that people can easily and quickly find local organizations and recommended publications. Local educational events could also be promoted through public information.

These recommended actions are not at all coercive, as this policy tool does not require compliance. Depending on the ultimate implementing body, outreach and education may be very direct, or the public information may be developed in coordination with partners who provide the city with the materials. Both types of public information may be somewhat automatic, as the city could utilize the existing city website and other existing partner communications channels to disseminate information; however, the development of new materials and publications will require new resources. As this work would be incidental to other network coordination work undertaken by the Burlington Food Council or City Food Office (see next section below), it would likely not be very visible. It is likely that funding for such work would come partially from outside grants.

Network coordination

The Task Force identified eight recommendations that can be characterized as network coordination. I have included network coordination as a policy tool because of the important role the city could play in coordinating the various departments, programs, and nongovernmental organizations involved in the governance of urban agriculture in Burlington. The Task Force identified that the Burlington Food Council or a city Food Office could serve such a crosscutting role by implementing the policy recommendations in the report, providing a single point of contact for city residents, maintaining relationships with partner organizations, connecting city staff to local experts and

resources, organizing events, and identifying funding opportunities for urban agriculture initiatives.

Network coordination would not be coercive. If conducted by a City Food Office, it would be direct because City Council or the Mayor would create the functionality. Network coordination would not be automatic, as it would create a new functionality for which the city does not currently have an administrative structure. This tool would be very visible because the City Food Office would show up on in the city's budget; however, regardless of whether a City Food Office or the Burlington Food Council was the primary implementing body, it is likely that functionality would be funded at least partially by outside grants and program fees.

The Task Force recommendation to create a Burlington Food Office to serve in a coordination role for implementing many of the recommendations in the report was a strategic one and based on an understanding of the political factors at play in Burlington. The Task Force discussed the advantages and disadvantages of locating this functionality within the city or whether the Burlington Food Council, as an external organization, would be a better fit for the functionality. The Burlington Food Council is currently an informal collection of organizations and individuals interested in food and agriculture policy and projects in the Burlington area. Because it does not have any formal designation, it cannot accept grants; however, another entity could serve as a fiscal conduit for any potential grants received. The Food Council, as it is located outside of city government, has the advantage of being able to play an advocacy role, and is not subject to the whims of politics and mayoral terms. However, this "outsider" position would lack access to the internal workings of the city and city resources.

A City Food Office, on the other hand, would have the advantage of having "insider" access to city resources and the workings of city departments, thus gaining some legitimacy in the eyes of city officials. However, the position in city government could limit its ability to advocate on behalf of certain stakeholders. Additionally, some people are skeptical of the city government, which could limit the legitimacy of the office in the eyes of some residents.

In either case, it will be necessary to secure funding to support such functionality, through general funds, program fees, or grants. Given the current fiscal climate in Burlington, it would be politically unfeasible to fund the functionality through taxpayer money at this time, and even if funding was secured through general city funds, its long-term availability would be subject to shifting political contexts. The use of program fees raises the concern about imposing new barriers to urban agriculture. A dependence on grant funding could be good or bad for the longevity of the functionality. For example, grant funding may be available to address some types of projects, but not others identified by the Task Force as high priority. Long-term funding may not be available for some of the operational and administrative work that network coordination requires. Additionally, the need to identify funding opportunities will be an ever-present item on the to-do list, which will impose on time that could be spent on projects.

Public action tools

The Task Force identified 30 recommendations that I have characterized as public action tools to accommodate programmatic actions that do not easily fall into the traditional policy tool or network governance frameworks. Public action recommendations identified by the Task Force include research and planning for urban

agriculture, the creation of new urban agriculture programs and initiatives, municipal policies on local food purchases, and the creation of a Burlington Food Charter. Funding for these projects may come from a combination of city, state, or federal funds, or through private foundations.

Research and planning efforts include the mapping of current urban agriculture activities, the identification of land for future urban agriculture projects, investigation of the potential for new urban agriculture programs and initiatives, and the explicit incorporation of food and agriculture in general municipal, open space, and sustainability plans. There is also an opportunity for the city to expand on the work of the Task Force by undertaking a city-wide or regional food system planning effort.

Programmatic efforts include the creation of new urban agriculture projects and initiatives, such as fruit tree plantings, matching urban agriculture practitioners without access to land with available land, a city-wide composting system, school garden initiatives, the creation of a mediation mechanism to mitigate neighbor conflicts, and urban food and agriculture business development. Program evaluation would include the identification and tracking of metrics that serve as indictors of program success.

Municipal policies for local food purchases would include provisions that a certain percentage or value of food purchased by city departments be from local sources. The Task Force also recommended the adoption of a Burlington Food Charter, which would engage a city-wide public process to articulate the vision, values, and goals around food and agriculture in Burlington. Such a community value statement would serve to guide future food and agriculture policies.

The public action tools outlined above are not coercive because they do not require compliance, with the possible exception of the municipal food purchasing policy, which could include a required minimum for local food purchases. The actions recommended by the Task Force are mostly indirect, as they would be authorized by City Council or outside funders, but implemented by city departments, the City Food Office, or organizational partners. With the exception of normal planning processes, programmatic actions are not very automatic, as they would require the creation of new programs and administrative processes. These actions would be somewhat visible, depending on how they are funded. Municipal food expenses may show up in the city's budget. Programs administered by city departments or the City Food Office would likely be funded at least partially by outside grants and program fees.

Policy tools interactions

A policy tool analysis of the Task Force recommendations, while primarily descriptive, highlights the potential for synergistic interactions between the tools. For example, the public information recommendation for policy outreach promotes public awareness of the social regulation recommendations. The network coordination function could serve a foundational role in supporting the public information recommendations by building relationships with partners who can support practitioners with information and resources.

Reflecting on the policy development process

The difference in approaches used in other cities underscores that although the policy tools framework presents ideal types of the different governance approaches available (with associated advantages and disadvantages based on the policy goal), there

is no one "right" way to govern urban agriculture (or anything, for that matter). Policies in the context of a living, breathing, political community—what Stone (2002) terms the "polis"—develop out of a push and pull of competing subjective interests. A search for objectively correct rules is pointless; rather, "good" rules must reflect some common understanding of fairness and appropriateness[41].

The Task Force process attempted to consider such criteria when developing the recommendations, but the regulatory policy recommendations could be considered unfair or inappropriate by certain stakeholders. Additionally, when the policy development process is taken to the next step of adoption, the policies are likely to change as a result of additional actors getting involved in the process.

Finally, in some ways the policy recommendations themselves are ideal types. Even if adopted exactly as recommended, there would be no guarantee of perfect implementation. In the long-term context of urban agriculture governance, the Task Force process was just one step in what is sure to be an ongoing process of a community trying to balance shifting and conflicting norms, values, and needs.

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[41] See May's (2002) explanation of the attributes of "good" rules on page 40.

Chapter 8. Conclusion

Many Burlington residents participate in food production activities in the city, including gardening, commercial farming, and keeping livestock. A number of state and municipal laws and policies affect urban agriculture in Burlington, although many of the policies were not designed specifically to apply to urban food production. A network of organizations governs and supports urban agriculture in Burlington, including governmental and nongovernmental entities.

Through a multistakeholder process, the Task Force research process identified barriers and challenges that arise from current policy and the context of growing food in the city. This process informed the development of policy recommendations for City Council to more effectively govern and support food production in Burlington. Participatory action research provided a useful framework for this project by ensuring that the research process actively engaged those most affected by the issues and that policy recommendations met the needs of stakeholders.

Key findings

Many urban agriculture practitioners in Burlington are interested in urban food production because they hold values related to sustainability and community resilience, a finding that is consistent with the multiple benefits of urban food production highlighted in the literature. Although the underlying drivers of social, environmental, and economic problems in the modern food system are beyond the scope of municipal urban agriculture policy, city policies can address barriers and challenges at a local level. Burlington has the opportunity to strengthen its support of urban agriculture through a variety of recommended laws and initiatives.

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The participatory process in Burlington offered an opportunity for stakeholders to witness and take part in the policy development process, thus building legitimacy for both the process and the outputs. Although the policy recommendations have not yet been adopted by the city (and if and when they are they will likely look different than the Task Force's recommendations), the participatory process was critical to developing recommendations generated with the intention of meeting stakeholder needs.

The multistakeholder process identified several synergies and trade-offs among stakeholder needs. In the case of conflicts, a balance must be struck between stakeholder needs to develop a workable policy that does not impose undue burdens on any one stakeholder group. For example, practitioners expressed a desire that regulations be minimal, while municipal officials expressed a need for measurable standards to ease implementation. The Task Force thus scrutinized each urban agriculture activity and recommended regulations only in cases where a legal basis seemed necessary. When regulation was not justifiable, other policy approaches were recommended, such as the use of a mediation mechanism, the promotion of educational resources, and the creation of a program to connect people with available land.

Given the complexity of needs, challenges, risks, and cultural values associated with urban food production, there is no policy silver bullet for municipal support for urban agriculture. A suite of policy approaches can be used to address the myriad issues that arise from historical land use patterns, social norms, legal precedence, and resource constraints. The policy tools framework highlights the fact that different governance approaches offer different advantage and disadvantages depending on the issue at hand. In the Burlington context, a legal basis for governing some aspects of urban agriculture,

such as the humane treatment of livestock or the size of structures, is needed, but other aspects, such as managing neighbor conflicts or connecting people to available land, are not easily regulated and require innovative programming.

The City has an opportunity to partner with other organizations that are better suited to provide technical expertise to practitioners. While the City can play a critical role in setting the scope for activities, removing policy barriers where possible, and ensuring that conflicts are resolved through fair processes, it should guide practitioners to nongovernmental organizations as resources for expertise on the technical aspects of growing food in the city.

Opportunities for future research

This research thesis was a modest step towards a better understanding of the social, political, and legal context of urban agriculture in Burlington. However, future research efforts could expand this understanding through investigation on particular activities, policies, practitioner subsets, and the natural resource base upon which all these activities depend.

Quantitative data on the scope of urban agriculture activities (especially residential activities) would be valuable for the sake of understanding the extent to which activities occur, both as a snapshot now and as a baseline for the future. The legal context for urban agriculture warrants future investigation as well, as there is not always consensus on the implications resulting from complex interactions between state and municipal laws. Future research on certain subsets of the practitioner community, for example, residential practitioners, community gardens, commercial farmers, or the New

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Farms for New Americans program, would offer the opportunity for a deeper analysis than was possible here on the unique issues faced by each group.

Research on soil would provide local data on fertility and contamination, which could inform food safety management practices. Data on stormwater impacts from urban agriculture would also be incredibly valuable, as municipal planning and zoning decisions are very concerned with the water quality aspects of different land uses. Lifecycle analysis of the resources and energy used in urban agricultural production systems would yield insights as to whether the sustainability claims of local food can be supported with evidence.

These research efforts, especially if undertaken in coordination with local government agencies or organizations, could yield important evidence and insights for urban food production in Burlington. Any of these projects would be great opportunities for future UVM undergraduate or graduate students or for students at Vermont Law School.

Expected outcomes

The recommendations developed by the Task Force lay the groundwork for the City of Burlington to better govern and support current and future urban agriculture activities. The successful adoption and implementation of the recommendations will require continued work on the part of municipal officials, local advocates, and committed residents. The creation of a Burlington Food Office or Burlington Food Coordinator position within the City could provide valuable dedicated resources to support such continued efforts.

Although the potential benefits of urban agriculture should not be exaggerated, the recommendations have the potential to transform the policy context for urban agriculture in Burlington, thereby reducing barriers to participation and increasing support for urban food production. Such policy changes are an important step for a city whose residents are interested in finding ways to support local sustainable agriculture, food security, and community resilience.

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Wood, M., Pyle, J., Rowden, N., & Irwin, K. (2010). Promoting the urban homestead: Reform of local land use laws to allow microlivestock on re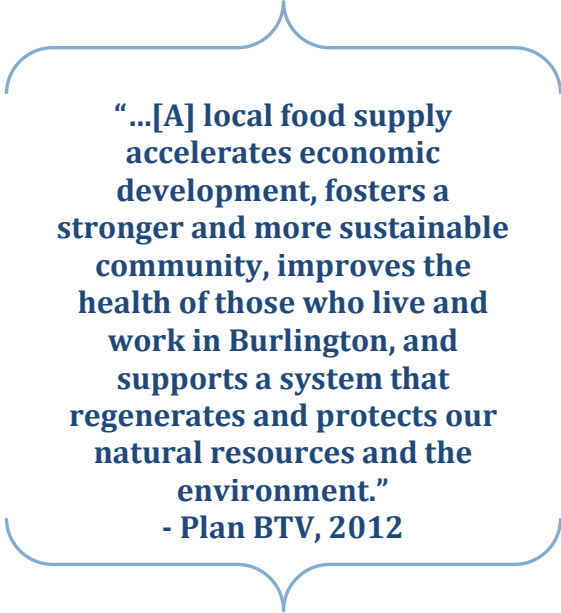sidential lots. *Ecology Law Currents*. Retrieved from http://elq.typepad.com/currents/2010/09/currents37-08-wood-2010-0907.html

Appendix A. Urban Agriculture Task Force report Executive Summary[42]

Many Burlington residents participate in urban food production in some capacity, either through gardening, keeping chickens, or growing or purchasing food from Burlington's peri-urban agricultural area, the Intervale. These people are motivated by values such as a love of local food, the recreational benefits of gardening, and the benefits that urban agriculture can provide to individuals, the environment, and the community.

> **"...[A] local food supply accelerates economic development, fosters a stronger and more sustainable community, improves the health of those who live and work in Burlington, and supports a system that regenerates and protects our natural resources and the environment."**
> **- Plan BTV, 2012**

Despite this broad range of activities, the City lacks policies specific to urban food production and residents often face barriers resulting from current policies or other factors that could be addressed through municipal policy. The City has a role to play in governing urban agriculture due to the fact that urban food production includes issues related to land use, public health, food safety, water quality, neighbor relations, and animal welfare.

In order to identify a set of policy recommendations to better support and govern urban agriculture in Burlington, the Urban Agriculture Task Force engaged community stakeholders in a year-long process and researched policy approaches used by other cities. This research informed the development of policy recommendations by incorporating stakeholder needs and considerations specific to the Burlington context. In order to address a variety of policy goals and priorities, a variety of approaches were identified, including ordinance revisions, education and outreach, and the coordination of multiple actors for specific urban agriculture projects.

The Urban Agriculture Task Force developed a set of more than 50 recommendations, which are detailed in the full report. A table summarizing the policies is included in Appendix A of the report. The pursuit of all of these recommendations will require a coordinated effort on the part of city offices, departments, leaders, organizational partners, and residents. For this reason, the Urban Agriculture Task Force also developed a set of implementation recommendations, which includes the creation of a City Food Office.

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[42] As presented to Burlington City Council on September 24, 2012

The Task Force identified a series of **crosscutting recommendations** that apply to many different urban agriculture activities. These include revisions to the zoning code, revisions to the general ordinance, outreach on urban agriculture policies, education on urban agriculture resources, encouraging communities of practice, adopting a mediation mechanism, coordinating with the state Agency of Agriculture, research needed to support future policy and measure progress against goals, incorporating food and agriculture into local planning efforts, adopting a Burlington Food Charter, and supporting access to land.

Home garden policy recommendations stipulate that the zoning code include a definition for home gardens and allow them in all residential zones to specifically protect the use of private yards for food production; that the city should facilitate soil testing for contaminants; that the city should promote sustainable management practices; and that the city should explore ways to connect home food production practices to stormwater management.

Community garden policy recommendations focus on expanding the amount of community garden space in the city in order to accommodate the number of people interested, especially in underserved neighborhoods. The Task Force also recommended expanding the definition for community gardens to include the sale of produce and encouraging the incorporation of shared garden space into new developments. Other recommendations include partnering with local experts and organizations to leverage access to land and educational programming, streamlining permitting for structures to reduce barriers to building garden sheds, and providing infrastructural support to community gardens for water and soil testing.

The recommendations for **urban farms** include that the city could facilitate access to farmland outside the floodplain and support local agricultural economic activity to support Burlington's commercial farmers.

The **livestock and poultry** recommendations include that the city should adopt an animal welfare general ordinance to regulate humane treatment, that livestock and poultry structures should be regulated through zoning, that the city should create a registration system for urban livestock and poultry to track metrics and communicate with practitioners, that the city should adopt a general ordinance clarifying that slaughtering is legal as long as certain provisions are followed, and that roosters should continue to be regulated using the nuisance ordinance. Other recommendations include that the city should promote education on livestock care and slaughtering by disseminating information on resources through print and online media, and manage neighbor conflicts through the mediation mechanism.

The policy recommendations for **beekeeping** include that the city should revise the zoning code to specifically allow beekeeping and a certain number of hives outright (more allowed pending review) and set a minimum setback from property lines. A general ordinance recommendation includes additional requirements for beekeepers,

such as requiring renters to obtain permission from their landlord and displaying the name and contact information for the beekeeper on each hive, thus placing some minimal additional burden on beekeepers for the sake of reducing risks. Other recommendations include that the city should promote outreach on policies, provide educational resources, and consider bees and other pollinators in city landscaping.

The recommendations for **hoophouses and greenhouses** include that the city should adopt definitions specific to these structures to differentiate them from buildings and that these structures should be exempt from zoning and building permits up to 400 ft^2.

The Task Force recommendation for **greenbelts**[43] is that the city should adopt an ordinance that prohibits food production in the greenbelt.

The **composting** recommendations suggest that the city should explore a community composting system to close the nutrient loop at a community level and the recently adopted state law (H.485) that phases in mandatory composting of organic waste by 2020.

Rooftop garden recommendations task zoning with exploring the use of incentives to encourage rooftop gardens and suggest that the city should explore the feasibility of putting rooftop gardens on city properties and Burlington Town Center Mall.

The **urban food forestry** recommendations similarly suggest that the city could initiate projects to map existing food-producing trees, identify potential tree planting locations, and establish and edible landscaping demonstration site.

The **school garden** recommendations address the feedback heard by the Task Force that the extent of garden education varies greatly between schools in Burlington. Although City Council does not have authority over school district curricular decisions, the Task Force felt that it was important to include recommendations for this important urban agriculture activity. Recommendations included that the school district should establish curricular support for school gardens and promote local awareness of program successes.

Recommendations for **food processing and sales** focus on providing support and permit exemptions to small-scale food processing outfits and those selling food grown in the city.

The pursuit of all of these recommendations will require a coordinated effort on the part of city offices, departments, leaders, organizational partners, and residents. For this reason, the Urban Agriculture Task Force also developed a set of implementation recommendations to begin to develop an implementation plan. The successful adoption of the Task Force recommendations will likely rely on the simultaneous use of the following strategies:

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[43] The use of the term "greenbelt" in Burlington refers to the strip of land between the sidewalk and the street, which is a public right-of-way.

- Partner with the Burlington Food Council as it builds capacity to address these issues through work with local agencies and organizations on both urban agriculture and other local food system issues, supporting the organization through the provision of in-kind resources, as a formal support when obtaining grants, and as a "fee for service" consultant on food system matters;
- Establish a Burlington City Food Office, starting with a City Food Coordinator position, to advance the recommendations identified in this report, manage the production and dissemination of educational materials, organize workshops and events, and coordinate with the Agency of Agriculture, city departments, and local organizations on issues related to food production, processing, and sales in the city;
- Utilize existing city departments for the adoption and implementation of zoning and ordinance changes, and the creation of new outreach materials to support awareness of urban agriculture policies and how-to resources; and
- Partner with local experts and organizations to leverage resources and expertise in support of policy implementation and project coordination.

The Urban Agriculture Task Force also identified a set of recommendations for funding these efforts, which are located in Appendix B of the report. Potential funding sources include grant agencies focused on community development and sustainability, as well as those focused on specific urban agriculture activities such as community gardens and urban food trees.

Appendix B. Urban Agriculture Task Force membership

Will Robb, Chair

Alison Nihart, Researcher

Jimmy DeBiasi, Intern

Ed Antczak, Community and Economic Development Office

David Casey, Board of Health

Harris Roen, Planning Commission

Will Bennington, Farmer

Jess Hyman, Advisor

Appendix C. Summary of Task Force policy recommendations

Rec. No.	Action	Type of Action	Cost range	Primary implementing body	Policy tool category
5.1	**Crosscutting recommendations**				
5.1.1	Revise zoning ordinance to accommodate urban agriculture	Zoning	Low	Planning and Zoning	
5.1.1.1	*Adopt zoning definitions for urban agriculture activities*	"	"	"	
5.1.1.2	*Streamline permitting process for urban agricultural structures*	"	"	"	
5.1.1.3	*Exempt small scale infrastructure*	"	"	"	
5.1.1.4	*Establish zoning that recognizes the benefits of food production*	"	"	"	
5.1.2	Adopt an urban agriculture general ordinance	General ordinance	Low	City Council	
5.1.3	Promote awareness of policies related to urban agriculture	Communications	Med	Burlington Food Council	
5.1.4	Promote awareness of urban agriculture resources	Communications	Med	Burlington Food Council	
5.1.5	Encourage communities of practice	Coordination	Med	Burlington Food Council	
5.1.6	Develop and implement a mediation mechanism	Programmatic	Med	TBD	
5.1.7	Coordinate with the Agency of Agriculture, Food and Markets	Coordination	Low	TBD	
5.1.8	Monitor indicators to guide policy and measure progress	Planning	Med	TBD	
5.1.8.1	*Maintain maps to inform urban agriculture decision making*	Planning	Med	Planning and Zoning	
5.1.8.2	*Develop food system metrics*	Evaluation	Med	TBD	
5.1.9	Incorporate food and agriculture into local planning efforts	Planning	Low	Planning and Zoning	
5.1.10	Increase public transportation to food production areas	Planning	High	Planning and Zoning	
5.1.11	Adopt a Burlington Food Charter	Public process	Low	TBD	
5.1.12	Support access to land at multiple scales	Programmatic	Med	TBD	
5.1.12.1	*Facilitate farmer/institutional land matching*	"	"	"	
5.1.12.2	*Facilitate homeowner/gardener land matching*	"	"	"	

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5.1.12.3	*Explore alternative conservation mechanisms*	"	"	"	
5.1.13	Promote urban agriculture on public land	Programmatic	Med	Parks and Recreation	
5.1.14	Promote sustainable management practices	Communications	Med	Burlington Food Council	
5.2	**Home Gardens**				
5.2.3.1	Facilitate soil testing	Programmatic	Med	TBD	
5.2.3.2	Link home food production to stormwater management	Research	Med	DPW	
5.3	**Community Gardens**				
5.3.3.1	Revise zoning for community gardens	Zoning	Low	Planning and Zoning	
5.3.3.2	Increase the number of community gardens	Programmatic	High	Parks and Recreation	
5.3.3.3	Partner with local experts and organizations	Coordination	Low	Parks and Recreation	
5.3.3.4	Streamline permitting for structures in community gardens	Zoning	Low	Planning and Zoning	
5.3.3.5	Ensure safe and secure garden operations	Programmatic	Med	Parks and Recreation	
5.4	**Urban Farms**				
5.4.3.1	Facilitate access to farmland outside floodplain	Programmatic	Med	TBD	
5.4.3.2	Coordinate with state and federal agencies	Coordination	Low	Multiple	
5.4.3.3	Support local agricultural economic activity	Programmatic	Med	Multiple	
5.5	**Livestock and Poultry**				
5.5.3.1	Adopt a livestock welfare ordinance to regulate humane treatment	General ordinance	Low	City Council	
5.5.3.2	Regulate livestock and livestock structures through zoning	Zoning	Low	Planning and Zoning	
5.5.3.3	Create livestock registration system	Programmatic	Med	TBD	
5.5.3.4	Adopt a slaughtering ordinance	General ordinance	Low	City Council	
5.5.3.5	Regulate roosters through nuisance ordinance	General ordinance	Low	Code Enforcement	
5.5.3.6	Promote education on livestock care and slaughtering	Communications	Med	Burlington Food	

				Council	
5.5.3.7	Manage neighbor conflict	Programmatic	Med	TBD	
5.5.3.8	Track livestock metrics	Evaluation	Med	TBD	
5.6	**Bees**				
5.6.3.1	Revise zoning ordinance to accommodate beekeeping	Zoning	Low	Planning and Zoning	
5.6.3.2	Adopt a general beekeeping ordinance	General ordinance	Low	City Council	
5.6.3.3	Promote education on beekeeping	Communications	Med	Burlington Food Council	
5.6.3.4	Consider bees and other pollinators in city landscaping decisions	Programmatic	Low	DPW	
5.7	**Hoophouses and Greenhouses**				
5.7.3.1	Revise zoning ordinance for greenhouses and hoophouses	Zoning	Low	Planning and Zoning	
5.8	**Greenbelts**				
5.8.3.1	Adopt a greenbelt ordinance	General ordinance	Low	City Council	
5.9	**Composting**				
5.9.2.1	Explore a community compost system	Research	Med	TBD	
5.9.2.2	Establish a pilot composting program for Church Street restaurants	Programmatic	High	CSWD	
5.10	**Rooftop gardens**				
5.10.3.1	Encourage rooftop gardening and green roofs	Zoning	Low	Planning and Zoning	
5.10.3.2	Consider rooftop garden atop Burlington Town Center	Research	Med	Planning and Zoning	
5.11	**Urban Food Forestry**				
5.11.3.1	Map existing urban fruit trees	Planning	Med	Planning and Zoning	
5.11.3.2	Identify potential locations for trees	Planning	Med	Planning and Zoning	
5.11.3.3	Establish edible landscaping demonstration sites	Programmatic	High	Parks and Recreation	
5.12	**School Gardens**				
5.12.3.1	Establish curricular support for school gardens	Programmatic	Med	TBD	
5.12.3.2	Focus on education and outreach	Communications	Med	TBD	

5.13	**Food Processing**				
5.13.3.1	Conduct a needs and assets assessment	Research	Med	CEDO	
5.13.3.2	Support new food enterprises	Programmatic	Med	CEDO	
5.13.3.3	Exempt home food processing from home occupation requirements	Zoning	Low	Planning and Zoning	
5.14	**Food Sales**				
5.14.3.1	Create a more supportive regulatory environment for farmers' markets	Zoning	Low	Planning and Zoning	
5.14.3.2	Exempt sales of food grown on-site from home occupation requirements	Zoning	Low	Planning and Zoning	
5.14.3.3	Incentivize food vendors selling food produced locally	Programmatic	Low	Planning and Zoning	
5.14.3.4	Use city purchasing power to support local food	Programmatic	Low	City Council	
6	**Implementation recommendations**				
6.1	Utilize existing city departments to adopt and implement new policies	Coordination	Low	-	
6.2	Support the Burlington Food Council	Coordination	Med	-	
6.3	Establish Burlington City Food Office	Coordination	High	-	
6.4	Partner with local experts and organizations	Coordination	Med	-	
6.5	Explore costs and funding mechanisms	Research	Med	Burlington Food Council	
Highlight = High priority recommendation					
Cost range based on informal estimates:					
Low: <$1,000. Costs could likely be absorbed by normal departmental operating budgets					
Med: >$1,000 and <$10,000. City may need to obtain grant funding or create budget line specific to this work					
High: >$10,000. City would likely need to obtain grant funding or create a new mechanism to generate revenue					

Appendix D. Summary of public feedback on draft report

URBAN AGRICULTURE TASK FORCE: PUBLIC COMMENTS ON DRAFT REPORT	
Topics and feedback obtained	**Adopted in report?**
RESOURCES	
Local organizational resource list	yes
ANIMALS	
Beekeeping	
include criteria for # of hives	yes
remove contact info requirement	no
Livestock and Poultry	
change wording re: roosters	no
change predator protection requirements	yes
clarify language on slaughter to explain that state regulations apply	yes
use percent lot coverage	no
change replace "backyard" with "residential" to prevent bias against front yard agriculture	yes
SPACE AND STRUCTURES	
size limits for structures: increase exempt max	
16-> 24 sq. ft. for livestock	yes
400 sq. ft. for greenhouses, hoophouses	yes
More than 2 structures should require review	yes
Add root cellars	no
Terracing included as a structure	yes
address setbacks explicitly	no
SOIL AND WATER	
mention use of greywater as something to explore	yes
add stormwater catchment	yes
refer to LCI's blue program	no
add human/animal -powered transportation	no
test community gardens for more contaminants than just heavy metals	yes
there is a disincentive for landlords to test soil	n/a
IMPLEMENTATION	
food office should be first stop for code violations	no
food office is resource for other city depts.	yes
create BTV food charter without public process (takes too long)	no
MISC.	
Cite all state statutes by number	yes

Appendix E. State laws affecting urban agriculture in Burlington

Many state laws affect urban agriculture directly or interact with municipal laws affecting urban agriculture. Although several of the laws were designed for commercial agriculture, the generous definitions associated with "agriculture", "farming," "agricultural practices," and "agricultural structures" result in applicability at a wide range of scales, and many hobby urban agriculture practitioners are affected by these laws.

The **Burlington Municipal Charter**[44] (24 V.S.A. § 3-48) grants authority to the City of Burlington on a wide range of governance topics. It is relevant to urban agriculture because it prohibits the city from having "power to license, tax, or prohibit farmers selling the produce of their own farm". This raises some questions about the limitations that have previously been imposed regarding when and where farmers markets may occur, as well as the need to license a mobile vending unit operated by one of the farms. The Municipal Charter also grants authority to the city to define and site slaughterhouses.

Vermont's **Limitations on Municipal Bylaws**[45] (24 V.S.A. § 4413) prohibits the city from regulating "accepted agricultural practices" and structures used for agricultural purposes. See Accepted Agricultural Practices section below for definition of "agricultural structure". The on-the-ground implications for this law are that all authority to prohibit or allow agricultural practices rests with the department of agriculture.

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[44] http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=24APPENDIX&Chapter=003&Section=00048
[45] http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=24&Chapter=117&Section=04413

However, the state does recognize the role of zoning as a viable municipal tool for determining where such activities take place.

Vermont's **Accepted Agricultural Practices** (AAPs) regulations[46] (6 V.S.A. § 4810) are primarily concerned with protecting water quality in the state. The regulations address nutrient management (manure, compost, and fertilizer) by requiring setbacks from property lines and surface waters. The notable consideration for Burlington residents is that these regulations apply at all scales, regardless of whether the practice is used in conjunction with a farm business. Thus, the storage of manure of compost on urban lots would be subject to setbacks, which at 100 feet are significantly greater than most urban lots in Burlington can accommodate. The Agency of Agriculture and the Agency of Natural Resources are responsible for enforcing these regulations, though at small scales enforcement is complaint-based. It is possible to get a variance in some cases when the practitioner cannot meet the requirements, though the variance comes with additional requirements to containerize the nutrient source or remove it regularly from the property.

The AAPs also provide definitions for "agricultural structures" that are used to determine whether a municipality has the authority to permit the structure or whether it falls under the jurisdiction of the Agency of Agriculture.

Vermont's **Apiary Law**[47] (6 V.S.A. § 3021) applies to both professional and hobby beekeepers, and includes a requirement that all beekeepers complete a free, one-time registration with the Agency of Agriculture so that the state may track where

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[46] http://www.vermontagriculture.com/ARMES/awq/AAPs.htmm
[47] http://www.leg.state.vt.us/statutes/fullchapter.cfm?Title=06&Chapter=172

apiaries are located and communicate with beekeepers in the case of disease or aerial

pesticide spraying near an apiary. The State Apiculturist is responsible for enforcing the

law, and visits apiaries throughout the state, including in the city of Burlington. The

apiary law also contains provisions to prevent the spread of disease. Beekeepers must

report any disease in their hive and the state apiculturist has the authority to inspect hives

and make determinations regarding the identification of disease. In addition, used

equipment or colonies from another state must be certified as free of disease. Hives must

be constructed with removable comb frames and an apiary may be located anywhere on

the property. The law also includes provisions specific to commercial beekeepers,

including that beekeepers must report the breeding of bees for commercial sales, and

regulations regarding the establishment of new apiaries within certain distances of

existing commercial apiaries.

Vermont's **slaughtering and meat inspection laws**[48] (6 V.S.A. § 3301) allows

the on-farm slaughter of animals for personal use, but animals for sale must be taken to

an inspected slaughterhouse. The on-farm slaughter of poultry for sale is exempt from

this requirement[49] , as long as certain provisions are followed and not more than 1000

whole birds are sold in one year. The laws apply at all scales, so hobby livestock keepers

are also eligible for the exemptions.

Vermont's **animal cruelty law**[50] (13 V.S.A. § 351) exempts "livestock and

poultry husbandry practices" from the regulation, but does not define these practices.

This means that livestock owners are not required to follow specific provisions to ensure

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[48] http://www.vermontagriculture.com/fscp/meatInspection/regulations.html
[49] http://www.leg.state.vt.us/statutes/sections.cfm?Title=06&Chapter=204
[50] http://www.vactf.com/manual/chap7/

that their animals are treated humanely. The enforcement implications of this exemption

are that humane investigators and enforcement officials lack a clear legal mechanism to

persecute offenders in cases of mistreatment.

Appendix F. Municipal laws affecting urban agriculture in Burlington

The city of Burlington uses two regulatory mechanisms: a Code of Ordinances, with general codes for the city[51], and a Comprehensive Development Ordinance[52], the land use and zoning code for the city. Penalties for noncompliance include tickets and fines.

General ordinances

Chapter 5 of the Code of Ordinances, **Animals and Fowl**, includes general provisions for the keeping of animals, establishes a pound, and outlines enforcement and impoundment. Despite the title, this section of the code does not mention any regulations related to fowl. It does contain a provision for nuisance animals (Sec. 5-4), which is currently used to regulate roosters. Sec. 5-26, Cruelty, prohibits "torture, torment or […] neglect" as well as prohibiting someone from "illegally kill[ing]" an animal. However, it does not address whether there is any exemption for "legal" killing in the case of slaughtering animals for food.

Chapter 8 of the Code of Ordinances, **Buildings and Construction**, outlines the requirements for obtaining a building permit for any structure to be constructed in Burlington. Agricultural structures are not required to be designed by a registered architect or engineer.

Chapter 17 of the Code of Ordinances, **Health**, prohibits the sale of "fruit or merchandise" in the "street or other public place" without the approval of city council (Sec. 17-5). Sec. 17-6 requires that any outside display for "fruits, vegetables or other

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[51] Available at: http://library.municode.com/index.aspx?clientId=13987
[52] Available at: http://www.burlingtonvt.gov/PZ/Zoning/Zoning-Ordinance/

foodstuffs" be "properly protected from insects, dust, dirt or any other foreign or unwholesome material by suitable coverings." Sec. 17-7 outlines the license provisions for the sale or delivery of milk.

Chapter 29 of the Code of Ordinances, **Vegetation,** prohibits the planting of trees in public parks or right-of-ways without the prior approval of the board of parks commissioners.

Zoning ordinances

Burlington's **Comprehensive Development Ordinance** (CDO) contains definitions for "animal boarding," which outlines that any person keeping more than four animals greater than three months of age shall be considered to be operating a boarding operation, which is a regulated use in the city. The boarding definition does include an exception for livestock in areas approved for agricultural use. However, in nonagricultural areas this effectively limits the number of livestock a person may have to four. The CDO also includes definitions and associated uses for "agriculture," "community garden," "composting," and "farm structure."

The CDO includes a requirement that the construction of any structures greater than 16 sq. ft. requires a zoning permit. Community gardens are allowed in most zones with the exception of the Downtown Transition and Urban Reserve zones, and one parking spot per ten plots is required in the neighborhood and shared use districts. The CDO also includes rules regarding "Home Occupations," which limits the type of businesses that people may operate out of their homes. Finally, the CDO includes a definition for "Open Air Markets," which allows for locally grown produce, crafts, and baked goods, which is used to govern the city's farmers markets.

Appendix G. Related media

Enabling legislation

- City Council resolution: http://www.burlingtonvt.gov/docs/3883.pdf

Newspaper articles

- Bedrosian H. 2010. "Ten Thousand Dollar Task Force." BurlingtonPol.com. Available from http://www.burlingtonpol.com/2011/03/20/ten-thousand-dollar-task-force/

- Bromage A. 2012. "Burlington Couple Busted For Gardening Structures in Front Yard." Seven Days. Available from http://7d.blogs.com/blurt/2012/05/burlington-couple-busted-for-gardening-structures-in-front-yard.html

- Freedman J. 2012. "Experts advise how Burlington could better protect, foster and shape its local food economy." Burlington Free Press. 15 July 2012. Available from http://www.burlingtonfreepress.com/apps/pbcs.dll/article?AID=2012307150006

- Johnson H. 2012. "Fusing the Urban and the Ag in BTV." UVM Food System Research Collaborative. Available from http://www.foodsystemresearch.net/tag/urban-agriculture/

- Picard K. 2011. "From Goats to Greenbelt Gardens: A New Task Force Defines "Farming" in Burlington". Seven Days. 13 July 2011. Available from http://www.7dvt.com/2011burlington-urban-gardens

- Picard K. 2012. "Growing Issues: Burlington's Urban Ag Task Force Seeks Feedback On Its Draft Report." Seven Days. 9 July 2012. Available from http://7d.blogs.com/blurt/2012/07/burlingtons-urban-agriculture-task-force-seeks-public-comment-on-draft-report.html

- RSENR. 2012. "Burlington's Urban Agriculture Task Force Holds Backyard Livestock Policy Workshop." The Rubenstein School of Environment and Natural Resources, University of Vermont. Available from http://www.uvm.edu/rsenr/files/RSENRNewsletterMarch2012.pdf

Videos

- Archer H. 2012. Urban Agriculture in Burlington. http://www.youtube.com/watch?v=godg7xefPvQ

- CCTV. 2012. Urban Agriculture Task Force Livestock Policy Workshop. http://www.cctv.org/watch-tv/programs/urban-agriculture-task-force-meeting