URBAN AGRICULTURE: A STRATEGY FOR GROWING SUSTAINABLE LOCAL FOOD & COMMUNITY RESILIENCE

by

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ABSTRACT

Urban Agriculture: A Strategy for Growing Sustainable Local Food & Community Resilience

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Urban agriculture is a food movement that challenges large-scale, industrial agriculture with an alternative, multifunctional model. The dominant food system in the United States is a market-based system driven by economic incentives reliant on largely unsustainable, and often detrimental practices. Alternatives to the dominant regime focus on reclaiming the benefits of a healthy food system by connecting people directly to their food through localized relationships. Urban agriculture is an alternative food system that can provide multifunctional benefits beyond food production, including human and environmental health. Shifting dependence further away from globalized, industrial agriculture to something more sustainable will require transformative change, including a cultural shift. This study examines the major opportunities and challenges of integrating urban agriculture into municipal planning and policy in Olympia, Washington. Urban agriculture provides a strategy for Washington's capitol city to become adaptive and resilient to disturbance while providing environmental, social, and economic benefits to its citizens. Planning and establishing a bigger, more advanced and municipally supported urban agriculture network in Olympia will require the cooperation of shareholders with diverse backgrounds, skills, and influence. Data for this research was obtained from interviews with individuals working as municipal planners, neighborhood organizers, agricultural practitioners, volunteers, activists, teachers, and business owners to understand the status of and desire for an expanded local food system in Olympia.

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Acknowledgements

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I would also like to express gratitude to The Evergreen State College. The natural world has always made more sense to me than the social one. Evergreen inspired me to step outside of my comfort zone to expand my knowledge of social science as it relates to environmental health. Now, I am more aware of the interconnectedness of social and environmental issues than I ever have been before. With this understanding, I feel better equipped to fight for a sustainable future. I appreciate the freedom this College instills in its students and the community to be innovative. I am grateful for the wise and impassioned professors that will make me miss being a student. My experience at Evergreen will always be dear to me.

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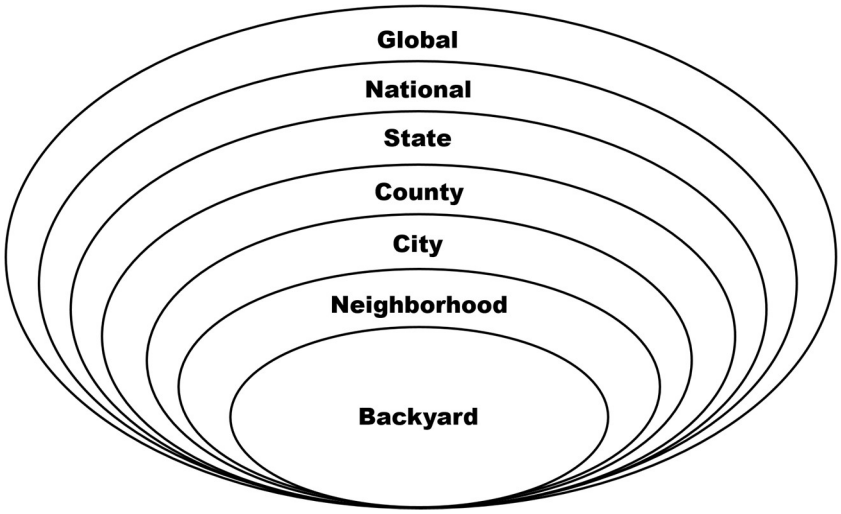
1. RETHINKING THE AMERICAN FOOD SYSTEM

The human body is reliant on regular food intake as a source of energy and health. Within the last hundred years, the American food system has undergone some significant changes. Rather than maximizing the quality of inputs and outputs and managing food as a crucial life ingredient, the dominant American system largely fails to recognize the complexity of food beyond its role as a market commodity (McClintock, 2014). This is a mistake. Food connects us to our natural environment and each other. Proving its power, people have used food for spiritual enlightenment and political protest throughout history. The globalized, industrial system has damaged the quality of our food, our relationship to it, and the natural environment through devastating practices (McClintock, 2014). Acting out of political defiance, concern, and the desire to be more self-sufficient, communities are regaining power from this corrupt and misguided system by establishing alternative food systems that nurture human health and environmental stewardship.

'Food system' is an overarching term referring to all the stages and processes involved in feeding a population. This includes everything from growing food through consumption and disposal including harvesting, processing, transportation, and marketing. The food system is a multi-nested complexity supported by local, regional, and global inputs (Hendrickson & Porth, 2010). Most people do not think about food at the systems scale. People tend to be grateful for the conveniences offered by the current food system. Industrialization has made farming more efficient; combined with globalization, it has also made food cheap. However, these conveniences are not without consequence and to understand that, it is necessary to examine food at the systems scale. The choices that are available to us through the dominant food system are not holistically

good for us. Alternative food systems are designed to address these deficiencies. Figure 1 illustrates the fact that food production occurs on many levels. This paper will focus on the benefits of localized production.

Figure 1. Multiple Levels of Food Production



The globalized, industrial food system is characterized by practices that have cascading detrimental effects to human and environmental health (McClintock, 2014; King, 2008). However, these repercussions were unimaginable when agriculture was dramatically altered, largely during the Industrial Revolution, setting the stage for what it has become today. Before the Industrial and Agricultural Revolutions, most Americans lived on farms and grew their food. Innovation and discoveries of the late nineteenth and early twentieth centuries, including mechanization and the advent of synthetic fertilizers and pesticides, transformed agriculture into an industrial process. Economists and scientists began exploring ways to standardize farming to maximize profits (Lyson, 2004). Farms became bigger, more automated, and overall more prolific. During this time, global trade was also advancing because of developments in shipping networks and

technologies. The economies of scale changed as did the portraits of American farms and farmers beginning a major transformative period for our relationship with food.

Based on mass-production manufacturing, industrialized agriculture was designed to increase productivity through automation and mechanization. According to the United States Department of Agricultural (USDA) records from 2014, large-scale and midsize family farms account for 9% of all farms in the United States (US). Oddly, this group operates 51% of all US farmland and is responsible for 68%, a majority, of American agricultural production (Hoppe & MacDonald, 2016). Ecological problems such as deforestation and biodiversity loss result from large-scale land use change driven by large-scale agricultural operations (Kremer & DeLiberty, 2011). Farming land at this scale is characterized by practices that are typically perilous for soil health which, unfortunately, has been severely degraded from industrial agriculture (King, 2008; McClintock, 2014). This is in part from mechanization and nutrient depleting crops but is also a result of chemical inputs used to maintain agricultural production despite poor resource management. Synthetic inputs (i.e. fertilizers) have had catastrophic effects on soil structure, fertility, and function (Kremer & DeLiberty, 2011). Additionally, poor soil can have compounding effects on the environment including water pollution. These are examples of problematic bi-products of large-scale, industrial, agricultural operations that, by USDA definition, earn $1,000,000 or more annually. The integration of these large-scale operations into the global and US economy makes them powerful and indispensable entities in the world market despite their injustices.

The mass production of food through industrial agriculture is unsustainable. Sustainability is a process that aims to achieve a balance between environmental

protection, social justice, and economic development. Globalization adds compounding factors to the unsustainability of America's dominant food system today because it compromises local economic resilience (Grewal & Grewal, 2011). American agricultural goods were globally traded well before agriculture was industrialized (Jensen, 1969). Industrial agriculture combined with globalization has created a market that has reduced food, with all its complexity, down to an economically valuable commodity. Economic incentives, which supersede the value of human health and environmental longevity, drive this market-based system. The globalized, industrial food system of today offers a cornucopia of affordable food choices but also creates significant social vulnerabilities. Large-scale agriculture benefits from economies of scale, or cost advantages, because of its size and scale of production. Dangerously, this does not account for unsustainable practices. The affordability of this 'efficiently' grown food creates a market that smaller, and probably more sustainable, farming operations have trouble competing against. Therefore, locally grown food is usually more expensive than some of the other choices that are marketed for consumption. Furthermore, fresh and healthy agricultural goods have become too costly to be readily accessible by everyone. This creates health disparities and is certainly unsustainable.

Additionally, large-scale production agriculture is adversely dependent on fossil fuels to run equipment and distribute goods (Lyson, 2004). Ironically, the dominant food system is increasingly vulnerable to climate change in part because of its contributions to environmental degradation. The Intergovernmental Panel on Climate Change (IPCC) reported in 2014, "Human influence of the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate

changes have had widespread impacts on human and natural systems." Ecologically degrading farming methods should be re-evaluated now more than ever. "Continuing down the current path of conventional/commodity agriculture is likely to lead to greater concentration of production in large-scale corporate hands, the further erosion of rural communities and culture, and continued resource depletion and environmental degradation" (Hinrichs & Lyson, 2007, 23).

The large geographic scale at which food is grown, processed, traded, and transported introduces exposure to natural and anthropogenic disruptions or disasters (Lovell, 2010). Regardless of its inadequacies, people are reliant on the dominant food system. Americans' relationships with food have changed dramatically throughout history and according to the USDA, fewer individuals in the country today make their living as farmers. They do not have the human (skills, knowledge, financial access) or natural resources to provide food for themselves. As a result, people are disconnected from their food; they have lost understanding of the growing process, and with that, have also lost a holistic understanding of its complexity. Our food choices effect our personal health, our community health, and environmental health. These all erode when we do not hold our food system to higher standards than just a money-making enterprise.

Globalized, industrial agriculture (which dominates the American food system) is unsustainable and alternative food systems are gaining increasingly more momentum worldwide as concern for sustainability and resilience grows (McIvor & Hale, 2015; Mendes, Balmer, Kaethler & Rhoads, 2008; Lovell & Taylor, 2013; King, 2008). Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change to retain essentially the same structure and function (Folke et al.,

2002). It is imperative that the American food system is reorganized for resiliency especially considering predicted trends of urbanization and climate change. Alternative food systems may be part of the solution for shifting American dependence away from globalized, industrial agriculture to something more sustainable, perhaps revolutionizing American agriculture once again.

My research focuses on one alternative food system in particular, urban agriculture, and provides examples of its potential multifunctional benefits. Urban agriculture challenges the inequities of globalized, industrial agriculture. It encompasses community and private gardens, edible landscaping, fruit trees, food-producing green roofs, aquaculture, farmer's markets, community-supported agriculture (CSA), small-scale farming, hobby beekeeping, food composting and more (Mendes, Balmer, Kaethler, & Rhoads, 2008). My research seeks to understand the challenges and opportunities associated with incorporating urban agriculture into municipal planning and policy using Olympia, Washington as a case study. I will examine the existing state of urban agriculture in Olympia and explore the realistic potential for expanding it.

This chapter introduced the unsustainability of the dominant American food system and previewed an alternative, urban agriculture. The next chapter provides a brief history of urban agriculture as a movement followed by a discussion of some supportive concepts as the theoretical framework behind its potential. These concepts include systems thinking, urban ecology, resilience, adaptive management, and landscape multifunctionality. After that will be a discussion of urban agriculture as a means to an end for transforming the dominant food system. The potential for this alternative will be discussed in relationship to the major motivations advocating for this shift including

urbanization and climate change. Current trends in American agriculture will be used to examine additional incentives including environmental sustainability and social justice, two concepts not widely supported by the dominant model. Chapter 3 will introduce and explain the methods for my case study of Olympia, Washington. Chapter 4 will present the results of my research including quoted insight from interviewed participants. Finally, Chapter 5 will provide some closing thoughts and offer some future research topics.

2. TRANSFORMING THE FOOD SYSTEM

The United Nations (UN) reports that from now on, increasingly more people will live in urban areas than ever before throughout human history (2014). Forebodingly, with dense human populations comes stress to the built and natural environments (Lovell & Taylor, 2013). Fortunately, many view the migration of people into urban hubs as an opportunity to mitigate and balance the adverse effects of urbanization (Lovell & Taylor, 2013). Urban agriculture, as the basis of an alternative food system, offers some promising potential by considering the food system more holistically and connecting community and environmental sustainability (King, 2008). The potential benefits of urban agriculture include food provision, income generation, city greening, pollution reduction and waste management, conservation and biodiversity opportunities, cultural preservation, and civic engagement (Lyson, 2004; McIvor & Hale, 2015; McClintock, 2014; Carolan & Hale, 2016; Chen, 2012; Mougeot, 2006; Lovell, 2010; Mendes, Balmer, Kaethler & Rhoads, 2008). Acknowledging the fact that our food system connects us to our natural environment, urban agriculture presents an opportunity for symbiosis in which ecosystem services are maximized through design and stewardship, ultimately contributing to community sustainability and resilience. Community resilience appeals to cities worldwide because of urbanization and climate change forecasts.

My research investigates Olympia, Washington as a case study for understanding the challenges and opportunities of including the municipal government in the expansion of urban agriculture. Olympia, Washington makes for an interesting case study because of the significant growth, current and anticipated, for the city in the coming decades. Olympia itself is primed for change. Based on my review of the literature, including the

municipal government in the integration of urban agriculture may be the most effective strategy for transforming local food systems to be more sustainable (McClintock, 2014; Mendes, Balmer, Kaethler & Rhoads, 2008). I gathered data for my case study by interviewing city employees, community organizers, and agricultural practitioners. This will be discussed in greater detail in chapter 3.

History of Urban Agriculture

Mougeot (2006) defines urban agriculture as agricultural goods grown, processed, and distributed within or on the fringe of an urban area directly for the urban market. The 2008 Congressional Farm Bill defines urban agriculture as "locally or regionally produced agricultural food product [that] is less than 400 miles from its origin, or within the State in which it is produced" (Hendrickson & Porth, 2010, as cited in Martinez et al., 2010). Some counties and states favor political boundaries for defining the term local (Chen, 2012). However, urban agriculture is highly variable and place-specific and the definition, therefore, is subject to some degree of flexibility. Urban agriculture encompasses community and private gardens, edible landscaping, fruit trees, food-producing green roofs, aquaculture, farmer's markets, CSA, small-scale farming, hobby beekeeping, food composting and more (Mendes, Balmer, Kaethler, & Rhoads, 2008).

Urban agriculture in the US dates back more than a century beginning with community gardens established on vacant lots in major cities such as Detroit, New York, and Philadelphia (Lovell, 2010; Lawson, 2005). Urban garden plots also appeared during the 1930s when America was experiencing hardship during the Great Depression (Lovell, 2010; Lawson, 2005). Then in the 1940s, the federal government promoted victory

gardens to address the rationing of food resulting from World War II (Lovell, 2010; Lawson, 2005). In the 1970s, urban agriculture spread from grassroots efforts to revitalize communities (Lovell, 2010; Lawson, 2005). Formal research into urban agriculture began in 1984 at the International Development Research Center emphasizing food security, nutrition, and organic waste use and treatment (Mougeot, 2006). Urban agriculture continues in the US today challenging the dominant food system for its social and environmental inequities. Practitioners and academics have identified local food production as a strategy for achieving sustainability (Chen, 2012). The next section, 'Theoretical Framework', describes some of the concepts that support this claim.

In 1987, the UN's World Commission on Environment and Development highlighted the potential of urban agriculture for sustainable development in a book called Our Common Future (Mougeot, 2006; World Commission, 1987). Sustainability is a socio-ecological process with goals of balancing environmental protection, social justice, and economic development. Sustainable development is the concept through which sustainability is achieved. Our Common Future defines sustainable development as that which "meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs" (World Commission, 1987, 39). International recognition of the importance of sustainable development has allowed for the exploration of alternative food systems and agricultural practices that directly address social and ecological needs (Mougeot, 2006).

Theoretical Framework

Urban agriculture is tied to and supported by several concepts giving it validity as a movement and theoretically reinforcing its transformative potential. The following section discusses these concepts as they relate to food and food systems. First, an examination of systems thinking presents understanding for how food is a socio-ecological system (SES). After that, the growing field of urban ecology is introduced as well as the concept of cities as safe to fail test cases. Next, a description of the resilience perspective establishes the basis for adaptive management. Adaptive management is identified as a strategy for integrating new systems, such as urban agriculture, into cities to achieve sustainability. Finally, the concept of landscape multifunctionality will be examined and connected to urban agriculture as a logical strategy for maximizing land use in the face of urbanization.

Systems Thinking

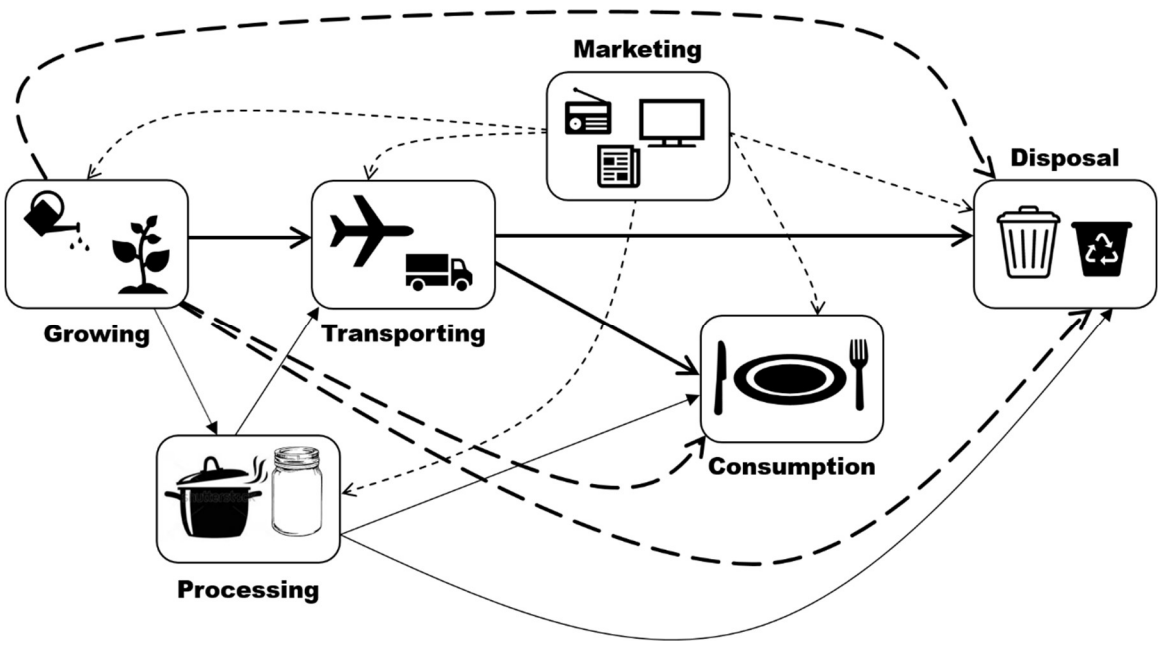
"A system is an interconnected set of elements that is coherently organized in a way that achieves something" (Meadows, 2008, 1). Systems thinking introduces a holistic view where components of a system and their interconnections can be examined (Berkes & Folke, 1998). Berkes and Folke argue that, in terms of resource management, social and ecological systems are linked and delineations between them are "artificial and arbitrary" (1998, 4). Socio-ecological system(s) (SES), they propose, are a more appropriate term to emphasize "humans-in-nature" relationships (Berkes & Folke, 1998, 4). For this report, food systems will be described as SES as they contain these relationships at many of the stages and processes involved in feeding people.

SES are nested, multilevel systems (Binder, Hinkel, Bots & Pahl-Wostl, 2013). Systems thinking can be usefully applied to food systems to understand some guidelines for management expectations. First, systems are nonlinear and therefore, despite the volumes written about them, often unpredictable. They are hard to define with boundaries and characterized by delays which, again, make them often unpredictable (Meadows, 2008). There are always limits to growth, self- and system-imposed, and understanding limiting factors is crucial (Meadows, 2008). Expected solutions to systems' problems can be ineffective and create even bigger issues. This is because the source of the problem may exist as part of the internal structure of a more complex system (Meadows, 2008). To apply this to the food system, increased production from industrial agriculture made it possible to feed a growing population. However, the food system is nested within social and ecological systems that have suffered from this 'solution'.

Systems are difficult to manage especially considering our human nature. Food system are no exception. Meadows (2008) explains our shortcomings as systems thinkers: we live in an exaggerated present discounting the future, we do not appropriately weigh the importance of system signals, and we tend to reject information that does not fit our models. For a system to be effective, proper and well-defined goals must be set, perceptions must be accurate, and boundaries must be appropriate. Furthermore, humans view the world as a series of events instead of seeing a system's performance over time, or its behavior (Meadows, 2008). This is a flawed perspective for systems management for at least one reason, systems are characterized by delay. What may seem like a victory or challenge one day may not actually mean so when considered holistically. Taking all of this into account, you start to get an idea of why multi-nested SES, like food, are

difficult to change or improve. Figure 2 illustrates the complexity of food systems by mapping out some common elements and possible pathways between them. Not pictured is the fact that each of these stages and pathways are further complicated by their impacts on the SES within which they are embedded.

Figure 2. Food System Complexities: Possible Stages and Pathways



The good news is, "Populations and ecosystems also have the ability to "learn" and evolve through their incredibly rich genetic variability. They can, given enough time, come up with whole new systems to take advantage of changing opportunities for life support" (Meadows, 2008, 17). Urban agriculture provides cities with a framework for seeking "systematically innovative solutions" for sustainability where citizens can reconnect to and understand their role in environmental problems (Chen, 2012).

Urban Ecology

Urban ecology is an emerging field that fuses theory and methods of both natural and social sciences to study the structure and function of urban ecosystems (Grimm et al., 2008; Lovell & Taylor, 2013). This field studies urban areas holistically identifying important connections between human populations and the surrounding environment. It is expected to become increasingly important in future years as cities become progressively more interested in establishing resilience in the face of environmental upheaval (Grimm et al., 2008). Urban ecologists view cities as informative, safe-to-fail test cases where innovation can be encouraged to build transdisciplinary, adaptive cities through shared and reflective learning. Urban ecology seeks to better understand and incorporate SES in urban structures and functions. It fosters an understanding of SES interactions and their role in evoking as well as responding to environmental change. Integrating urban ecology into cities maximizes their capability of fostering essential ecosystem services and other sustainable functions (Grimm et al., 2008). Examples of ecosystem services are food, fiber, carbon sequestration, energy, and drinking water (Binder, Hinkel, Bots & Pahl-Wostl, 2013; Berkes & Folke, 1998; Lovell & Taylor, 2013). Urban ecology can reveal the usefulness of understanding patterns in the urban landscape to preserve ecosystem health under highly managed scenarios (Lovell & Taylor, 2013).

Resilience

Resilience refers to a system's capacity to absorb disturbance and reorganize while undergoing change so that it may retain essentially the same structure and function (Folke et al., 2002). The resilience perspective grew out of ecological studies in the 1960s

and 1970s (Folke, 2006). Managing for resilience improves the chances of sustaining natural systems (Folke, 2006; King, 2008). Declining ecosystem capital, like that caused by intensive agriculture, presents an urgency for increased resilience in transitioning environments where the "future is unpredictable and surprise is likely" (King, 2008; Folke, 2006; Walker & Meyers, 2004; Adger, Hughes, Folke, Carpenter & Rockstrom, 2005). SES that lack resiliency are vulnerable to disturbance (i.e. climate change, urbanization) and may result in dramatic consequences (Folke, 2006). Food is a necessary element of human life and therefore it is essential that the food system be resilient and protected as a necessary element of human survival. Urban agriculture, emphasizing ecological and community resilience, can provide a link between the existing food system and natural resource management (King, 2008). Managing natural resources sustainably is an important part of ecological resilience.

In addition to ecological resilience for the provision of ecosystem services (i.e. food, fiber, water), the concept of community resilience has gained prominence in recent years in the face of climate uncertainty. As the impacts of climate change have become more evident around the world, the volume of literature devoted to community resilience has increased. Vulnerable communities are forming climate adaptation plans in preparation for and in response to natural disasters. The city of New Orleans, for example, developed citizen resources for disaster preparedness following Hurricane Katrina (Emergency Preparedness, 2016). Even closer to home, the city of Olympia has begun developing a community resilience plan as downtown Olympia is critically vulnerable to forecasted rising sea levels (Sea Level Rise, 2017). Climate adaption and community resilience plans seek refuge and security in the face of ecological uncertainty.

Food security is an element of community resilience. Food security, as defined by the UN's Food and Agricultural Organization (FAO), is "…a situation that exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life" (Lang and Barling, 2012, 313, as cited in FAO, 2009, 8). Urban agriculture fosters food provision as well as democratic habits that aid in a community's collective capacity to influence its future (McIvor & Hale, 2015). When citizens are included in decision making for systems that affect them, such as food, citizen participation increases at all levels (Mendes, Balmer, Kaethler & Rhoads, 2008). Resilience results from empowered communities whose social capital is strengthened by systems such as urban agriculture (McIvor & Hale, 2015). Social justice is one of the factors of sustainability. Lang and Barling proclaim that food systems must be sustainable to be secure (2012).

Adaptive Management

Adaptive management is a framework for sustainable resource management that could be effectively utilized by municipalities integrating urban agriculture into their cities. The resilience perspective served as the theoretical framework for early ecosystem adaptive management studies (Folke, 2006). "Resilience provides adaptive capacity that allows for continuous development" (Folke, 2006). Adaptation, the basis of this framework, refers to the responsive actions taken as a result of a change or disturbance (i.e. climate change, urbanization) to reduce unfavorable ramifications and capitalize on opportunities (Tompkins & Adger, 2004). Food systems, such as urban agriculture, seek a sustainable alternative to globalized, industrial agriculture. Including sustainability goals into adaptive management strategies ensures the progression of environmental protection,

social justice, and economic development. Adaptive management is not focused on returning to some steady state after a disturbance. Instead, adaptation recognizes the constant evolution of all social and natural systems and is therefore focused on maintaining structure and function. Adaptive management, as a process, is informed by iterative learning much like trial and error. However, it differs by containing a guiding structure that includes: stating objectives, recognizing uncertainties, predictions of management consequences, identifying management alternatives, and monitoring (Williams, 2010).

Multifunctional Landscapes

Landscape multifunctionality is a concept that refers to the strategic managing of areas to provide multiple benefits and functions across diverse ecological, cultural, and production dimensions. Landscape multifunctionality can benefit the development of urban areas in several ways (Lovell & Taylor, 2013). It emphasizes the positive and synergistic interactions of different landscape functions (Lovell & Taylor, 2013; Selman, 2009) and pursues greater complexity and biodiversity be built into city systems to increase ecosystem resilience (Lovell & Taylor, 2013; Fischer, Lindenmayer & Manning, 2006; Folke et al., 2010). Greater biodiversity increases an adaptive system's ability to absorb disturbance and reorganize (Folke 2006). Landscape multifunctionality is an adaptive strategy for addressing unknown future conditions that include climate change, water scarcity, pressures on land, food insecurity, and limited economic resources (Lovell & Taylor, 2013; Fischer, Lindenmayer & Manning, 2006; Folke et al., 2010).

Multifunctional landscapes model landscape sustainability: "the capacity of the landscape to consistently provide long-term, landscape-specific ecosystem services essential for maintaining and improving human well-being" (Lovell & Taylor, 2013; Wu, 2013). Unlike the dominant food system, the needs and preferences of the owners and users are prioritized by this framework (Lovell & Taylor, 2013; Otte, Simmering & Wolters, 2007; Lovell, 2010). Multifunctional landscapes, such as urban agriculture, promote the integration of new activities for urban ecosystems that may not already be widely associated with them (Lovell, 2010). Another value of landscape multifunctionality is that it provides a framework for evaluating landscape designs (Lovel, 2013; Lovell & Johnson, 2009). Considering global urbanization and the stakes for developing sustainably, assessment may be a principal element for communicating experiences and transferring knowledge.

As part of multifunctional landscapes, urban agriculture can be integrated into cities for multifunctional benefits. Urban agriculture can be included into city planning for the production of fresh agricultural goods, increased biodiversity, conservation opportunities, green aesthetics, pollution reduction, and waste management (Lovell & Taylor, 2013; Mendes, Balmer, Kaethler & Rhoads, 2008). Thinking of food in terms of its everyday importance can reveal connections between food and other social issues such as culture preservation or ethnobotany. Support for cultural functions is another element of the multifunctional landscape strategy that urban agriculture has been shown to support (Richardson, 2011). There is a fantastic opportunity for synergistic functions through urban agriculture. An example of this would be utilizing waste (i.e. water) from a separate system for an agricultural function (i.e. irrigation). Considering that land and

space in cities will become increasingly scarce with urbanization, maximizing the multifunctionality of landscapes will become increasingly important.

Major Motivations for Urban Agriculture

Urban agriculture has the potential to strengthen the concept of community and empower communities as decision-making units and influential entities (McIvor & Hale, 2015; Mendes, Balmer, Kaethler & Rhoads, 2008). Experience has shown that involving municipal governments in integrating urban agriculture increases the potential success and permanence of the food movement (McClintock, 2014; Mendes, Balmer, Kaethler & Rhoads, 2008; Grewal & Grewal, 2011, Mougeot, 2006). In the US, where the average citizen is severely disconnected from their food sources, urbanites are inclined to have an aversion to agricultural noises and smells. Additionally, urban agriculture is an alternative to the dominant food system to which people are accustomed and dependent. Therefore, municipalities face a variety of challenges when they decide to adopt and support an alternative food system, including a necessary cultural shift. Other difficulties include: identifying and designating useable land and spaces, removing existing restrictions that might prevent innovative growing areas (i.e. building rooftops), establishing new structures and processes for policy, settling disputes, and providing equitable access (Mougeot, 2006; Lovell & Taylor, 2013). Successful and innovative urban agriculture, however, can offer cities sustainability and resilience. The following sections discuss some of the reasons why these goals are important.

Urbanization

"The planet has gone through a process of rapid urbanization over the past six decades" (UN, 2014). Urbanization is the migration of people to urban areas, a trend expected to continue worldwide. Sixty-seven years ago, in 1950, the rural-urban divide of the global population was predominantly rural (70%). In 2014, this balance shifted with a little more than half of the world's population (54%) inhabiting urban areas instead. By 2050, the UN predicts that the rural-urban population distribution of the mid-twentieth century will be reversed with roughly one-third of the population becoming rural and two-thirds urban (UN, 2014). These statistics suggest that rural living has become less appealing over time.

During the 1980s, social scientists began to understand the connection between civic production and consumption behaviors and larger social, cultural, political, and environmental issues (Lyson, 2004). Cities faced with rapid urbanization can be unprepared for the pollution and strain on resources and infrastructure that accelerated sprawl can cause. The concentrated, collective power of cities is substantially positive considering the economic and political influence that they hold, along with ingenuity. Human capital (i.e. energy, skills, knowledge, innovation) is densely concentrated in cities creating significant opportunities for adaptation. Naturally, urban centers have become ideal grounds for studying and exploring efficiencies in the pursuit of seeking sustainability solutions (Lovell & Taylor, 2013). The challenge is to minimize the undesirable, typical consequences of cities and introduce innovative systems that offer sustainability and resilience into city planning and infrastructure.

The future is urban and, in the face of global climate change, the way that places transition to this state matters. Opportunities to change the current trajectory of anthropogenic climate change begin by acknowledging the connection between urbanization and the three pillars of sustainable development: economic development, social development, and environmental protection (UN, 2014). With city services and populations concentrated in smaller areas, there is a tremendous opportunity to have efficient, sustainable, and resilient hubs. For example, mass transportation could effectively eliminate single passenger vehicles when US cities finally decide to curb carbon emissions heeding the increasing siren of climate change science.

Climate Change

Cities are known, individually and collectively, as a major source of environmental degradation and stress (Lovell & Taylor, 2013). Urban hubs consume a vast amount of resources and generate massive waste streams. As facilitators of economic and population growth, cities alter natural land use and land cover increasing impervious surface area and reducing biodiversity (Grimm et al., 2008; Lovell & Taylor, 2103). Other significant impacts include altered biogeochemical cycles, highly modified and engineered hydrologic systems, and a significant increased contribution to climate change through greenhouse gas (GHG) emissions (Lovell & Taylor, 2013; Grimm et al., 2008). Facing climate change, municipal players are seeking effective solutions for new and existing urban areas to mitigate impacts and achieve a balance between various dimensions of sustainability (Ameen, Mourshed & Li, 2015).

As cities grow, there may be opportunities to improve infrastructure to support greater population densities. Climate change phenomena lead to hardships for agricultural productivity, challenging the ability to satisfy the increasing populations' universal need of access to a healthy diet. These problems will only be amplified as climate change continues to worsen. Incorporating urban agriculture into municipal infrastructure could address these problems by providing various environmental benefits including the creation of vibrant green spaces, improved air quality, preservation of cultivable land, and improved urban biodiversity (Mendes, Balmer, Kaethler, & Rhoads, 2008).

Without sustainable systems and strategies, the production and consumption behaviors from urban living can create mounting problem for cities (Grimm et al., 2008). "In urban areas, climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, …extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea-level rise, and storm surges" (IPCC, 2014, 16). Ecologists suggest that regional networks of organizations that focus on and target areas of the ecosystem for improvements contribute more to sustainability than individual organizations (Jennings & Zandbergen, 1995). As a unit, cities have the potential and responsibility to challenge the climate trajectory by curtailing their emissions and general negative influence on natural resources.

Social Justice

Longo suggests that because people in the US lack access to healthy food, the social justice critique of the dominant food system has the greatest potential to generate transformative change (2016). Transforming the contemporary food system is not a new

concept. There are already many places in the US that have rejected the dominant food regime. Trust and dependence on the prevailing system are waning, and many who can have already begun to seek food through alternative means. Interest in alternative food networks has increased over the past couple of decades because of a growing awareness of the amassing vulnerabilities of globalized, industrial agriculture and its dominant role in the American food system (McClintock, 2014; Lovell & Taylor, 2013). The existing capitalist model is heavily scrutinized for its disregard of social and environmental damages.

Food is commonly known as any nutritious substance consumed by an organism to maintain life and growth. The food that Americans base their diets on contributes significantly to their overall health. The World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being" (1948). According to statistics from the USDA, grocery stores (including supermarkets) accounted for 91% of total US food store sales earning $571,000,000,000 in 2011. Most Americans depend on grocery stores to feed themselves, and with all the choices available to them, there may be some serious reluctance by individuals to change this behavior. However, all food is not created equal, and grocery stores offer a host of problems that Americans could avoid if they adopted some new and improved food habits supported by alternative food systems. By prioritizing economic incentives over human and environmental health, grocery stores have become a huge factor in today's unsustainable but dominant American food system.

Urban agriculture requires more effort from individuals than visiting a grocery store and picking food from a variety of options cleverly displayed on shelves. But while

it may seem like grocery stores exist to make your life easier, they are part of a system that does not prioritize health. They are motivated by economic gain and capitalize on consumer desires. To illustrate this point, consider sugar. Americans love sugar and on average eat or drink 34 teaspoons of sugar a day (Raatz, 2012). USDA Dietary Guidelines recommend no more than ten teaspoons of sugar a day for adults (Raatz, 2012). Furthermore, sugar is an unhealthy desire that probably, by definition, should not even be considered food. From the USDA Agricultural Research Service, "Sugar contains calories and only calories; it provides no other nutrients - no protein, no vitamins and no minerals. When sugar calories replace more nutrient-dense foods such as fruits and vegetables, your whole diet (and, maybe, your health) suffers" (Raatz, 2012). However, 74% of packaged foods sold in supermarkets contain added sugar that inconspicuously appears on food labels under 60 plus different names (Ng, Slining & Popkin, 2012).

Even more troubling, food that contains ingredients that are not necessarily healthy but, no doubt, highly desirable are dishonestly marketed for containing nutrition benefits. A study conducted in all six grocery stores in Grand Forks, North Dakota examined packaged food labels. For reference, the population of Grand Forks is greater than Olympia, Washington, the case study city of this report, by approximately 7,000 people. This study specifically analyzed nutrition marketing on food labels. Nutrition marketing is health and nutritional information beyond minimum requirements used in television, radio, and food label marketing. Examples of nutrition marketing are phrases such as "reduced fat" or "good source of calcium" (Colby, Johnson, Scheett & Hoverson,

2010). This research is available from the USDA, and it is shocking. The study found that,

> 49% of all products contained nutrition marketing and of those, 48% had both nutrition marketing and were high in saturated fat, sodium, and/or sugar (11%, 17%, and 31% respectively). 71% of products marketed to children had nutrition marketing. Of those, 59% were high in saturated fat, sodium, and/or sugar content, with more than half being high in sugar. (Colby, Johnson, Scheett & Hoverson, 2010, 92)

This marketing is part of the dominant food system that is not helping consumers select foods low in saturated fat, sodium, and sugar (Colby, Johnson, Scheett & Hoverson, 2010). Instead, the food regime is falsely marketing food with ingredients that are profitable and cause addictive-like behavior in consumers.

Scholars and practitioners believe that the most compelling strategy for transforming the dominant food system is a social, or 'people-centered,' approach (Figueroa, 2015).

> The environmental movement is critical to our survival. Our house is literally burning, and it is only logical that environmentalists expect the social justice movement to get on the environmental bus. But it is the other way around; the only way we are going to put out the fire is to get on the social justice bus and heal our wounds, because, in the end, there is only one bus. (Hawken, 2007, 190)

Urban agriculture and other forms of alternative food markets emphasize a reconnection to food. Through this model, individuals have increased opportunities to become familiar with the process of growing food through direct participation or closer relationships with food sources via local markets. This creates a more sustainable scenario that prioritizes holistic health benefits, something that the dominant American food system clearly does not. Grocery stores are selling people food that is increasingly connected to illness and disease. People deserve to be treated as more than just consumers. A cultural shift surrounding our food system is necessary.

The increased consolidation of the food system takes control away from local communities and increases their vulnerability to food security (Lovell, 2010). Again, food security is "… a situation that exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life" (Lang and Barling, 2012, 313, as cited in FAO, 2009, 8). Food sovereignty is a precondition for food security (Lang & Barling, 2012) which may provide the means to "transcend" life under capitalism (Figueroa, 2015, 506); its approach most directly opposes the corporate food regime (Alkon & Mares, 2012). "Food sovereignty…prioritizes production for local and domestic markets, demands fair prices for food producers, and emphasizes community control over productive resources such as land, water, and seeds" (Alkon & Mares, 2012, 347). Developing urban agriculture in place of industrial, large-scale agriculture has the potential to fulfill the democratic imperative that people should be actively involved in the systems that affect them (McIvor & Hale, 2015).

Discussing food as a human right frames it as a universal concern rather than an individual problem. In the US, food links us to capitalism every day continually reproducing institutional and structural injustices (Figueroa, 2015). When food primarily exists as a marketplace commodity, people who struggle with income insecurity also suffer food insecurity (Longo, 2016). Forty percent of the food grown in the US goes to waste (Longo, 2016). Therefore, access to nutritious food has more to do with income inequality than stock or the geographical placement of healthy food sources. "The issue of hunger and lack of access to healthy food will not go away unless there is a structural solution" (Longo, 2016, 35). Globalization compromises local economic resilience and

autonomy by creating dependence on foreign goods (Grewal & Grewal, 2011). This has created a “fundamental shift in food culture from one based on necessity and restricted choice (dictated by seasons and local availability) to one based on desire and choice (dictated by retailer contracts and price)” (Lang & Barling, 2012; Burch & Lawrence, 2007). Again, developing urban agriculture in place of globalized, industrial agriculture has the potential to connect people to the systems that affect them (McIvor & Hale, 2015; Longo, 2016) creating the space for people to become healthier.

Scholars and practitioners suggest that the potential social benefits of urban agriculture are vast. These benefits include: "vibrant public spaces, community capacity building, participatory decision making, enhanced sense of place, food security, community safety, physical activity, social inclusion, and improved health and nutrition” (Mendes, Balmer, Kaethler & Rhoads, 2008). However, McClintock warns that organized urban agricultural projects, although well intended, bolster neoliberalism when enforcing self-sufficiency and personal responsibility discourses (2014). McClintock argues that a patchwork of organizations focused on urban agriculture may unevenly deliver intended services that were once provided by the government (2004). This may ultimately fail to challenge the injustices of the existing food system (McClintock, 2014). It is important when designing urban agriculture, or other alternative food systems, citizens are given choices that are not all market-based. Increased concern for civic well-being draws enthusiasm for urban agriculture’s potential to empower communities, strengthen social capital, and promote democratic habits and norms (McIvor & Hale, 2015). However, citizens must be involved in urban agriculture beyond buying practices if they expect transformative change. This describes a complete reconnection to food

through every process of the food system, a reality that involves drastic behavior changes for most Americans.

Environmental Quality

Emphasis on sustainable agriculture is becoming more mainstream in the US today as consumers are becoming more concerned with long-term environmental impacts (Osteen et al., 2012). American farm agencies such as the USDA and the Natural Resource Conservation Service (NRCS) have conducted exhaustive research and developed programs to incentivize best management practices for natural resource management. However, the following is from a USDA report on environmental indicators, "Long-term agricultural productivity is driven by innovations in animal and crop genetics, chemicals, equipment, and farm organization" (Osteen et al., 2012, 13). This could be a warning signal about the agency's holistic understanding of the sustainability of American food systems. Growing interest in sustainable agriculture is great, but simultaneously supporting unsustainable practices will not result in effective change. Additionally, money for agricultural research and development in the US is spent more on marketing and genetically engineered seeds than on natural resources and nutrition and food safety (Osteen et al., 2012). While the growing concern of environmental impacts is federally recognized, this evidence illustrates the persistence of dominant industrial agricultural practices in America. In 2007, 51% of total US acreage was used for agricultural purposes (Osteen et al., 2012). The importance of sustainable agriculture is essential, and its success will continue to influence our environmental impact as a country.

Sustainable farming practices are different from conventional methods which rely on synthetic inputs for maximum production and economic gains. Pest management, for instance, is something that every farmer must confront. Conventional producers use synthetic chemicals and rely on genetically engineered insect-resistant and herbicide tolerant crops as a defense (Osteen et al., 2012). In contrast, sustainable agriculture utilizes a more environmentally sound approach to the same problem through practices such as "crop rotation, adjustments to planting and harvesting dates, and the use of beneficial organisms" (Osteen et al., 2012, 21). Conventional methods introduce harmful chemicals into the environment while sustainable methods use natural resources to their advantage. Pesticides are most readily applied to commodity crops grown by large-scale production operations: corn, soybeans, wheat, cotton, and potatoes (Osteen et al., 2012). "Corn and soybeans are the two largest U.S. commercial crops in terms of both value and quantity" (Schnepf, 2017, 4). Furthermore, corn accounted for 46% of US fertilizer consumption in 2010. Because of environmental risk, nutrient management is a sector of agriculture that has tried to dial in excessive fertilizer application. Misapplication can result in soil, water, and air pollution (Osteen et al., 2012). Ironically, corn is using a significant amount of natural resources and creating negative environmental impacts but producing goods which we do not, or should not, eat. It is beyond the scope of this paper to describe the negative environmental effects of our meat-heavy American diets, but corn is grown for nonessential products including high fructose corn syrup (sugar substitute), biofuels, and animal feed (Osteen et al., 2012; Schnepf, 2017).

Soil and water are two of the most valuable natural resources for successful agriculture. Recently, conventional agriculture has adopted better practices for

maintaining them. For water, this is a result of increased demand and shrinking supplies (Osteen et al., 2012, 29). None the less, irrigated agriculture consumes the greatest portion of US consumptive water use (Osteen et al., 2012). Water quality is connected to healthy agricultural soils as degraded soils contribute to erosion and, consequently, water pollution. Sustainable soil management practices can prevent significant environmental contamination. Soil conservation practices in agriculture have increased in acreage across all major crops (Osteen et al., 2012). One factor of healthy agricultural soils is crop rotation. Unfortunately, as cited from a USDA report, "Market factors—including relative commodity prices and input prices—greatly affect crop rotation decisions" (Osteen et al., 2012). This demonstrates a huge problem with the dominant food system: economic incentives are more influential than environmental longevity. This is not sustainable.

Urban agriculture is a movement that challenges the dominant food system as a sustainable alternative. The purpose of urban agriculture goes beyond generating income. It inherently requires community participation and environmental stewardship and is an improvement over the dominant food system that is dependent on toxic inputs and non-renewable resources. The size of an urban area is a limiting factor for urban agriculture. Therefore, urban agriculture relies on the innovative use of land and space to produce goods for the local population. In the US, the average American meal travels an estimated 1,500 miles from field to plate (DeWeerdt, 2017). Food that travels a shorter distance from field to plate produces less GHG emissions that contribute to and threaten agricultural sustainability (Mendes, Balmer, Kaethler & Rhoads, 2008). Urban agriculture provides a direct connection between people and their food. Because of

integrated relationships and holistic understanding, urban agriculture creates ecological and community sustainability and resilience. The reality of a growing global population may make it hard to alleviate large-scale, industrial agriculture entirely from the equation, despite its social and environmental injustices. However, the large production model must extend its value system to include factors of sustainability for resilience in the face of growing populations and climate change. Water stress, pressures on land use, and social justice must be considered (Lang & Barling, 2012; Lang, 2010; Lang, Dibb & Reddy, 2011). When they are, the affordability of large-scale, industrial agriculture will decrease, and the organization of the dominant food system in America may be persuaded to evolve.

This chapter provided a brief history of urban agriculture as a movement followed by a discussion of some supportive concepts as the theoretical framework behind its potential. Urban agriculture was discussed in relationship to the major motivations advocating for a shift of the dominant food system. Current trends in American agriculture were used to discuss additional incentives including environmental sustainability and social justice, two concepts not widely supported by the dominant model. The next chapter will explain the methods for my case study of Olympia, Washington to inform my research and explore the challenges and opportunities associated with incorporating urban agriculture into municipal planning and policy. My case study examines the existing state of urban agriculture in Olympia, Washington and seeks to understand the realistic potential of expanding it.

3. METHODS FOR CASE STUDY OF OLYMPIA, WASHINGTON

I conducted a case study of Olympia, Washington to inform my research on urban agriculture. I wanted to explore how American dependence can be shifted away from globalized, industrial agriculture to something more sustainable. Studying the multifunctional benefits of urban agriculture, I became interested in how it can be permanently integrated into cities within the US. Places experimenting with urban agriculture worldwide show increased success and permanence when municipal governments are involved in the integration of new systems such as urban agriculture (McClintock, 2014; Mendes, Balmer, Kaethler & Rhoads, 2008). My research adds to existing knowledge by exploring the current state of urban agriculture in Olympia, Washington as well as its realistic potential for expansion. My research also contributes to the understanding of the challenges and opportunities associated with incorporating urban agriculture into municipal planning and policy using Olympia as a case study.

Olympia has a well-established, existing network of urban agriculture projects containing many individuals and organizations who support local food and sustainability. Based on these premises, my hypothesis was that Olympia has exciting potential to expand urban agriculture by integrating it into municipal planning and policy making. The Olympia municipality contains long-term planners who are already preparing for the future and therefore, I assumed they would be receptive and willing to discuss strategies for achieving increased community resilience through urban agriculture. My research offers insight into individual attitudes beneficial for understanding the potential for establishing food security as an element of community resilience.

I conducted formal interviews from different shareholders in Olympia to inform my research. I initially reached out to a total of 41 individuals to participate in my case study of urban agriculture in Olympia. Out of the 41 people that I contacted, 14 agreed to participate as interviewees resulting in an overall 34% participation rate. The participants are divided into two main groups. The following paragraphs describe these groupings as well as participant recruitment.

One of the interview groups, Group 1, is made up of individuals with municipal experience relevant to my research. Throughout this report, the words municipality and City refer to the City of Olympia municipal government and its employees unless explicitly stated otherwise. Group 1 consists of City planners and members of neighborhood planning groups. Starting in June 2016 I worked with the City of Olympia as a Geographic Information System (GIS) intern. After my internship, I stayed on as a part-time employee under the supervision of Eric Christensen, Planning and Engineer Manager for Public Works Water Resources. I initially reached out to Mr. Christensen with my research questions, and he helped me to identify appropriate individuals within the City with whom I could gather data relevant to my project. From there, I recruited participants for Group 1 from City Hall and set appointments for interviews. Additional contacts were recruited from input revealed by participants through interviews. Interviews were conducted in person and Appendix 1 provides an example of the typical questions used to guide interviews.

The other group, Group 2, consists of urban agriculture practitioners, volunteers, activists, teachers and business owners. I initially reached out to a well-connected, local agricultural entrepreneur who suggested several resources based on the scope of my

research. My list of references naturally grew as I began to collect interviews and had an expanded understanding of Olympia's existing urban agricultural network. To eliminate bias, I sent an email to all the vendors listed on the Olympia Farmers Market website as well as all the Olympia farmers listed on the Tilth Alliance website. However, the research participants from Group 2 were primarily recruited by word of mouth. Interviews were conducted in person and Appendix 2 provides the questions developed to guide interviews with participants from Group 2.

There is some participant overlap between these two groups. Both major groups contributed to my overall understanding of the current extent of urban agriculture within and surrounding Olympia, Washington. The interviews I conducted averaged about forty minutes in length and were semi-structured. Consequently, interviews were individually unique, allowing for theory development about the potential of an expanded urban agricultural system in Olympia. Participant involvement was anonymous. Each contributor is associated with a unique, single letter identifier used to cite the information they provided. From the interviews, I was also able to gauge the interest and support for expanding urban agriculture by recording common and reoccurring themes as they emerged from the data. This is consistent with grounded theory, a methodological technique that has been used in the existing literature for studies similar to mine (Alkon & Mares, 2012; Glasser & Strauss 1967).

Urban agriculture offers many potential benefits to urban areas (Mendes, Balmer, Kaethler & Rhoads, 2008; King, 2008; Lovell, 2010, Chen 2012; Grewal & Grewal, 2011). By interviewing agricultural practitioners as well as municipal players, I was able to collect data that allowed me to compare perspectives on urban agriculture in Olympia.

To obtain this information from Group 1 participants, I asked if they were familiar with urban agriculture within the City. I questioned whether they were directly involved through their position and probed about the potential to expand City services to include increased access to local agricultural goods. What I found is that, while the City of Olympia is supportive of urban agriculture, its involvement or role in the issue is not largely one of leadership.

To understand the potential of growth for urban agriculture within Olympia, I asked Group 1 participants if urban agriculture is a designated land use on City maps. I enquired about the potential of vacant lots and other underutilized space including the potential of repurposing run-down facilities for new use. I found that the City has established some beneficial policies for urban agriculture in Olympia but has also been criticized by some of the participants for their lack of action on the topic. When I questioned Group 1 about the willingness of Olympia residents to work collaboratively with the City, responses varied.

The local food system and urban agriculture are dominated by several third-party stakeholders that form a sizeable support network. I asked Group 2 participants to describe their role in the local food system and asked about their experiences with the subject over time. I inquired about their opinions of getting the municipality to more fully integrate urban agriculture into planning and policy and questioned whether they thought this was necessary given the existing support network outside of municipal structure. There were some mixed responses to these issues, but most participants from Group 2 did convey limitations that they thought the municipality could address. I also asked this group about communication from the community surrounding the topic of food. I

questioned them about the average Olympian's knowledge and interest in urban agriculture. I found that people in Olympia are interested in urban agriculture, but that interest is focused in seemingly isolated ways. Meaning that citizens and organizations are fighting for and supporting local food in different ways without a clear unifying direction or voice. I also asked Group 2 about their predictions for the future of urban agriculture in Olympia, and most of them were positive, despite some limiting and unpredictable factors. These discussions revealed opportunities and challenges for convincing the municipality to adopt a more integral role in the expansion of urban agriculture in Olympia. The next chapter discusses these findings in detail.

4. RESULTS AND DISCUSSION

Through semi-structured interviews, I collected data to inform my exploration of Olympia, Washington's local food system. This data enhanced my understanding of the existing state of urban agriculture in Olympia. Through data collection and research, I learned about the challenges and opportunities of getting the municipality of Olympia involved in establishing and expanding local, urban agriculture. Interview participants presented insightful information about the existing state of urban agriculture, the motivations and interests that recruit citizen participation, the obstacles associated with a robust local food system, and the opportunities and predictions for how the local food system will evolve over time. Fourteen participants contributed the supporting data for this project. This section cites and explains the findings of that data.

The potential to expand urban agriculture in Olympia through municipal policy and planning was expressed through reoccurring opportunities and challenges within the data. The Olympia-specific opportunities of expanding urban agriculture by these means are: 1) supportive policies are already in place, 2) there is a sizable network of supporting organizations, 3) sustainability is culturally significant, and 4) land and water availability are favorable for food production. In opposition, there are also several notable challenges of expanding urban agriculture through municipal integration. The Olympia-specific challenges identified through interview data analysis are: 1) competing public concerns and limited City resources, 2) there is a lack of awareness and education about food systems, 3) future challenges, and 4) land and sunlight are limiting factors for food production. Table 1 presents these findings as the major themes that emerged from the data.

Table 1. Major Themes for Municipal Integration of Urban Agriculture in Olympia, WA

Benefits	Challenges
Supportive policies are already in place	Competing public concerns and limited City resources
Sizable network of supporting organizations	Lack of awareness and education about food systems
Sustainability is culturally significant	Future challenges
Land and water availability are favorable for food production	Land and sunlight are limiting factors for food production

These themes are complex and not solely opportunities nor challenges. Instead there is overlap between categories due to exceptions and caveats that will be explained in detail as each theme is discussed throughout this section. This section will present and explain the results of my research revealing the opportunities and challenges for the municipality to adopt a more integral role in the expansion of urban agriculture in Olympia. Additional benefits and challenges associated with urban agriculture will be presented as communicated through interview participants.

Opportunity 1: Supportive Policies Are Already in Place

Comprehensive Plan

There are clear ways in which the existing municipal framework supports urban agriculture. In Olympia, a long-standing, guiding document called the Comprehensive Plan outlines goals and policies that "provide high-level direction for actions the City and other community members may take" to assimilate the vision and values of Olympia citizens (Olympia Comprehensive Plan, 2014). The Comprehensive Plan is a twenty-year plan developed with significant community input. It is mandatorily updated at least once

every eight years to accurately reflect the community it serves. The Comprehensive Plan is typically amended annually for Olympia. The most current twenty-year, or periodic, update for Olympia's Comprehensive Plan was adopted in December 2014 with yearly amendments being added every year since. The Comprehensive Plan vows to maintain and enhance the quality of life in Olympia while acknowledging the projected growth for the future (Olympia Comprehensive Plan, 2014). A City of Olympia web page introducing the Comprehensive Plan explains the following regarding Olympia's future.

> Most readily-buildable parcels in the City are already developed to some degree. Thus, over the next 20 years, we expect to see more infill and redevelopment of existing developed areas. This presents our community with opportunities to restore degraded environments, create vibrant pockets of social and economic activity, and target investments to make more efficient use of and improve existing infrastructure. (Olympia Comprehensive Plan, 2014)

According to the literature, urban agriculture presents cities with an opportunity for integrating multifunctional landscapes. This has the potential to not only provide a strategy for efficient land use but also promotes social and economic activities (Figueroa, 2015; Lovell, 2010; McIvor & Hale, 2015; Grewal & Grewal, 2011). In this way, the language from the Comprehensive Plan, describing the long-term goals and values of Olympia, signals an opportunity for urban agriculture to meet evolving needs of the City.

Relevant to this study, Volume 1 of the Comprehensive Plan contains ten chapters. Goals are established within each chapter stating what the City hopes to achieve as a community. Under each goal, several policies are listed describing how, in a broad sense, the goals will be met (Olympia Comprehensive Plan, 2014). Some policies established through the Comprehensive Plan support urban agriculture in Olympia. Participant E, who is familiar with the Comprehensive Plan, brought these policies to my

attention (personal communication, 2017). The next several paragraphs examine each of them further.

Comprehensive Plan, Chapter 4: Natural Environment, Goal GN8

Chapter 4 of the Comprehensive Plan is titled 'Natural Environment.' One of the goals, GN8, within this chapter states "Community sources of emissions of carbon dioxide and other climate-changing greenhouse gases are identified, monitored and reduced" (Olympia Comprehensive Plan, 2014). This goal lists seven policies, one of which is directly relevant to this study. Policy PN8.7 states that the City will, "Reduce energy use and the environmental impact of our food system by encouraging local food production" (Olympia Comprehensive Plan, 2014). For reference, Appendix 3 contains the full text for GN8 and all seven of its supporting policies.

This policy communicates that the City of Olympia is aware of the environmental repercussions of the dominant globalized, industrial food system which relies on fossil fuels and subsequently generates GHGs. It also communicates an understanding that an alternative local food system could adequately address this problem. This presents an opportunity for the municipality of Olympia to champion urban agriculture and potentially adopt meaningful plans and actions to do so. However, the word 'encourage' in the policy language signals that the City does not have established requirements to fulfill this plan. The City of Olympia explains the intention behind the use of this word in an introductory chapter of the Comprehensive Plan. The City justifies the use of 'encourage' or 'support' in place of more prescriptive words by explaining that they allow for flexibility in implementing policies "through incentives or partnerships rather

than regulation" (Olympia Comprehensive Plan, 2014). Whatever the reasoning, the use of these words also enables the City to fulfill policies without any action. In this way, the use of the word 'encourage' in this policy is both problematic and advantageous for the prospect of municipal integration in support of urban agriculture.

Comprehensive Plan, Chapter 5: Land Use and Urban Design, Goal GL25

Chapter 5, Land Use and Urban Design, of the Comprehensive Plan, contains additionally relevant policies for this study. Goal GL25 states, "Local Thurston County food production is encouraged and supported to increase self-sufficiency, reduce environmental impact, promote health, and the humane treatment of animals, and support the local economy" (Olympia Comprehensive Plan, 2014). There are 11 policies in place to support GL25. These policies are directly relevant to this study but will not be produced in detail here. Appendix 4 provides full descriptions of all 11 policies. None of these policies explicitly use the phrase urban agriculture although they do describe many of the elements achievable through an urban agricultural system. The policies encourage home gardens and for-profit gardening and farming in the community (including food-producing gardens on rooftops), commit to promoting a local food economy, and identify the key role of partnerships to provide education and information regarding the importance of local food. Three of the policies, PL25.3, PL25.7, and PL25.8, under GL25 define opportunities the municipality has identified for committing themselves to an expanded urban agricultural food system.

Policies under goal GL25 supporting local Thurston County food production

GL25, Policy PL25.3

Policy PL25.3 discloses the City will "Collaborate with community partners to ensure that everyone within Olympia is within biking or walking distance of a place to grow food" (Olympia Comprehensive Plan, 2014). According to the literature, unequal access to healthy food is often the result of whole foods being far more expensive than convenient, fast foods (Figueroa, 2015). Convenient, fast foods typically do not have the same nutritional value as whole foods. This is complicated by the lack of time people feel like they can afford to devote to feeding themselves and their families. As a result, many Americans are malnourished and suffer resulting diseases and sickness (Figueroa, 2015; Chen, 2012). Urban agriculture is a possible part of the solution to this growing problem because it supplements citizens' diets and incomes with conveniently, locally grown food (Figueroa, 2015; Chen, 2012). This policy supports the concepts of both food security and food sovereignty by communicating an understanding of the importance of access to space for food production.

Policy PL25.3 supports urban agriculture by asserting that everyone has access to a place to grow healthy food. This brings some meaningful choice back to consumers. But many other factors should be considered together when ensuring efficient utilization of these spaces. Evaluating access to these places must take into account availability regarding income as well as physical placement. Space alone does not make healthy whole foods appear, but it is an essential element. The municipality employs planners who seem to be in the best position to preserve City space for uses determined or at least

influenced by citizens. Growing healthy food takes time and energy and is not nearly as convenient as some other options. However, it offers many additional benefits that contribute significantly to holistic human health and overall community sustainability. The scale at which food is grown may be critical to making urban agriculture viable for everyone including hard working, time constrained families. This will be discussed further as a final thought in Chapter 5. A transition to a system where convenience foods cannot compete with whole foods will require a cultural shift made possible by public education and awareness. This will be discussed further later in this chapter under Challenge 2 (Education and Awareness).

Participant F made disapproving remarks about the City's failure to progress on this policy, "I don't believe they are being intentional about implementing that part of the Comprehensive Plan" (personal communication, 2017). Very little of the purposed plans related to urban agriculture and food systems made it from the planning process to the action plans, according to Participant F (personal communication, 2017).

> There's money to write plans and it gets everybody excited to do a vision and write a plan but then the plan just gets put on a shelf somewhere and doesn't become a breathing document that particularly guides budget development…I always think in terms of municipal policy, if you want to know what's important you'll look at where you're spending the money. They're [the City] not spending anything on urban agriculture. (Participant F, personal communication, 2017)

However, as communicated through a follow up conversation with an interview participant, citizens that originally pushed for this policy to be adopted have not forgot its existence and are determined to see it realized.

GL25, Policy PL25.7

Another Olympia municipal policy under GL25 supporting urban agriculture is PL25.7 which states the municipality will "Recognize the value of open space and other green spaces as areas of potential food production" (Olympia Comprehensive Plan, 2014). The City has made some progress towards meeting this policy. There are currently two community gardens established within Olympia managed by the municipal Olympia Parks, Arts, and Recreation Department (OPARD). They are the Sunrise and Yauger Community Gardens where plots are available to rent for fifty cents per square foot (Participant M, personal communication, 2017). The Sunrise Community Garden is in Sunrise Park neighboring a US Department of Housing and Urban Development (HUD)-subsidized low-income apartment complex. The municipally supplied amenities at this garden include 55 garden beds, a tool shed, a compost system, and a community strawberry bed (Community Gardens, 2016). The Yauger Community Garden has 79 garden beds, nine of which are Americans with Disabilities Act (ADA) accessible, and includes: a toolshed, a compost system, a covered seating area, and community blueberry beds (Community Gardens, 2016).

The City deserves to be commended for the social equality the garden plots available at these two community garden sites are conscious of and strive to achieve. "That place to garden has the same amenities for whatever gardener you are. The garden that you sign up for is the same that everyone is getting. Everyone has the same access to the same goods" (Participant M, personal communication, 2017). A community driven scholarship fund is even available to subsidize space for gardeners who desire a plot but may not have the means to rent one at full price (Participant M, personal communication,

2017). Both gardens exist on the west side of Olympia within two miles of each other, so they are probably not being fairly utilized by citizens throughout the city. These gardens do benefit from consistent and maximum utilization year after year.

OPARD's community gardens succeed at two things: providing spaces for people to garden and creating a space that gives citizens the opportunities to build community (Participant M, personal communication, 2017). Opportunely, Councilman Clark Gilman, and potentially one other councilperson, have expressed interest in community gardening. Having this interest on the Olympia City Council is a positive sign that people in influential positions could be persuaded to increase support for urban agriculture in Olympia. Another participant has heard that citizens from the community gardens have voiced an interest in more human interaction opportunities (Participant H, personal communication, 2017). Community building is essential for sustainability and resilience, and urban agriculture provides the space for these interactions (Longo, 2016; King, 2008; Chen, 2012). The community gardens in Olympia need to connect the right elements to obtain the benefits that urban agriculture offers.

Participant M voiced a major limitation of the OPARD community gardens.

> I would say what it [the community gardens] doesn't succeed at is that it's not a garden for producing food for the masses. All the garden beds are separated and divided, so the amount of food that you can grow in your space is limited. So as far as having an urban agricultural program where you are making large amounts of food that are available, that's not something that the community garden achieves. (Participant M, personal communication, 2017)

The reality of these spaces for potentially valuable food production seems to contrast what policy PL25.7 appears to establish. Urban agriculture, if designed to do so, can be significantly productive (Grewal & Grewal, 2011) and strengthen community

relationships (McIvor & Hale, 2015; Lovell, 2010, Carolan & Hale, 2016; King, 2008; Mendes, Balmer, Kaethler & Rhoads, 2008). The community gardens within Olympia are missing these opportunities.

The 2010 Parks Plan vowed to one day build three to five community gardens by 2020 (Participant M, participant communication, 2017). It is 2017, and currently, two community gardens function as intended. However, OPARD has not developed a community garden since 2011 when the garden at Yauger Park was established. Garden Raised Bounty (GRuB), a non-profit in Olympia, created the community garden at Sunrise Park (Participant M, participant communication, 2017). The City became managers of this garden in 2011 after it had been in production for several years. Therefore, the municipality has made only slight progress towards upholding policy PL25.7 to "recognize the value of open space and other green spaces as areas of potential food production."

There is an opportunity for growth as evidenced by the active participation at the existing municipal community gardens and the City's ownership of a significant amount of land within Olympia. The available land will be discussed in more detail later in this chapter under Opportunity 4. No substantial effort on the part of the municipality has been made to expand community gardening space since 2011. Despite community interest in existing municipal facilities, this subject seems to be a low priority for the City, judging from the minimal progress to fulfill policy PL25.7. Factors behind this inattention may be the present housing composition within Olympia as well as the distraction of other competing public interests. Olympia's housing structure will be discussed further in this chapter under Opportunity 4 (Availability of Natural Resources

is Favorable to Food Production) as well as under Challenge 3 (Future Challenges). Competing public interests will be explained in more detail under Challenge 1 (Competing Public Concerns and Limited City Resources).

GL25, Policy PL25.8

The third policy under Land Use goal GL25 that provides opportunities for municipal integration of urban agriculture is PL25.8. This policy declares the City will "Work with community organizations to develop strategies, measure, and set goals for increasing local food production" (Olympia Comprehensive Plan, 2014). The City of Olympia is working with third party organizations on local food, but not driving the conversation (Participant M, personal communication, 2017). However, these third-party organizations often struggle with funding and sometimes with waning participation due to burnout (Participant D, personal communication, 2017; Participant H, personal communication, 2017; Participant L, personal communication, 2017). Two participants revealed that food projects did not receive grant funding last year (Participant B, personal communication, 2017; Participant F, personal communication, 2017). This may be a serious cause for concern for non-profits which rely heavily on grant funding to support their programs. The localization of food requires financial capital, and the literature suggests that municipal integration may be a key factor in mobilizing state and federal resources (Grewal & Grewal, 2012). Lovell suggests that municipalities have a unique large-scale perspective that positions them to coordinate activities across fields (2010). And McClintock purposes that municipal involvement supports a paradigmatic shift away from industrial food systems when food and public health are discussed alongside city planning (2014). For these reasons, the City of Olympia will need to take more of a

leadership role than it is currently if urban agriculture is to expand in a way that is transformative and challenges the dominant model.

Recognized neighborhood associations (RNAs) are organizations that the City of Olympia work with for improvement projects. The neighborhood matching grants program annually funds projects that "foster civic pride and environmental sustainability, enhance and beautify neighborhoods, expand citizen involvement, and promote the interests of the Olympia Community" (Neighborhood Programs, 2017). In the past, money has been awarded to RNAs for neighborhood gardens. In 2016, the Bigelow Neighborhood received money from the program to clear blackberries and plant fruit and nut trees (Participant I, personal communication, 2017; The Bigelow Neighborhood, 2017). This program provides an avenue for the City to fulfill policy PL25.8, to "Work with community organizations to develop strategies, measure, and set goals for increasing local food production" (Olympia Comprehensive Plan, 2014).

Three out of 14 participants, 21%, directly criticized the City of Olympia's efforts towards the development of urban agriculture and a local food system. Participant D described conversations with the City about support for community gardens, mapping food plots, and planting fruit trees but said, "There is no organized or staffed program that I am aware of that deals with any of that in any consistent way" (personal communication, 2017).

> Even basic things that we thought we're low hanging fruit like they we're going to develop so many community gardens. Well they've developed one and a half community gardens. At this, point they should have done 4 or 5 based on their own Parks Planning document. I have some frustration and I think others have some frustration about the pace in which they're actually taking meaningful actions to implement these visions that were broadly agreed upon by the community. (Participant F, personal communication, 2017).

Participant H expressed a desire for collaboration with the municipality particularly citing financial and staffing support (personal communication, 2017). This interviewee also explained an experience they had with the City that was not advantageous. In this scenario, a neighborhood group proposed an area for garden space but was denied because of conflicting uses of the space. To accommodate the citizens, the City choose a different site for a garden that was, unfortunately, completely shaded and unsuitable for growing food. The City needs to be able to identify space for urban agriculture that makes sense (Participant H, personal communication, 2017). Dedicating a position to local food and employing someone with experience for oversight would be beneficial for the City.

Growth Management Act

In 1990, the Growth Management Act (GMA) was passed for the state of Washington because of rapid growth in the region. As a state, Washington recognized that unchecked growth was problematic and causing some unwanted side effects, such as hindering traffic congestion (Participant E, personal communication, 2017). The GMA was passed as a guiding document to ensure that areas experiencing population growth and development were doing so intentionally according to a plan that sought to protect natural resource lands of long-term significance: forestry, agriculture, and mineral resource lands (Participant E, personal communication, 2017).

> For a long time, Olympians have been wrestling with this issue of sustainability and trying to look ahead to what's coming down the pipeline and creating those growth management plans and growth management areas. Which is not without its own controversy but I think it has also been a good idea. Because you can look at Lewis county as an example that doesn't have that kind of management and there's growth and sprawl happening everywhere… (Participant K, personal communication, 2017)

Since its adoption in 1990, the GMA has been directing the Comprehensive Plan for Olympia. "Not every city and county is fully planning under the Act but most populated areas are" (Participant E, personal communication, 2017). As part of this framework, the state has the chance to review and comment on Comprehensive Plans but do not usually appeal them unless they conflict with a state-wide precedence. Therefore, "Growth management in Washington is considered a bottom up approach. We have a framework that's established in the GMA but every city and county gets to decide how they are going to do that at the local level" (Participant E, personal communication, 2017).

The basic strategy of the GMA is to encourage compact urban growth and reduce sprawl, which are collaboratively achieved. This includes developing and building more onto the existing infrastructure while protecting land outside of the more densely-populated areas, such as Olympia. For Olympia in the future, this will mean building up instead of out (Participant E, 2017). Currently, the City of Olympia is dominated by single family residences which may be forced to change to meet the goals of the GMA into the future (Heartland, 2010). And currently, urban agriculture is 'encouraged' and 'supported' within the City of Olympia but not necessarily protected or prohibited for that matter. It seems that for the time being this framework is working well for the region. However, there are a couple of cautionary details that should be considered.

From the prescriptive language used in the GMA and the non-prescriptive

language used in Olympia's Comprehensive Plan, agricultural production is prioritized in rural areas outside of the city limits. This makes sense because of the efficiency that comes with growing food at a large scale where the built environment is minimal. In that regard, it is great that rural agricultural lands are protected because that is certainly not the case everywhere. Washington is fortunate to have the framework in place to see that soil, for instance, is preserved to sustain long-term agricultural capabilities. However, the GMA overlooks the needs of the people in growing urban areas.

Successful alternative food systems challenge the dominant model by focusing on local food (McClintock, 2014; Alkon & Mares, 2012; Chen, 2012; Longo, 2016; Grewal & Grewal, 2011). For Olympia, it is reasonable to extend the definition of local food to include the surrounding rural areas, perhaps even all of Thurston County. This localization is still ecologically sustainable. However, for local food to contribute to economic and social sustainability in Olympia, space for urban agriculture must be provided within the City limits. Growing food solely in rural areas without prioritizing space for it in urban ones may further the gap in the disconnect that people have with their food. This may be counterproductive to the cultural movement necessary to connect people with healthy food and the physical and mental health of their bodies. There are multi-functional benefits for citizens personally involved with the production of their food (McClintock, 2014; Alkon & Mares, 2012; Chen, 2012; King, 2008; Grewal & Grewal, 2011). Isolating agriculture to rural areas may prevent this from ever being realized in urban communities. While I do believe the GMA has been great for the region until this point, l would offer that it should not serve as an excuse to limit significant agriculture within urban areas moving forward. The value of urban agriculture must be

established before Olympia experiences a substantial influx of people placing higher demands on land within the city.

Opportunity 2: Sizable Network of Supporting Organizations

In Olympia, there is an extensive network of organizations working on local food issues which collectively possess vast resources in the form of agricultural skills and knowledge. "The advantage is, Olympia has a lot of educated people in it that are skookum about these issues and so there is a lot of support" (Participant K, personal communication, 2017). The interest in local food is strong and the network of advocates in favor of healthy, local food provides an opportunity to continue the expansion of urban agriculture in Olympia. As previously mentioned, the City of Olympia has established policies to collaborate with these organizations to increase local food production. The substantial existing network creates a realistic opportunity for the municipality to fulfill these policies. As stated by one interview participant, "The thing that the city has, and they're lucky to have, is a lot of community based organizations that provide a lot of food support here in Olympia" (Participant C, personal communication, 2017). In fact, 14 out of 14 participants mentioned at least one organization within this local food network that supports the City in some capacity.

The local food support network that exists in Olympia extends to Thurston County and even to Washington state in some instances. Non-profits, neighborhood groups, vendors, farmers, entrepreneurs, and institutions such as schools and churches are some of the organizations and individuals that compose this network. Table 2 provides a list of all the network entities identified through participant interviews and provides some

additional details about each organization including their mission and role with local food. The existing network successfully supports local food in many ways. However, this is best illustrated and expressed through Table 2 as the list of organizations identified during interviews is quite extensive.

Table 2. Organizations Identified as Players within Olympia's Local Food Network

	Name. Followed by (if applicable) Mission (M:). Relevance or role (R:). **Web source (W:).**
1	**Alliance for a Healthy South Sound.** M: "Support coordinated and collaborative decision-making aimed at restoring & protecting ecological & socio-economic health of South Puget Sound". R: The Sound provides habitat for shellfish and salmon (local food source for surrounding areas). **W: http://www.healthysouthsound.org/.**
2	**Black Lake Organic Nursery & Garden Store.** M: "We advocate & teach about using Mineral Augmented Organic gardening for nutritionally superior plants & a healthier you." R: Valuable source of knowledge on organic fertilizers & gardening since 1980. **W: http://www.blacklakeorganic.com/.**
3	**City of Olympia City Council.** Composed of 7 members including the mayor; governing body voting on policy for Olympia. R: Land Use & Environment Council Committee involved with Community Development, Land Use, Planning, Utilities, Environment, & Sustainability which are all important aspects of expanding urban agriculture in Olympia. **W: http://olympiawa.gov/city-government/city-council-and-mayor.aspx.**
4	**City of Olympia Parks, Arts, & Recreation Department (OPARD). R:** Manage an estimated 1,000 acres of land within Olympia some of which could be converted into space for urban agriculture if pushed for by citizens. **W: http://olympiawa.gov/community/parks.aspx.**
5	**Olympia Coalition of Neighborhoods Association.** M: "To provide a forum for individuals & community organizations to discuss important topics with neighborhood association leaders, & to ask individual associations for support and help." R: Neighborhood associations act as avenues for citizen issues to be brought to municipal decision makers. **W: http://www.olympianeighborhoods.org/.**
6	**The Commons at Fertile Ground.** Open permaculture space downtown. M: "To cultivate urban sustainability on a neighborhood scale." R: Building community resilience using garden space. **W: http://commons.fertileground.org/.**
7	**West Olympia Community Visioning Group.** M: "To improve quality of life in West Olympia community through development of public recreational and/or educational facilities such as parks, libraries, and museums." R: Urban agriculture can help achieve this mission. **W: http://www.westolycvg.org/.**
8	**Crazy Faith Outreach.** M: "Going to where the people are and loving the hell out of them!" R: Providing free food to homeless Olympia citizens. **W: https://iamcrazyfaith.com/.**
9	**Eastside Urban Farm and Garden Center.** M: Increase local food resiliency & foster community stability. R: Promoting urban agriculture by supporting backyard gardens. **W: http://urbanfarmoly.com/.**
10	**Edible Forest Gardens.** Local non-profit organization and nursery. R: "Planted more than 60 Edible Forest Gardens in yards, schools, community gardens, neighborhood pathways & businesses around Olympia over the past 8 years." **W: http://oly-wa.us/edibleforestgardens/index.php.**
11	**Enterprise for Equity.** Non-profit organization. M: "To ensure people with limited-incomes in the South Sound region have access to credit, technical assistance, training & support for small business development." R: Funding source for urban agriculture businesses within Olympia. **W: http://www.enterpriseforequity.org/.**
12	**The Evergreen State College.** Houses an organic garden that serves as a learning laboratory for small-scale organic agriculture. R: Provides opportunity for students to learn about agriculture. **W: http://www.evergreen.edu.**
13	**Free Summer Lunch Program.** USDA program, sponsored by OPARD. R: provides free meals to children 18 & under. **W: http://olympiawa.gov/city-services/parks/recreation/SKIPP.**
14	**GRuB (Garden Raised Bounty).** Non-profit food growing organization with many active programs in Olympia for different citizen groups. R: GRuB brings people together around food, is committed to community food solutions, & provides agriculture training resources. **W: http://goodgrub.org/.**

Table 2. Organizations Identified as Players within Olympia's Local Food Network

15	**Kiwanis Club of Olympia.** R: Raising vegetables for the Thurston County Food Bank since 1990. Supported by volunteers contributing to community resilience. **W: http://olympiakiwanis.org/.**
16	**Lincoln Elementary.** Used to support science & other learning projects. R: "Each class participates in the planting, tending & harvesting of food and flowers the garden provides." **W: http://lincoln.osd.wednet.edu/lincoln_garden/lincoln_garden.**
17	**Master Gardener Program.** Thurston County volunteer service through WSU Extension. M & R: Group of skilled practitioners cultivating plants, people, and communities since 1973. **W: http://extension.wsu.edu/thurston/gardening/.**
18	**Olympia Farmers Market.** M: "To promote & encourage development of local, small scale agriculture & ensure a dynamic market balance for small, local growers & others to make available their products to residents of this community." R: Providing a local market for regionally grown food. **W: http://www.olympiafarmersmarket.com/.**
19	**Olympia High School Freedom Farmers.** R: Program that gives students credit for working on a sustainable, organic farm producing food for local hunger relief efforts & educating the greater community on hunger issues. **W: http://olympia.osd.wednet.edu/media/pagefiles/3327.freedom_farmers.pdf.**
20	**Olympia Neighborhood Associations.** Olympia has 38 Recognized Neighborhood Associations (RNAs). Each group manages & organizes itself. R: RNAs communicate community needs to City & can receive City funding for neighborhood projects including urban agriculture. **W: http://olympiawa.gov/city-services/neighborhood-programs.aspx.**
21	**Olympia Pediatrics.** Primary care practice for babies through young adults. R: Working with GRuB on Prescription Garden Program study for Olympia. **W: http://www.olympiapediatrics.com/.**
22	**Olympia Village Building Convergence.** R: "Diverse coalition of placemakers and community organizations joining together to share their time, skills and resources to transform public spaces into friendly neighborhood places." Urban agriculture provides friendly neighborhood places. **W: http://www.village-builders.org/.**
23	**Providence Family Medicine.** Primary care clinic. R: Working with GRuB on Prescription Garden Program study for Olympia. **W: http://www.uwmedicine.org.**
24	**Roosevelt Elementary.** R: Identified through interview as having a school garden. That could not be confirmed from the school website. **W: http://roosevelt.osd.wednet.edu/**
25	**South of the Sound Community Farm Land Trust.** Non-profit organization. M: "Promoting vibrant local food & farming systems through community supported farmland preservation strategies, educational outreach, & partnerships that increase opportunities for farms & farmers to flourish." R: Mission supports urban agriculture concepts. **W: http://www.communityfarmlandtrust.org/.**
26	**South Sound Food Systems Network.** Voluntary coalition of individuals & organizations. M: Our mission is to grow a vibrant local food economy, ensure broad access to healthy foods, & steward the environment in the South Sound. R: Mission supports urban agriculture concepts. **W: https://ssfoodsystemnetwork.org/.**
27	**Saint Martin's University.** Houses garden for "students to experience an outdoor classroom that promotes sustainability in our relationships with one another, with our environment, & with our food." R: Sustainability education of socio-ecological systems (i.e. urban agriculture). **W: https://www.stmartin.edu.**
28	**Sustainable South Sound. Non-profit volunteer organization.** M: "Leading the transformation towards a sustainable community through education, advocacy, action & celebration." R: One of the groups objectives is to "Promote a local food system that is locally just and ensures resources are maintained for future generations." Urban agriculture supports these goals. **W: http://www.sustainablesouthsound.org/.**
29	**Sustainable Thurston.** Project from Thurston Regional Planning Commission M: To create "regional vision of sustainable development that encompasses land use, housing, energy, transportation, food, health, & other interconnected issues." R: Urban agriculture encompasses some of these issues. **W: http://www.trpc.org/259/Sustainable-Thurston.**
30	**Thurston Conservation District.** M: "To conserve & sustain the beneficial use & protection of local natural resources through partnerships with the County's rural, agricultural, & urban communities, as well as local, state, federal, & tribal agencies." R: Working on natural resource management across community boundaries. **W: https://www.thurstoncd.com/.**
31	**Thurston County Food Bank.** M: "To eliminate hunger within our community." R: Providing & distributing food to citizens with accessibility issues, including children. **W: http://thurstoncountyfoodbank.org/.**

Table 2. Organizations Identified as Players within Olympia's Local Food Network

32	**Thurston Economic Development Council.** M: "To create a dynamic sustainable community that supports the values of the people who live & work in Thurston County." R: Urban agriculture can create new economic opportunities for Olympia and in Thurston County. **W: http://www.thurstonedc.com/.**
33	**Thurston Regional Planning Council.** Intergovernmental board of local governmental jurisdictions within Thurston County, plus the Chehalis & Nisqually Tribes. M: "Provide visionary leadership on regional plans, policies, & issues." R: The issues this planning group oversees are important for urban growth & therefore, the potential of urban agriculture. **W: http://www.trpc.org/259/Sustainable-Thurston.**
34	**Thurston Thrives.** Initiative to engage community in improving public health & safety. R: Action teams have been established for 8 areas, food is one of them. **W: http://thurstonthrives.org/.**
35	**Tilth Alliance.** M: "Build an ecologically sound, economically viable & socially equitable food system." R: Statewide resources for agriculture. **W: http://tilthproducers.org/about-us/.**
36	**Urban Futures Farm.** Urban farm in Olympia. R: Generating sustainable, local food. **W: https://urbanfuturesfarm.com/.**
37	**West Olympia Farmers Market.** M: "Provide opportunity for direct sales between farmers, producers, & artisans & the public, promote sustainable agriculture, & create a neighborhood-scale market that increases the social & economic vitality of the local community." **W: http://www.wolyfarmersmarket.org/.**
38	**WSU Thurston County Extension.** M: "Help find new opportunities for our farmers, natural resource managers, families, young people, & business leaders to become successful and thrive." R: Urban agriculture provides these opportunities. **W: http://extension.wsu.edu/thurston/.**

A caution previously introduced in Chapter 2, suggests the presence of the network that supports urban agriculture in Olympia may be preventing municipal involvement (McClintock, 2014). According to the literature, when a community's needs are being met by auxiliary groups, the municipal government is less likely to address the need or devote resources to it. While these networks serve as a safety net for the community, they could inhibit real, systemic change (McClintock, 2014). Alkon and Mares suggest that food justice organizations do not tend to adopt strategies of political transformation and reform (2012). Political action may become necessary to pressure the municipality to support an alternative food system fully. Citizens working on the localization of food must clearly communicate their goals to the municipality to prompt transformative action. The success of a system depends on effort towards a common goal (Meadows, 2008). Olympia is the capitol city of Washington that is commonly galvanized by politics and activism, especially on social issues. With increased awareness

of the stacked injustices of globalized, industrial agriculture this fact may serve as a vital spark for creating a widely-supported movement towards urban agriculture.

Literature suggests that expanding or establishing effective urban agriculture systems can benefit from municipal leadership and involvement (Mendes, Balmer, Kaethler & Rhoads, 2008; McClintock, 2014; Grewal & Grewal, 2012). Fully incorporating the design of these systems into municipal planning and policy can offer resources and consistency that are sometimes hard to achieve otherwise (Lovell, 2010; McClintock, 2014). At present, limitations for the groups in Olympia working on local food issues do not include group participation, interest, and involvement. However, 86% of participants expressed organizational limitations due to capacity problems in the form of money, staffing, and time. These are all limitations the municipality could offer consistent resources towards if they prioritized urban agriculture. And favorably, "there's much more information on urban ag then there was even a few years ago for planners" (Participant E, personal communication, 2017).

Citizen Interest in Urban Agriculture

An overwhelming majority of participants interviewed, 93%, expressed that they believed Olympians were interested in urban agriculture.

> I think it's hugely important for people to grow a lot of their own food or at least to know where it is coming from or buy it locally…I think that's why there's been a push for more local food. They want to know where it's grown, how far it's traveled, and they want to know it was grown without pesticides… (Participant E, personal communication, 2017)

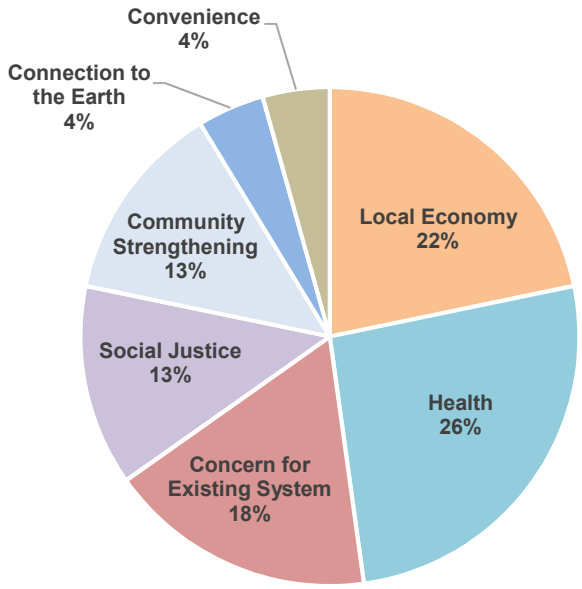
When elaborated on, participants explained that this interest was in response to several different motivations or factors. The most frequently revealed motivation, by 6 out of 14 participants, was health related benefits offered through urban agriculture (Participant A,

personal communication, 2017; Participant J, personal communication, 2017; Participant K, personal communication, 2017; Participant L, personal communication, 2017; Participant M, personal communication, 2017; Participant N, personal communication, 2017). Five out of 14 participants, conveyed that citizens are generally interested in urban agriculture to support the local economy (Participant B, personal communication, 2017; Participant D, personal communication, 2017; Participant E, personal communication, 2017; Participant F, personal communication, 2017; Participant H, personal communication, 2017). Next, concern for the existing food system was recognized by 4 out of 14 participants (Participant C, personal communication, 2017; Participant E, personal communication, 2017; Participant F, personal communication, 2017; Participant K, personal communication, 2017).

> I think there's some policy makers and some planners and certainly some members in the community that look at the big picture, the industrial food system and say this thing is a house of cards. It's destroying the planet, it's destroying the people, and it's destroying the earth, and we got to change that. (Participant F, personal communication, 2017)

Then, social justice and community strengthening were each mentioned by 3 out of 14 participants as motivating interests driving urban agriculture (Participant E, personal communication, 2017; Participant F, personal communication, 2017; Participant L, personal communication, 2017). Additionally, one participant spoke about the convenience of having a garden plot nearby (Participant F, personal communication, 2017), and another voiced the opportunity from urban agriculture to fulfill a desire to have a physical connection with the Earth (Participant K, personal communication, 2017). See Figure 2 for a graphical breakdown of this information.

Figure 3. Motivating Interest for Urban Agriculture in Olympia, Washington



Health

More than any other motivating interest, participants cited health as the major supporting cause for increased urban agriculture in Olympia, Washington. One health aspect mentioned repeatedly was the recreation and physical work involved with growing food (Participant A, personal communication, 2017; Participant K, personal communication, 2017; Participant N, personal communication, 2017). The literature supports the concept of urban agriculture as a source of physical exercise (Grewal & Grewal, 2012; Brown & Jameton, 2000). It suggests physical exertion can relieve stress and improve psychological health (Grewal & Grewal, 2012; Kaplan, 1973; Malakoff, 1995). Blaine, Grewal, Dawes, and Snider found that dietary changes result from engagement in community gardening (2010). Participants relayed the importance of this as they discussed the connection between diet and health in terms of illness prevention.

> I think the attitude of a lot more people now a days is that we need to get healthier. There's too many people out there that have diabetes from being overweight or high blood pressure. Things that if you perhaps ate right, would not happen…we realize that health and food go together. (Participant J, personal communication, 2017)

GRuB is currently working on a new project to bring the connection between diet and illness to a wider audience. The Prescription Garden Project will partner with the local health care community to pilot a study researching diet related illness specifically, kids experiencing obesity and adults who are diagnosed as pre-diabetic (Participant L, personal communication, 2017). Participant L says people experiencing these issues are victims of a broken health care system. The new Prescription Garden Project will be designed to provide support for them and connect them to a garden as a source of healing (Participant L, personal communication, 2017).

Buy Local Economy

The second major motivation revealed for urban agriculture in Olympia was citizen interest in supporting the local economy. "Food and agriculture is in our top five industries in this region. As we grow local food that's only going to get bigger" (Participant L, personal communication, 2017). The discussion surrounding this topic was extensive for the participants who mentioned it.

> I think more and more people are starting to want to buy food locally and/or produce food locally. I've spent a lot of time at the Eastside Urban Farm store, and their business is great because more and more people are growing little bits of food in their own yards. That's great. (Participant F, personal communication, 2017)

However, participants disclosed that Olympia citizens overall seemed more interested in buying local food than growing it themselves, pointing to the success of CSAs and the Olympia Farmers Market as evidence of this.

> We have one of the most successful farmers' markets…There is interest and even a level of commitment to local food. I think that is going on certainly all up and down the I-5 corridor. Washington and Oregon is the value-added food capital of the world in many ways. There is a lot of interest. People are willing to pay more money for local food. (Participant D, personal communication, 2017)

One benefit of urban agriculture, when fully embraced by the municipality, is increased economic opportunities for all citizens (Grewal & Grewal, 2012; Chen, 2012). Localizing the food system through urban agriculture could result in more citizens generating income from the system as entrepreneurs (Chen, 2012). This would benefit an extended demographic who currently may not be experiencing benefits from Olympia's urban agriculture in its current state. "There is an economic divide in terms of who's interested, who's actually involved in purchasing local food and folks who can't afford it" (Participant H, personal communication, 2017). In Olympia for instance, the increased presence of local food could be integrated into restaurants and food trucks. "I would love to see some actually good restaurants pop up that truly source local. There are a few and that's good. We have so many great raw ingredients here, so why don't we have better restaurants" (Participant B, personal communication, 2017)? Increased economic opportunities for citizens is an important incentive the municipality should consider for adopting, integrating, and expanding urban agriculture within Olympia.

Opportunity 3: Sustainability is Culturally Significant

When asked if they felt sustainability was a concern for the City of Olympia, participants unanimously answered 'yes.' Fifty-five percent went as far to describe sustainability as an engrained or cultural element of Olympia as a place. "I think sustainability has been embedded and interwoven within our culture and so it's not so

much that there is an interest, it's an expectation" (Participant C, personal communication, 2017). Urban agriculture is a movement that challenges the dominant food system (Urban Agriculture, 2016; McClintock, 2014) with a more sustainable model (Mendes, Balmer, Kaethler & Rhoads, 2008; Grewal & Grewal, 2011; Lovell, 2010; Chen, 2012; King, 2008). One of the greatest opportunities for urban agriculture in Olympia is that the city has an extremely high awareness and concern for sustainability. Sustainability is a term whose definition seems to frequently present conflict (Participant G, personal communication, 2017). Though some still argue that the definition is too variable and the concept is too abstract, it is an idea that seems to be well understood and embraced by Olympians.

Existing urban agriculture operations in the area have adopted a value system beyond monetary gain and incorporated sustainability into their mission. Participant J practices animal husbandry and has made improvements to their land by removing invasive species such as Scotch Broom (personal communication, 2017). They also limit antibiotics and replace them with herbal and homeopathic remedies (Participant J, personal communication, 2017). Participant F is dedicated to soil health and grows vegetables, fruits, and chickens without chemicals and with minimal fuel use (personal communication, 2017). Participant B's agricultural processing business is a B Corporation held to the highest standards of social and environmental performance (personal communication, 2017). The goal of the B Corporation certification is a redefining of what it means to be a successful business (What are B Corps?, 2017). These shareholders are already fostering sustainability and subsequently the resilience of Olympia.

Despite their dedicated support for sustainability, participants expressed a sense of worry and uncertainty about Olympia in the future, especially since the 2016 presidential election. A couple of participants felt unsettled about the future of the economy, social diversity, and funding for community development (Participant B, personal communication, 2017; Participant F, personal communication, 2017). Significant population growth is predicted for Olympia in the coming decades. Participant C explained that Olympia's ideals are at risk of being diluted or shifted as the city's population continues to grow.

> As we add more people, our culture and our expectations of the city [Olympia] are going to change…I think that if we're not continuing to push it and continuing to make sustainability relevant that it could go away. Because we get different people in leadership and those different people in leadership align with the different people moving in and all of a sudden, the expectations change. (Participant C, personal communication, 2017)

Olympia will have to decide what it stands for as the demographics will be increasingly vulnerable to a new influx of people migrating to the capital city.

Opportunity 4: Land & Water Availability Are Favorable for Food Production

The availability of natural resources in Olympia is (mostly) favorable for food production. For now, land is an abundant resource within the City. The Olympia Parks Department, OPARD, is responsible for acquiring land within the City to be used as community parks, neighborhood parks, or open space areas (Participant A, personal communication, 2017). OPARD owns and manages an estimated 1,000 acres in total with "quite a few" parks being completely undeveloped and largely not utilized at all by OPARD (Participant A, personal communication, 2017). Converting areas such as these to food production could be a potential use that City policy and planning could support.

In collaboration with City Engineer Fran Eide, the Northeast Neighborhood is currently working on a pilot project to engage and recruit support for the innovative use of underutilized spaces such as right-of-way areas (Participant C, personal communication, 2017; Participant E, personal communication, 2017). There is a great deal of opportunity for the City to dedicate OPARD owned land to food production in accordance with municipal policy. Furthermore, OPARD continues to buy up available land within Olympia's city limits because of the strong demand to do so by Olympia citizens.

> The City has voted twice now to tax themselves more in order for that money to go to acquire more Park land. That says a lot. The last vote which was just in 2014. 60% of the voters said yes, I will pay more for acquiring more acreage of Park land. (Participant A, personal communication, 2017)

At present, the City is largely characterized by single family residences that tend to have decent yard space for food growing potential. The big caveat of this, of course, is the projected growth the city will face in the coming decades. According to the City of Olympia, the population is expected to increase by approximately 2% every year to become 84,400 by 2035 (Olympia Comprehensive Plan, 2014). This means that the composition of housing within the City will be forced to change to accommodate this growth, in accordance with the GMA. "We won't have as much land as we had before… This whole downtown area is going to be completely reshaped and reformed over the next five-fifteen years… We're gonna see corner plots being taken down and townhouses going up" (Participant C, personal communication, 2017). If Olympia does not extend its boundaries outward, it will be forced to evolve upward. This may put pressure on the existing configuration of the city. Market pressure will likely cause a transition towards more multiplex housing. If the spacious single-family residences are removed, and

apartments are put up in their place, the availability of land will decrease driving up its demand and market value.

Other than land, Olympia has another natural resource that aids in food production: water. Not surprisingly, 8 out of 14 participants, or 57% of those interviewed brought up the importance of water as it relates to urban agriculture. Olympia's drinking water utility is supplied by the municipality from a source called the McAllister Wellfield (McAllister Wellfield, 2017). According to the City of Olympia, this source pulls from a large, protected, sustainable aquifer. The water quality is reportedly high and productive (McAllister Wellfield, 2017) with consistently heavy seasonal rainfall in the winter effectively resupplying the watershed. As the provider of the drinking water utility, the Olympia municipality manages the infrastructure that serves the City. If the City were to increase their role in the adoption of urban agriculture, this authority could prove beneficial in providing a valuable element to food production.

Major Challenges

Although several factors support the potential success of an expanded agricultural system in Olympia, there are challenges the municipality faces that keep it from being urgently addressed. Some limitations have already been introduced as caveats or exceptions related to the opportunities presented in the first half of this chapter. The four major challenges that the next half of this chapter will explain are: 1) competing public concerns and limited City resources, 2) the lack of awareness and education about food systems, 3) unforeseen future challenges, and 4) land and sunlight are limiting factors for food production. The next several paragraphs will delve into each of these to offer an

understanding of the challenges the municipality faces with fully integrating urban agriculture into their planning and policies.

Challenge 1: Competing Public Concerns and Limited City Resources

One challenge the municipality must confront is limited City staff and funding to address numerous competing public concerns. The Olympia municipality and the network of non-profit organizations working on local food issues are alike in their limitations. The difference for the municipality is that they are responsible for addressing a range of problems and providing multiple services to the citizens of Olympia.

> The role of government is a complicated one of balancing economic interests with environmental interests and sustainability. How do you find an appropriate blend of those things? The City is trying to encourage redevelopment and develop a tax base to support City services, while protecting natural resources, and also providing livable spaces that work for people…There's so many different pieces of it. (Participant I, personal communication, 2017)

Of the participants asked about the City's support of urban agriculture, 75% felt like the City supported it. Simultaneously, 89% of those participants also admitted a degree of unresponsiveness by the City because of competing interests. "With City government, or any government, squeaky wheels definitely get the grease and it raises your issue to the top if people are pushing it" (Participant A, personal communication, 2017). Receiving wide-ranging input from the community on a variety of issues, the City has not prioritized urban agriculture. They are not opposing it either though; they just are not taking the initiative to integrate it into municipal government.

An example of a competing concern the City faces is the street, or homeless, population within Olympia. Anyone who has ever walked through downtown Olympia can attest to the fact that many people dwell within doorways of downtown buildings.

One participant explained that, unlike hunger or other food-related concerns, homelessness is a more visible issue.

> Right now, the focus is really on housing and homelessness not on food sustainability. Even though if people are fed and they're clothed their likelihood of getting housing and employment is increased. They're [City of Olympia] kind of jumping to housing and homelessness because that's what the public is calling out because it is visible. (Participant C, personal communication, 2017)

Two additional participants identified homelessness and heroin abuse as "enormous issues that the City must take a key role in" (Participant L, personal communication, 2017; Participant M, personal communication, 2017). Participant M recognized that needle collection sites and public bathrooms downtown are a major concern for the municipality (personal communication, 2017). Another participant added to the conversation by saying that the City's primary interest is in providing public safety (Participant G, personal communication, 2017).

While homelessness and addiction may be more visible or seemingly pressing issues for the municipality, the City does not recognize the opportunity to address them using urban agriculture. Participant K, however, was keen to this fact and relayed a story they had heard on the topic.

> Up in Vancouver, B.C. there's this man who…works in intercity B.C. where there's this urban farm that employs people who are drug addicts and people who are trying to get off the streets. They have an innovative program…It is producing food and it's creating relationships and it's also helping with de-stigmatizing addicts and homeless folks. So it has these multiple levels of missions. (Participant K, personal communication, 2017)

Instead of making excuses for why urban agriculture will not work within the City, Olympia needs to think in terms of what it could achieve. Just as Participant K noted, these projects take innovation, and the City may be missing the point. Urban agriculture does not have to be a competing concern when it comes to homelessness and heroin use.

Some of the other competing concerns identified, that admittingly seem a bit trivial compared to the issue just discussed, were the desire for more recreational spaces in Olympia. Specifically communicated desires of the community include the need for a soccer field and public pool (Participant A, personal communication, 2017; Participant M, personal communication, 2017). The City commonly faces pressure for increased green space and land for economic development (Participant A, personal communication, 2017). Urban agriculture can act as a green space and generate economic development (Grewal & Grewal, 2011; Chen, 2012). These connections are not being made by anyone within the municipality or by any driving force in the community. "As far as I'm aware of, there's not a gardener group or anything that's been ya know, "We want more!" (Participant A, personal communication, 2017). Community gardens are an excellent example of urban agriculture and Olympia citizens are happy to have the two already established within the City. However urban agriculture can be so much more than gardening in a confined 5'x10' box. This is not to say that the Olympia municipality is doing anything wrong, there is just an enormous potential to increase urban agriculture for its multifunctional benefits that are not entirely being taken advantage of.

Challenge 2: Lack of Awareness and Education About Food Systems

Urban agriculture offers cities a strategy for attaining multifunctional benefits. Examples of these benefits are increased access to healthy and nutritious food (Grewal & Grewal, 2011; Blaine, Grewal, Dawes & Snider, 2010), city greening (McClintock, 2014), improved psychological health (Kaplan, 1973; Malakoff, 1995), community strengthening (Chen, 2012; King, 2008), civic engagement (Chen, 2012; McIvor & Hale, 2015), recreation (Lovell, 2010; Mendes, Balmer, Kaethler & Rhoads, 2008), increased

biodiversity (Lovell, 2010), and cultural preservation (Richardson, 2011). A major challenge of expanding urban agriculture in Olympia is a lack of awareness and education to do so. Ten out of 14 participants, 71%, identified a need for increased education and awareness on issues surrounding food (Participant B, personal communication, 2017; Participant C, personal communication, 2017; Participant D, personal communication, 2017; Participant F, personal communication, 2017; Participant G, personal communication, 2017; Participant H, personal communication, 2017; Participant J, personal communication, 2017; Participant K, personal communication, 2017; Participant L, personal communication, 2017; Participant N, personal communication, 2017). Additionally, 75% of the participants who did not identify the need for education on the topic did mention some sort of existing educational value associated with urban agriculture (Participant E, personal communication, 2017; Participant I, personal communication, 2017; Participant M, personal communication, 2017). Therefore, 93% of those interviewed talked about education related to urban agriculture whether in terms of a need or as an existing benefit. There were several layers to the conversation about education and awareness identified by participants. The next couple of paragraphs describe them.

First, the current dominant food system that most people rely on is unsustainable (Grewal & Grewal, 2011, Longo, 2016; King, 2008; Mendes, Balmer, Kaethler & Rhoads, 2008; Lovell, 2010; Chen, 2012). There is a broad lack of understanding of this issue. The market that produces food consumed within Olympia offers a wide variety of options at an affordable price. These advantages, however, do not come without a cost (i.e. ecological degradation and social decay). Because of convenience and what one

participant referred to as the ‘hustle’ that we as Americans are living, there is little time to engage in those issues (Participant L, personal communication, 2017).

Another element of the discussion concerning education and awareness is the need for cultural change to address food issues in this country and in Olympia. For one, the skills necessary for effective and significant urban agriculture have become obsolete in the current food supply system.

> Most citizens now are divorced from their agriculture. We are urbanized meaning most people wouldn't know how to can a fruit tree if you put it in their front yard. They wouldn't. Whereas my mother canned fruit. Most people canned fruit, most people knew how to slaughter an animal those kinds of things. Those kind of things, those skills are vanished and so you'd have to bring them back. (Participant G, personal communication, 2017)

Furthermore, farming as a profession has lost appeal over time, especially with the rise of urbanization. This creates stigma for the profession that participants voiced as something they feel is an important problem in need of reconsideration. “It's a huge sacrifice to be a farmer and it absolutely should not be. We should turn it to a viable and valued part of our society because it's actually important” (Participant B, personal communication, 2017). People disconnected from their food sources may not completely understand or care about this fact, but farmers are essential to healthy food production.

Another issue that people tend to be sorely underinformed of or passively involved with is their health, as well as the connection that food plays in that relationship. ‘Food’ has become a term used to describe everything we pick off the shelves and throw into our carts when we are shopping at the local supermarket. Participant L warns though that all calories are not created equal (personal communication, 2017). This is supported by the report on nutrition marketing discussed earlier in Chapter 2 (Colby, Johnson,

Scheett & Hoverson, 2010). Because of sneaky marketing, people need to become smarter consumers. Supermarket items labeled as 'healthy' or 'natural' still contain deceiving ingredients such as salt, sugar, and fat (Colby, Johnson, Scheett & Hoverson, 2010). The dominant food system is driven by profit and it is not looking out for your health! It may not be wise to trust a system with your personal health when its track record is unsustainable in all aspects of the word (economic, environmentally, and socially) (Grewal & Grewal, 2011, Longo, 2016; King, 2008; Mendes, Balmer, Kaethler & Rhoads, 2008; Lovell, 2010; Chen, 2012).

> We could be working better on integrating sustainability and health because they're all very connected. Nutrition and wellness...I mean really just thinking of everything as a system. All the parts are connected. We should be, as we plan urban development, be thinking about nutritional needs and health. I think people do, but I think there's definitely some gaps. And we have the information now so it's like let's integrate it. And there's more all the time but we have a lot more information then appears to be being used. (Participant B, personal communication, 2017)

Finally, because people are disconnected from the process of food production, it would be an adjustment for urbanites to be exposed to the odd views, smells, and noises which typically accompany it (Participant K, personal communication, 2017). It is a challenge to integrate these untraditional activities into urban areas. To overcome this, work would have to be done to prove that the occasional discomfort is worth the benefits. The City of Olympia is hands-off but largely supportive of urban agriculture in Olympia. Problems that they respond to now typically have to do with neighbor complaints (Participant A, personal communication, 2017). If urban agriculture were to be expanded to a significant level in Olympia, the culture of acceptance surrounding food production would have to change.

The challenge of increased education and awareness is not unique to the issues surrounding urban agriculture. Rather, this seems to be a key component of any successful movement. “What I think is getting lost in all of this is some holistic sense about how food systems are the cornerstone of a sustainable community” (Participant F, personal communication, 2017). This understanding is the focus of a Food Summit currently planned for Olympia in the Fall of 2017. The South Sound Food System Network (see Table 2 for organization information) is organizing this event in hopes of inspiring a wider interest in local food. It is an ambitious project with lofty goals to reignite the conversations that need to happen to pave the way for a sustainable food system in Olympia. Organizers of the event are optimistic and feel like Olympia might be on the edge of a tipping point for the issue of local food (Participant D, personal communication, 2017). There seems to be quite a lot of momentum on the topic and some meaningful relationships are starting to align. This presents an encouraging chance for a concentrated transition towards a food system where localized food is an increasingly available, sustainable alternative.

Challenge 3: Unforeseen Future Challenges

The reason why sustainability and community resilience are important is because of the predicted challenges for the future. Half of the participants communicated a need to secure local food because of the predictions of urbanization and/or climate change for Olympia (Participant B, personal communication, 2017; Participant C, personal communication, 2017; Participant D, personal communication, 2017; Participant E, personal communication, 2017; Participant F, personal communication, 2017; Participant G, personal communication, 2017; Participant L, personal communication,

2017). All but one of these seven participants relayed this message with a sense of urgency and warning. Especially apparent to those already working on local food issues, the challenges of the future may seriously threaten our ability to feed ourselves. We must prioritize and plan for the future of our food sources. Some participants expressed a heightened concern of these issues with the results of the 2016 presidential election. The current administration has repeatedly failed to acknowledge the pressing reality of climate change.

Almost certainly, the population of Olympia is going to continue to increase. With this growth, the City may begin to experience strains that it has never had to deal with before. Boundaries established by the GMA are going to force a concentration of growth. The value of land is going to become increasingly expensive as its availability decreases. Everything will be subject to change. Drainage will be effected, and wetland areas may be altered, pressure may be put on green space, and single residences are going to be converted to accommodate a variety of housing types for diverse incomes. "I've seen a lot of growth [in Olympia] in a short amount of time and I've also seen that in Seattle too. I lived in the Fremont area so I see some signs of growth coming" (Participant C, personal communication, 2017).

Climate change is another increasingly obvious factor in the fate of Olympia's future. There are two major ways in which climate change is and will continue to impact the City: through sea level rise and changing weather patterns. Olympia is already experiencing flooding of downtown areas during high tides.

> The risk of widespread flooding in Downtown increases as sea levels rise and weather systems become increasingly volatile. The magnitude and timing of sea level rise is uncertain, but the risk is clear. Current trends in sea rise and weather patterns are concerning. (Sea Level Rise, 2017)

Despite the inevitable, the City of Olympia has decided to mitigate the rising water rather than develop an incremental exit strategy. Sea level rise is a top priority, and a strong competing interest for the City of Olympia as many downtown businesses are vulnerably located. The City is currently in the process of developing a Sea Level Response Plan to form a strategy for dealing with this problem considering risks, uncertainty, and associated costs (Sea Level Rise, 2017). The effects of sea level rise threaten downtown businesses but would also impact storm water infrastructure, potentially creating severe water quality and human health issues if not addressed. However, the effects of climate change will be and already are more widespread than rising sea levels. Agriculture will undoubtedly also be affected.

> Our conservation district and WSU [Washington State University] extension just did a class and training where farmers came in and… they were actually giving examples of how they have seen the weather change and how it's been affecting their crops and what we should be preparing for in the future. (Participant A, personal communication, 2017)

With unpredictable weather, places that have traditionally grown food may not be as productive. Agriculture needs to diversify to deal with changing weather patterns. Unpredictable weather will cause disruptions that have not yet been experienced in Olympia.

Participants also identified the importance of local food security in Olympia for emergency management purposes. "We live in a geological area active area. There will be times when there's an interruption in the food supply. Meaning that the ground transportation of all this food, all these inputs coming into our community will be

interrupted" (Participant G, personal communication, 2017). The future is unpredictable, and climate change is promising to keep that true. Local food sources would be less subject to interruption (Participant G, personal communication, 2017). Participant C suggested a map of all community gardens within Olympia be developed to hand out with emergency management flyers in case supermarkets become unreliable. If that happens, "… We're gonna have to go to those community gardens and utilize them" (Participant C, personal communication, 2017). Of course, having a working system in place before disasters arise would be best.

> If the local government really related to building a whole agricultural system, I think the argument perhaps that would work for them best would be food security in terms of like should there be a natural disaster and suddenly you couldn't get things trucked in for one reason or another… It seems like they'd be doing a lot of things, like requiring all of the government agencies to be purchasing local or at least having a percentage… Some schools take it upon themselves and that's great. I mean prisons could be [purchasing local]. It's like all of that would build up this market to support more farms. (Participant B, personal communication, 2017)

Securing sources for food production is more of a priority for some than it is for others. Those most concerned are close to the issue and already passionately working on local food.

> I think people mostly tend to see local, sustainable, organic food as kind of a niche. And it's a niche that could be expanded and would be great to expand it but it's never going to be the dominant way that people produce or procure or think about their food system. I'm on a completely different page with that. I think that the whole system is collapsing under its own weight and when you start to add on climate change, and overpopulation and trade barriers and reductions in migrant workers and everything. Are we far away from food shortages? I don't think we're all that far away from food shortages. We're no more immune than any other place is to that. Clearly, that's a minority perspective at this point but what I try to do in my work is to get people to think about those things. (Participant F, personal communication, 2017

Opportunity 4: Land & Sunlight Are Limiting Factors for Food Production

Although plentiful land and clean and reliable water were identified as advantages for urban agriculture in Olympia, there are resource limitations that simultaneously make food production difficult. There is a great deal of marginal agricultural land in Olympia, including a substantial number of wetlands. Because wetlands are so well protected, they are a land designation that is hard to utilize for human productivity purposes. However, land that is otherwise considered marginal may still have the potential to function as part of an urban agricultural system. For instance, an area with known contamination could still be used for a variety of agricultural functions including flower production, bee-keeping, or even raised garden beds. This is an example of innovation that successful and significant urban agricultural systems take advantage of.

One natural resource that is not as bountifully available in Olympia currently, and therefore a major limiting factor, is sunlight. Forty-three percent of interview participants identified this as a challenge to food production in Olympia. This is one of the reasons that large-scale agricultural production does so well in the eastern part of Washington (Participant G, personal communication, 2017). One tool that might be useful for Olympians and the municipality, if they were going to pursue a greater role into the integration of urban agriculture, would be a map of sun-kissed areas within the City ideally lit for growing happy plants. With global warming, this would be a better strategy than hoping for hotter summers.

This chapter discussed each of the opportunities and challenges that emerged from data collection for integrating urban agriculture into municipal planning and policy.

In review, the Olympia-specific opportunities of expanding urban agriculture by these means are: 1) supportive policies are already in place, 2) there is a sizable network of supporting organizations, 3) sustainability is culturally significant, and 4) land and water availability are favorable for food production. In opposition, the Olympia-specific challenges of expanding urban agriculture through municipal integration are:
1) competing public concerns and limited City resources, 2) there is a lack of awareness and education about food systems, 3) future challenges, and 4) land and sunlight are limiting factors for food production. The next and last chapter offers some final thoughts on these findings.

5. FINAL THOUGHTS

Future Research

A topic for future research identified from this case study would be an investigation into specific examples of urban agriculture used to address homelessness and addiction. A participant revealed that this was being successfully achieved by a project in Vancouver, British Columbia. Urban agriculture has the potential to give these citizens purpose, community, and skills. The City of Olympia should consider this innovative strategy as a means for addressing these challenges for effective and lasting results.

Additional research should also be conducted regarding the scale at which food is grown. This may be key to making urban agriculture viable for everyone including hard working, time constrained families. The scale of food plots is also important when considering some of the potential social benefits of urban agriculture such as community building, knowledge sharing, and civic engagement. Scale is a factor that might make all the difference. Dominant industrial, globalized agriculture is too big and the Community Gardens that the City of Olympia provides may be too small and isolated to offer human to human benefits. An investigation into the right scale could be the subject of future research on urban agriculture.

There are also some mapping needs that do not currently exist for the City that would be beneficial for expanding urban agriculture. However, the project to do so would be extensive and may be significantly aided by City resources (i.e. staff, access, GIS, historical records). Urban agriculture can be most successfully integrated when available

land and space are inventoried. Mapping should include land and space under or mis-utilized, privately owned properties which may be willing to entertain tenure agreements, vacant lots with short term availability, and existing facilities that may be converted or renovated to support urban agriculture. Inventorying these places with sunlight ratings would also be beneficial for maximizing urban agriculture productivity.

Scope

Olympia is not a super densely populated city. The most recent statistic for the current population of Olympia as of 2016 is over 49,000 people. The population of Olympia was 46,478 according to the 2010 census. The cities that are really recognized as having significant urban agriculture are larger cities. The scholarship for urban agriculture tends to be on these bigger scaled/scoped examples. Therefore, it is difficult to compare what is going on in Olympia directly to the literature that exists on urban agriculture. In that regard, this case study offers insight into a city of a smaller size.

Generalizability

The generalizability of this study is narrow. The nature of urban agriculture is dynamic and Olympia as a City has a unique population. This can be both advantageous and detrimental. It is advantageous in the regard that urban agriculture can be customized for a countless number of places and variables. This can lead to ownership and place-specific knowledge and connections that are important for continual buy in and stewardship of the home cities that citizens around the world are part of. The detriment comes because the place specificity of urban agriculture presents a challenge for generalizable knowledge being used to establish a local food system as well as for lessons

learned to be shared and applied uniformly. However, cities such as Olympia can certainly grow from lessons learned in bigger cities regardless of other factors. The innovation and knowledge bank surrounding urban agriculture is great. Studying the different examples could spark unique innovation. Regardless of scale, innovations can be modified to fit or serve the appropriate scale of any city. There is some opportunity for relating this case study to other cities. It would ultimately be most useful for cities with similar climates and similar population dynamics. For example, I learned through my research that Olympia has other similarly sized cities within Washington that they use as local resources for a variety of municipal functions. These cities include Redmond, Bellingham, and Kirkland (Participant A, 2017). The generalizability of this study would best serve these sister cities. However, with some imagination, the application could be much more extensive.

Political Obstacles

The current White House administration is obsessed with the federal budget in all the wrong ways. Two items vulnerable to defunding threats are community development and climate change. If carried through, neither of these budget cuts would be good for Olympia. The neighborhood matching grant program, which currently provides funding for community betterment projects, would likely lose support if the President does not recognize its importance. Currently, this is how urban agricultural projects receive funding. Likewise, the President fails to acknowledge the overwhelming science of climate change. By denying the reality of climate change and subsequently defunding everything having to do with it, Olympia will be on its own to respond to the potentially cataclysmic effects of sea level rise and natural disasters of the future. This would leave

the City in a vulnerable position. Urban agricultural development would likely become a very low priority under the worst-case sea level rise scenarios for the city.

Globalized, industrial agriculture is unsustainable and alternative food systems are gaining increasingly more momentum worldwide as concern for sustainability and resilience grows. It is imperative that the American food system be reorganized for resiliency especially considering predicted trends of urbanization and climate change. Alternative food systems, such as urban agriculture, may be part of the solution of shifting American dependence away from globalized, industrial agriculture to something more sustainable. Using Olympia, Washington as a case study, this research revealed some major challenges and opportunities for convincing the municipality to integrate urban agriculture into policy and planning. However, research shows that the success of these alternate food systems can be more permanent and transformative with municipal buy in. The challenges are significant, but the stakes are high for a more sustainable food system. Citizens need to empower themselves by increasing their knowledge of the food that they eat. A cultural shift surrounding food could force a paradigm shift where people begin to reconnect with the land and each other. Failure to do so will result in continued injustices by the dominant food system to market and sell unhealthy food that is ecologically damaging. Considering that we all need food to survive, and the future threatens us with unpredictability, securing local food sources is paramount and may be the best strategy for preparing for what is yet to come.

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List of Appendices

Appendix 1: Group 1 Interview Guide

- What is your position at the City of Olympia? What is its purpose (big picture)?
- How does the City balance the negative impacts associated with urban areas?
- Can you speak to the level of commitment the City of Olympia has towards sustainability and sustainable development in Olympia?
- Is Olympia interested in self-reliance or resilience? In what ways is this expressed? What are the motivating factors?
- Does your job involve urban agriculture in any way?
- Can you speak to the size of the existing network of UA in Olympia? To what extent is municipality involved in UA?
- Is there potential to expand city services to include increased access to fresh agricultural goods?
- How extensively is land and space mapped in Olympia?
- What kind of contamination records does the City have for public land within City limits?
- From your experience, can you speak to the general willingness of Olympia citizens to collaborate with the City?
- What incentives and strategies do you use to engage new people and include underrepresented groups?
- From your personal experience, can you compare the local food system in Olympia with another City?
- Do you have any other comments on the prospect of an expanded local food system in Olympia?

<u>UA Specific Questions</u>

- How much land is available really and where is it at?
    - Has it been mapped?
- Is UA included as a land use category and economic function in the planning system for Olympia?
- How much space is actually being used by urban producers?
    - What kind of spaces and what types of production systems are they using?
- What tenure arrangements can be offered that will allow organized groups to have equitable access to urban spaces for agriculture?
- What innovative forms of credit can be made available to assist urban providers & small-scale processing operations?
- What infrastructure and facilities exist (functional or not) that have room for or could be revamped to support production, storage, processing, marketing or recycling activities?
- Are there specific advantages associated with urban agriculture in Olympia?
- Are there specific challenges or problems associated with urban agriculture?
- What policies/technologies offer best tools to improve food security of poorest city dwellers?
- Would the City be interested in UA planning & implementation training?

Appendix 2: Group 2 Interview Guide

- Will you start by introducing yourself?
- Are you involved in any community development or regional planning groups or committees? Are they related to agriculture? How long have you been involved with those? Can you talk about the participation and consistency of these groups?
- Please introduce your farm. What motivated you or interested you in starting an urban farm?
- How have you seen urban agriculture change in Olympia?
- Is the shift to support more local food a trend or something more permanent?
- How is your land farmed? Are there certain practices/beliefs that you follow?
- Did you receive special funding?
- Can you speak to the level of commitment you have towards sustainability and sustainable development?
- What sorts of jobs does this farm create?
- What about education opportunities?
- Does the farm host any special social or outreach opportunities?
- What does the farm contribute in terms of human and environmental health?
- Are there limitations to fulfilling maximum function/service/product intended? Or can you think of a time when you had trouble you would like to discuss?
- Does organization experience vandalization or crime?
- How do you feel about the City of Olympia's commitment towards sustainability and sustainable development?
- How much do you know about the network of agricultural organizations and committees that supports producer in Olympia?
- How do you feel about this? Would you like to see the municipality more fully integrate urban agriculture into policy and planning? Or do you feel like the existing food system networks are successful and consistent enough without city support?
- In your experience, what is an average Olympian's interest in urban agriculture?
- What is an average Olympian's agricultural knowledge (skill and experience)?
- Do people communicate concerns attached to current food system?
- What are the long-term plans for your farm?
- What can you say about your predictions for the future of urban agriculture in Olympia?

Appendix 3: Municipal policy under Natural Resources relevant to urban agriculture in Olympia, WA

Natural Resources, GN8

Community sources of emissions of carbon dioxide and other climate-changing greenhouse gases are identified, monitored and reduced.

PN8.1 Participate with local and state partners in the development of a regional climate action plan aimed at reducing greenhouse gases by 25 percent of 1990 levels by 2020, 45 percent of 1990 levels by 2035 and 80 percent of 1990 levels by 2050.
PN8.2 Monitor the greenhouse gas emissions from City operations, and implement new conservation measures, technologies and alternative energy sources to reach established reduction goals.
PN8.3 Reduce the use of fossil fuels and creation of greenhouse gases through planning, education, conservation, and development and implementation of renewable sources of energy (see also GL2).
PN8.4 Encourage the conservation and reuse of existing natural resources and building materials.
PN8.5 Reduce the pollution and energy consumption of transportation by promoting the use of electric vehicles and expanding accessible and inviting alternatives that reduce vehicle miles traveled, including transit, walking and cycling (see also GT25).
PN8.6 Plan to adapt, mitigate, and maintain resiliency for changing environmental conditions due to climate change, such as longer periods of drought and increased flooding related to changing weather patterns and sea level rise (see also GU11).
PN8.7 Reduce energy use and the environmental impact of our food system by encouraging local food production (see also GL25).

Appendix 4: Municipal policies under Land Use relevant to urban agriculture in Olympia, WA

Land Use, GL25

Local Thurston County food production is encouraged and supported to increase self-sufficiency, reduce environmental impact, promote health, and the humane treatment of animals, and support the local economy.

PL25.1 Actively partner with community organizations to provide education and information about the importance of local food systems.
PL25.2 Encourage home gardens as an alternative to maintaining a lawn.
PL25.3 Collaborate with community partners to ensure that everyone within Olympia is within biking or walking distance of a place to grow food.
PL25.4 Encourage for-profit gardening and farming in the community.
PL25.5 Purchase locally grown food when possible.
PL25.6 Allow food-producing gardens on rooftops, and offer incentives to include greenhouses for year-round food production.
PL25.7 Recognize the value of open space and other green spaces as areas of potential food production.
PL25.8 Work with community organizations to develop strategies, measure, and set goals for increasing local food production.
PL25.9 Work with local governments throughout the region to help protect existing agricultural lands and develop and promote a vibrant local food economy.
PL25.10 Partner with community organizations to help educate citizens who are interested in raising animals for food in the city. This might include information about protecting animals from predators, maintaining sanitary conditions, and treating animals humanely.
PL25.11 Educate and encourage citizens to purchase from local farms and small producers as an alternative to factory farms that may engage in inhumane treatment of animals.