Future Considerations of the Maddox Park Greenhouse

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Future Considerations of the Maddox Park Greenhouse:

an exploration of urban food production and education as a means to community revitalization in Atlanta’s West Side

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May 2012
Foreward and Acknowledgements

This report was produced in partnership with David Epstein and Kenneth Lovell of Bioponica, who contributed to the proposal for Maddox Park, helped to identify costs, materials and space needs estimates, and contributed many of the graphics and sketches of the area.

I would also like to thank the following people and organizations for their generous assistance in this project, and for sharing their experience, without which this report would not have been possible.

Barbara Petit, Alice Rolls, Jonathan Tescher – Georgia Organics


Chris Norman and Michael Nesbit – Fulton County / City of Atlanta Land Bank

Fred Conrad – Atlanta Community Food Bank

Judith Winfrey and Joe Reynolds
Love is Love Farm

Jan Youtie – Georgia Tech Enterprise Innovation Institute

Kyla Zaro-Moore and the Edgewood Farm Crew - Southeastern Horticultural Society and Coan Middle School

Kurt and Christine Mann

Michael Elliot
Georgia Institute of Technology, Department of City and Regional Planning

Michelle Uchiyama – Charitable Connections and CCNA (Community-building Coalition of Northwest Atlanta)

Oakleaf Mennonite Farm

Park Pride Atlanta

Peggy Barlett – Emory University Office of Sustainability

Rashid Nuri – Truly Living Well Urban Organic Farm

Tony Giarrusso – Georgia Institute of Technology Center for GIS

Vanhvilai Douangchai

Many thanks to all others not mentioned ...friends, colleagues, professors and urban farmers...who have contributed to furthering the reach and understanding of the importance of healthy, sustainable food in our communities.
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1 Introduction

What are the benefits, requirements and issues that may arise if the City of Atlanta’s Greenhouse at Maddox Park were to be converted into a sustainable urban food production and job training/research center?

Purpose of this Report

The intention of this research project is to produce a report that investigates this question by understanding the implications of a proposed installation and operation of an urban farm/aquaponics campus and food production/distribution center at the site of the Maddox Park Greenhouse, a property currently owned by the City of Atlanta.

Building on information based on this emerging technology in urban farming, this report considers the implications of an installation of Bioponica’s systems at the Maddox Park greenhouse. This paper intends to proactively raise questions and address issues regarding how the installation would be integrated with and thus affect the areas surrounding Maddox Park, primarily the neighborhoods, as well as the larger city as a whole. It is the goal of this report to create understanding of the potential of such a Center, in terms of job creation, food security, quality of life, community health, educational opportunities, as well as its impacts and interactions with existing infrastructure and plans in the area.

The Site

The site is a 15,000 square foot greenhouse located inside Maddox Park, which is an underutilized park located west of the English Avenue neighborhood next to the Bankhead MARTA rail station. It is located on the proposed Beltline corridor. The greenhouse is not currently utilized to its full potential and there has been much talk about the opportunities of transitioning the greenhouse into an alternative use.

In addition to the needs of the adjacent residents, the neighborhood is also extremely underserved with places to acquire fresh food. The city overall has an unmet demand for local food and lacks a skilled workforce necessary to increase the production of local food, as well as infrastructure to train a sufficient workforce; thus there are significant barriers to developing a local base in this green job sector. There is also no formal food systems planning in Atlanta. However, the City of Atlanta has set forth some ambitious sustainability goals relating to local food and waste recycling. Specifically, they are to reduce/reuse/recycle 30 percent of residential waste and bring local food within 10 minutes of 75 percent of residents.

The Center

The objective of the proposed center is to revitalize and retrofit the greenhouse and ultimately Maddox Park as a site for food production, organic fertilizer production, food waste recycling, and education that focuses on aquaponics and urban agriculture jobs training, farm-to-school, after school programming, local food sales and distribution. It has the potential to become a fresh food connection in the neighborhood, producing but also bridging the community to other food suppliers and vendors, as well as proving education on the importance of eating healthily.
2 New Models of Sustainable Urban Food Production

This section reviews current literature on the state of sustainable and other emerging models of urban food production and distribution, strategies that promote its growth, and the anticipated social and environmental benefits that result.

Current academic writing on sustainable food production focuses on some key concerns about the industrial agriculture and commercial food processing and their affects on the quality of food available in cities. Topics range from over-processed nutritionally invalid foods that lead to health problems and inequities to the negative environmental impacts of inefficient distribution systems and industrial farming practices. Cities suffer both economically and socially from the dominance of industrial agricultural producers and processors. These businesses continue to grow more powerful in shaping both the demand and supply sides of the food production and distribution systems in the U.S. and the world.

The literature cited here examines the characteristics of emerging new models of food production, which are both a reaction to the consolidated food industry as well as a means to address the environmental, economic and social disparities regarding food access in cities while creating new green jobs in this emerging sector of the food industry. The new food economy explored in the literature—specifically the role of food producers—is more than a return to pre-industrial methods, scales and perspectives on agricultural production and processing. It combines the values of sustainability and modern capabilities for energy and water efficiency with recognition of the superior economic dynamics of small and medium, local food producing and processing enterprises.

2.1 A Review of Important Concepts

>Local Food – There are several ways to delineate “local.” One popular definition is a 100-mile radius. The USDA uses a 400-mile boundary to define local in some of its programs. Political boundaries are also used, such as food produced within a state. Defining an area’s food shed can also help define the term local (Kremer and DeLiberty 2011).

>Food Sheds and Food Systems – Food shed describes regional sources of food and its distribution, with ideas about how many the local area can feed, what can be produced locally and how much, and what imports are essential (Kremer and DeLiberty 2011). Food systems are intentional, collaborative effort between consumers in cities, decision makers, and food producers in a region to build more locally based, self-reliant food economies—one in which sustainable food production, processing, distribution and consumption are integrated to enhance economic, environmental and social health (Feenstra 1997).

>Food Security – Food security is a measure of a city or region’s food system. It is achieved when all persons in a community have access to nutritionally adequate food through local, non-emergency sources at all times. Food security has also become an issue of homeland security, where a regional food supply that is less vulnerable to the uncertainties of economies is recognized.
as necessary in emergencies. For this purpose, every community should be able to produce or supply at least a third of the food required by its residents. At present, less than five percent of food consumed in communities across the U.S. is produced locally (Brown and Carter 2003).

> **Food Desert** - Food insecurity typically occurs in low-income urban areas where residents either lack access to a grocery store or other sources of fresh, nutritionally sufficient food. The USDA defines a food desert as any census district where at least 20 percent of the inhabitants are below the poverty line and 33 percent live over a mile from the nearest supermarket (or in rural areas, more than 10 miles). These areas are often characterized by a prevalence of fast-food restaurants but few other options. Food deserts affect the quality of life, as poor nutrition is associated with school and work absences, fatigue, and problems with concentration. Hunger and poor nutrition are linked to more incidences of infectious diseases, and increased risk of diabetes, hypertension, and heart failure (Brown and Carter 2003).

> **Food Miles** – Food miles describes the long distance food travels in the global food system, with specific focus on the environmental impacts of fossil fuel use and greenhouse gas emissions.

> **Aquaponics** – An aquaponics system is a closed-loop growing system where plants filter the water for the fish and the waste from the fish is converted to food for plants; a sustainable convergence of hydroponics and aquaculture.

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**Definition of Sustainable Urban Food Production**

“Sustainable agriculture systems are based on relatively small, profitable farms that use fewer off-farm inputs, integrate animal and plant production where appropriate...emphasize technologies that are appropriate to the scale of production, and make the transition to renewable forms of energy” (Horrigan 2002).

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**2.2 What is Sustainable and Why Should Food Systems Be Sustainable?**

Sustainability in food production takes advantage of energy-efficient technologies and minimizes waste, and utilizes sustainable, ideally local, food distribution networks. Leo Horrigan, Robert Lawrence and Polly Walker’s article, “How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture,” provides a definition of sustainable agriculture: “Sustainable agriculture systems are based on relatively small, profitable farms that use fewer off-farm inputs, integrate animal and plant production where appropriate, maintain a higher biotic diversity, emphasize technologies that are appropriate to the scale of production, and make the transition to renewable forms of energy. Sustainable systems involve less reliance on chemical inputs and decreased emphasis on economic efficiencies that shunt environmental costs onto society.”

They also note that a more sustainable food system would involve closer connections between producer and consumer, meaning more direct marketing of foods to local customers. Gail Feenstra, in, “Local Food Systems and Sustainable Communities,” defines this element to include processing activities, where “a
From farm to plate, vegetables travel on average about 1,600 miles and fruit about 2,400 miles.

collaborative effort to build more locally based, self-reliant food economies—one in which sustainable food production, processing, distribution, and consumption [are] integrated to enhance the economic, environmental, and local health of a particular place” (Feenstra 1997). Laura DeLind notes in “Are Local Food and the Local Food Movement Taking Us Where We Want to Go? Or are we hitching our wagons to the wrong stars?” that Feenstra’s definition goes well beyond production agriculture to include processes “up and down the food chain that sustain a food system as well as their environmental, community, health, and economic implications” (DeLind 2010).

Why is this important? “Because agriculture can have such profound effects on the environment, human health, and the social order, it is a critical part of any movement towards sustainability” (Horigan 2001)

Horigan, Lawrence and Walker note that the U.S. Environmental Protection Agency estimated industrial farming is responsible for 70 percent of the pollution in rivers and streams, accounts for about two-thirds of all water use worldwide, and 17 percent of all fossil fuel use in the U.S. Table 2.2.1 on page 7 illustrates the consumption of resources that occur in each phase of the conventional food production cycle. From farm to plate, vegetables travel on average about 1,600 miles and fruit about 2,400 miles. Transporting, processing, and packaging also require large amounts of fuel. In addition to using large amounts of fertilizer and pesticides, which pollute but also harm birds and beneficial insect populations and disrupt ecosystems, industrial agriculture also degrades the soil and contributes to erosion. This loss of topsoil is happening at a greater rate than it can be replaced, threatening the ability to feed a growing population (Horrigan 2001).

This commercial food industry is also blamed for injustices and hidden costs to society, as it fuels and shapes inequitable distribution and retail networks. In 2002, the ten largest food companies controlled 24 percent of global processed food sales. This concentration of power allows the price of food to be dictated entirely by large processors and retailers (Gopalan 2001). This situation undercuts the sale of healthier fresh food by making processed foods cheaper. Inequalities of access and affordability of fresh foods are also created by the processed food sector, as the industry dictates what foods certain low-income populations will have access to, and what the price will be.

In “Making Healthy Food More Accessible for Low-Income People,” Molly Anderson highlights the complexity of this issue in cities. Calorie-dense and nutrient-poor foods have become cheaper while healthy

Figure 2.2.1: U.S. Food Deserts
No Car and No Supermarket Store Within a Mile

options have become more expensive. This is a result not only of farm policy but the food processing industry’s profitability schemes. Federal subsidies for corn and soybeans reduce the cost of making high fructose corn syrup and hydrogenated soybean oil (both are common items in processed foods) while fruit and vegetable producers receive little federal support. This is intensified by the fact that low-income populations tend to face higher prices and fewer choices at neighborhood food stores, which is known as the food desert phenomenon. Even within the same chain, supermarkets in urban and rural areas are likely to charge more than those in suburban areas, driving purchasing decisions more and more towards cheaper nutritionally invalid foods. Also, studies have shown that fresh fruits and vegetables are less likely to be found in stores in low-income areas (Anderson 2007). According to the USDA, approximately 23.5 million Americans live in a food desert. Many of these large swaths, as illustrated in the map on page 5, occur in the southeast, which has prime growing climate.

2.2.1 The New Look of Urban Food Systems

The new look of urban food systems is integrated and supportive of the health of an area or region’s local food system, economy and environment. Radha Gopalan, in “Sustainable Food Production and Consumption,” writes, “Sustainability must extend to every stage in the life cycle of food production and consumption ranging from farming practices to distribution to consumption.”

Growing Demand for Local Food

The strongest support of sustainable food production is the growing demand for local food. The USDA 2010 study on local food systems estimates that demand for locally grown food will rise from the $4 billion market it was in 2002 to a $7 billion market in 2012. From 2002 and 2007, direct sales of vegetables increased 69 percent, fruit and nut sales increased 75 percent and beef sales increased 84 percent. There was a 92 percent increase in the number of U.S. farmer’s markets from 1998 to 2009. Local food sales through all marketing channels in the United States were $5 billion in 2007. And in general, organic food sales are growing at a faster rate than conventional food, as Table 2.2.2. illustrates (USDA 2010).

Table 2.2.1: U.S. Food Sales Growth 2009

<table>
<thead>
<tr>
<th>Organic Food</th>
<th>5.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Food</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

Source: USDA 2010

Alison Blay-Palmer and Betsy Donald observe in “A Tale of Three Tomatoes” that by supporting the development of a localized food industry, cities and states can see economic benefits from local food production by capturing more local food dollars within the state, which can also strengthen rural economies (Blay-Palmer 2006).

Local food provides avenues for product differentiation and adding additional value to products, as regionally grown food is increasingly recognized by consumers as providing social, economic, environmental and health benefits. Higher quality is also increasingly associated with local. The growing local food movement has in itself added value to food labeled as local.
Of course, the amount of local food that is it is possible to produce will vary by region both in relation to existing local food system infrastructure and growing season (Thompson, Harper and Kraus 2008). For example, in a 2008 study of San Francisco’s foodshed, which was defined as a 100-mile radius from the city, researchers found that 20 million tons of food are produced within the foodshed annually, compared with annual food consumption of 935,000 tons in San Francisco and 5.9 million tons in the entire Bay Area. Only a few commodities consumed are not produced in enough abundance to meet the demands of the City and Bay Area: eggs, citrus fruit, wheat, corn, pork and potatoes (Thompson, Harper and Kraus 2008). But in areas whose foodsheds do not include California’s central valley, the availability of local food may be much less.

In Philadelphia the 100-mile foodshed has 29,910 square miles (19,142,400 acres) of land area and 27 percent is agricultural land. There are several major cities within the 100-mile foodshed, including New York City, Philadelphia and Baltimore and it has a density of over 1,034 people per square mile. In such a densely populated area, not all food can be local as demand exceeds supply from within the foodshed. The Greater Philadelphia Food System Study estimates Philadelphia’s population requires over 6.8 million acres of agricultural land to meet its food demands, more than what is available in its foodshed (Delaware Valley Regional Planning Commission 2010).

Food is usually considered locally or regionally produced when it has traveled less than 400 miles from its origin or has remained within the same state, according to the USDA (Martinez 2010). Rainbow A. Vogt and Lucia L. Kaiser, authors of “Still a Time to Act: A Review of Institutional Marketing of Regionally-Grown Food,” synthesize several definitions of the local food system: “a system where there are adequate opportunities and infrastructure for food producers to sell their goods to local people and institutions.” Furthermore, a community food system is defined as “a viable regional food system no longer entirely dependent on the global food

Table 2.2.2: Environmental Impacts of Food Production

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sales (Billions)</th>
<th>Employees</th>
<th>Emissions (% of food system)</th>
<th>Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>$300</td>
<td>997 K</td>
<td>60%</td>
<td>Uses about 80% of freshwater resources; soil degradation and water pollution from agricultural runoff.</td>
</tr>
<tr>
<td>Processing</td>
<td>$589.50</td>
<td>1.5 M</td>
<td>10%</td>
<td>Accounts for 16% of food system energy use; packaging/containers make up more than 30% of municipal solid waste nationally.</td>
</tr>
<tr>
<td>Distribution</td>
<td>$819.40</td>
<td>882 K</td>
<td>7.11%</td>
<td>Average transport from farm to table is 1,500-2,500 miles; requires large energy and fuel inputs, particularly for transport, refrigeration and warehouse technology.</td>
</tr>
<tr>
<td>Retail</td>
<td>$918</td>
<td>11.9 M</td>
<td>15%</td>
<td>Supermarkets are the number one industrial emitters of HFC gases used as coolant in freezers; contributes to the 100 billion plastic bags used annually, made from 12 million barrels of oil.</td>
</tr>
<tr>
<td>Waste</td>
<td>N/A</td>
<td>357.7 K</td>
<td>8%</td>
<td>Residential and commercial food waste constitutes the 3rd largest waste stream after yard waste and paper: 36 billion pounds.</td>
</tr>
</tbody>
</table>

*Source: Green For All 2010*
system.” Additionally, Dara Bloom and C. Hinrichs, in “Moving Local Food Through Conventional Food System Infrastructure,” write that local food offers extra value and contributes to a successful business strategy. Demand for local food gives producers an advantage, as their products can be differentiated based on the fact that they are locally grown (Bloom 2010).

2.3 New Methods and Technologies

While the growing demand for local food can certainly be served by rural farms, urban agriculture has become a popular strategy for supplementing the local food supply. Urban agriculture includes a range of activities initiated and facilitated by a wide range of organizations, from neighborhood organizations, community development corporations, social service providers, coalitions for the homeless, schools and universities, nonprofits, individuals, groups of individuals, and small businesses. For whatever the purpose is, whether it be a small entrepreneurial venture or part of a school curriculum, urban agriculture is essentially growing and marketing food inside of a city.

> **Community gardens** can range from 2,500 square feet to one or two acres. In their simplest form, people pay small fee for a plot. A well-run, well-supported community garden does have the potential to grow into a significant contributor to the community in a number of ways. Community gardens can transition into or be funded by a non-profit organization with an operating budget, begin offering classes, events, plant sales, rent garden space, donate food to shelters or food banks, and hold fundraisers and earn money through memberships.

> **Market Gardens or Farms** is a small to mid-scale entrepreneurial operation that might range from 2,500 sq. ft to 1-3 acres and is run by one or two farmers, usually on land that is leased very cheaply (or for free). Market gardens typically sell at farmers markets, and grow into a Community Supported Agriculture (CSA) or supply small local grocers, and restaurants.

> **CSA** is a method of sales for a market or entrepreneurial farm. Farmers are paid in advance for weekly delivery of produce, ranging from $20-80 per week per share. The acronym “CSA” also refers to the box of produce itself.

> **Outreach, Learning or School Gardens** can be 2,500 square feet or up to three acres in size, and its primary purpose is community education or job training. This might grow out of a community garden that is funded by a non-profit or private foundation. Youth or marginalized community members may be employed during training, or the garden may be an extension of a school curriculum. The education component may also be in the form of a youth summer camp. Successful models can supplement income by going to market and producing value-added products.

> **Urban Agriculture Businesses**: This scale is defined here as a mid to large-scale entrepreneurial operation, at least 1-3 acres in size. These types of applications may have several employees, utilize greenhouses, hydroponics, use high-intensity growing methods and other technologies, have on-site sales at market stands and value-added products, and may offer services such as consultation or installations in addition to traditional sales methods as utilized by small operations.

> **Hybrid Garden or Farms** can be a combination of several models, typically a community garden partnered with or
having become a non-profit organization or a non-profit community organization using urban agriculture as mechanism for outreach and education. Other characteristics of entrepreneurial urban agriculture are related to the types of spaces they can fit into. “Some grow food in cultivated soil. Others use hydroponic (non-soil) techniques to produce food. A few are located in greenhouses. Others operate out of older warehouse facilities in industrial areas. Some are located in residential facilities. Many are located on relatively uncontaminated urban sites, others on designated brownfield sites.

Given the number of methods – raised beds, aquaponics, vertical – in addition to the broad range of products that can be cultivated or raised or farmed – vegetables, fruit, melons, berries, honey, mushrooms, compost worms, flowers, eggs, poultry, etc. – there is no single type of space that is ideal for accommodating urban agriculture, there are many.

Many of the methods and technologies emerging can utilize impervious surfaces and utilize undevelopable sites, utility easements, wetlands, and other inaccessible or otherwise unusable land. (Kaufman 2000). Vertical gardening, spin farming, greenhouses, rooftop gardening, and other intensive methods that utilize smaller spaces are typical in urban settings due to space limitations and the availability of warehouse or other industrial spaces for growing.

Aquaponics is just one example of a growing technologies and methods of sustainable food production, which is ideal for urban areas as it is an efficient use of limited space, it recycles and conserves water, and does not require soil. It also has the capacity to recycle waste, as nutrient sources for aquaponics can come from a number of available urban waste sources, from grass or yard clippings to grocery store food waste or other food waste sources. Below, Figures 2.3.1 and 2.3.2 are diagrams that explains the aquaponics system and cycle.

The system is described as an integrated system of hydroponics and aquaculture, or an aquaculture systems that incorporate the production of plants without soil, designed to raise large quantities of fish in relatively small volumes of water by treating the water to remove toxic waste products and then reusing it. The accumulation of nutrients and organic matter are channeled into secondary crops that can be sold or in some way benefit the primary fish production (Rakocy 2006).
As previously stated, the foundation for sustainable food systems in a city or region is sustainable agriculture and local food networks, both of which are increasingly viewed as tools for economic development and as ways to address the negative social and environmental impacts of industrial agriculture.

As sustainable food systems rely on closer connections between producers and consumers, urban centers, which are the biggest markets for food, are ideal locations for food production, as they contain direct access to the majority of retail outlets (Green for All 2010).
The Benefits of Sustainable Local Food Systems

3.1 Public Health and Food Security

Efforts to create healthier food environments can also address the inequities of access and negative public health impacts of the industrial food system and introduce a series of societal benefits that can improve quality of life in urban areas and foster community development. This multi-faceted network of benefits that urban areas can realize through promoting the growth of sustainable food production is explained in the article, “Engagement for Transformation: Value Webs for Local Food System Development” by Daniel Block, Michael Thompson, Jill Euken and Toni Liquori. The authors here describe a web of benefits inherent in sustainable food systems and localized food production that are very different from the traditional industrial food system, where resources are taken out of the community and food products are imported in. The authors note that beyond economic benefits, local food systems “foster environmentally and economically sustainable production in their regions, and work from the consumption side to the production end to change the way that conventional food systems operate, introducing “moral value” into food systems, such as enabling access to healthy and/or locally produced foods in local schools and supermarket-deprived zones in urban areas (Block 2008).

Extensive and mounting evidence shows that school-based garden programs have significant health effects on young people: agricultural education programs can provide exercise, mental stimulation, skills in biological and environmental sciences, math, geography, and induce healthier eating habits.

Farm-to-school and farm-to-institution programs offer an alternative to highly processed menus in schools, hospitals, shelters, and prisons. In particular, prison garden programs can improve physical and mental health of prisoners. Community-centered agricultural education and outreach programs enrich social engagement, build community, and promote personal health care and wellness. These programs are often coupled with outreach medical clinics that focus on epidemics like obesity and diabetes, typically caused by poor eating habits or food-desert environments. Food production education for older youth and adults teaches job skills and offers entrepreneurial opportunities. Additionally, urban agriculture programs can link different sectors of a city through market sales and other social activities (Bellows 2006).

3.2 Economic Development

The USDA report, “Local Food Systems: Concepts, Impacts, and Issues,” claims that local food systems can directly benefit local economies through import substitution. If consumers purchase food produced within a local area instead of food sourced from large industrial processors, the money stays within the area, the effect multiplying as that money is again spent within the area” (Martinez 2010). This concept transfers directly to food processing, as local processing of locally grown food can again compound local dollars if it is again sold in the local area as value added product. Processors also retain a bigger share of the retail price if they are doing the distribution (Martinez 2010).
Several studies measure the effect of local food dollars on the local economy. A study in Iowa showed that each dollar spent at farmers’ markets in Iowa generated 58 cents in indirect sales, and each dollar earned at farmers’ markets generated an additional 47 cents in indirect income. Each full-time equivalent job created at farmers’ markets supported almost half of a full-time equivalent job in other sectors of the Iowa economy (Martinez 2010).

In 2010, a study for the City of Cleveland analyzed the impacts of a 25 percent shift in total food localization. The findings, in addition to a huge job stimulus, were $4.2 billion of additional output, $1.5 billion in additional value-added activity, $868 million in additional wages, and $126 million of additional state and local tax revenues. Unquantifiable benefits mentioned in the study were growth of region-wide entrepreneurship, dramatic reductions in public assistance outlays in unemployment, food stamps, housing vouchers, health subsidies, and other government supports (Masi 2010).

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A study on the Maine Organic Farmers and Gardeners Association estimated that if every family in Maine spent $10 dollars a week on local food, it would add $104 million into the local economy (Sonntag 2008). A 2008 study conducted by the University of Georgia Center for Agribusiness and Economic Development, “What if Georgians Ate Georgia Produce,” found that “if Georgians produced all of the fruits and vegetables that they consumed, it could provide over $780 million per year to local producers. Even “closing the gap” in one commodity such as lettuce could mean an additional $83.6 million of direct revenue to local producers (Kane 2010).

### 3.3 Education and Job Training

Local food systems are linked to other sectors like tourism, biotechnology, packaging, low-impact green technology, and waste recycling. Sustainable food production methods, such as aquaponics and other bio-intensive gardening models, can grow green jobs and offer workers green job skills, such as in environmental sustainability and innovative market development. There is also the advantage of the fact that many of these jobs are entry-level (City of Oakland 2004).

Green jobs in the food system are defined as quality jobs with livable wages that build skills, expand ownership and community benefits and wealth opportunity (Agricultural Utilization Research Institute 2010). Green job growth can be realized in organic food production, which is growing in sales at a faster rate than conventional food. In 2009, organic food sales increased 5.1 percent from 2008, while total U.S. food sales grew only by 1.6 percent (Green for All 2011). The Soil Association of Britain found that organic farms create 32 percent more jobs per farm than equivalent non-organic farms, as organic food production is more labor-intensive.
Food production education in sustainable operations offers skill building in integrated pest management, plant health, soil management, water conservation and rainwater collection systems, landscape design, seed saving and crop rotation, food waste recycling, vermiculture, food processing, among others, with very low barriers to entry. As demand grows, these skills can segue into job opportunities in agro-ecology, permaculture or aquaponics and bio-chemistry (Green for All 2011).

Many of these types of skills translate well into self-employment in edible landscaping companies, greenhouse nurseries or small processed food and local food retail start-ups. Increased availability of local organic food can create a demand for more shared processing facilities and cooperative processors with business incubator services, especially meat and custom-feed processors that accommodate small or medium producers, and provide small business and entrepreneurial opportunities (Green for All 2011).

The area of waste recycling alone, such as zero-waste anaerobic methane digesters (microbial processors that produces methane and carbon dioxide from organic materials) is a growing field where skills and working knowledge is needed.

As they continue to grow, new food production technologies will require specialized and trained farmers, agricultural technicians and skilled laborers who can use tools like sub-irrigated planters, rainwater catchment systems, precision composting, and vertical growing. The growing interest in the renewable energy potential of anaerobic digestion and the sale of biogas for food processing also represents a growing field that will need skilled technicians (Green for All 2011).

Beyond taking advantage of the economic benefits of local food production, an urban agriculture Center at the Maddox Park greenhouse featuring aquaponics and other sustainable food production technologies could potentially position Atlanta as an emerging national headquarters for training and certification in these emerging sectors of urban agriculture, especially if partnerships with institutions of higher learning are developed as part of its operations. The following chapter discusses particular models where urban food production and green jobs in aquaponics are being implemented and fostered on multiple levels, from grade school to high-level institutional research, illustrating how the Maddox Park greenhouse might be developed to achieve a similar outcome.
4 Successful Models for a Community-Based Urban Aquaponics Center

In the U.S., several successful models for urban agriculture and sustainable food production initiatives are making headway towards achieving community development, food security, community health, and economic development goals. These models contribute a wealth of knowledge in establishing, funding, and operating in the operation of a community-based urban agriculture and aquaponics center.

The Midwest is the home to all of the following examples, as the region is on the forefront of urban agriculture models in the U.S., which have been supported by enabling urban agriculture policies and strategic partnerships with city and state entities. In particular, Growing Power is a leading organization that helped spawn much of the region’s awareness of new models of food production, community stability and jobs and how these can be addressed through sustainable local food production.

4.1 Growing Power

Growing Power, a national non-profit organization headquartered in Milwaukee, runs several successful urban agriculture programs in the Midwest from Wisconsin to Illinois. The organization produces vast amounts of food year-round and cultivates produce and livestock at various urban and rural sites in and around the Midwest. The three areas of focus are:

> Projects and Growing Methods
> Education and Technical Assistance
> Food Production and Distribution

Iron Street Farm

Iron Street Farm is one project that embraces all three of the focus areas, and lends itself as an appropriate model for the proposed Maddox Park project. Iron Street Farm is a former industrial site in Chicago’s South Side. It was established in 2010 and funded by a combination of partnerships between public departments, the Housing Authority, the City of Chicago, and an EECBG Stimulus grant (Growing Power 2011). The organization has expertly weaved these various entities together to create urban agriculture opportunities that address a variety of economic and public health goals.

Iron Street is being called a model “Green Campus” for the City of Chicago, as well as Growing Power’s central distribution center for all of its Midwest farms. The center will hold an anaerobic digester for food waste, aquaponics systems, vermiculture composting for soil remediation, offices for staff, and a class-room for the local community (Growing Power 2011).

Figure 4.1.1: Iron Street Farm

Source: http://www.globalgiving.org/projects/iron-street-urban-farm/updates/
Future Considerations of the Maddox Park Greenhouse

By Mary Richardson

Urban Agriculture Training
Growing Power offers a Commercial Urban Agriculture Training Program for individuals who want to gain skills in commercial urban agriculture, which may eventually be offered at Iron Street but currently is offered at its headquarters. The training facilities include:

- greenhouses
- training gardens
- aquaponics systems
- large-scale vermicompost and composting, anaerobic digestion
- a food distribution facility

Youth Outreach
Chicago Youth Corps is focused on entrepreneurial youth development and apprenticeship. It offers youth from low-income backgrounds both academic and professional experience. The program offers the basics of organic agriculture, as well as development of leadership and entrepreneurial skills.

4.1.1 Badger Rock School and The Resilience Research Center
A partnership between The Resilience Research Center and Growing Power, Badger Rock School, a vacant school building in Madison, Wisconsin, will be converted into a year-round intensive urban agriculture training center and charter school. The facility is currently under construction, and the proposed design is

Additionally, Growing Power provides technical training support to urban farm projects across the U.S. These Regional Outreach Training Centers (ROTCs) receive technical support to host Growing Power’s “From the Ground Up” workshop and to plan and develop a Community Food Systems project modeled after Growing Power’s Community Food Center and Projects.
illustrated in Figure 4.2.1. The school component will offer a interdisciplinary program on environmental sustainability. The center will offer skills training in: urban agriculture, bio-intensive food production, food preparation, and marketing.

*Figure 4.2.5: Badger Rock Site Design*

The curriculum is focused on entrepreneurial youth development and neighborhood green jobs. Half of the students will come from nearby neighborhoods.

The Resilience Center component is a research lab and community center. Research will focus on food growth and science, energy and water use, and community cooperation (Center for Resilient Cities 2011).

**4.2 The Plant**

A former meatpacking plant in Chicago, which is now called The Plant, is being renovated and leased to different businesses in the food production sector, creating cooperative, mutually beneficial relationships between the businesses. The long-term vision is for The Plant to become a headquarters for fresh organic produce and small food businesses.

*Figure 4.3.1: The Plant Chicago retrofits an old meat packing facility*

The Plant is currently about 50 percent renovated and occupied. John Edel, who initiated the project after purchasing the building, started with a non-profit aquaponics research farm as an anchor tenant. Other tenants are a vertical landscaping company, the New Chicago Brewing Company, 312 Aquaponics, a mushroom farm, a kombucha (fermented tea) brewery, and a composting company (Hoekstra 2011).

*Figure 4.3.2: 312 Aquaponics at The Plant*

Source: ThePlantChicago.org
Carbon and Waste-Neutral
The state of Illinois awarded The Plant a $1.5 million in grant funds through the Department of Commerce and Economic Opportunity program to support its renewable energy system, a biodigester that will recycle food scraps and supply energy to the building. The relationships between the tenants, their inputs and their waste, and the digester is illustrated in Figure 4.3.4. A licensed shared-use commercial kitchen space is also being installed in the space, which will be available to current and future tenants (Hoekstra 2011).

4.3 Sweet Water Organics
Sweet Water Organics is an urban farm located in the Bay View neighborhood of Milwaukee inside of a re-purposed, previously abandoned, industrial building. Sweetwater uses aquaponics systems to sustainably grow fresh produce and fish for Milwaukee consumers, restaurants and grocery stores. Fish (Perch, Blue Gill and Tilapia) and produce, including sprouts, lettuce, wheatgrass, watercress, basil, mushrooms, peppers, cucumbers, squash, and herbs are grown (Sweetwater Organics 2011).

Sweet Water Organics Store
In addition to supplying wholesale products to grocers and restaurants, produce and fish (packed fresh-to-order) are sold on-site
in a store attached to the warehouse. The store also carries meats, eggs, cheese and jarred items from other local farms and producers. The store also sells its own vermicompost (worm composting) systems, worms, rain barrels, and guide books for composting and water collection, and other educational materials (Sweetwater Organics 2011).

**Youth Education, Educator Training, and Career Paths**

The Sweet Water Foundation (SWF) is the non-profit educational arm of Sweet Water Organics, and facilitates the AQUAPONS Program and other educational programs in the field of urban agriculture, for the purpose of building food secure urban communities. Since 2009, SWF has developed and implemented educational “Kindergarten to Career” programs in urban agriculture and aquaponics for K-12 students that incorporate environmental science, biology, chemistry, agriculture, mathematics, engineering, economics, and other disciplines in partnership with educators and post-secondary institutions. SWF has also helped install over fifteen miniature aquaponics systems in schools in Milwaukee and Chicago since 2010.

*Figure 4.4.4: Sweet Water Foundation Aquaponics educational program*

SWF and the Midwest Aquaponics Expertise Development Initiative (MAEDI) have received funding from the USDA to conduct a teacher training and educational pilot program that supports student entry into food-science related careers. Currently, SWF is designing curriculum around aquaponics.

The AQUAPONS training can implemented at any site with access to an aquaponics system. Trained SWF staff, coaches, or teachers will implement the AQUAPONS training. The target audience for the AQUAPONS program are K-12 teachers and students, who are learning aquaponics as an integrated aspect of their school’s curriculum (Badges for Lifelong Learning 2011).

**Overall Benefit of these Models**

The lessons that can be drawn from these examples are rich, and can directly inform any initiative utilizing the Maddox Park Greenhouse for a community and education-based urban aquaponics site. From the design of the school, to balancing non-profit status with business and income-earning initiatives, city and state government and other institutional partnerships, establishing and operating community markets and an onsite store, developing school curriculums, to partnering with research institutions or technical colleges for job training and business incubation, the cases illustrate that these models are working, and they successfully work together. Additionally, these organizations, particularly Growing Power, offer themselves as consultants to assist in establishing other similar efforts around the country.

That said, these are only several of the viable business, funding, and operational models that could successfully guide such an implementation at the Maddox Park greenhouse. However, the context of the City of Atlanta should also be considered. This is discussed in the following chapter.
In Atlanta, to establish a center at the Maddox Park Greenhouse similar to those mentioned in Chapter 4, a number of local considerations would have to be made. There is significant support for urban agriculture in Atlanta, as well as existing infrastructure for urban agriculture-related activities in the form of farms, markets, programs, organizations, and networks. These are discussed here to paint a picture of how a new urban agriculture center might be supported by and contribute to this emerging sector in Atlanta. This section discusses local and national statistics on local food, and presents ways that urban agriculture activities are currently being engaged in order to illustrate how these efforts operate politically, financially, and organizationally.

In 2010, Atlanta’s Office of Sustainability released its official Sustainability Plan, declaring that Atlanta would bring 75 percent of its residents within 10 minutes of fresh, local food by 2040. While not directly linked to sustainable agriculture or food systems, the Sustainability plan also states that the city plans to launch a green workforce development policy and program in order to grow sustainability education and training programs (Mahoney 2010). An urban aquaponics Center at Maddox Park could significantly move the needle forward on these two sustainability goals as part of an interactive, multi-disciplinary program with far-reaching benefits in public health, food security and green job and workforce development.

5.1 Local Food in Atlanta and in Georgia

Local food demand in Georgia is growing, and the main market in the state is Atlanta. This is coupled with an increasing number of urban agriculture activities within the cities, which represent a diverse set of operational models, funding mechanisms, and overall objectives. Demand for local food is seen in the increasing popularity and number of farmers markets and CSAs to the increasing number of restaurants and grocers offering locally grown food.

The following observations were analyzed using data provided by Georgia Organics, the 2008 report, “Atlanta Metro Region & The State of Georgia Farm & Food Economies,” by Ken Meters, statewide data collected by the Georgia Department of Agriculture’s 2009 Farm Gate Report, and personal interviews. They collectively show that the demand for local food in Georgia is growing significantly, and at a faster rate than the national average. This indicates
that there is likely an unmet demand for local, organic food in Atlanta and that any food produced via the Maddox Park Greenhouse would be in high demand.

In Fulton and Dekalb counties, there are 35 farmers markets, 16 CSAs, and 50 community gardens. Including surrounding counties, there are 27 entrepreneurial farms within 25 miles of downtown Atlanta (Tescher 2011). In Georgia, locally-grown food direct sales increased 37 percent from 1997 to 2002. The number of farmers markets in the state has grown 19 percent since 2009. In Georgia over the past 10 years, the number of farmers markets has more than doubled. This rate of increase is higher than the national average, which was 16 percent in 2009, illustrated in Figure 5.1.1 (USDA 2010).

Figure 5.1.1: Farmer’s Market Growth 2009-2010

This trend in Georgia exceeds national trends. According to the USDA, in 2009 Georgia’s number of organic farms is growing at a rate three times the rest of the U.S., as is illustrated in Figure 5.1.2.

Table 5.1.1: Percent Local Food Infrastructure in Fulton and Dekalb Counties

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer’s Markets</td>
<td>28%</td>
</tr>
<tr>
<td>Local Food Restaurants</td>
<td>63%</td>
</tr>
<tr>
<td>CSA’s</td>
<td>20.5%</td>
</tr>
<tr>
<td>Local Grocers</td>
<td>31.5%</td>
</tr>
<tr>
<td>2010 Population</td>
<td>16.6%</td>
</tr>
</tbody>
</table>

Source: Georgia Organics Local Food Guide 2010; US Census 2010

While this trend is represented on a statewide scale, much of the local and organic food that is sold directly to consumers in Georgia is purchased in the city of Atlanta. According to data from the Georgia Organics Local Food Guide, Dekalb and Fulton counties contain 28 percent of the farmer’s markets, 63 percent of local food restaurants, 20 percent of the CSAs, 32 percent of the local grocers and food co-ops, and 67 percent of the community gardens (Tescher 2011). Comparatively, Fulton and Dekalb counties represent 16.6 percent of the total 2010 population in Georgia (US Census 2010).

The increase in direct sales of locally produced food can have enormous positive economic impacts. The 2008 study, *What if Georgians Ate Georgia Produce*, found that “if Georgians produced all of the fruits and vegetables that they consumed, it could provide over $780 million per year to local producers. Even “closing the gap” in one commodity such as lettuce could mean an additional $83.6 million of direct revenue to local producers (Kane 2010).

Many of the urban agriculture activities in Atlanta are administered by non-profits or are small for-profit businesses. The models vary widely in terms of organization, funding and marketing strategies, objectives, and operational characteristics. However, there is one unifying characteristic. Of the 22 urban
agriculturalists interviewed as part of this report, all of them have similar land arrangements, specifically, they pay either nothing at all or a nominal amount for the use of land, regardless if the landowner is a religious organization, governmental body, private landowner, or neighborhood association.

For such operations, partnerships for selling the food is a strategic way to guarantee or anticipate annual income for better budgeting. Farm-to-Institution is one way to do this, and the earnings can be significant, even with one partnership. For example, Emory University currently dedicates just 11 percent of its dining budget to sourcing local food, which creates an input of $300,000 into the local economy per year (Barlett 2011). If just one institution of this size partnered with an operation at the Maddox Park Greenhouse, this guaranteed contract could finance a significant percent of the operating expenses.

Additionally, selling local food to restaurants is another viable option. In Atlanta in 2010, there were 110 local food restaurants (Tescher 2011). One in particular, Miller Union, sources on average 75 percent of its food locally, employs 50 people, and grosses around $2 million per year (Satterfield 2011). This is a growing national trend, as the National Restaurant Association’s 2011 survey found that three of the top five overall trends nationwide are locally sourced food.

5.2 Atlanta’s Urban Agricultural Activities and Operations

As previously mentioned, 22 urban agriculturalists and organizations were interviewed for this report, during the summer of 2011. Their input is presented here to illustrate the nature and scope of agricultural activities at work in Atlanta. They range from non-profit and outreach organizations, school program administrators, community garden organizations, farming entrepreneurs, property developers, city planners, and leaders in the local urban agriculture movement. Understanding the current urban agriculture outlook in Atlanta, including the organizations currently at work and what models they are utilizing, can inform the development of a new urban agriculture center in Atlanta. These models and organizations, coupled with the case studies presented in Chapter 4, should be synthesized to provide an idea of what works from both a best practices point of view as well as a localized understanding of what Atlanta currently supports and what is currently lacking from its overall picture of urban agriculture.

5.3 Atlanta’s Urban Agriculture Infrastructure

Truly Living Well Urban Organic Farm

Truly Living Well, headquartered four blocks from downtown Atlanta, just off of historic Auburn Avenue in the King Memorial District, has quickly become the most prominent urban farm in Atlanta. The organization operates four different sites in the Atlanta area. Three of them were established in 2005, and the most recent, which has now become the organization’s headquarters, has and continues to receive lot of local attention for its efforts and model.

The farm and learning garden were built in the winter of 2010, on top of slabs left from a public housing demolition, using raised garden beds. The beds were filled with dirt and compost made using Truly Living Well’s own compost processing techniques and diverted food waste from several area grocery stores. Previously the lot was deserted and the surrounding area has suffered from the large amount of vacant buildings and lots, where camps of
homeless individuals have become a normal use of the area (Nuri 2011).

**Figure 5.2.1: Truly Living Well’s Downtown Farm**

![Image](source: Author’s photograph)

At present, seven months after beginning the remediation, the site is a fully functioning urban farm, producing vegetables, flowers and herbs as well as hosting a children’s summer camp, tours, volunteer days, and an on-site farm stand. The farm is supplying CSAs, several farmer’s markets and grocers around Atlanta. An intern program is in full swing, and as of June 2011, there were 15 people, most of whom are interns, on the organization’s payroll. The farm has received several grants from foundations such as the Arthur M. Blank Foundation, the Reilly Family Fund, and the EPA (Nuri 2011).

The founder, Rashid Nuri, who recently converted the organization’s status from LLC to non-profit, says he is planning to use the funds from the grants for expansion of infrastructure and hopefully establish the business operations enough to support the costs of operation. The new main site, about five acres in size (though not all has been cultivated yet) is owned by Wheat Street Baptist Church, which lies across Auburn Avenue from the farm. For the first year, the farm pays no money for use of the land, and in the second year, they will transition into a low-cost lease. The arrangement is similar for Truly Living Well’s other three sites, where they receive free use of privately owned land. (Nuri 2011).

Truly Living Well is also currently working with Georgia Tech researchers to construct a greenhouse to accommodate an aquaponics system on the site.

**Gaia Gardens**

Gaia Gardens is imbedded within East Lake Commons, a co-housing and sustainable community development built 15 years ago, designed by Global Eco-Villages, an Atlanta-based design firm specializing in sustainable housing developments that incorporate farming. It is located 5.4 miles from downtown Atlanta, just past the city limits.

**Figure 5.2.3: Gaia Gardens at Market**

![Image](source: Author’s photograph)
The farm is sits on five acres that were conserved in the development; it uses a traditional crop rotation method, and is certified organic. Even though the farmers, Joe Reynolds and Judith Winfrey, are supported by and have a close working relationship with the Commons’ neighborhood association, they operate as an independent LLC. The terms of the agreement were built into the developments model, and have proven to be successful. The farmer(s) lease the land from association for $1 per year, are provided with farming equipment and an irrigation system supplied by a spring-fed pond that doubles as a stormwater catchment system. In exchange, the farm business must offer first rights to the CSAs to the people living in the Commons before selling them to others outside, including markets or grocers. The farm currently provides 100 CSA shares, and sells to one or two farmers markets, and to restaurants when there is overflow. Currently, Gaia employs one full-time and two part-time employees (Winfrey 2011).

Pod Ponics
Established in 2010, Pod Ponics is the most straightforward, profit-driven urban agriculture business, and will also likely be the fastest growing of the three case studies. The two-person start-up currently grows organic lettuces and micro-greens inside of retro-fitted, repurposed old shipping containers, which is where the term “pod” is derived. The company developed a system where they build a single computer-controlled hydroponic growing environment inside of each semi-truck-sized shipping container, and sell produce exclusively to local restaurants and grocery stores. It started out with five pods, but recently relocated to the Southside Industrial Park, an underused site owned by the Atlanta Development Authority. Taking advantage of some of the city’s traditional economic development incentives, Pod Ponics is now planning to expand to 100 pods in the next two years. Each pod produces 1.5 acres equivalent. The company expects to employ 30 new people in next two years (PodPonics 2011).

5.3.1 Education and Community Outreach
Farm to School
Farm-to-School programs in Atlanta are becoming more notable and prolific, thought they are still only being initiated on a grassroots level by urban farming advocates and ambitious teachers and public health professionals rather than the Atlanta Public Schools or any other official commission. Programs currently underway are at these elementary schools: Toomer, Springdale Park, Parkside, Morningside, Mary Lin, Hill-Hope, Cook, Centennial Place, and Burgess-Peterson, as well as at Coan Middle School. They are being coordinated and assisted by Georgia Organics and other non-profit organizations (Zaro-Moore 2011). One such program is the Edgewood Farm Crew at Coan Middle School.
Farm Crew is a crew of 13 youth from the Edgewood neighborhood in Atlanta, ranging from age 14 to 22. They are paid to participate in an 8-week program organized outside of the school program, but which is held at Coan Middle School, using both the classroom facilities and the existing garden space. The program is in its second year, and is funded partially by the Zeist Foundation and Emory’s Graduation Generation program. The funds are administered by the Southeast Horticulture Society. The first year, the program was funded by a United Way grant and federal stimulus funds administered through Georgia Teen Works. The crew develops skills in urban agriculture in the garden, in the classroom, and at the market, where they sell some of the produce. Some of the produce they eat on the job, as the program also teaches the crew healthy eating habits and food preparation skills in the class kitchen.

Together they cultivate one-third of an acre, growing corn, tomatoes, onions, garlic, potatoes and other vegetables. Other opportunities have grown out of the program for participants, as some of them now take on side-jobs doing garden installations, and irrigation systems.

Atlanta Community Food Bank Garden Program

The food bank offers support to community gardens, such as bringing volunteers there for a work day or offering technical assistance. The Food Bank also runs its own garden, which it has operated since 1999 but at different locations. The current location in Ormewood Park is through an arrangement and formal contract with several neighbors who collectively own the land behind their houses. They allow the Food Bank the use of the land for farming in exchange for upkeep, such as mowing.

The produce grown is sold at the WIC Farmers Market Nutrition Program at the Fulton County Health Department (when program funds are available). The goal is to make fresh produce available to low-income families who might not have access otherwise, and it can be purchased with WIC vouchers. This program is modeled after one at the Cobb-Douglas County Health Department, where WIC vouchers are distributed on the same day as the farmers market.
The garden and the market program are funded by a combination of grants from the USDA, Turner, the Federal Reserve, Keiser, and others. Food left over from the market goes into the food bank, which distributes to 38 counties. The garden program costs little, as seeds are donated, labor is volunteered, and water is paid for by the owners of the land.

Atlanta Urban Agriculture Program

This program is a part of the University of Georgia Cooperative Extension program for Fulton and Dekalb counties. It gives assistance to existing community and school gardens, including training, tools and provides organized labor for workdays. It also manages and maintains several demonstration gardens and works in collaboration with the Atlanta Community Food Bank (Conrad 2011).

Figure 5.2.8: Food Bank’s Garden Plot

In addition to a community garden with plots and programming for youth and young adults, this non-profit community-based organization operates the H.A.B.E.S.H.A. Works program, which is a year-long training course in urban agriculture. It teaches basic skills in urban organic agriculture and agro-business beginning with an intensive 12-week course on agriculture. The focus is on creating links to business opportunities through urban agriculture, and to this end, requires the participants to develop an urban agriculture-related business plan. H.A.B.E.S.H.A. receives funding from a variety of sources, including the Georgia Department of Public Health, Annie E. Casey Foundation, Waterfall Foundation, Kaiser and others (Williams, 2011).

Oakhurst Community Garden

Oakhurst Community Garden was established in 1997. It sits on two acres that the non-profit organization now owns near downtown Oakhurst. They operate with a budget of $200,000. The annual plant sale brings in $40,000 and gardening workshops and other classes bring in about $20,000. They also earn from selling garden supplies (compost tumblers, rain barrels, worm castings, chicken feed), space rentals, membership, plot rental, sponsorships, ticketed events, fundraisers, capital campaigns, and grants. The staff of five is supplemented by interns and regular volunteers.

Figure 5.2.9: Oakhurst Garden

Located less than five miles apart, the EAV market in 2011 consistently saw 1,000 customers per week. In 2010, the EAV market’s busiest day was 850 customers. The Grant Park market in its first year in 2011, had 1,700 customers per week.
Oakhurst Community Garden likely offers the most comprehensive set of agriculture and urban gardening-related workshops, classes, camps, and youth programs in Atlanta and Decatur. People from all over Georgia attend the classes.

Current programs include a Decatur farm-to-school partnership, where they offer advice to schools and assist educators with curriculum development and a teacher workshop series. They also assist people starting community gardens.

In 2010, the organization expanded to a new garden site called Sugar Creek, where volunteers can work in exchange for a share of the produce. It is a secondary educational space for people to learn new techniques, methods of gardening, such as biodynamics and more technically-driven and less common growing methods. The land arrangement for Sugar Creek is a partnership with the City of Decatur.

5.4 Support Organizations and Networks

Community Farmer’s Market Association
The Association represents the East Atlanta Village (EAV) Farmer’s Market and the Grant Park Farmer’s Market. The association collects fees from vendors, and handles the registration and inspection process, manages credit card transactions, tracks some sales. The two markes are less than 5 miles apart, yet are both growing in customers and size. The EAV market operates in the evenings on Thursdays and Grant Park, on Sunday afternoons. In 2011, EAV consistently saw 1000 customers per week, a significant increase from the previous year when its busiest day was 850 customers. The Grant Park market opened in 2011 and had 1,700 customers on average per day (Winfrey 2011).

Wholesome Wave
Wholesome Wave is a national non-profit organization focused on public health. It is currently running a program in conjunction with 13 farmer’s markets statewide in Athens, Savannah and Atlanta, where EBT dollars are doubled when they are spent at farmer’s markets. The organization received $2 million in donations from private foundations, with a portion being distributed to the Georgia chapter. The organization hopes to collect enough data to convince the USDA that incentive programs work, with hopes of it being incorporated into the national food stamp system (Winfrey 2011).

5.5 City and Institutional Programs and Initiatives

Park Pride Community Gardening Program
Park Pride is a division of the Atlanta Parks Department. In 2007, Park Pride successfully passed an ordinance that enabled citizens to establish community gardens on park land. It now handles applications from groups wishing to put gardens inside of parks, and administers small grants to those new community gardens that are selected. The passing of this ordinance and the success of this program suggests that similar a program and ordinance enabling individuals with an entrepreneurial objective to get access to park or publicly owned land is a viable opportunity in Atlanta (Martin 2011).

Atlanta-Fulton County Land Bank Authority
As of 2011, 90 properties owned by Atlanta-Fulton County Land Bank Authority were earmarked as being potentially suitable for urban agriculture. The Land Bank at the time was working with Georgia Organics and trying to bring other local thought leaders to the table on developing policies.
that will transition these properties into the hands of farmers and agriculture-related businesses or organizations (Nesbit 2011).

**Atlanta Regional Commission (ARC)**

The ARC is working to create awareness of urban agriculture and has sponsored several meetings, educational sessions and garden installations. More specifically, the ARC held a session at the Spring 2010 Georgia Planning Association conference on urban agriculture and is set to focus on urban agriculture at both the 2011 Fall and Winter Land Use Coordinating Committee (LUCC) meetings. The ARC also recently issued grants as part of its Lifelong Communities Program, which paid for the installation of gardens at senior centers (Duncan 2011).

**Local Food Infrastructure Map**

The map on the following page, Figure 5.2.12, illustrates the existing local food infrastructure in the Atlanta area, according to data available from the Georgia Organics Local Food Guide. While this data may be imperfect, it is likely the most comprehensive list of farms, farmer’s markets, community gardens, local grocers and restaurants serving locally sourced food in Atlanta. As the map shows, much of the infrastructure for local food is located primarily in the north and east areas of the city center.

The Maddox Park greenhouse, located in the northwest area of Atlanta, would have the capacity to balance the availability of local food in the city by bringing a significant local food source to the northwest. Additionally, its proximity to the Beltline could attract customers of an outdoor market from all around the city, adding an amenity to the park, thus increasing activity in this underutilized area. Coupled with planned renovations of Maddox Park as part of the Beltline redevelopment, an outdoor farmers market stall that features food grown in the greenhouse as well as stall space for other vendors could become a successful, even iconic, anchor tenant that could support future development of retail along or near this section of the Beltline.

Additionally, as this chapter attempts to show, activity and excitement in Atlanta surrounding urban agriculture is abundant, but an aquaponics-based urban agriculture center, one that is attached to a community and educational outreach facility and a permanent market stand, would broaden the overall scope, diversity and reach of the urban agriculture outlook in Atlanta, as such a model does not yet exist here. Such a new addition would likely garner the same if not more enthusiasm that accompanies existing urban agriculture activities in Atlanta.
Figure 5.2.1: Local Food Infrastructure in Fulton and Dekalb Counties

Data Source: Georgia Organics Local Food Guide 2010
5.6 Funding Opportunities in Atlanta

Beyond the existing infrastructure of people and organizations involved in urban agriculture in Atlanta, which support the idea that a project such as the Urban Agriculture Center at the Maddox Park greenhouse would be a well-received and successful project supported by the city’s many knowledgeable actors and resources, the location and the objective of the Center also lend themselves to several funding opportunities. Some of the most prominent of these opportunities are briefly discussed below, but by no means is this an exhaustive list of potential funding sources for the project.

5.6.1 Invest Atlanta (formerly the Atlanta Development Authority)

Through the Westside Tax Allocation District (TAD) Neighborhood Fund, Invest Atlanta is encouraging the redevelopment and reinvestment in the Westside TAD Neighborhood Area, which includes the eastern section of the study area.

The purpose of the Neighborhood Fund, as the IA website notes, is to:

- Positively impact transportation through new and improved linkages between the CBD, Georgia Tech, Atlanta University Center, and adjoining neighborhoods;
- Improve the community environment for existing and future residents and business through job creation, enhanced quality of life, safety, aesthetic appeal and attractiveness of available sites to private investors;
- Increase investments in the area and overcome impediments to development through economic incentives (Invest Atlanta 2010).

5.6.2 Beltline TAD

Improvements as part of the Atlanta Beltline project are well underway. The completion of the Old Fourth Ward Park is just one example of many park improvements that are scheduled in the upcoming years. As the list of projects progresses according to the Beltline TAD’s anticipated bond schedule, Maddox Park will be redeveloped and significantly expanded and improved. The park will link to what is to become the Westside Park Project; a massive 350-acre expansion of city park land onto what was formerly a gravel quarry. The park is being called the “center piece” of the Beltline (Atlanta Beltline 2010).

That said, portions of the funds allocated to this project, specifically to the portion dedicated to the adjacent Maddox Park redevelopment, can be allocated to fund some part of the greenhouse renovation. The Beltline, as the Maddox Park redevelopment plan indicates, is already on board for a community-accessible greenhouse, so this seems like an obvious and likely partnership opportunity.

5.6.3 Other Existing Plans

As previously mentioned, the City of Atlanta has set a goal of bringing 75 percent of residents within 10 minutes of fresh, local food by 2040, as well as grow sustainability education and training programs (Mahoney 2010). In addition to the Beltline plan for Maddox Park, leverage for city funding can be gained by also illustrating that an urban agriculture Center supports the NPU-G Master plan and the goals of the city’s Redevelopment Priority Area along D.L. Hollowell.

5.6.4 Federal Programs and Incentives

Many federal agencies administer grants for food security, as it is a cornerstone of sustainability in a community. Many of
these grants include urban agriculture as a qualified activity. Specifically, federal initiatives that have funded urban agriculture-related activities include the Department of Housing and Development’s Sustainable Communities Grants and Community Block Grants, the USDA’s Hunger-Free Communities and Community Food Projects grant programs, the Department of Health and Human Services’ Food and Nutrition Education Program and SARE Grants, WIC Farmers Market Nutrition Program, the EPA’s Environmental Justice Education and Innovation Community Grants, the Department of Labor’s Job Training Partnership Act, the Department of Justice’s Weed & Seed program. Grants benefiting urban farming have also been distributed through the Department of Education.

More specifically, the Sustainable Communities Grant “supports efforts that integrate housing, land use, economic and workforce development, transportation, and infrastructure investments in a manner that empowers jurisdictions to consider interdependent issues, such as social equity, public health and environmental impact.” In 2010, over $400 million in funding was allocated to over 200 communities across the country (U.S. Department of Housing and Urban Development 2012).

The Center at Maddox Park would be a likely candidate for this grant, as the program prioritizes nontraditional partnerships between diverse entities, such as public health, food systems, and public education.
Meeting Community Needs Through an Urban Agriculture Center

By providing access to fresh local food options, access to employment, and educational programs for youth and adults at an accessible location, the Maddox Park area meets some significant needs in the community and can provide these potential benefits under a single operation with strategic partnerships.

6.1 Community Characteristics

This chapter will discuss the current characteristics, needs, and desires of the community surrounding Maddox Park and nearby neighborhoods in the West Side of Atlanta. The specific location is illustrated in Figures 6.1.1 and 6.1.2. Maddox Park is located just south of the Bankhead MARTA station, just across Donald Lee Hollowell Road. The area is about two miles from Georgia Tech and Midtown, although access between these areas is limited by the CSX railroad. It is three miles from downtown and less than five miles from Atlanta University Center. The neighborhoods located roughly three-miles from the park will likely have the most access to the Center. This area includes the neighborhoods of Bankhead, English Avenue, Washington Park, Hunter Hills, Grove Park and Knight Park. These are illustrated in Figure 6.1.3. The Census tracts block groups are shown in Figures 6.1.4-5.

1 All data was sourced from SocialExplorer.com and the cartographic boundaries were sourced from the Census Bureau’s website.
6.2 Socio-Economic Characteristics and Food Access

Census data from 2010 offers an understanding of the social and economic characteristics of the neighborhoods in order to illustrate how these needs might be met by the Center. Figure 6.2.1 below illustrates the average rates for select 2010 characteristics. As illustrated in the chart\(^2\), rates of unemployment, poverty, lack of personal vehicles, post-secondary education, and skilled or professional jobs are consistently and significantly higher than the Fulton County average. The report, *Capturing Atlanta’s Food Environment: A Community Level Assessment of Three Disparate Areas* by Vanhvilai L. Douangchais, shows that the area suffers from a lack of access to fresh food. The study analyzes the food availability of 2000 Census Tracts.

\(^2\) Analyses was conducted by normalizing the counts in each category for each tract or block group against the total count to get a percentage rate. The rates for each track or block group were then compared to the rates for Fulton County.
located within and intersecting NPU-G using the Retail Food Environment Index (RFEI). RFEI determines the balance between “quick service” food destinations, such as convenience stores and fast food restaurants, and supermarkets and farmers’ markets. RFEI was developed by the California Center for Public Health Advocacy. The index is a ratio of the total number of fast food restaurants and convenience stores to the total number of supermarkets and farmers’ markets.

Comparing the area with two other areas with somewhat homogenous populations, the report finds that NPU-G (See Figure 6.1.3) is the most lacking area and contains the most vulnerable census tracts. They have no supermarkets, farmers’ markets, produce vendors, or food retail outlets according to Douangchai. Also, whe writes, “Census tracts 8, 87.01, and 87.02 have no retail [food] outlets, while census tracts 22, 23, 78.07, 82.01, 83.01, 84, 86.02, and 88 have no healthy food retail outlets,” (Douangchai 2011). Figure 6.2.2 illustrates these findings.
The study found that 64 percent of the Census Tracts in NPU-G do not have supermarkets, produce vendors and farmers’ markets.

*NPU-G Community Master Plan: A Live-Work-Play Approach to Upward Mobility*, confirms these findings from an on-the-ground perspective, noting that access to fresh food is a major concern for residents in NPU-G. It states, “There is nowhere within the neighborhood to shop for fresh, healthy foods. Thus, residents of NPU-G travel outside the neighborhood to do their grocery shopping. It can be difficult for residents to get to one of these grocery stores, as NPU-G is somewhat isolated by the Chattahoochee River to the west, and the huge rail yard to the east. There are limited pathways across these two isolating masses, so residents must travel far in order to reach a grocery store” (City of Atlanta 2011).

6.3 Related Initiatives in the Community

6.3.1 City-Lead Initiatives

The Beltline Master Plan for Sub-Area 10 specifically mentions that the City Greenhouse should be used for community-based urban agriculture, stating that “The greenhouse could be opened for community use and include expanded programming. Partnerships with sponsoring organizations, such as a local gardening club, horticulture societies, botanical gardens, etc. should be engaged to operate and maintain the facility” (Atlanta Beltline 2010).

*Figure 6.3.2: Interior of City’s Greenhouse*
6.3.2 Community-Lead Initiatives

There are several organizations in the community that have come together to address issues of employment, education, health, and fresh food access. They are largely represented by the Community-building Coalition of Northwest Atlanta (CCNA), a network of community and charitable organizations. This network has voiced support for agricultural projects for community development, health and job creation. CCNA has developed a proposal for Maddox Park, which it has presented to the City of Atlanta, titled the Agri-Economic Opportunity Project.

Agri-Economic Opportunity Project’s Five Year Goals

> Create a minimum of four self-sustaining urban agricultural sites in Northwest Atlanta with Maddox Park becoming a Northwest Atlanta destination for urban agriculture education, activities and food production;
> Establish a best practices youth and adult agri-business/entrepreneurship training program to facilitate successful income production for youth and adults in Northwest Atlanta;
> Develop a food distribution structure that will support economic opportunity in Northwest Atlanta, be a catalyst for community engagement, and expand food sources for Northwest Atlanta individuals, families, and the homeless;
> Improve community health outcomes through access to better food and reduction of the carbon footprint in Northwest Atlanta and connecting individuals, families and the homeless with quality health services; and
> Create an enrichment program focusing on the development of healthy therapeutic lifestyles, which will include organic gardening, teaching children the science and business of growing and distributing fruits and vegetables, and the science of living together and honoring themselves and each other (CCNA 2011).

Figure 6.3.3 illustrates the relationships and roles of the active community-based organizations and other community-based organizations that have worked together to develop the Agri-Economic Opportunity Project, as well as have played a part in developing and adopting the NPU-G Community Master Plan. They are:

CCNA:
> Represents NPUs G, H, I J, K and is the lead organization in the development of the Agri-Economic Opportunity Project (Uchiyama 2012).

Emory Office of Community Partnerships and Urban Health Initiative:
> Bolton Hollowell Outreach Project;
> Contributed to the Agri-Business, Economic Opportunity Project;
> Runs the City of Refuge Healing Community Center, a clinic providing free care for indigent and low income individuals (Emory 2012).

Reverend Larry Hill of Word of God Ministries:
> Friends of Maddox Park
> Owns land adjacent to park
> CCNA Board
> Northwest Youth Power
> Runs Youth Programs, Daycare
> Relationship w/ schools (Uchiyama 2012).

Additionally, Trinity Presbyterian Church has been involved in education and nutrition programs, organizing tutors for students at Bolton Academy Elementary and providing meals through the Agape Community Center for children who are involved in the after-school program (Trinity Presbyterian 2011).
Opportunities for Community Development Through Urban Agriculture-Related Projects

As the preceding sections show, the community has a need that urban agriculture initiatives can potentially resolve, and the community itself has expressed a specific desire for these kinds of solutions. The Center has the potential to create skills training that may lead to jobs, fresh food access, and provide much-needed community services to the neighborhoods surrounding Maddox Park.

Location and Nearby Institutional Partnerships

As illustrated in Figure 6.3.1, the location of the greenhouse lends itself to a broad network of institutional supporters and is also accessible to the communities surrounding the park as well as the larger Atlanta community via the Beltline and MARTA.

Building off of established partnerships that exist in the community, as discussed in the previous section, the location of the greenhouse site is ideal for creating linkages and from Northwest Youth Power and other nearby youth programing, elementary schools, and child and family educational and outreach services related to healthy food access and dietary habits.

For example, if the center were established at the greenhouse site, a farm-to-school curriculum could be coordinated with the nearby elementary schools. Contracts for food purchasing could be established as part of this program to fund this component of the center. After-school programming could be developed in conjunction with Youth Power.

Young children and families at risk due to dietary habits or those facing food insecurity could be reached for educational programming as well as food or meal delivery via the City of Refuge Healing Community Center and the DFACS office.
The Atlanta Community Food Bank’s urban agriculture program could offer support or labor in overseeing and operating the aquaponics systems, contributing to the farmer’s market stand, as well as provide a food source for food waste recycling and vermiculture components. The Fulton County jail is a source for food waste, as is the City of Refuge. These institutions could also be potential clients/buyers of the food produced in the greenhouse.

Green Job Skills Training

The communities nearest Maddox Park are spatially constrained by income, and income is somewhat constrained by low education levels. The creation of new jobs that are accessible not only in terms of location but in hiring requirements is needed in this area. Given the disproportionate amount of unemployment, the percentage of families in poverty, and the area’s dependence on public transit and alternative transportation combined with low education level, non-professional entry-level jobs that are nearby are ideal.

Many of the jobs that would be created by the Center would work within those limitations. Additionally, the education and outreach component creates the opportunity for youth in the community to gain skills in the emerging green job sector of aquaponics and urban agriculture as skilled urban farmers or aquaponics technicians.

Community Reinvestment and Stabilization

Much of Atlanta’s Westside, including the neighborhood of English Avenue, has been designated as priority areas by the Atlanta Development Authority, which has recognized a need for reinvestment and job creation there. There is both a Westside TAD and a Westside Neighborhood Fund to help promote the redevelopment. Funds for
Future Considerations of the Maddox Park Greenhouse

By Mary Richardson

redevelopment in the area are also available through the Atlanta BeltLine TAD, as the study area is situated inside Beltline Planning Area 10, with Maddox Park being a central figure in those plans. The Bankhead MARTA station is located within the park; the proposed Beltline transit and trails run through it and it is just south of the proposed Beltline Reservoir Park, to which it will be connected by linear greenspace and trails.

Access to Healthy Food

In general, low-income, low-education are indicators of poor diets either for reasons due to lack of access or knowledge or both. Considering that between 50 and 100 percent of the working population living in three block groups in the study area use public or alternative transportation and in the four block groups clustering immediately southeast of Maddox Park between 35 and 50 percent of residents use public or alternative transportation to work, this suggests there is likely also dependence on these modes for other purposes, such as shopping for essentials like food. Furthermore, the study area has been identified by other research as a food desert. According to Douangchais report, seven Census tracts near Maddox Park were mentioned as having a deficient retail food environment.

Locating sources of fresh food production has been shown to have enormous potential in remediating food deserts as well as improving dietary habits of low-income populations, which disproportionately suffer from instances of diabetes and obesity. Studies have found that residents with greater access to supermarkets or a greater abundance of healthy foods in neighborhood food stores consume more fresh produce and other healthful items. The Center would bring access to fresh, healthy food to these communities who currently severely lack these options.

Education Partnerships

The NPU-G Master Plan suggests developing a partnership with a technical college to facilitate job training programs and a business incubator that connects students of the program with land leases or use of land at the nearby Atlanta Industrial Park. The plan suggests that funding for this green workforce development program be provided by Invest Atlanta. The plan also mentions utilizing the available space of several recently-closed public schools as classroom facilities for this training program.

To expand on this idea, although not noted in the plan, Invest Atlanta recently leased a portion of the Industrial Park to PodPonics, a hydroponic grower referenced in Chapter 4, for an extremely low rent. A job training program or business incubator component of the Center, in partnership with Invest Atlanta, could eventually expand to utilize the school buildings to offer training in aquaponics and urban agriculture with an entrepreneurial focus, making inexpensive leases in the industrial park and start-up grants available to those completing the program.

A training program facilitated by a university could not only further the research and capabilities of aquaponics and anaerobic digestors, but could create a permanent bridge to this community in a variety of disciplines, from city planning and urban design to engineering and industrial design, with a sustainability and economic development focus.
7 Using the Maddox Park Greenhouse Site for Agriculture

This chapter considers the appropriateness of the greenhouse for urban agriculture, evaluates its specifications, its location, current nearby activities and its impact or interaction with those activities, its compatibility with the redevelopment plans for the rest of the park, and the logistics of operating a community-oriented facility under the governance of the Parks Department.

7.1 Site Description

The greenhouse is situated inside of Maddox Park, which is located in Northwest Atlanta, bordered by Donald Lee Hollowell Parkway to the North and North Avenue to the south and east (as it curves around), as well as by a CSX rail line to the east and the MARTA rail line to the west, as illustrated in the location maps, Figures 7.1.1 and 7.1.2.

It is less than three miles from the Georgia Dome and Philips Arena in Downtown Atlanta and roughly three and a half miles from Midtown. The Bankhead MARTA line passes along the west side of the park, and the station is located just northwest of the basketball and tennis courts at the north entrance to the park at Donald Lee Hollowell Parkway. Proctor Creek borders the park’s south end, running from west to east, just south of the greenhouse and just above North Avenue, ending at the City of Atlanta’s public works complex, where it is at that point diverted below ground.

The greenhouse is one of several non-recreational facilities located inside the park, and is an extension of the city’s use of the park for a public works complex, which occupies a large area of park land east of the CSX rail line. The City of Atlanta Parks Department uses the greenhouse to grow plants for city parks and municipal buildings. It is currently fenced off and only used by Parks Department employees.

The greenhouse is roughly 18,000 square feet in size and includes an attached structure currently used as a park maintenance building. It houses the heating source for the greenhouse, storage space, and offices. Again according to the Beltline’s report, the city is currently only operating one of three bays.

Figure 7.1.1: Maddox Park Aerial

Source: Author’s rendering
7.2 Greenhouse Specifications

The greenhouse, as illustrated in Figure 7.2.1, is 126 feet wide and 150 feet long and has an adjacent maintenance building that is 65 feet wide and 75 feet long. It contains three growing bays, each 150 feet long and 42 feet wide.

The greenhouse is accessible from the north entrance of the park as well as from North Avenue at the south through an unpaved driveway. Here, North Avenue ends at the public works complex. City employees to access the complex or the greenhouse typically only use this entrance; the entrance is not meant for public use or access the park. The greenhouse area is protected by tall chain-link fence.

7.3 Park Use Patterns and Current Activities

As part of Beltline’s SubArea 10 redevelopment plan, the Beltline conducted an observational study of park activities and rhythms of use. According to the Beltline’s report, Maddox Park as a whole is underutilized and many of the recreational facilities are inoperable. The following key observations were noted in the report:

> **Recreation Activity** – The park facilities, in their current condition, support minimal recreation activity. Based on observation,

[Link](http://www.beltline.org/LinkClick.aspx?fileticket=izyoqM2GlzE%3D&tabid=1824&mid=8691)
the multi-use field is infrequently used for pick-up ball games as well as a golf practice. The basketball courts are used for informal pick-up games, most often during the large community gatherings. There are no organized sports that take place in the park. The pool is closed indefinitely due to lack of reconstruction funding.

> **Park Rhythm** - Based on observation, the park experiences the greatest level of activity after 5pm on weekdays and on the weekends. During these time periods, large gatherings typically occur in the parking areas of the historic core. During weekday mornings and afternoons, park maintenance crews and unemployed or homeless men appear to be the primary park users. Illegal activity in the park is also a concern, according to park users and the Atlanta Police Department. Selling drugs and other illegal activity is an issue during day and evening hours. The limited visibility and activity in the park contributes to this issue.

> **Social Gathering** – Maddox Park is a popular after-work and weekend destination for community gathering. Rather than taking advantage of the picnic areas, however, the large gatherings are focused within and adjacent to the parking areas in the park. Based on park visits during these gatherings, attendees are predominately male and between the ages of 18 and 64. Families and children were not observed to be a part of these gatherings.

### 7.4 Development Plans for Maddox Park

In addition to general plans for aesthetic improvements and upgrades to recreational facilities, a significant portion of the redevelopment plan is devoted to expanding the park to include adjacent land to the east and southeast of the public works complex. These expansions will increase public accessibility to the greenhouse as well as increase the amount of traffic entering the park from the southeast corner where it is located.

According to the Beltline report, the City’s public works complex, which houses maintenance operations, fleet vehicle services, water management operations, forestry and waste trucks, produces heavy vehicle traffic and noise when using the facilities, which negatively impact the adjacent neighborhoods and park.

Additionally, Proctor Creek has been put below ground just as it approaches this section of the park; the redevelopment plan suggests resurfacing the creek as part of redeveloping the complex into publicly-accessible park space.

**Issues relevant to project identified by Beltline**

> The park lacks programming for kids, i.e. unique programs and activities to make the park family friendly;

> The city Public Works facilities detract from the recreational nature and future potential of the park;

> The city Public Works operations impact the adjacent neighborhoods with noise and truck traffic; and

> The park needs paths and/or new roads between park and neighborhoods.

**Key opportunities pointed out include:**

> Community garden-themed programming opportunities (greenhouse);

> Park is within easy walking distance from a MARTA station;
**Greenhouse Use**

The Maddox Park Master plan specifically states that the greenhouse could be opened for community use and include expanded programming for children.

**Redevelopment Affecting the Greenhouse**

The expansion of the park to the public works complex would necessitate transportation improvements that, if implemented, would improve access to the greenhouse site. The Maddox Park Master Plan calls for the extension of North Avenue across the public works complex to reconnect with the other segment of North Avenue for a continuous east-west street south of the greenhouse. Additionally, the plan allocates funding ($40,000) for the construction of a “grand stairway” entrance to the greenhouse from North Avenue and the installation of public restroom facilities east of the greenhouse, across from the public works land, which it plans to redevelop into a dog park and multi-use open field. The plan also adds a 25-space parking lot adjacent to the greenhouse and a pedestrian promenade circling the greenhouse.

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**Figure 7.4.1: Beltline Proposed Park Transportation Improvements**

**Figure 7.4.2: Beltline Redevelopment of Area Surrounding Greenhouse**

*Source: Beltline SubArea 10 Master Plan*
Visualizing the Urban Agriculture Center at Maddox Park

This chapter imagines the proposed urban agriculture center both visually, spatially, logistically, and technically. Specific attention is given to answering the question, “How could this work?” in terms of the methods of growing food, recycling food waste, and processing and selling food. Consideration is given to the cost and use of water. Space needs for a farm stand, an urban agriculture school program, professional aquaponics training, workshops, and administration are also considered.

Objectives of the Center

The objective of locating an urban farm and agricultural learning center inside the Maddox Park greenhouse is, overall, to provide healthy food, job and skill building opportunities and related services and education to a community that suffers a lack of such, and simultaneously increase local food production in Atlanta. The Center would ideally also revitalize an underutilized park space, possibly even increasing activity in the larger Northeast area of the city, in a way that accommodates the needs and desires of the surrounding community, park users, and Atlantans.

While the official facilitators of the Center would have to outline the goals and target populations of its services, for the purposes of this report, based on the characteristics of the study area, combined with the successful models referenced in the case studies, I have identified target groups based on similar groups that appear in the case studies, as they are comparable to the population of the study area.

An educational component would target local elementary school students and young adults in the community, while an outreach component would target women and caregivers, seniors and families with small children who may be at risk for health problems such as obesity and diabetes due to lack of healthy food options. Those who receive federal assistance such as WIC or EBT may also further define this group. The food market would target the entire community as well as residents of the greater Atlanta area who may be attracted to a large farmer’s market facility and a renovated park space as a destination that is accessible by the Beltline trails or transit.

The Maddox Park Urban Farm and Learning Center is conceptualized as a publicly funded project, one that is operated as a public-private partnership or non-profit organization. This is not only because it is located on land owned by the Parks Department, but because the goals of the facility are in line with the goals of the city and designed to benefit the surrounding neighborhoods, schools, and other community facilities, with the purpose of education, food security, economic development and community health.

The prevalence of food insecurity is a major factor in the sustainability and health of the city. Investment of public funds in such facilities as the Center is an investment in the public health, particularly the health of those currently living within a food desert. In the case studies, partnerships with the public sector, whether they be grants, partnerships with schools, or donations of land and buildings, are essential for the success of the operation.
Features of the Maddox Park Urban Farm and Learning Center

- Food, soil and worm production
- Food and organic waste recycling
- Food processing and distribution
- Energy/water conservation
- Urban agriculture/aquaponics school curriculums and after-school programming
- Professional aquaponics training and workshops
- Classrooms, offices, and research facilities
- Community learning and outreach center and healthy eating educational resources
- Farm market stand

8.1 Aquaponics Systems

Taking the greenhouse specifications and capacity specifically into consideration, Bioponica has determined how many of its modular bays the facility could hold and the food, worm and castings output of these, as well as the inputs of water and energy that would be essential in running the aquaponics operation. Additionally, Bioponica has created estimates of the labor hours, operational costs, and earnings potential from this system.

Figure 8.2.4 on page 50 illustrates the layout of Bioponica’s systems inside a single bay of the greenhouse. This would be the same for each of the three bays in the greenhouse.

Food Production and Waste Recycling Systems

The greenhouse is divided into three bays, as illustrated in Figure 8.2.1 below. According to Bioponica, in each of these bays, an aquaponics system can be constructed as an independent system, so that the overall system can be built incrementally, to accommodate transformation of the space, and also keeping in line with projections for funding, staffing, or phasing in of other elements of the Center, such as the market stand or classroom. Basically, the systems do not all have to be built at once until the center is completely ready to handle, finance and manage them and the amount of food they produce. If Bioponica’s systems were used for the project, Figure 8.2.4 shows how the individual aquaponics systems could be laid out in a single bay.

Figure 8.1.1: Greenhouse Aquaponics Systems Location Plan

Source: Bioponica

Specifically, in each bay there are:

- BioTrough (NFT 124-20) - 8 units - Larger growing troughs designed for growing plants with larger root systems, such as tomatoes, which can also accommodate smaller-rooted plants such as lettuce and micro-greens. These are fertilized by liquid fertilizers produced by the Bio-Incubator.

- BioIncubator (P124-I182/T152-20) - 4 units - Three-level growing system: top for raising growing plants; the middle one for nutrient re-cycling; and the bottom for housing up to 200 pounds of fish.

- Vermi-Trough Worm Farm (V-242) - 8 units - Two troughs designed for composting food solids and green wastes utilizing earthworms.
The layout of these systems is illustrated in the Bioponica diagram below, Figure 8.1.10. and the estimated costs and potential gross revenue of this specific combination of systems, are in Table 8.1.1. Renderings created and provided by Bioponica, Figures 8.1.2 – 8.1.3, illustrate what the system might look like inside the greenhouse.

**Table 8.1.1: Aquaponics Cost and Revenue Estimates**

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<th>Module Name</th>
<th>Code</th>
<th>Total Material Cost 1/27/10</th>
<th>Cost of Pond</th>
<th>Total Pond Cost 1/27/10</th>
<th>Cost of BioGrowth 1/27/10</th>
<th>Total BioGrowth Cost 1/27/10</th>
<th>Cost of Aquaponics</th>
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<th>Gross Profit GHFT</th>
<th>Gross Profit GHFT</th>
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</tr>
</tbody>
</table>

**Source:** Bioponica

The illustrations on page 51, Figure 8.2.1, is a diagram of a system Bioponica calls Food Plant, and is very similar in size and operation to what might be appropriate for the Maddox Park Greenhouse. It shows how each of the recommended Bioponica modular systems work together to grow food and recycle food waste.

**Figure 8.1.4: Single Greenhouse Bay: Aquaponics System Layout**

**Source:** Bioponica

Figures 8.1.5-8.1.9 illustrate each of the recommended systems. The illustration on page 51, Figure 8.2.1, is a diagram of a system Bioponica calls Food Plant, and is very similar in size and operation to what might be appropriate for the Maddox Park Greenhouse.
Figure 8.1.5: Bio-Incubator

Figure 8.1.6: BioTrough

Figure 8.1.7: BioTrough Live Photo

Figure 8.1.8: BioTrough Live Photo 2

Figure 8.1.9: VermiTrough
8.2 Other Center Operations

Initially, the operations would be best limited to the following core functions until capital could be built to expand to future full-scale operations:

- Aquaponics greenhouse
- Rainwater collection and storage
- Administrative space
- Some classroom/meeting space
- Green waste silo
- Food Processing area/Community Kitchen

Future expansions would include:

- Passive heating/cooling systems
- Anaerobic digester
- Business Incubator Facility
- Beltline Farmer’s Market Stand
- Farm-to-School or Farm-to-Institution programs/contracts
- Green job training curriculum
- Research facility
- Institutional food waste collection

While phasing in of the future goals are largely dependent on the success and operational management of the center, as well as its funding capacity, the construction of a permanent market stand could likely come relatively soon after the initial operations have begun. It would be best implemented in tandem with the Beltline’s renovations of Maddox Park, the opening of the Quarry Park, the North Avenue extension, or at least, in tandem with Beltline trail or transit construction. The market space would then be more accessible to the larger population of Atlanta for market sales.

Water collection is essential in the beginning, as the aquaponics system require large amounts of water. The cost for
collection systems would be quickly recovered by offsetting the cost of purchasing water from the municipality. Bioponica previously conducted analyses of the water required to operate the greenhouse.

Based on the average rainfall for Atlanta and total roof area of 23,775 square feet, Bioponica estimated the total yearly gallons the building could capture at a 90 percent capture rate is 649,550, with an average monthly capture of 54,129 gallons. Table 8.2.2 illustrates the estimated water use of the aquaponics systems and compares the cost of purchasing the water to installing a rainwater harvesting system.

Table 8.2.1: Rainwater Collection System Use

<table>
<thead>
<tr>
<th>Estimated Water Use 1-42 x 150 Ft Unit</th>
<th>Rainwater Collection System Cost</th>
<th>Years to Payoff Cost vs. Cost of Purchasing Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Use</td>
<td>Average Cost</td>
<td>Max Cost</td>
</tr>
<tr>
<td>Plants &amp; Troughs</td>
<td>11,306</td>
<td>7,189</td>
</tr>
<tr>
<td>Evaporative Cooling</td>
<td>12,000</td>
<td>2,200</td>
</tr>
<tr>
<td>Misc</td>
<td>5,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Total</td>
<td>28,506</td>
<td>13,486</td>
</tr>
<tr>
<td>Water Cost</td>
<td>$852</td>
<td>$852</td>
</tr>
<tr>
<td>Purchased</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Bioponica

The table indicates that the system would pay for itself in roughly six years. Table 8.2.3 below shows the details of the system cost estimates.

Table 8.2.2: Rainwater System Cost

<table>
<thead>
<tr>
<th>New Rainwater Collection System</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO/DI Tank</td>
</tr>
<tr>
<td>Freight</td>
</tr>
<tr>
<td>Install Yanks</td>
</tr>
<tr>
<td>Greenhouse Gutter</td>
</tr>
<tr>
<td>Piping</td>
</tr>
<tr>
<td>Pumps</td>
</tr>
<tr>
<td>Bed</td>
</tr>
<tr>
<td>Concrete</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Source: Bioponica

A list of Bioponica’s overall cost estimates for the aquaponics and rainwater equipment is shown in Table 8.2.4.

Table 8.2.3: Bioponica Total Cost Estimates

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
<th>Yearly Revenue</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment and Installation</td>
<td>$201,000</td>
<td>$205,200</td>
<td>$76,800</td>
</tr>
<tr>
<td>Construction Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microgreen Gross Revenue and Gross Profit</td>
<td>$112,298</td>
<td>$146,504</td>
<td></td>
</tr>
<tr>
<td>Vertical Gross Revenue and Gross Profit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$313,298</td>
<td>$351,294</td>
<td>$124,194</td>
</tr>
</tbody>
</table>

Source: Bioponica

Actions Required

This section is intended to generally discuss options and opportunities for the greenhouse space and surrounding area. A formal business plan with more complete costs and revenue estimates, funding strategies, and a phasing plan is needed.

8.2.1 Other Spaces

The adjacent maintenance building is 65 feet wide and 75 feet long, totaling 4,875 square feet, as discussed in Chapter 7. As illustrated in Table 8.2.5, based on standard space designs, the space in this building is sufficient to accommodate, through a renovation, space for offices for Center administrators, classroom and community multi-purpose room for general meetings, as well as restrooms and a kitchen and processing area. In order to make the best use of the available space for these purposes and to facilitate the most diverse set of uses within each designated space, prioritizing flexibility and diversity in the initial design and furnishings is important. Features like movable desks and chairs, whiteboard wall paint, and movable projectors would make for efficient and flexible space utilization.
### Table 8.2.4: Other Space Needs Estimates

<table>
<thead>
<tr>
<th>Facility</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative office</td>
<td>150 sq. ft.</td>
</tr>
<tr>
<td>Open office/workspace</td>
<td>200 sq. ft.</td>
</tr>
<tr>
<td>Classroom (capacity 25-35)</td>
<td>400 sq. ft.</td>
</tr>
<tr>
<td>Conference/General Meeting Room</td>
<td>150 sq. ft.</td>
</tr>
<tr>
<td>Restrooms</td>
<td>400 sq. ft.</td>
</tr>
<tr>
<td>Washing, Processing and Prep Area with cold storage and kitchen</td>
<td>2000 sq. ft.</td>
</tr>
<tr>
<td>Storage area</td>
<td>300 sq. ft.</td>
</tr>
<tr>
<td>Break room</td>
<td>100 sq. ft.</td>
</tr>
<tr>
<td>Multipurpose room</td>
<td>700 sq. ft.</td>
</tr>
<tr>
<td>Public area/reception</td>
<td>200 sq. ft.</td>
</tr>
<tr>
<td>HVAC</td>
<td>600 sq. ft.</td>
</tr>
<tr>
<td></td>
<td>4,800 sq. ft.</td>
</tr>
</tbody>
</table>

Source: [http://www.wbdg.org/design/office_st.php](http://www.wbdg.org/design/office_st.php)

### 8.3 Administration and Planning Requirements

The Center will require, first and foremost, a network of program partners who are committed financially to seeing the facility built, and from this network, either an independent organization or a subset of one single partner organization must be formed and tasked with the administration and facilitation of the programs of the Center. Through a set of program partners, administrators and staff, a business plan, operating budget, and funding strategy can be developed. This could include initial renovation plans for the greenhouse, including the installation of aquaponics systems. Construction of food processing and distribution area, classrooms and office/administrative space, community center space, and the market stand (including potential lease/use arrangements) would depend on the development of operational plans. These would include plans for developing curriculums, outreach programs, and farm-to-school programs.

Those organizations currently involved, either directly or indirectly, with the greenhouse, the neighborhood, or specific initiatives in the community related to urban agriculture and public health include:

- Emory University Office of Community Partnerships
- City of Atlanta Parks Department
- City of Atlanta Office of Sustainability
- City of Atlanta Parks Department
- City of Atlanta Planning Department
- Invest Atlanta (formerly Atlanta Development Authority)
- Northwest Youth Power
- Atlanta Beltline
- Fulton County
- CCNA

Those who could potentially become involved include:

- Atlanta Food Bank
- City of Atlanta Workforce Development
- Atlanta Public Schools
- UGA Extension Office’s Atlanta Urban Agriculture Program
- Georgia Tech
- Clark Atlanta
- Truly Living Well
- Georgia Organics
- City of Refuge (Women’s Shelter)
- Fulton County Jail
- Atlanta Department of Recreation
- H.A.B.E.S.H.A. Works
- Georgia Conservancy

This list does not include the extent of funding partnership opportunities that are possible from organizations who may not play an administrative role, but have
available programs to fund this initiative, which could include but is not limited to:

> Georgia Department of Agriculture
> USDA
> HUD
> CDC
> U.S. Department of Commerce
> Georgia Department of Labor
> EPA
> Annie E. Casey Foundation
> Wholesome Wave
> Georgia Department of Health and Human Services
> Department of Energy

The prospects for viable partners and stakeholders in this project are numerous, in both the realms of potential or committed. The unique strengths and individual roles that each might play at a particular junction or throughout the life of the Center should be evaluated upon the formation of the initial network and facilitating organization. These would then need to be further related to each phase in the development of the Center. An important strength of the facilitation of Center will be for administrators to retain an openness and an eye towards future partnerships and collaborative potential for the various elements of the center.

**Actions Required**

Once an organization that will facilitate the Center is established, an official phased redevelopment plan and a business plan would need to be drafted, which would include formal estimates of capital and operational costs, staff needs, and a funding strategy. Ideally, formation of the facilitator would be coupled with start-up capital commitments from the founding partner organizations, who would work to solicit outside funding for the development phase.

Ongoing income sources would have to be budgeted for the long-term, based on income and operational costs of each of the legs of the program. Income-generating operations could include:

> Professional aquaponics workshops
> Equipment sales and consultations
> Food, soil, worm sales
> Supplier contracts with public facilities, schools, shelters, or the Fulton County jail
> Dinners, tours, special events and fundraisers
> Plant sales
> Leased market space
> Leased event space

Design and construction of the classrooms, offices, aquaponics facility, rainwater harvesting system and initial administrative and classroom space would follow, and ultimately what is possible would be limited by budget restrictions and lease conditions with the Parks Department. Overall, these decisions are again contingent on the initial steps and funding availability based on how the facilitator organization is set up.

**8.4 Anticipated Outcomes**

> Improved access to fresh food;
> Development of workforce (adult/youth) trained in aquaponics and urban agriculture
> Improved public health through community education and outreach
> Creation of employment opportunities
> Creation of youth programming and farm-to-school programming
> Creation of outreach programs
> Revenue market stand and workshops
> Increased area activity and safety

The anticipated outcomes resulting from constructing an urban farm and agricultural learning center inside the Maddox Park greenhouse are that the community would have access to healthy food, job and skill
building opportunities, and improved children’s educational programming through relationships with local schools and community facilities, achieving the stated goals of the neighborhood leaders and the vision of active neighborhood groups.

Educational outreach targeting women and caregivers, seniors and families with small children, especially those who receive federal assistance such as WIC or EBT would work to improve healthy eating habits for at-risk members of the community, working through existing outreach currently led by Emory and Morehouse.

A large farmer’s market facility and a renovated park space would further the goals of the city as well as the surrounding neighborhoods, moving the needle on the city’s overall goals for food security and economic development and green jobs training. Also, the city would have a new fresh food destination that is accessible by foot, bicycle or transit.

Food waste being sent to the municipal dump would be reduced, as food waste from nearby schools, shelters, the Fulton County Jail and the Atlanta Food Bank would be recycled into soil, nutrients for aquaponics and worm castings for parks or other urban agriculture programs.

Emory, Morehouse, and Georgia Tech would have an opportunity to contribute to aquaponics research and establish long-term partnerships with the community.
9 Issues

The following is an outline of potential regulatory barriers to implementing the Center, and attempts to provide insight into how these might be overcome.

9.1 City Governance and Park Regulations

Farmer’s Markets and Agricultural Sales on Public Property

The City of Atlanta’s Park Use Rules and Guidelines state that selling of food or other items is not allowed except by special permit. However, in the case of farmer’s markets inside city parks, two instances provide a solution to this limitation.

The Community Farmers Market, the non-profit organization that oversees the operation of two farmer’s markets, one inside Grant Park, works through the Grant Park Conservancy and is able to bypass this regulation through a Memorandum of Legal Understanding (MLU). As the Conservancy has relieved the Parks Department of the burden of caring for the park, it inherits the right to permit and regulate park activities, including food sales from farmer’s markets.

Similarly, the Green Market at Piedmont Park runs market through an arrangement with the Piedmont Park Conservancy, as the Conservancy has also signed an MLU with the Parks Department.

To address the operation of a building that is owned by the Parks Department, the West Atlanta Watershed Alliance (WAWA) provides a good example. WAWA operates the Outdoor Activity Center (OAC) located in West Atlanta, about five miles from downtown, which offers education children and adult programming in environmental issues and conservation, ecology and the natural environment. The facility sits on a 26-acre urban nature preserve includes about trails, a ropes course, and a playground. The site is property of the Atlanta Parks Department, and WAWA has signed an official Memorandum of Understanding (MOU) with the Department to operate and maintain the Center (WAWA 2012).

9.2 DNR Permits, Registration and Licensing

In Georgia, aquaculture and live fish sales are regulated by the Wildlife Resources Division of the Georgia Department of Natural Resources (DNR). Under Georgia law (O.C.G.A. 27-5-5(b)(6)), all exotic fish (which includes Tilapia) not held in tanks under certain conditions require a Wild Animal License (WAL). In the case of the Center greenhouse, if tilapia is raised, in order to avoid maintaining a WAL, the following conditions must be met:

1. Tilapia must be held in tanks from which no water is discharged except during periodic cleaning.
2. Water discharged during cleaning must be “passed through a filtering system capable of removing all fish and fish eggs and is disposed of ONLY in a septic tank permitted by the county or in a wastewater treatment system permitted by the Environmental Protection Division of the DNR.

So while tilapia held in tanks in a greenhouse does not require the license, the filtration that the aquaponics system offers is likely unfamiliar to the DNR, and would likely raise issues. The water in aquaponics is continually recycled, though water must occasionally be changed. Further investigations and discussion with the DNR would be required to establish a workable system. Freshwater shrimp and crawfish do not require DNR permits, so this may be an alternative species to Tilapia.
Additionally, domestic fish do not require this license, so raising Yellow Perch or Blue Gill would also be an alternative. Aquaculture systems raising domestic fish may register for free with the DNR. A Commercial Fish Hatchery License, Wholesale Fish Dealers License, or Retail Fish Dealers License are not needed to sell domestic fish if the seller has registered as an aquaculturalist.4

The proximity of the Center to Proctor Creek and its location within a flood plain may present further complications.

9.3 Georgia Department of Agriculture Regulations and Permits5

Georgia Food Act
Under the Georgia Food Act (Section 26-2-25), “It shall be unlawful for any person to operate a food sales establishment without having first obtained a license from the Commissioner.”

“Food Sales Establishment” means retail and wholesale grocery stores; retail seafood stores and places of business; food processing plants, except those food processing plants which are currently required to obtain a license from the Commissioner under any other provision of law; bakeries; confectioneries; fruit, nuts, and vegetable stores or roadside stands; wholesale sandwich and salad manufacturers, including vending machines and operations connected therewith; and places of business and similar establishments, mobile or permanent, engaged in the sale of food primarily for consumption off the premises.

However, food products are considered exempt from the inspection and licensing required by the Food Act if the products are sold directly to consumer at an event that:

1. Is sponsored by a political subdivision of this state or by an organization exempt from taxes;
2. Lasts 120 hours or less; and
3. When sponsored by such an organization, is authorized to be conducted pursuant to a permit issued by the municipality or county in which it is conducted.

Investigation into this issue and how the Center might be categorized would be necessary.

Seafood Safety Office
GDA’s Seafood Division also conducts inspections, which may be necessary for fish sales.

Retail
Depending on how food sales are handled at the Center, GDA sanitation inspections of retail food stores, food storage warehouses, salvage food operations may be required.

Seed, Fertilizer, and Feed
The GDA inspects Seed, Fertilizer and Feed Section regulating labeling and quality standards for fertilizer sold or transported for sale in Georgia. Licensing may be required to sell seeds, fertilizer from worm castings and recycled food waste.

9.4 Health Department Regulations
Two issues relevant here are: health requirements for processing food in the same location that it is grown, and the issue of processing and storing food waste in the same location that food is grown and sold.

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4 http://www.georgiawildlife.com/node/731
5 http://agr.georgia.gov/divisions.aspx
These issues will likely not be directly addressed by the GDA or the Georgia Health Department regulations, so variances will likely have to be sought and the issue will likely have to be discussed in detail with these entities.

One major issue that may make a difference in terms of health inspections is how fish is handled, and whether the fish will be processed into filets and sold or sold whole. Another major factor in these determinations will be the equipment included in the kitchen and processing area. If there is no equipment for cooking or heating or processing food, such as ovens or stove ranges, several of the inspections may be avoided.

Exemptions from food service
Establishments that require inspections include “any outdoor recreation activity sponsored by the state, a county, a municipality, or any department or entity thereof, any outdoor public school function or any outdoor private school function.”

Variance
The Heath Department may grant a variance by modifying or waiving the requirements “if in the opinion of the Department a health hazard or nuisance will not result from the variance.” Variances must be applied for through formal processes.

9.5 Organic Certification
USDA Organic Certification and utilization of the “USDA Organic” label will likely not be an option for products grown in the greenhouse, and this may cause some level of marketing disadvantage. This is because the certification process, in addition to being costly, is difficult to apply to aquaponics systems, as it is nearly impossible to regulate whether the sources of waste that supply the nutrients for the system are organic, considering that the waste matter often is sourced from a variety of places and it is impossible to decipher what is and is not organic.

Small producers selling under $5,000 per year can use the term “organic” without acquiring certification. They must still register with Georgia Department of Agriculture and comply with all organic standards, but still cannot use the USDA organic seal.

The greenhouse could likely produce much more than $5,000 worth of produce per year, so pursuing some alternative certification, such as “Certified Naturally Grown,” may be necessary. This certification alternative is recognized internationally, and is based on the USDA’s standards and practices for organic agriculture. It is administered by a private non-profit organization and the certification implies that farmers don’t use any synthetic herbicides, pesticides, fertilizers, antibiotics, hormones, or genetically modified organisms.

This limitation does not imply that the Center cannot be successful; Sweet Water Organics, one of the case studies mentioned in Chapter 4, is operating as “uncertified organic” with success.

The GDA conducts organic certification in Georgia.

6 http://www.health.state.ga.us/pdfs/environmental/Food/Rules/FoodServiceRules.pdf

7 http://www.caes.uga.edu/topics/sustainag/programs/organiccert.html

8 http://www.naturallygrown.org/about-cng/frequently-asked-questions
9.6 Nuisance Laws

Section 74-168 Storage of Odorous commodities

City ordinances regulating odorous commodities may apply to park users. Currently, considering the low activity levels in the park and the fact that the City uses adjacent land as a public works complex, it is not likely that these would apply. However, if Maddox Park were to evolve into the park envisioned by the Beltline and use were to escalate, this ordinance may become more of an issue. Odorous items on the site could range from decaying fruits or vegetables, fish or other aquatic species, or possibly the system itself. The level to which the smells would escape the confined space of the greenhouse and surrounding area is unknown, however, the greenhouse is buffered by trees on all sides, making wind less of an issue in carrying smells over long distances.

Considering the current uses in the area, the loud and sometimes odorous activities at the public works complex nearby and the CSX and MARTA rail lines that border the site on either side, as well as the fact that the greenhouse has been used by the City Park maintenance crews, bringing in new activities that are potentially odorous would likely not trigger much alarm.

Section 74-170 Wells, cisterns, pits or holes

If an underground anaerobic digester or other pit-like storage facility is installed to break down food waste into liquid fertilizers for the aquaponics system, this ordinance would apply, requiring it to be securely covered or enclosed, and would be considered a nuisance otherwise.

Section 8605 - Condemnation, disposal of decayed fruit, meat, other food.

Inspection by the Bureau of Sanitary Services may be required if food and other organic waste is stored at the site for any period of time, waiting to be composted or is in the process of being composted or used in the vermiculture systems (worm bins). Also, those grocery stores or markets or cafeterias that the food waste is sourced from may be subject to regulation if through some type of relationship with the Center, waste is held for a period of days to economize delivery to the Center.

Section 74-204 Permits required for flood areas

Use of lands and buildings, and construction, reconstruction, repair, modification or demolition of structures within floodplains, including special flood hazard areas, shall require review and approval of a permit by the commissioner. Fire safety inspection will also be required.

Aquaculture is an exempted land-disturbing activity under Chapter 74 Article II, Soil Erosion, Sedimentation and Pollution Control and therefore, the center would likely not be required to obtain a permit from the City for this purpose or be inspected for activities related to pollution controls.

9.7 Lack of Food Policy Council or governing body

The City of Atlanta does not have a Food Policy Council and typically does not include food systems planning as part of its comprehensive plans. Regardless of the City’s Sustainability Goals or other stated position regarding food security and urban agriculture, there is no official to go to on this matter. For this reason, there is difficulty in addressing certain issues when questions arise. Therefore, while the Parks Department would be the default authority

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9 www.municode.com
over issues that arise, the site has the potential to involve several other public entities at both the city and state level, such as Atlanta Public Schools, the Atlanta Development Authority, the Beltline, and the Department of Health. It is possible that this lack could create delays to initiatives due to bureaucratic confusion, forcing the Center and the particular public entity to navigate uncharted territory without any official procedures to follow at each turn in the evolution of the Center.

9.8 Traffic, Parking and Impacts on Park Users

Increased traffic and use of the rear site entrance and the portion of North Avenue that is frequented by City maintenance vehicles and trucks would likely become problematic on days and times when the Center hosts large activities, events or workshops and the rear entrance was being used at times that intersected peak traffic and activity periods at the City public works complex. Use of the main entrance of the park would likely not create the same conflicts except on weekends, as the Beltline study noted, peak use of the park is typically on weekends, while the daytime during the week, the park experiences the lowest levels of visitors.

9.9 Site and Facility Acquisition

In Atlanta, there is no direct mechanism for the acquisition of publicly-owned land, whether the intent is to purchase or lease. The ordinance passed enabling Park Pride to initiate its Community Gardening Program, allows citizens to “adopt” a portion of park land and establish community gardens on the site. The city of Decatur has similar enabling legislation, but it includes an additional mechanism for acquisition of all city-owned land for agricultural purposes.

As mentioned in Chapter 7, WAWA, which operates the Outdoor Activity Center on park-owned land, an MOU between the organization and the Parks Department enables the non-profit to manage the facilities and operate somewhat on its own terms.

9.10 Compatibility with Beltline park improvement plans

The proposed redevelopment plan and improvements mentioned in the Beltline plan, however far into the future they may be realized, would likely be adjusted to accommodate the Center if it was operable when these projects begin. Similarly, the Beltline would hopefully become a partner in the Center’s redevelopment, as establishing it would bring Maddox Park one step further towards the Beltline’s general vision for the park anyway. But it seems that potential conflicts between these plans and the Center are still worth mentioning.

Parking would likely be the largest activity to conflict with the Center, as the Beltline proposes to add a 25-space lot with public restroom next to the greenhouse for general use. The site itself does not have any dedicated parking space and not much available space for creating dedicated spaces, and the Beltline plan proposes only a couple of parking spaces be added to the greenhouse site lot. Reserved parking for administrators and employees of the Center would be a simple remedy for low activity days, but alternative transportation and parking spaces would likely have to be utilized, as 25 spaces would likely not accommodate large events or workshops.

Additionally, the North Avenue extension and reroute would transform the portion of North Avenue that runs south of the greenhouse and while making the greenhouse more accessible to the surrounding communities via this new arterial, it would also increase traffic at this new entrance.
Whether the site is omitting odorous smells, this may have the potential to negatively effect users of the new dog park, which in itself may omit odorous smells, but most likely the users of the pedestrian trail that passes next to the greenhouse would be the heaviest affected.

**9.11 City of Atlanta Zoning**

Several mixed-use and commercial districts (which also permit residential use), however, allow for commercial greenhouses and/or private vending of fruits and vegetables.

Zoning, however, is likely not to be an issue as the facility is on city-owned park land.
Conclusion

The Maddox Park Urban Farm and Learning Center is an outdoor classroom where students and youth can gain skills in environmental science, biology, chemistry, agriculture, mathematics, engineering, economics, which could ultimately lead to careers. It is an outreach center where seniors and families can learn how to eat healthier and acquire the fresh food to meet those dietary goals. It is a receptacle for food waste from nearby schools, shelters, the Fulton County Jail and the Atlanta Food Bank can be recycled into soil, nutrients for aquaponics and worm castings for Atlanta’s Community Garden Program or City of Atlanta Parks. It is a lab where higher institutions, such as Emory, Clark Atlanta, or Georgia Tech can conduct research and establish long-term partnerships with the community. It is a green jobs training center or a track to employment for the unemployed community members. It is a place for residents from the surrounding neighborhoods to buy fresh food, and it is a walkable or bikeable or transit-oriented destination for the rest of Atlanta to purchase fresh produce and fish.

Such a center would likely affect the areas surrounding Maddox Park, primarily the neighborhoods, as well as the larger city as a whole in a positive manner. The potential negative impacts do not seem to outweigh the positive, as such a project could result in job creation, food security, improved quality of life, and programs for increasing community health and education.

The site inside Maddox Park seems to be an ideal location for addressing the needs in the adjacent neighborhoods, while also being accessible via the Bankhead MARTA rail station and the proposed Beltline corridor.

Successful models both in other parts of the U.S. and in Atlanta exist to guide the development of the greenhouse into an urban agriculture center. Support for this idea is embraced by existing plans, current community leaders, city initiatives, and the urban agriculture community in Atlanta. Support for such a center is doubly supported by the growing demand for local fresh food in the city.

In addition to the needs of the adjacent residents, the neighborhood is also extremely underserved with places to acquire fresh food. The city overall has an unmet demand for local food. It lacks a skilled workforce necessary to increase the production of local food and infrastructure to train a sufficient workforce.

There are significant regulatory barriers to developing the center, however, it seems that these have been overcome by other agricultural activities and could be overcome in this situation.

In terms of funding, on a local and national scale, there is enough collective support to likely patch together funds for the Center, but the search for these funds would have to be taken up by one or more organizations. Fortunately, there are a number of entities who have some connection to this project who could fill this role appropriately.

Overall, the project seems viable and likely to succeed under the right guidance. The major missing piece of the equation is the organization who is willing to take up the reigns and push it forward.
References


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Douangchai, V. (2011). Capturing Atlanta's Food Environment: A Community Level Assessment of Three Disparate Areas. Atlanta, Georgia Institute of Technology Department of City and Regional Planning.


