

A Food System Analysis of the City of Atlanta



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Executive Summary

The study of local and regional food systems has been identified at the global and national levels as an important activity for municipalities to evaluate. Food security, or consumer access to safe, nutritious, and affordable food, is increasingly studied in public health and poverty research. Cities are utilizing urban agriculture as a tool for economic development, vacant land reuse, community building, and public health. The negative environmental and societal ramifications of the current food system necessitate a shift towards agriculture at varying scales of production.

In the last five years, Atlanta public officials and food advocates have identified goals towards building a more localized and vibrant food system. This report provides further reasoning for promoting food systems planning, identifies mechanisms employed by other cities and regions to enhance the provision and consumption of locally grown food, and describes Atlanta's current efforts in this regard. Strategic directions to guide Atlanta are recommended to help improve its efforts and overcome the identified barriers.

The report is organized into three sections:

Section 1 discusses how community food systems are an integral part of sustainable and healthy cities. It introduces the five subsystems of a well-functioning food system: production, aggregation, distribution, consumption, and disposal.

Section II analyzes the current state of the policies and activities in Atlanta, and the opportunities that exist for improvement. Some of the best practices that are being done in the United States are investigated, and how these innovations might serve as examples for Atlanta. Each of the five food subsystems is discussed in a separate chapter. Also included is a chapter on planning for the system as a whole.

Section III provides recommendations and proposed next steps to support a vibrant, localized food system in Atlanta. It includes strategies to prioritize land use, set food access goals, gather data, work in partnership to conduct a regional assessment, amend regulatory barriers, and support innovative programs.

Key findings of the food systems analysis in the city of Atlanta include:

- Agriculture can be a valuable interim land use for blighted and vacant land. There is a need for interagency coordination around a vacant land survey, an accurate data set of property ownership, and the identification of potentially suitable land for agriculture;

- Local food aggregation and distribution at the small and medium scales is a barrier for the economic success of small farmers. Mid-scale food hubs are currently in the development stage around the state of Georgia. Atlanta could identify an ideal site for a food aggregation facility for small-scale farmers, which could tie in with a large production site or permanent farmers market location;
- Access to local food is very limited for the population without a personal vehicle, and for those who commute by public transit. Farmers markets should be encouraged and prioritized near centers of public transit and downtown;
- The majority of Atlanta is considered to have low access to fresh healthy food, as defined by the USDA Food Access Research Atlas. This public health issue needs to be a major city-wide initiative and priority;
- Experiential education and involvement in community gardening have been shown to increase consumption of fresh fruits and vegetables. Community gardening sites on publicly available land should be identified and implemented, especially in underserved areas;
- Mapping of the food system is needed to prioritize food access areas, production and innovation sites, and locations for farmers markets and community gardens;
- Composting can be a valuable activity both for increasing nutrients in soil, and decreasing landfill waste. Open-air composting of food waste and vegetable scraps are currently prohibited in the city, and an updating of the ordinances are needed;
- Food systems policy and planning within the city and regional governance should be institutionalized to better create an overarching strategy.

Atlanta has made great strides towards strengthening the local food systems. Language in support of food growing and access has appeared in municipal and regional planning documents in the last 5 years. Barriers to growing and selling food are being removed, and a system has been put into place to regulate these activities for public safety. A vibrant advocacy and nonprofit culture continues the programmatic efforts to educate on the importance of local and regional food systems in the Atlanta area. What has emerged through this analysis is an overall need for strategic direction and coordination of the food system activities. Rebuilding a localized system will not happen overnight, and will require persistence, patience, and governmental leadership. The implementation of the strategies and recommendations listed below will provide a solid foundation for an integrated and healthy functioning food system in Atlanta.

Seven recommendations are presented, based on the analysis of the current conditions:

1. Research and analysis to inform the decision-making process
2. Explore the possibility of an urban agricultural incubator site
3. Assist in the creation of a Groundworks Atlanta
4. Identify and prioritize food access areas in the city
5. Encourage farmers market locations near public transit centers
6. Conduct a regional analysis of the food system for the City of Atlanta
7. Amend City of Atlanta ordinances on composting

The recommendations provide a roadmap to strengthening Atlanta's local food system using innovation and collaboration in the public sector. Research, mapping, and data gathering will help to create metrics for measuring public health, environmental, and economic indicators. Innovative projects such as farm incubator sites and a Groundworks trust will provide educational hands-on opportunities for residents while mitigating persistently vacant land. The creation of a framework around land access and lease agreements for urban agriculture will help to match food entrepreneurs with available land. Public health concerns and food deserts in the city will be addressed through an implementation of creative food access programs. These will be guided by an analysis of barriers and gaps in the food system, prioritized by geography. Finally, regulatory barriers that prohibit composting can be amended to allow food waste to be diverted from the landfills and recycled as soil on farms.

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Introduction

There are a number of practical reasons for localizing food systems that touch on economic development as well as community health and nutrition, local wealth building, and environmental sustainability. Lowered dependence on fossil fuels for production and distribution is a major environmental reason, as are sustainable agricultural practices that promote soil

and water conservation. Fresh food growing programs in underserved neighborhoods have been found as a way to counter negative eating patterns that increase rates of obesity and diabetes. Also in neighborhoods hit by the foreclosure crisis and Great Recession, a vacant land interim use strategy is necessary to adequately address the blighted homes and properties that can otherwise lower housing values and promote crime. Localized food systems can also have an economic benefit to the community, when financial incentives, foundational and public grants, access to markets, and access to growing opportunities are made accessible the community.



Figure 1: Urban Farm in Atlanta

While the City of Atlanta has adopted transportation, land use, and economic development as part of comprehensive and long-term plans, food systems planning remains less formalized and still requires an overarching strategy and action plan. Several Atlanta and neighborhood planning documents now make mention of food systems-related goals for economic development, health, and land use reasons. However, some regulations and policies exist that serve as barriers to these goals, by inhibiting effective production, processing, distribution, consumption, or food waste disposal.

Food planning can and should be approached from a regional perspective, tied in with the area wide land use, transportation, and conservation goals (APA 2012). For purposes of this paper, however, only policies and plans established by the City of Atlanta are considered. The city is actively promoting improvements in its food systems, and opportunities exist within the city to evaluate and change several existing regulations and zoning ordinances to better promote a vibrant regional food ecology.

Community healthy food access goals necessitate an evaluation of stakeholders, opportunities, and barriers around the promotion of a healthy local food system. The American Planning Association identifies 5 major activities in food systems planning: production, aggregation/processing, distribution, consumption/access, and disposal (2010). In this context of a food systems cycle, Atlanta's regulatory framework will be evaluated.

Section I: Community Food Systems Opportunities



What are Food Systems?

A regional food system assessment is a tool that is used by many major metropolitan areas to identify and assess all of the interconnected activities around farming and food. The American Planning Association has devoted at least two publications to food systems in the last 5 years, defining a new category of planning which explores the linkages between production, processing, distribution, consumption, and disposal of food in a city or region. Food systems can be thought of in terms of a cycle of activities, as well as scale of production.

Cycle

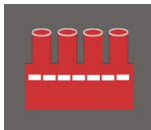
Food systems are generally defined by the five distinct areas of activity (American Planning Association 2010):



Figure 2: Planning Magazine featuring food systems



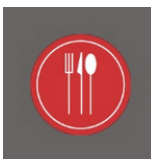
Production. The use of natural resources and human resources to grow edible plants and animals in urban, suburban, or rural settings.



Transformation/Processing. The transformation of raw food materials through value-adding, processing, manipulating, and packaging to create a usable end product for consumption.



Distribution. The direct or indirect distribution and transportation of processed and unprocessed foods to wholesalers, warehouses, retailers, and consumers.



Access and Consumption. The availability and accessibility of foods and their subsequent purchase, preparation, ingestion, and digestion.



Waste/Resource Recovery. The disposal of food-related materials, waste, and by-products and their subsequent disposal, reuse, or recycling. This could mean composting food scraps to return leftover nutrients to the soil, or sending food scraps to a landfill.

In large-scale agriculture and at a global scale this food system is linear, beginning with petroleum-based inputs and seed purchased from companies. Food travels through the system, with 50% of the harvest never consumed by humans due to spoilage or other waste (EPA 2011). Figure 3 below graphically represents these five major cycles and some examples of activities and interventions current being researched and implemented in the food system.

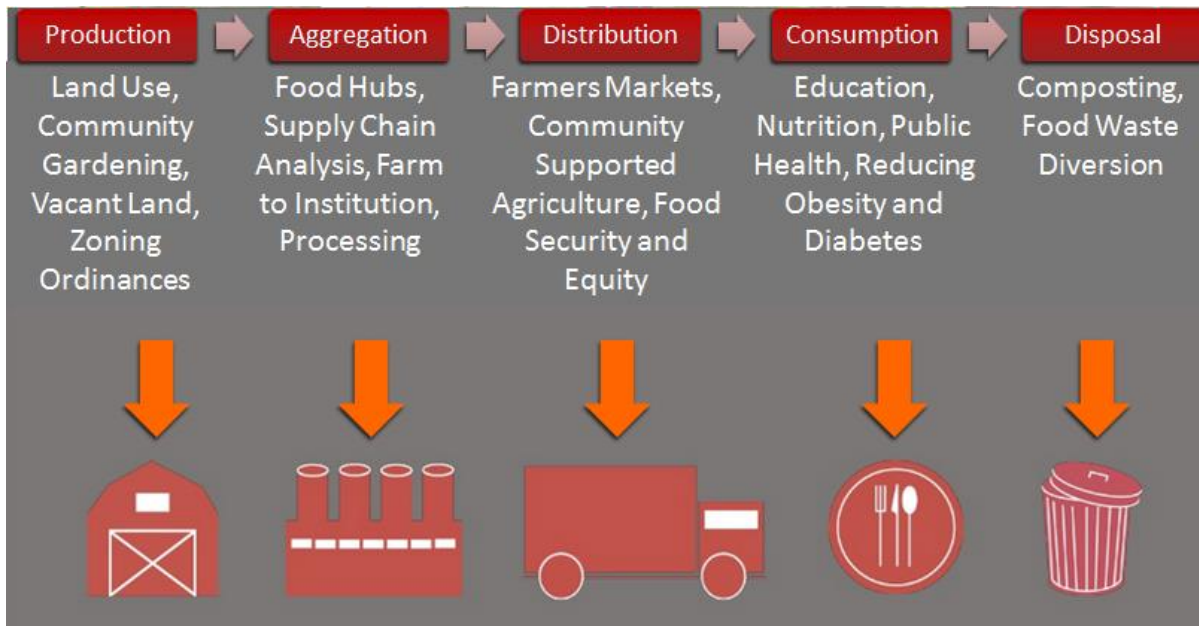


Figure 3: Areas of Intervention in the Food System.

Hodgson et al (2011) proposes another measure of a vibrant food system, specifically one that is:

- Place-based, promoting networks of stakeholders from urban and rural areas
- Ecologically sound, using environmentally sustainable methods for producing, processing, distributing, transporting, and disposing of food and agricultural byproducts
- Economically productive, providing job opportunities and development
- Socially cohesive, addressing the concerns and needs of all citizens, including marginalized groups;
- Food secure and literate, removing physical and economic barriers to healthy food.

Figure 4, at right, shows a healthy food system cycle, where waste is recycled back to the farm to build healthy soils. This system is in contrast to the linear one which requires heavy inputs (fertilizers and pesticides) for production, and hauls millions of tons of waste to landfills. Section II will delve more into the issues of this healthy, interconnected food system, and how Atlanta shapes up in comparison with other cities.

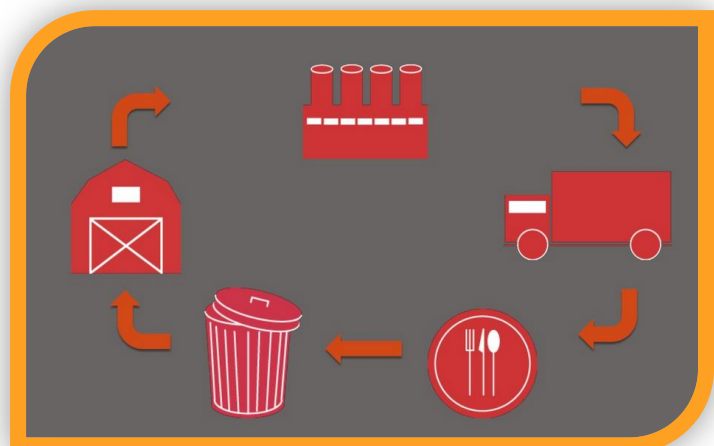


Figure 4: Integrated Food System of Production, Aggregation, Distribution, Consumption, and Waste

Scale

The economies of scale at the global level and increased industrial agriculture in the past 60 years have created unintended harmful consequences in the environment and social spheres (APA 2012; Duffy 2009). As a way to encourage healthy food consumption, promote community development and decrease environmental impacts, a broad-based coalition of experts has emerged to evaluate and innovate new policies around food systems at the local and regional level (Raja et al. 2008). These coalitions involve professionals in the fields of public health, planning, government, sustainability, nonprofits, food activists, education, research, farming, horticulture, and community development.

The University of Wisconsin researchers have proposed a framework to look at food systems through varied scales of production. The diagram in Figure 5 below shows five tiers of food systems production, from Tier 0 at the individual level to Tier 5 at the global scale. The majority of efforts to promote production, aggregation, and distribution of local food are done at Tier 2 (Center for Integrated Agricultural Systems 2010).

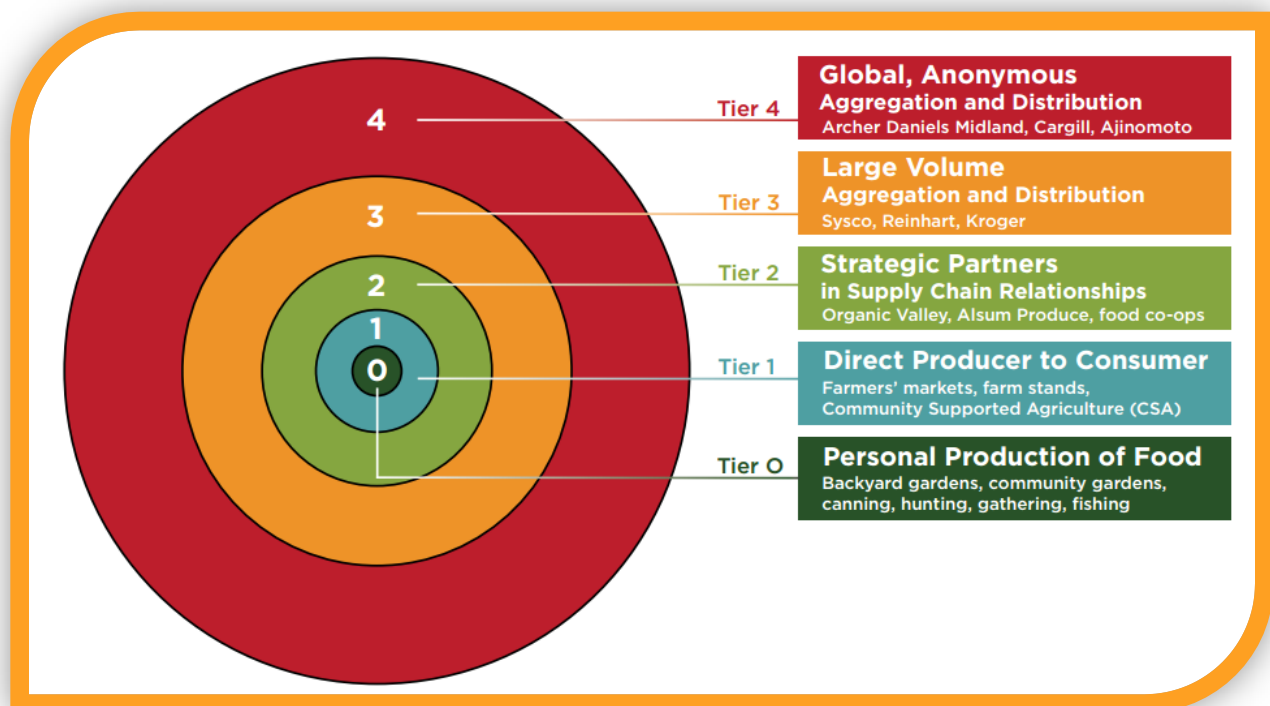


Figure 5: Different Tiers of the Food System.
Source: Center for Integrated Agricultural Systems

The next section will look at some of the unintended consequences of a highly “efficient” food system from an environmental, social, and economic perspective, and the response by some communities to reverse these negative impacts. Often, addressing an aspect of the food system has a ripple effect through the community and through the policies and plans of a region. Residents become more engaged and aware of the importance of sustainable and healthy communities. Comprehensive plans begin to track metrics around improving the lives of its most vulnerable citizens through improving the built environment.

By no means just confined to public health and eating, planning for food systems attempts to draw linkages to other major themes in planning, including water, stormwater mitigation, transportation, land use, energy, and economic systems.

Unintended Consequences of our Current Food System

Creating an efficient food system that supplies every variety of fresh produce to all areas of the country has been a tremendous logistical feat requiring great coordination among growers, transportation, and food outlets. Eating a pineapple or a vine-ripened tomato in the middle of January is the positive result of this food system. In the United States, we enjoy spending only 6.7% of our total household expenditures on food, the lowest in the world (USDA 2011). However, these efficiencies have created externalities outside of the system that have incredible environmental, social, and economic impacts.

Environmental Impacts:

Waste generated

Though disposal has garnered much less attention, it is an equally important step in the food system cycle. Especially from an ecological framework, proper food waste diversion is a vital part of lowering a region's environmental footprint, decreasing greenhouse gas emissions, and building healthy soil for next season's crops. Figure 6 to the right shows the makeup of municipal waste in 2010. On the right side of the graph, paper and paperboard, food scraps, and yard trimmings combined make up over 55% of the waste stream. All of these items are compostable, and would add valuable nutrients to soil as it decomposes.

Food waste diversion involves the separation of compostable, organic matter from other trash so that it can be used for compost, made into biofuel, or recovered as biogas. Composting is the least expensive and low-tech of these solutions, and completes the ecological materials cycling for reuse in growing crops. Though composting seems to make sense for many reasons and is a valuable agricultural practice, antiquated regulatory frameworks often prohibit or severely restrict it on land not zoned for agricultural or industrial use.

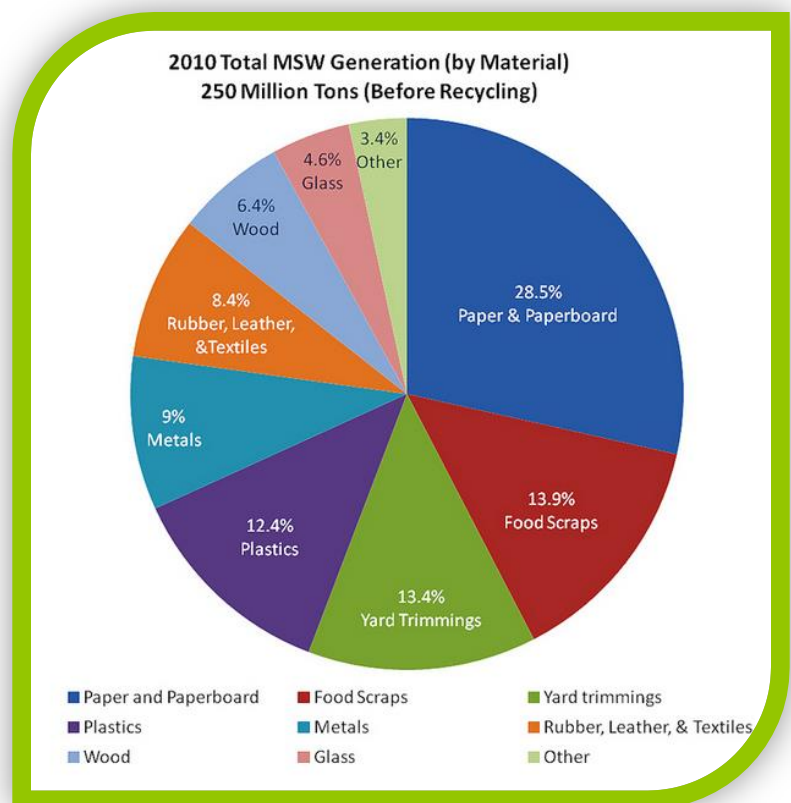


Figure 6: EPA Municipal Waste Characterization in the United States, 2010:

<http://www.epa.gov/osw/conserve/materials/organics/food/fd-basic.htm>

Energy Costs

The average American meal travels between 1,500 and 2,500 miles from its source to the table, with an estimated 50% of produce lost to spoilage between harvest and purchase (Community Food Security Coalition 2003, EPA). While wasteful in lost nutritional value, this distribution mechanism wastes vast amounts of energy.

Figure 7 to the right is part of a life cycle analysis of food in the United States, conducted by the Center for Sustainable Systems. Their analysis indicates that the energy utilized in all aspects of the food system is over 6 times the food energy derived from the consumption of the food.

¹Household storage is the most energy-intensive of the process, followed by production. Transportation, processing, and packaging together use the most energy. When taking into account that half of this food will never be consumed, it is difficult to rationalize the wastefulness of this food system that is considered economically efficient.

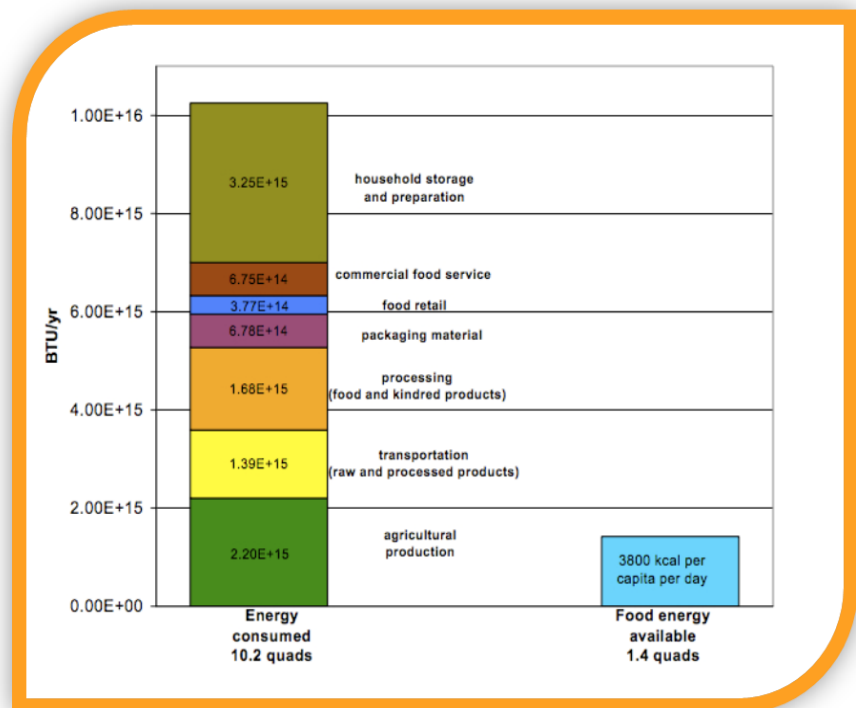


Figure 76: Life Cycle Energy Use in Supplying US Food

Source: Center for Sustainable Systems,
http://css.snre.umich.edu/css_doc/CSS00-04.pdf

Large-Scale Monoculture Farming

The environmental degradation in modern agriculture has been well documented and studied (APA 2006, Union of Concerned Scientists 2013, American Farmland Trust 2013). The chemical and petroleum-intensive process by which crops are grown has negatively impacted the ecology on a massive scale. The nutrient runoff, soil erosion, and water pollution from agricultural production add to global warming emissions and create hypoxic zones in waterways. Figure 8 below shows a satellite view of the dead zone in the Gulf Coast from the runoff of Midwestern agriculture. Monoculture cultivation requires increased use of herbicide and insecticide, all of which have the potential to harm wildlife and beneficial insects.

¹ A quad is a unit of energy measurement and represents one quadrillion British Thermal Units (10^{15})

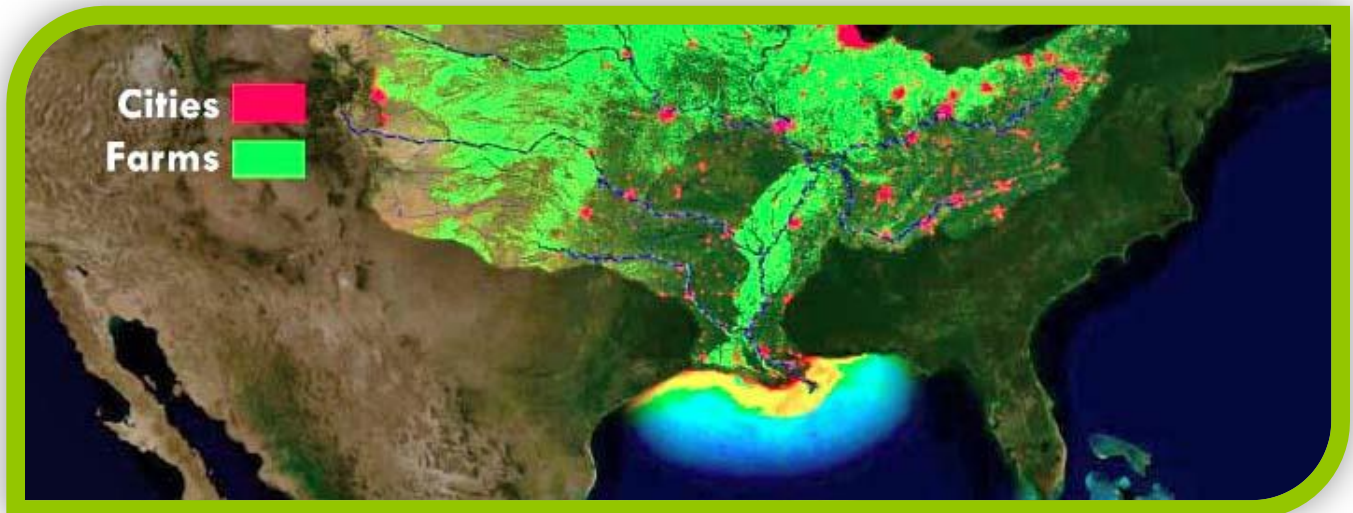


Figure 8: Hypoxic Gulf Coast Dead Zone, indicating Runoff Sources: NOAA
 Source: <http://web.1.c2.audiovideoweb.com/1c2web3536/091912deadzone.jpg>

Social Impacts:

Fresh Food Consumption and Access

One in ten families in the United States meets the criteria as a ‘food insecure’ household, meaning that they experience periods of time in which they are uncertain of having enough food for all members of the household. This can be either due to financial reasons or because of inadequate access to food (Freedman and Bell 2009). The built environment, including access to grocery stores and fresh food access, is one of the greatest contributors to the health disparities that exist between different socioeconomic classes (Friedman 2008; Ross et al 2007). Research has shown that there is often not sufficient market demand in a neighborhood with low purchasing power to support a supermarket or large grocery store (Helling and Sawicki. 2003). The smaller grocery stores or convenience stores must charge more for food, have a more limited fresh and healthy food options, and are more likely to be found in low-income neighborhoods with people on limited food budgets (USDA 2009). This means that people without sufficient transportation, and those on limited incomes, may never have consistent access to a healthier diet.

Low income individuals and minorities are disproportionately affected by diseases resulting from a diet of calorie-dense foods, including such diseases as obesity, diabetes, and heart disease (Candib 2007). Obesity rates have doubled in adults in the last 20 years, and tripled in children and adolescents (Ogden et al 2008). Diabetes rates have also risen along with obesity. The number of Americans with diabetes more than quadrupled between 1980 and 2008, with more than 60% of people with diabetes under the age of 65. 50-85% of diabetes cases are linked to unhealthy eating patterns and inactive lifestyles (CDC 2007).

Traditional economics has viewed food as a normal good, meaning that food consumption increases as income increases (USDA 2009). Food access is increasingly recognized as too valuable and fundamental of a right to be left to the free market where undervaluation of this vital good may occur and lead to

deprivation or disease. This has led to public health funding and grants for the creation of farmers markets, food pantries, and other venues to equalize quality food access.

Farmers markets have also become increasingly popular as a way to connect the food consumer directly to the farmer. Nationwide, the total number of markets has grown over 90% in the last 5 years (USDA. 2012). The state of Georgia boasts a 600% increase in the number of markets (Georgia Organics. 2011). Besides encouraging small to midscale farming in the region, farmers markets have been seen as a way to provide healthy, affordable, fresh food areas in areas that are lacking. Several federal and state agencies, as well as nonprofits, are giving grants for the creation of farmers markets to address issues of food access, and funding programs for low-income individuals to use their SNAP-EBT benefits at farmer's markets.

Community building

Food production, in part through the interpersonal connections found at local farmers markets and community gardens have been found to foster a local identity and build community (Shigley 2009; Wakefield et al 2007). Especially in low-income communities, this can be a powerful tool for community development work. Building social capital and mobilizing around other social issues have emerged as a result of neighbors gardening together. Implementation of gardens, especially on vacant land, have prompted cities to evaluate and enact policies addressing agriculture and interim land use, improving access to produce, and increased attention and focus on social indicators for individual and community health (Twiss et al 2003).

Blight mitigation on vacant land

In a city with low vacancy rates and high property values the argument for urban agriculture looks very different than in a post-industrial city with high vacancy and foreclosure rates. The utilization of urban land for growing is very dependent on the context, and cities with very different land use patterns are embracing agriculture as a tool for mitigation of blight, neighborhood stabilization, and use of publicly-owned underutilized properties. In 2000, Philadelphia was spending \$18 million to maintain just a small portion of its vacant parcels (Kaufman and Bailkey 2000). A recent study in Cleveland estimates that it will spend 4.5 billion over the next decades on maintenance and demolition costs of the 13,500 homes that are blighted (Cleveland Plain Dealer 2012). Replacing these blighted homes with new housing stock will only solve some of the expense of maintenance of the vacant properties.

Finding new and productive uses for abandoned urban land will be instrumental in the coming years as cities find their urban form being reshaped due to the foreclosure crisis, changing settlement patterns, and development pressures on the urban fringe areas. These changes present incredible opportunity to retrofit cities in a healthy and sustainable way for its citizens. Urban

"Urban agriculture on brownfields, either in the form of community gardens or for commercial urban farms, can be an avenue for community revitalization. By stabilizing vacant lots, by reusing brownfields, by taking surplus land out of the real estate stream, and by providing healthy food to low-income residents, urban farming can advance the cause of environmental justice and become a vital part of the fabric of urban neighborhoods"

(Wachter and Scruggs, 2010)

agriculture and food security has a substantial role to play in this reshaping of the built environment, and, when factored into a city's maintenance costs for blight reduction, may make good sense for land use policy.

Economic Impacts

Food costs

Consumer food prices have risen consistently over the years, rising and falling with the price of crude oil on the world market. Figure 9 shows the fluctuation of oil and how closely it is related to the price of maize (corn). This is a major staple crop which is found, along with its derivatives, in most processed foods and many cosmetic and plastic products.

Price volatility for commodity crops is highly correlated with crude oil prices on the world market. In 1973, the oil embargo caused high instability in food prices. Previous to this time, oil and gas had been abundantly available and had a more stable price. Figure 9 shows the level of instability that has occurred in the price since 1973. In the late 2000s, after the housing market collapsed, speculation in commodity crop futures caused a surge in market prices (Winders 2011). Petroleum-derived fertilizer costs went up for the farmers, more than doubling in one year. As transportation costs increased, these input costs were passed along to consumers. As long as a highly mechanized, globalized, petroleum-dependent food system persists, this price instability at the supermarkets is likely to continue.

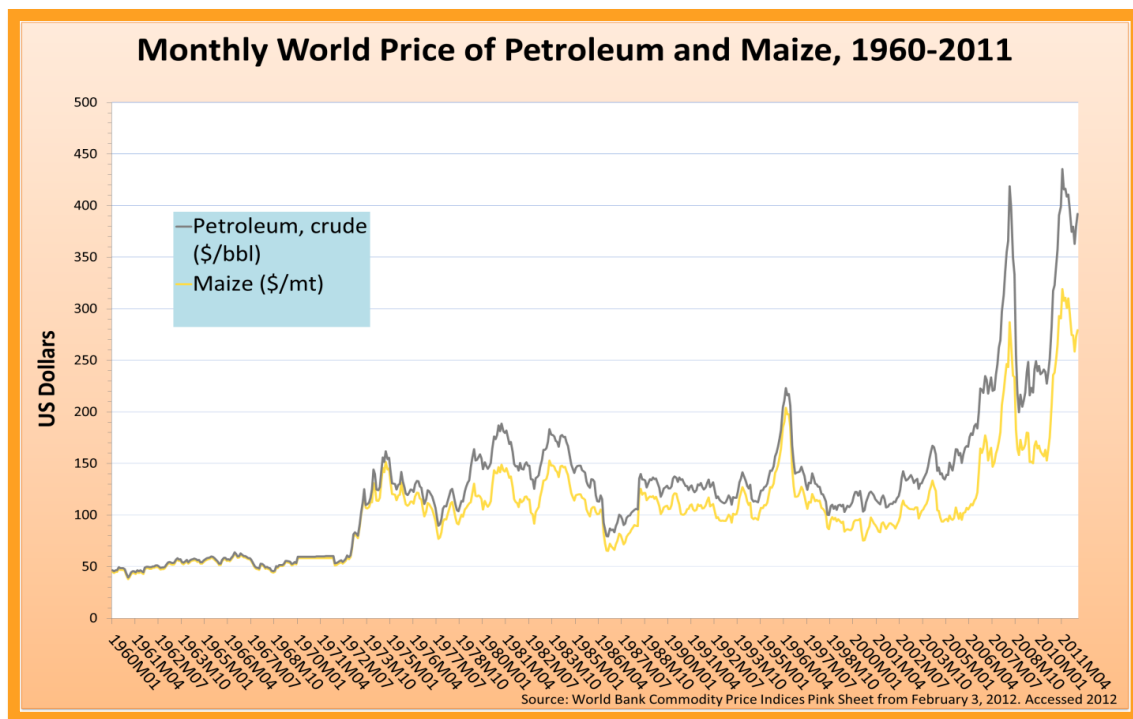


Figure 9: Linking of Petroleum Prices to Corn Prices.

Data Source: World Bank Commodity Price Indices Pink Sheet. Accessed 2012.

Economic viability as a small scale farmer

While the number of farms has not diminished, Figure 10 below indicates that nearly 55% of farms in 2007 in the US earned less than \$10,000 a year. Less than 5% of farms produce over 65% of the value of agricultural products. This figure confirms that fewer and fewer small and medium sized farms are economically viable as a sole occupation.

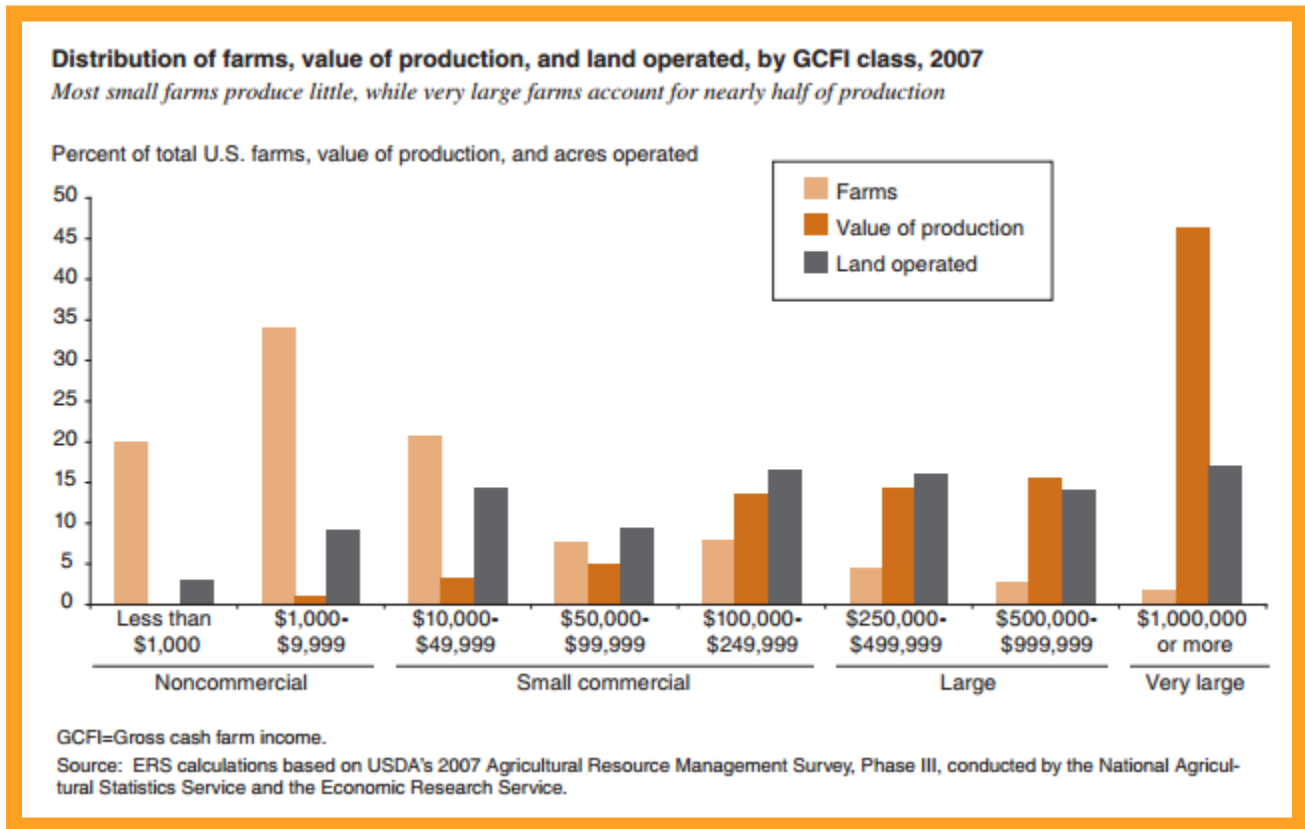


Figure 107: Very large farms are nearly half of production in the United States

Source: http://ers.usda.gov/media/147003/eib63_reportsummary_1_.pdf

The average age of a principal operator of a farm has increased from 54 years old in 1997 to 57 years old in 2007 (USDA 2009). As they approach retirement age, a new generation of farmers is needed to learn from and purchase their farms. However, they often cannot overcome the barrier of the upfront cost of land and equipment purchase. In the last 60 years, in order to remain competitive in an increasingly large-scale global market, farms became increasingly concentrated into extremely large operations on vast amounts of land. Retiring family farmers often have a bulk of their worth in the value of the land itself.

Farmers are faced with the difficult choice of making a sound economic decision or keeping the land in production, but not both. Vast swaths of agricultural land are sold for new, sprawling development that occurs at the rate of roughly an acre per minute² (American Farmland Trust 2012). The USDA and other

² Based on US data from 2002-2007.

national advocacy groups have identified the complexity of transitioning working farms from one generation to the next when the two parties are not familial relations. While there are some programs on the national level, regional and local governments are critical to creatively bridge the financial gap between retiring farmers and younger aspiring farmers.

A core question around localizing food efforts is finding the appropriate scale that is still economically profitable to the farmer and affordable to the consumer. . Farmers must increasingly accept a lower price for their products, selling to a broker who aggregates up to a scale large enough to supply mega-retailers, large chain grocery stores, and franchise food establishments. This change in food sourcing has led to financial hardship for farmers, and an undervaluation of the societal benefits of local agriculture. The development of small and mid-scale food distribution systems can help to stem some of the price volatility and instability that can rapidly develop in the global food system, and restore economic profitability to farmers at all scales of production.

Opportunities for Atlanta

The issues identified above with the current food system provide numerous opportunities for change at the regional and local levels. A well-functioning community-based food system can benefit the Atlanta region from an environmental, economic, and social perspective. A study done by the University of Georgia's College of Agricultural and Environmental Sciences Center for Agribusiness and Economic Development found that if each of the approximately 3.7 million households in the state devoted \$10 per week to locally grown products from Georgia, it would add more than \$1.9 billion back into the state's economy (Kane et al 2010). The results indicate that there is enormous potential for economic development and strengthening the linkages between producers and consumers. With a population of 540,000 residents in the city, and a population of just under 5.5 million in the 28-county MSA, the Atlanta area provides great potential consumer demand for local foods.

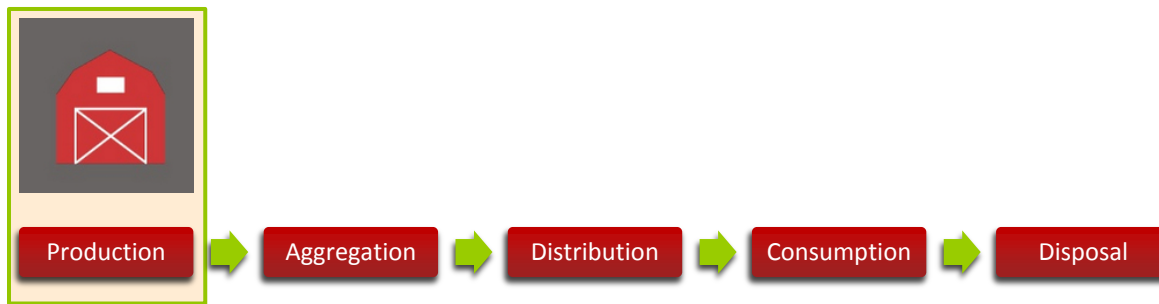
While the city of Atlanta is in a position to shape policies and promote activities around the localized food economy, budget limitations for implementation of these projects may be of concern. There are currently extensive foundational and federal funding sources centered on the creation of neighborhood-serving programs for local production, aggregation, distribution, and educational outreach. A large number of grants to promote fresh food access, community health programs, farmers market promotion programs, agricultural education programs, and development of food innovation zones have historically been part of the federal 5-year omnibus bill known as the Farm Bill. Numerous other federal agencies, such as Housing and Urban Development (HUD), Health and Human Services (HHS), the US Department of Treasury, and the US Department of Commerce have grants that are targeted towards increasing access to or production of fresh food in underserved neighborhoods³.

³ See Appendix D for more details.

Current food systems activities occurring in Atlanta are discussed in the next section, including barriers and opportunities. In addition, best practices of cities around the country are introduced to illustrate how they have faced similar situations and leveraged their resources. The section is organized into 6 chapters, each describing one aspect of a well-functioning holistic food system: production, aggregation, distribution, consumption, disposal, and the overall regional system.



Section II: The Current Food System in Atlanta



Production activities govern the growing of edible plants and trees, raising of animals and bees, and cultivating soil for personal use, educational demonstration, or for sale. In a food systems context, production occurs at various scales, in both urban and suburban areas, and involves public, private, and nonprofit entities. Land use decisions around community gardens may differ from urban farms due to the size, intensity of use, and proximity to the public.

Atlanta has over 165 community gardens in 2008, as a conservative estimate (Blatt 2010). A handful of urban farming enterprises also exist, including a newly-established one along the BeltLine. These are typified by production-based parcels that sell food for sale offsite at markets. They can be operated by a nonprofit or as a private venture. Although community gardens are often viewed as an interim use of land, over thirty-two percent of the 6,018 gardens responding to a 1996 national survey had been operating for more than ten years (American Community Gardening Association 1998). This statistic indicates that cities would benefit from appropriate site selection and advance planning for these community spaces. Determining land use rules will not only encourage these activities through discussion, but also ensures that they are done using appropriate methods that enhance, rather than degrade, environmental and community health.

Zoning

Currently, Atlanta zoning code does not address growing in areas of the city except for restrictions in residential areas. Personal gardens are neither expressly permitted or prohibited, and are exempt from water use restrictions. Off-site sale of produce is allowed without restriction, but onsite selling is not permitted in residential areas. The increase of urban agricultural activities in Atlanta in all zoning categories has highlighted a need for further regulation to protect the interests of the city, the public, and the farmers. The City, in partnership with urban growers, the Atlanta Local Food Initiative, Georgia Organics, and other stakeholders, have developed amendments to the zoning code to promote market gardens and urban farms in all zoning designations within the city. The proposal is summarized below:

Urban gardens are broadly defined as “...a lot, or any portion thereof, managed and maintained by a person or group of persons, for growing and harvesting, farming, community gardening, or any other use, which contributes to the production of agricultural,

floricultural, or horticultural products **for beautification, education, recreation, community or personal use, consumption, off-site sale, or donation.** “ This would include community gardens, educational gardens, school gardens, and gardens planted for hunger relief.

Market gardens are a different classification, and are the same definition as above except that their purpose is “... **for community supported agriculture or on-site sales. All products sold onsite must be grown onsite.**” (Section 16-29.001, proposed item 80). The market garden designation only differs from that of the urban garden in that it allows for on-site sales.

Structures are allowed, as is machinery if it is stored out of sight⁴. An annual special use permit, applied for at the Office of Sustainability, is required for Market Gardens over 3 acres in size. The application must supply a site plan that outlines water source, market site, compost location, nutrient and chemical management plan, fencing, and management (Section 16-25.002, proposed item 5). Each zoning district, from residential R-1 through R-5, R-G, R-LC, O-I, C-1 through C-5, I-1, I-2 will be amended to include for market gardens and urban gardens, as well as all SPI (special public interest) zones⁵. Each of the zones has varied requirements so that the agricultural activity fits in with the surrounding uses and minimizes negative impacts to neighbors. Animals used in agriculture are not specifically mentioned, though they are currently permitted in residential areas in the City of Atlanta (Georgia Organics 2011).

These proposed zoning changes will provide for agricultural activity to occur, and make explicit the appropriate measures taken to buffer the activities from neighboring uses. The zoning code is currently being revised by the city planning department, and will be presented to the city council, NPU, and other community groups to ensure that these amendments are understood and supported by the community and city officials. As it is currently proposed, the zoning amendments for agricultural production have flexibility for suitable sites in any zoning classification. Only market gardens (with on-site sales) over 3 acres are required to submit paperwork to the Office of Sustainability, so the administration of the permits should not be overly burdensome for the city. An added benefit of requiring a site design is that market gardens may reach out to students and professionals for assistance in ecologically sensitive site design. There exists an opportunity to collaborate more deeply with the College of Architecture or the Environmental Engineering program at Georgia Tech, or a collaborative agency that provides technical assistance.

⁴ I-1 and I-2 Industrial Districts are exempt from keeping machinery out of sight.

⁵ Special Public Interest zones 8, 13, 14, and 19 are not mentioned and might not allow these uses

Farming on Public and vacant land

Increasingly, localities are recognizing urban agriculture in their open space planning process. These efforts coincide with a greater attention to the management of public vacant land, are the two may be strategically utilized to address issues of vacancy, blight, public health, and food access (Schukoske 2000). Many cities are finding that they lack a comprehensive list of vacant lots that are publicly owned, and that often this information is spread over dozens of agencies. Even if the information is readily available, there is still a lack of policy or strategy around the acquisition, use of, and disposition of the land. Some cities, such as Baltimore and Indianapolis, have identified the need to inventory and track vacant lots for future active and interim uses (Schukoske 2000, City of Indianapolis 2009).

A study by the Metro Atlanta Quality Growth Task Force in 2004 estimated 1.2 million acres of vacant and developable land in the metro area (MAQGTf 2004). ALFI, citing this study in their 2008 report, estimates that less than 2% of this land would feed the 4 million residents of the city if put into productive agricultural use. While it may not be feasible or desirable to have this amount of agricultural land in the metro area, the statistic points to a need for coordinated land acquisition, aggregation, interim use, and disposition strategy.

The Fulton County and City of Atlanta Land Bank is a public-private authority that is able to clear the title of land that does not have a clear title due to tax-foreclosed property, with the mission of returning parcels back to productive use. This authority is granted by legislation passed by the state of Georgia, one of only eight states that allow this activity (Smart Growth America, n.d). Other states, such as Michigan and Ohio, are successfully utilizing this program for the identification and dispossession of vacant parcels. This is an asset in the City of Atlanta that can and should be utilized to the fullest in determining the best locations for agricultural activity and for interim land use strategies.

Truly Living Well is an educational not-for-profit model that focuses on food production in the city. Truly Living Well operates a 3.5-acre urban farm in the Old Fourth Ward, as well as a larger farm site in East Point. The urban property is the site of an old affordable housing project that had been demolished, leaving an eyesore of concrete pads, weedy expanses, and parking lots. With a grant from the Arthur Blank Foundation for seed money, they negotiated a land lease from the Wheat Street Baptist Church. Through a partnership with Georgia Tech and a grant from the Ford Foundation, they are currently constructing an aquaponics system that will raise tilapia fish for sale to the Sweet Auburn Curb Market less than a mile away. They also collect area food waste, brewery waste, yard waste, and wood chips from Georgia Power that are used for compost. They have also planted over 30 fruit, nut, and berry trees and bushes for perennial production. Truly Living Well also operates a community supported agriculture program (CSA), a recycling program, and a weekly farmers market on-site. Through USDA grants, they provide educational trainings to become a small-scale organic urban farmer. There is already a growing demand for land to be made available for these farm entrepreneurs.

This project has transformed an area that was three full blocks of vacant, blighted lots into a hub of activity, education, beauty, and a source of fresh food. As other cities have found, nonprofit urban agriculture “pioneering” activity has found success in blighted neighborhoods until redevelopment can occur. Community engagement that has been built around the food project often advocates for the projects to continue as a neighborhood stabilization tool and a gathering space, and it can help to stimulate development activity.

Case Studies

Cities all over the country have set precedent to allow farming in various urban zoning districts. Some cities, such as Detroit and Cleveland, have located farm enterprises in low density residential areas due to the ability to aggregate large tracts of vacant and derelict land. Other cities like Boston are passing zoning ordinances that confine agriculture to areas designated as community commercial.¹² There are numerous examples of locating farms locating on former industrial and brownfield sites in Philadelphia, Detroit, Buffalo, Baltimore, Sacramento, Somerville, MA, and other cities (EPA 2013).

In 2000, Philadelphia was spending \$18 million to maintain just a small portion of its vacant parcels. A recent study in Cleveland estimates that it will spend 4.5 billion over the next decades on maintenance and demolition costs of the 13,500 homes that are blighted...

In Cleveland, vacant and derelict land was aggregated for a farm incubator project as a partnership between the city, state, and federal agencies. Foundations and a private developer helped to further fund the project. This microenterprise model aims to lower the barriers to farming by providing land for lease, shared tools and equipment, and technical assistance. The land acquisition was an obstacle for assembling the property needed for operations. The city

of Cleveland acquired land through the Urban Redevelopment Agency (URA) and their local land bank, combining multiple parcels into one with a large enough scale for the project. Through two linked HUD programs, Green City Growers received \$2 million from the Brownfield Economic Development Initiative (BEDI) and an \$8 million HUD 108 loan, as well as New Market Tax Credits and a contribution from the Evergreen Fund. They were also able to receive funding from the water and sewer district because of their efficient stormwater management system.

Green City growers, a worker-owned cooperative, purchased the 10 acres of land from the city at fair market value based on appraisal. Although community land trusts (CLT) were not employed to set up the properties, they are a viable tool in keeping costs low and protecting from individual co-op failure. The larger cooperative corporation is now

¹² Tad Read, Planner at Boston Redevelopment Authority, February 26, 2013 personal communication

establishing a CLT vehicle that can acquire both the properties owned by the current cooperatives and properties for future cooperatives that can be structured as trusts (Capital Institute 2012).

Philadelphia's Redevelopment Authority (RDA) established criteria for allowing some of their 2500 parcels of vacant land in the city to be used for urban agricultural enterprises. They determined the estimated property values using hedonic prices, and then recommended that the lower valued properties be considered for permanent agriculture. Higher-valued properties, or properties where development was expected to grow in the next few years would be available for shorter-term leases (Penn Institute for Urban Research 2010).



Figure 11: Greensgrow Project on a Brownfield Site
Photo source: cityfarmer.info

The Philadelphia Greensgrow Project combines food access, environmental education, and economic development on a $\frac{3}{4}$ -acre former Superfund site in an economically distressed community. Greensgrow, a nonprofit, is partnering with the Redevelopment Authority of the City of Philadelphia to establish more greenhouses, markets, and a wholesale nursery project on vacant properties that the city owns. Greensgrow also notes that urban agriculture on vacant industrial land can have significant beneficial stormwater mitigation through increased green space and rainwater collection (Greensgrow, 2012).

In 2010, Greensgrow had revenue of \$1.1 million, with 12% of this in the form of grants. CDFI (Community Development Financial Institutions Funds) provided a revolving loan for matching funds to allow low-income residents to purchase food directly from farmers. This food hub model has expanded since Greensgrow's inception in 1997, and now the site provides an urban retail outlet for over 80 farms in the Philadelphia region while addressing food access in an underserved neighborhood (CDFI Fund, n.d).

Numerous cities in the country face high property vacancy problems and blight, including Indianapolis and Baltimore. These public officials have assembled a task force and released a public document outlining their strategies. These action plans have helped to change regulations as necessary, leverage federal funds for acquisition and blight mitigation, and develop programs to encourage interim use strategies of the properties. The City of Indianapolis created an official city Urban Gardening Program to provide underutilized land as spaces for growing food. It now partners with the health department to offer free soil testing, and an area nonprofit for funding to explore soil remediation on properties in order

to encourage more edible schoolyard projects in its 1.5 square mile smart growth redevelopment area. It also has a partnership with an area environmental justice nonprofit to create a database of “safe-for-growing-food” sites, and suggests the construction of year-round greenhouses for food production and partnership with a local job training organization to promote economic development through agriculture (EPA 2012). Indianapolis has also instituted urban agriculture in its Smart Growth brownfield redevelopment area, recognizing that the daily presence of the farmers has had a positive and stabilizing effect in the neighborhood. Residents report that they are utilizing the adjacent bike path, and that there is a perceived lower risk of crime due to the increased activity in the area (EPA 2011).

Detroit, while an extreme example of a shrinking city, faced a 25% decrease in population in the last decade. This sharp decline has forced them to come up with innovative strategies for vacant land use (Davey 2011). Realizing that the housing stock is aging, vacancy rate is increasing in certain parts of the city, and the infrastructure is too expensive to maintain, Detroit published a document outlining the strategies for acquisition of vacant and foreclosed properties (City of Detroit 2011). Because many different public entities own properties, Detroit mapped all public ownership of properties in the city to see where they were concentrated and might be able to be assembled for sale or agricultural lease. Figure 12 shows the map of land owned by the land bank, school, city, housing authority, code enforcement, and treasurer. Private developers are acquiring auctioned properties and are aggregating them for agricultural usage. The city is still playing a substantial role through code enforcement and ensuring that speculators do not leave parcels to languish.

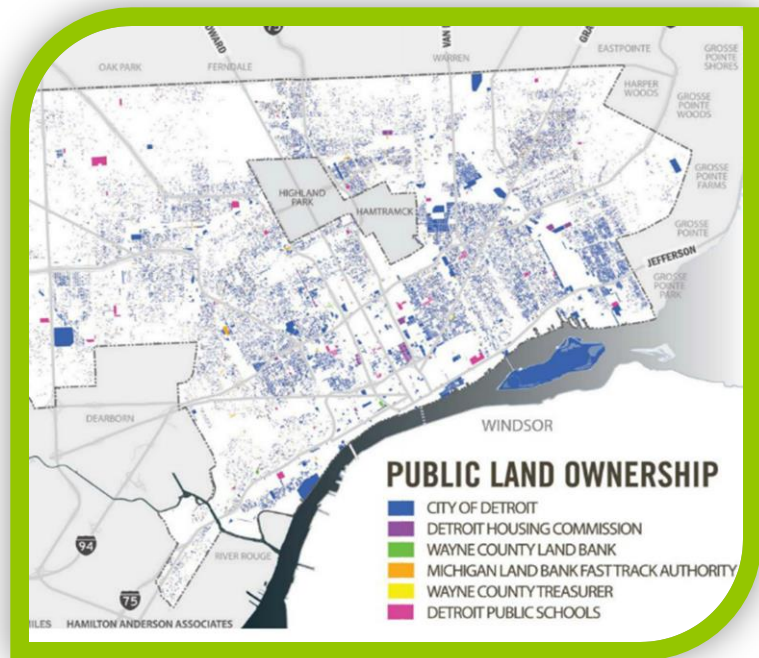


Figure 10: Detroit Publicly-Owned Land Map

Source: detroitworkspj.com

Analysis

Many urban areas are being more strategic in locating agricultural activities. This is part due to fresh food access for underserved communities, and is also in response to residents' concern over the potential nuisance from community gardens and urban farms (Ready and Abdalla 2005). The need for agriculture to be accessible, in a location suitable for growing plants, and yet buffered from neighboring uses requires a land suitability analysis to determine potential locations. There are also environmental considerations, such as slope

and aspect, which will affect the plants' growth, access to the crops, and potential for nutrient or soil runoff. Once the other criteria of the land suitability have been applied, the best parcels can be inspected using online aerial photography or by visiting physically to assess their surface cover and condition.

Davis (2008) did a land suitability analysis for siting of community gardens in the City of Atlanta. His criteria were population density, proximity to census tract in which a garden is located, poverty rates, and parcels without buildings. He concluded that a further suitability analysis for Atlanta should include slope, tree canopy, impervious surface, water availability, zoning, and surrounding uses.¹³

Richardson (2011) did a form of land use analysis using GIS, with a ranking scale that prioritized sites near greenways, streams, and sites between 1 and 5 acres. She also mapped ideal sites for their proximity to schools, hospitals, churches, other local food infrastructure, and renewal areas.¹⁴

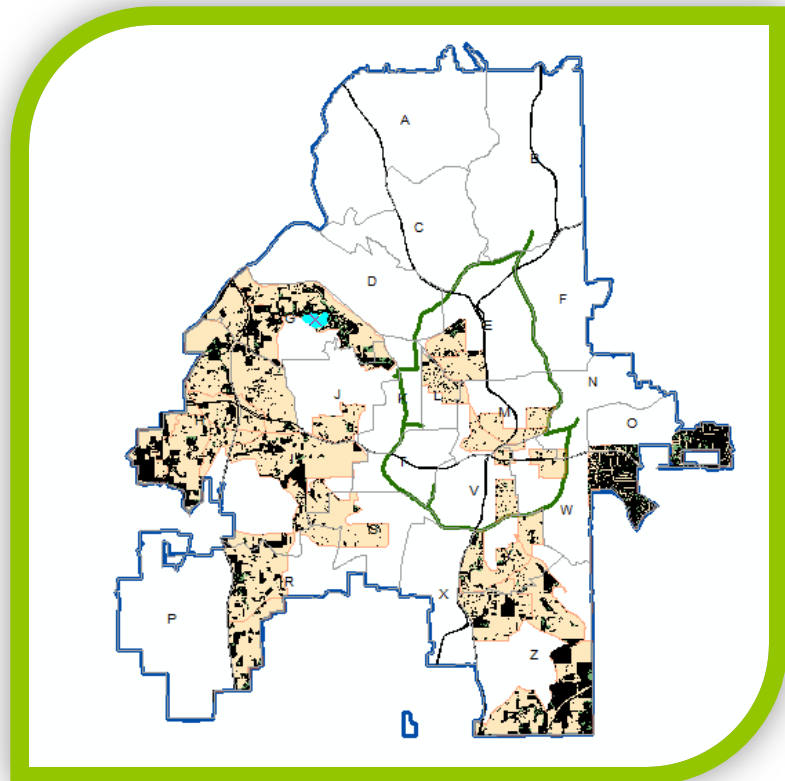


Figure 13: All Vacant, Publicly Owned, or Unknown Parcels in Food Desert Tracts in the City of Atlanta

The preliminary land suitability analysis below was done using GIS model builder. It includes environmental, socioeconomic, and parcel ownership as input criteria. Parcel data was evaluated for public ownership and vacant land use codes.¹⁵ Socioeconomic variables are critical to measure when looking at food security and equitable distribution of food outlets. The USDA Food Access Research Atlas provides an analysis at the census tract level

¹³ Davis, Brad. "Literature Review and Suitability Analysis for Community Garden Sites in Atlanta, GA." (Master's Option Paper, Georgia Institute of Technology, 2008. P.47.

¹⁴ Richardson, Mary. "Identifying Opportunities for Urban Agriculture in Atlanta." Enterprise Innovation Institute presentation, Georgia Institute of Technology, September 2011

¹⁵ For methodology, please refer to Appendix B.

of access to grocery stores by measuring American Community Survey and Census data on vehicle access, distance to grocery store, vulnerability, and poverty. While community gardens and urban farms may not solve the issue of food access and are not a replacement for a grocery store, a market garden that grows and sells its produce onsite may be a benefit to the neighborhood. The map in Figure 13 on the previous page shows all of the publicly-owned or vacant land in census tracts with low food access.

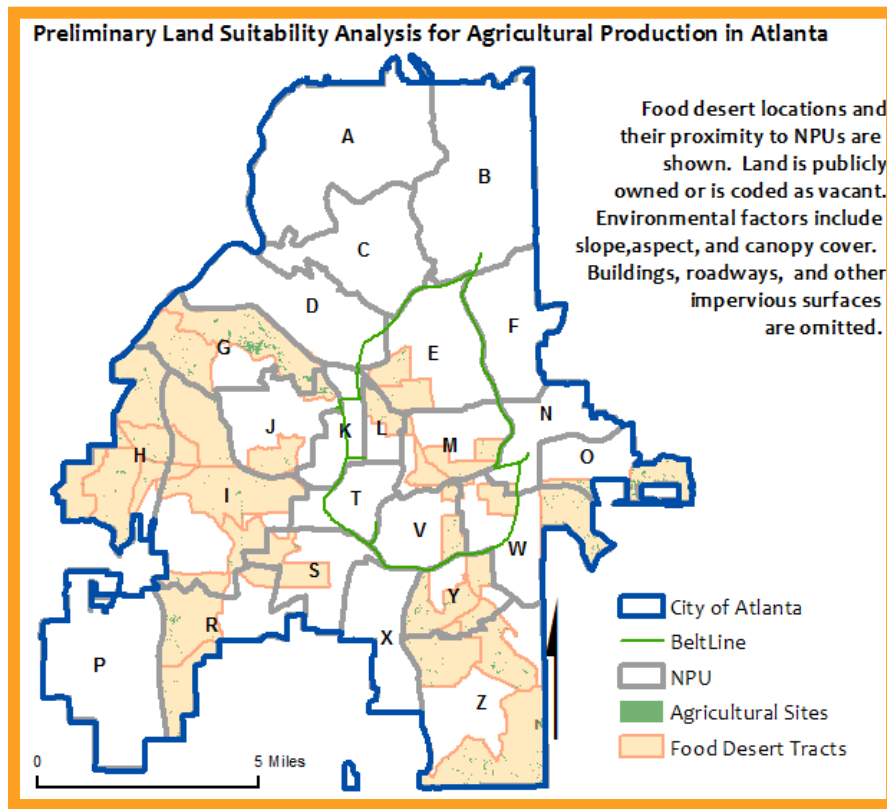
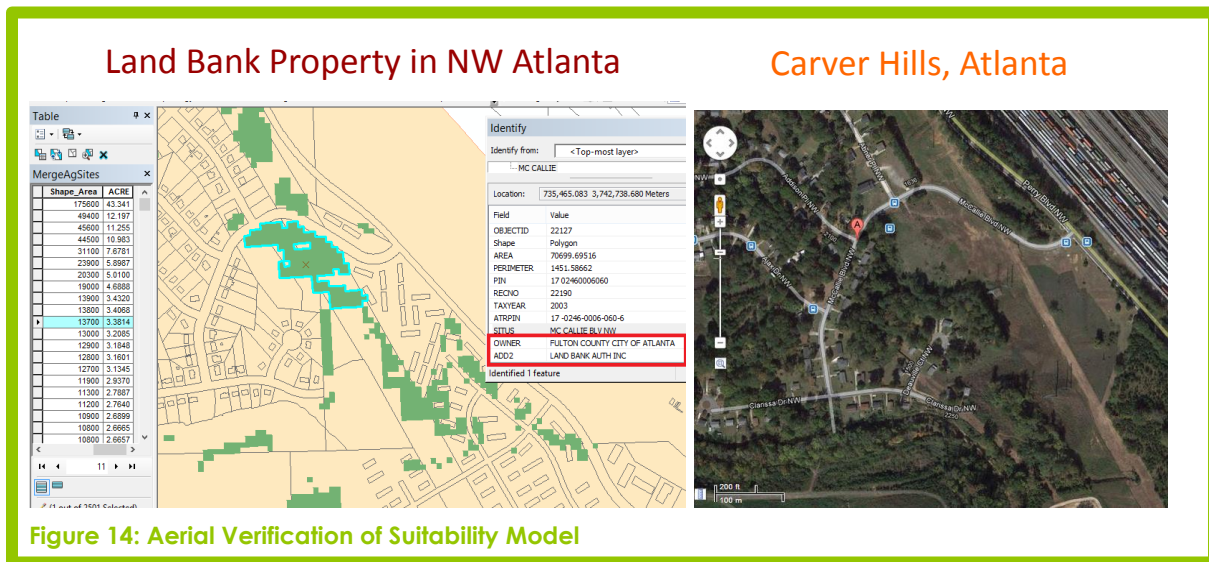


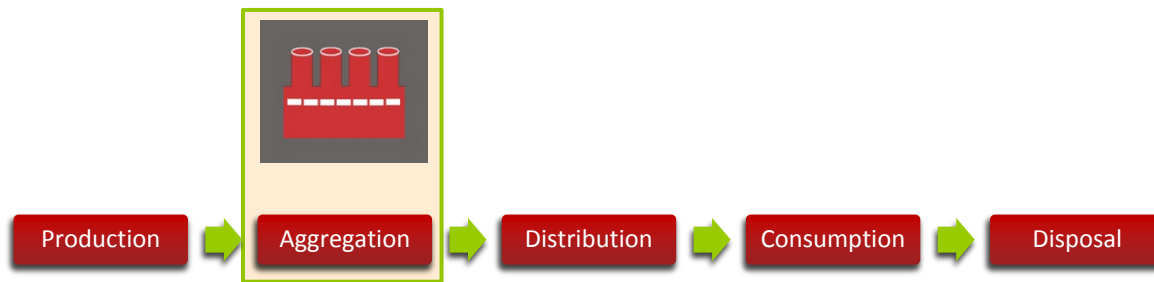
Figure 14: Land Suitable for Agriculture in Atlanta

Finally, an environmental analysis selected suitable parcels based on slope, aspect, impervious surface, tree canopy cover, building footprint, and floodplain raster data. The overall map is shown in Figure 14. As is apparent from the map, the environmental factors significantly limit the amount of land suitable for farming. Aerial analysis of selected sites was done to verify the model, and is shown in Figure 15 below.

The model indicates how an analysis can assist with identifying public properties for agriculture, but is limited by the accuracy of the data collected. Thousands of records for the City of Atlanta have no ownership or land use codes available. A vacant land survey would also ideally include derelict residential, industrial, or commercial properties, but this data is difficult to gather. Building an accurate data set would require the cooperation of many different entities, including the city of Atlanta, MARTA, Fulton



County, the Land Bank authority, Code enforcement, the State of Georgia, and the Atlanta Housing Authority. Because the data changes frequently, cities like New Orleans have enlisted the assistance of neighborhood groups to keep the information up to date by conducting windshield surveys. Area universities assist with interactive GIS mapping (Whodata.org 2013). Cities with limited staffing capacity such as Atlanta could utilize the structure of the Neighborhood Planning Unit or other place-based community organizations to help out with the persistently blighted and vacant properties in their neighborhoods.



Processing and aggregation of products investigate the activities around turning raw food materials into finished food products, and aggregating several growers' produce to supply to larger institutions or regional markets. While planning documents in Atlanta make mention of targeting other areas of the food system, processing and aggregation are not included in city-wide goals and strategies. Several researchers have analyzed the feasibility of food hubs, local wealth building initiatives, and mechanism for growers to aggregate their product for local markets.

King et al find that a critical component of local supply chain profitability is diversification of operations and access to processing services. There are few models between large-scale agribusiness and direct-to-consumer schemes, such as farmers markets and community-supported agriculture programs (2010). This is a large gap that can be served by further analysis and development of aggregation models that engage area institutions. Mid-size farms have traditionally competed unsuccessfully in larger supply chains, but cannot achieve the economies of scale and price supports that large farms enjoy. Lev and Stevenson propose the development of regional, or Tier 3, food systems that serve different and unique products in order to create a profitable model at varying scales (2011).

"Farms and businesses in local supply chains can be successful if they offer unique product characteristics or services, diversify their operations and have access to processing and distribution services."

-King et al, 2010

Food Hubs

Small to mid-scale aggregation sites, or food hubs, are an emerging focus of research for the USDA. A food hub is defined as "...a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of regionally produced food products (USDA, n.d). The USDA further finds evidence that these food hubs can stimulate local economies, increase food access in food deserts, and provide regional resiliency.

A local food hub does not attempt to replace the major national grocery retailers, but rather to provide a parallel distribution network that is more locally based. According to the USDA, consumers are becoming increasingly aware of their food source and desiring that it is more local. The National Restaurant Association reported in 2009 that 89% of fine dining restaurants served locally-sourced items. A consumer survey done by the National Grocery Association in 2011 found that 86% of people said that local food presence was “very important” or “somewhat important” (USDA, 2011). There is growing demand for local food, but the distribution infrastructure that has been developed and optimized in the last 50 years focuses on large-scale farmers that sell to brokers and large aggregation sites all around the country where produce is then contracted between major food service distributors and retail outlets.

The Georgia Sustainable Agriculture Consortium has studied potential barriers to food hub development and evaluated the infrastructure needed to support the hubs. The consortium aims to foster the growth of small to midscale agriculture in Georgia, and promote cooperation among stakeholders. Their findings include that sustainable agricultural production systems will first need to be robust enough to support regional food hubs in Georgia. Based on their research, midscale vegetable production and animal species grazing systems are the most promising at the current time (2011). The consortium has outlined the following goals for the next five years around food aggregation:

1. form a working network structure that will facilitate interaction between key institutions and stakeholders,
2. quantify barriers and infrastructure needed for local/regional food hub development,
3. conduct life cycle analysis of vegetable and grazing systems,
4. begin research on multi-species grazing systems,
5. increase research and extension on midscale vegetable production systems, and
6. create two local/regional food hubs in Georgia.

While Georgia Organics and the Local Agriculture Subcommittee at the ARC are involved in conversations regarding the statewide development of food hubs, there is little information on any specifically planned to be located in the city of Atlanta. This may be due to the proximity of production sites to the desired aggregation facility. Minimizing transport before the item is washed, packaged, and processed is preferable to shipping to in-town locations for processing. However, with the increase of urban agriculture activities and farmer trainings, there will soon be more demand for washing and aggregation sites within the city.

Farm to Institution

The farm to institution model seeks to build a localized economy using the purchasing power of venerable place-based institutions such as universities, hospitals, medical clinics, and large employers that are rooted in the area. They are advantageous for farmers more so than the K-12 farm-to-school programs because the institutions continue to purchase produce during the summer months.

The Atlanta Wealth Building Initiative in Atlanta is working to establish a greenhouse facility on former industrial land that will grow 3 million heads of lettuce to be sold to anchor institutions such as hospitals and universities. They have engaged a broad community base of support. First partnering with students in the business school at Emory University, they conducted an initial feasibility study on the financial aspects and potential market. They have also partnered with the Annie E. Casey Foundation that is working on the Pittsburgh Master Planning Initiative around resident-led goals of food access, farmers markets, and community gardens. The Community Foundation, as part of its mission to match philanthropists with community-based projects, is acting as the convener of this diverse group of stakeholders. AWBI is currently working to secure interest from area institutions that want to source food locally or have explicit sustainability goals. Both Emory and Georgia Tech have a stated commitment to environmental sustainability, and are working within their large-scale food contracts to allow for local purchase of specific goods.

Working with Invest Atlanta, the social enterprise has identified a site to purchase along the BeltLine that will be eligible for both New Market Tax Credits for establishing a business, as well as property tax deferment within the BeltLine tax allocation district. The growing facility, with good expressway and road connectivity, could also act as a processing and distribution hub. Should this model prove successful, there are many more universities and institutions in the area, and other types of products besides lettuce could follow suit.

Case Studies

Cleveland has some similarities to parts of Atlanta which have experienced manufacturing losses, job losses, high foreclosure rates, and the presence of numerous brownfields. One of the area-based responses that emerged in Cleveland to promote community wealth and neighborhood revitalization was the creation of a large-scale worker cooperative with a focus on green manufacturing businesses. One of these, Green City Growers is an urban agricultural cooperative located on 10 acres assembled from multiple parcels in Cleveland's Central neighborhood. In partnership with the Cleveland Foundation, neighborhood groups, research institutes, and city support, Evergreen Cooperative Corporation has developed a network of these worker-owned businesses, all targeted within an underserved area of six neighborhoods in Cleveland. The project's strategy is to build a localized economy using the purchasing power of venerable place-based institutions such as universities and medical clinics that are rooted in the area. They have agreements with the Cleveland Clinic, Case Western Reserve University, and other area institutions to provide them with their services, including locally-grown lettuce (University of Maryland, 2011).

Analysis

A study done by the University of Georgia found that there are very few small to midscale farm operations in Georgia that can supply local institutions such as schools, universities, hospitals, and convention centers in the state (2011). While Georgia is a leader in agricultural production, most of this production is in commodity crops that are under contract with large companies or sold to brokers to aggregate at a national scale. Furthermore, the end users require that the food be cleaned and prepared, and delivered in larger quantities than one

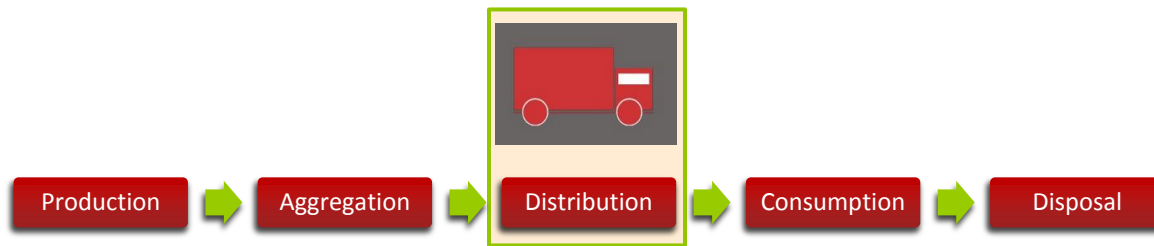
medium size farmer can typically supply. This is where there is currently a gap in the local food supply chain, and where cooperative farmer / cooperative producer models can help to build local wealth at the grassroots level. A farmer or grower working in a cooperative aggregation site has a financial incentive to participate because they are still getting a higher wholesale price for their produce, rather than the 12 to 20 cents on the dollar of profits they receive from selling to a broker (USDA, 2011).

These studies point to the barrier of infrastructure around processing and aggregation. And while other aspects of the food system are now mentioned in long-range planning documents, goals for aggregation and processing sites are still missing. The City of Atlanta could promote local food distribution through identification of ideal food hub locations. These would ideally be located adjacent to or near larger urban farm and market garden sites. Recommendation 3 explores the possibilities around an urban agricultural enterprise zone similar to the one created in Cleveland, which combines several small production sites with a washing and aggregation facility. Recommendation 1 discusses the need for a city-wide mapping of food system activities and a land use analysis, which would be useful for determining the best location for an aggregation and processing site.

“What is missing in our current system are midscale farms and the infrastructure for these farms to access wholesale and institutional markets that want local, sustainably produced foods. Local/regional food hubs are a way to provide this missing link.”

-Georgia Sustainable Agriculture Consortium, 2011.

Working with Invest Atlanta, the social enterprise has identified a site to purchase along the BeltLine that will be eligible for both New Market Tax Credits for establishing a business, as well as property tax deferment within the BeltLine tax allocation district. The growing facility, with good expressway and road connectivity, could also act as a processing and distribution hub. Should this model prove successful, there are many more universities and institutions in the area, and other types of products besides lettuce could follow suit.



This topic looks at the process by which food is transported, stored, and marketed on its journey from farm to consumers. It also looks at access of the community to food outlets and the barriers to bringing food to the local population. The spatial distribution and access to food retailers has been found to influence consumer choices about diet (USDA 2013). Urban agriculture initiatives and community gardens are strategies that promote awareness around fresh and healthy foods, but at a significantly smaller scale than is needed for regular and predictable food shopping needs. Similarly, farmers markets are a positive way to connect residents to local food producers, seasonal produce, cooking demonstrations, and local entrepreneurs, but limited in their ability to provide food security due to infrequency and seasonality. A range of food distribution options includes supermarkets, corner stores, mobile markets, and farmers markets. The activities in Atlanta for each of these options will be explored in more detail below.

The term food security has evolved from a definition in 1986 of “...access of all people at all times to enough food for an active, healthy lifestyle” to “...a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO 2001). In the United States, planners and public health officials are increasingly borrowing from the food justice movement to define the term as “... the condition in which all people at all times have access to fresh, healthy, affordable, and culturally appropriate food (IATP 2012).

The USDA Food Desert Atlas is a tool that was developed by the USDA in 2011 to provide analysis at the census tract level of food access by measuring American Community Survey and Census data on vehicle access, distance to grocery store, vulnerability, and poverty. The USDA Food Access Research Atlas, released in 2012, is an updated version of this that includes new tools and refined data to find food deserts or areas of low food access. An analysis with 2013 data indicates that a majority of the census tracts within the city have low food access. Figure 16 below shows the spatial distribution of census tracts that are considered low access in the City of Atlanta, and indicates whether these are also low income communities.

City of Atlanta Food Accessibility, Based on 2013 indicators

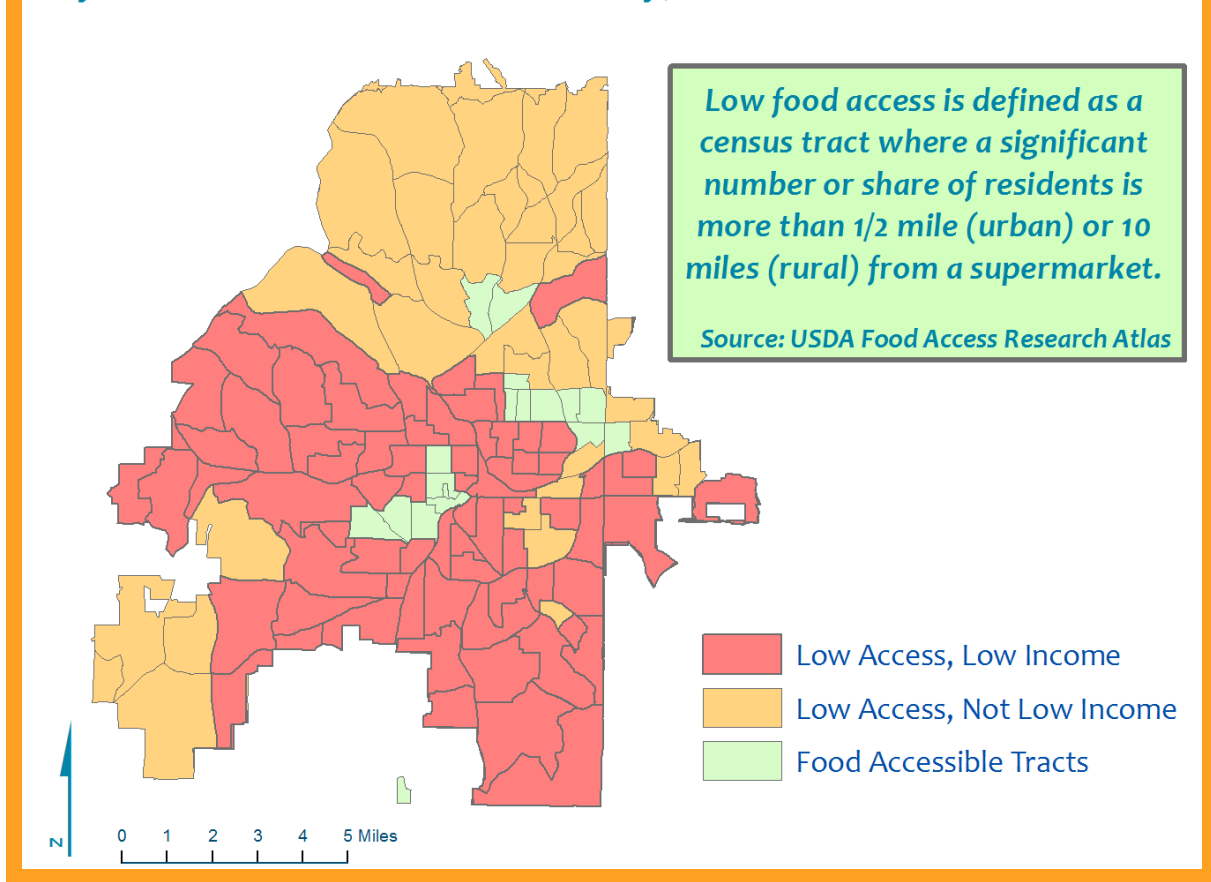


Figure 16: Food Accessibility by Census Tract in Atlanta

The neighborhoods of West End, AUC, and Vine City in the west, Midtown in the center, Candler Park, Poncey Highlands, and Virginia Highlands in the east, and Brookwood Hills in the north are the only locations where 1/3 or more of the population is within a 1/2 mile of a grocery store. While this atlas does not take into account public transportation options, it indicates that fresh food access has important impacts on land use decisions and the attraction of businesses that can provide healthy food options to residents.

Supermarkets

Lee (2011) mapped the distribution of Kroger and Publix grocery stores in the Atlanta area, shown in Figure 17. Her analysis clearly shows areas in west and south Atlanta where there is a lack of large supermarket sites. Larger food retailers are important to note, because they are more likely to have fresh fruits and vegetables at a lower price than other area markets. The Georgia Family Connection Partnership and the Georgia Food Industry Association have also recognized this as an issue, and formed a Georgia Supermarket Access Task Force to develop a solution for the state. They are working with the Food Trust (in Philadelphia) to develop Georgia-specific public policy recommendations



Figure 17: 2011 Map of Kroger and Publix Locations in Atlanta

to encourage the development of supermarkets in food deserts. They released a draft set of recommendations that are currently undergoing review (GSATF, 2011 draft).

Corner Stores and Mobile Markets

Through the Community Development Financial Institutions Program, the CDFI Fund builds the capacity of CDFIs to serve low-income people and communities lacking adequate access to affordable financial products and services. The Healthy Food Financing Initiative is a supplemental funding opportunity under the CDFI program for CDFIs that express an interest in expanding their healthy food financing activities. While this is a broad-based definition, in Atlanta the focus is specific to promoting healthy foods in corner stores in three zip codes in Northwest Atlanta.¹⁷ Based on a Philadelphia model described below, the corner store initiative partners with area convenience store owners and gives them funding to prominently display fresh produce and healthy snacks.

¹⁷ This is one specific CDFI, Access to Capital for Entrepreneurs. Other CDFIs in Atlanta may exist with HFFI funding for other types of projects. Personal communication April 12, 2013.

Another method of food access that cities are attempting is the mobile food market model. In this program, a truck filled with fresh produce (sometimes local) is driven at scheduled times and parked in densely settled underserved areas. The Fulton Fresh Mobile Farmer's Unit, a program of Fulton County Cooperative Extension, delivered an estimated 10,000 lbs. of fresh produce to over 900 residents living in four areas identified as food deserts. It serves the communities of West End, Bankhead Highway, Palmetto and Collier Heights. In addition to delivery of fresh produce, there is also an educational component of learning how to prepare tasty, healthy meals (Fulton County 2012). Mobile markets may be structured as government-sponsored programs, nonprofit organizations, or for-profit enterprises that aim to provide an alternative method of food delivery to underserved areas, and there are several examples that are taking root in Atlanta¹⁸. These projects would be eligible for funding under the Healthy Food Financing Initiative Funds.

Farmers Markets

In September 2011, the city council of Atlanta passed a farmers' market amendment to the zoning ordinances in recognition of the increasing demand for access to local foods. The amendment defines "farmers' market" as "a market where vending activity is conducted outdoors in an open air environment and accessible to the general public." 75% of the booths must be dedicated for producers of farm products or value-added products. To operate, a farmers' market must obtain an annual special administrative permit.

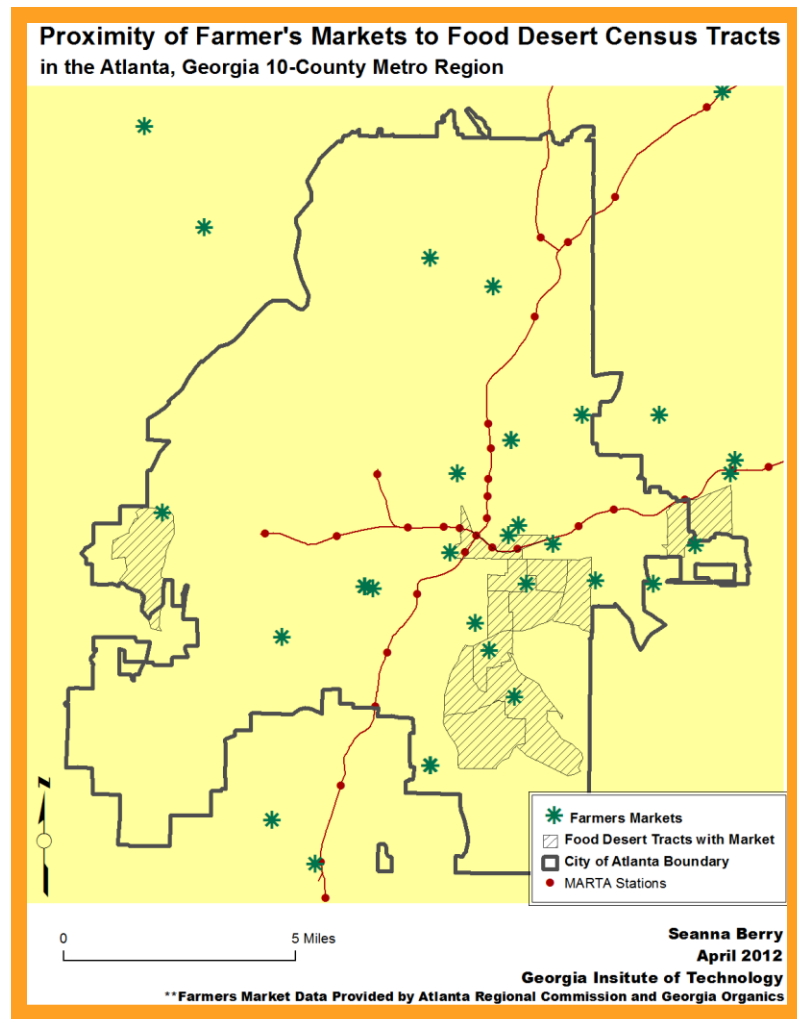


Figure 18: Location of Farmers Markets in Atlanta

¹⁸ The Turnip Truck, Riverview Farms Mobile Truck, and the Atlanta Mobile Market are some local examples.

Exclusive parking is required at the rate of one space per booth.¹⁹ .

Permitted farmers' markets are allowed in almost all districts, but are limited in residential districts to "parcels which meet the minimum lot size requirements and are used as churches, synagogues, temples, mosques and other religious worship facilities or schools." The map in Figure 18 above shows the Atlanta area and the location of farmers markets with respect to food desert census tracts. Tracts considered low food access that have a farmers market in them are shaded. Considering the number of low food access tracts from Figure 15, there are several more potential locations for the establishment of markets.

Case Studies

Detroit, similar to many US cities, faced an issue of lack of major grocery store retailers in its urban core. Its development authority, the Detroit Economic Growth Corporation, works to attract supermarket retailers through its permitting and site selection process. Programs such as these are increasingly found in cities across the country in part due to the USDA Healthy Food Financing Initiative, which provides federal Community Development Financial Institutions (CDFI) funds for underserved food desert areas to attract grocery stores and to develop programs to increase fresh food access in convenience stores.

As part of its Green Grocer Initiative, the Detroit Economic Growth Corporation works to facilitate a streamlined development and permitting process for grocery stores, assistance in identifying and assembling the site, and earmarked financing sources specific to fresh food access.

Philadelphia has been piloting a healthy corner store project since 2004, with its Food Trust Corner Store Initiative. They identify corner stores that are 2000 square feet or smaller, have just one cash register, and have four aisles or fewer. Participation in the program is voluntary, and owners agree to a memorandum of understanding about the goals and expectations of the project. They faced obstacles in physically identifying appropriate corner stores, language and cultural barriers, finding time to provide trainings for busy store owners, and ownership turnover. Through their research into lessons learned, they found that:

¹⁹ There are exceptions to this rule, depending on site ownership. See Farmers' Market Text Amendment Z-10-030 for details.

- Partnering with corner stores can be an effective strategy to improve healthy food access in underserved communities;
- Corner store owners are willing to introduce healthy inventory, but they need support and simple steps to follow;
- Making small investments in equipment for corner stores can significantly increase the stores' capacity to sell healthy products.

The Food Trust has since partnered with the Philadelphia Department of Health to expand the Philadelphia Healthy Corner Store Network to over 600 stores. They have found that conversions (infrastructure changes) have cost an average of \$1,390 (The Food Trust 2012).

As part of economic development, historic preservation, and land reuse projects, several cities are adaptively reusing old buildings or building new sites for more permanent farmers markets. Figures 19 and 20 show examples of this in Detroit and Cincinnati.

Analysis

Sites for major retail grocery stores need to be identified based on spatial distribution and proximity to other stores, sufficient population support, and location within a tax abatement or



Figure 19: Detroit's Eastern Market

Source: Project for Public Spaces



Figure 20: Cincinnati's Historic Findlay Market

Source: Cincinnati Convention Visitors Bureau

employment incentive district. Invest Atlanta could work to attract a grocery store to identified locations by assembling large enough parcels, making the sites shovel-ready, and reaching out to major retailers with tax breaks and other incentives. Building on Recommendations 1 and 5 around mapping of food assets, sites for grocery stores can be prioritized in areas that are lacking fresh food outlets and yet have not been targeted for a retail location.

Farmers markets will not be a replacement for a reliable, year-round source of a variety of fresh foods, but they can be used as a tool in areas of low food access. Analyzing food desert locations, socioeconomic variables, and the spatial location of farmers markets in the Atlanta region yielded some interesting results. Figure 21 below highlights farmers market locations with respect to MARTA stations and the commuting patterns of residents by census tract. It is interesting to note that just 4 markets are within a ½ mile walking distance of MARTA rail stations. The dark orange tracts indicate a high percentage of residents who commute by alternative modes of transportation. It does not automatically include only low income individuals who cannot afford a vehicle, but rather measures commuting habits

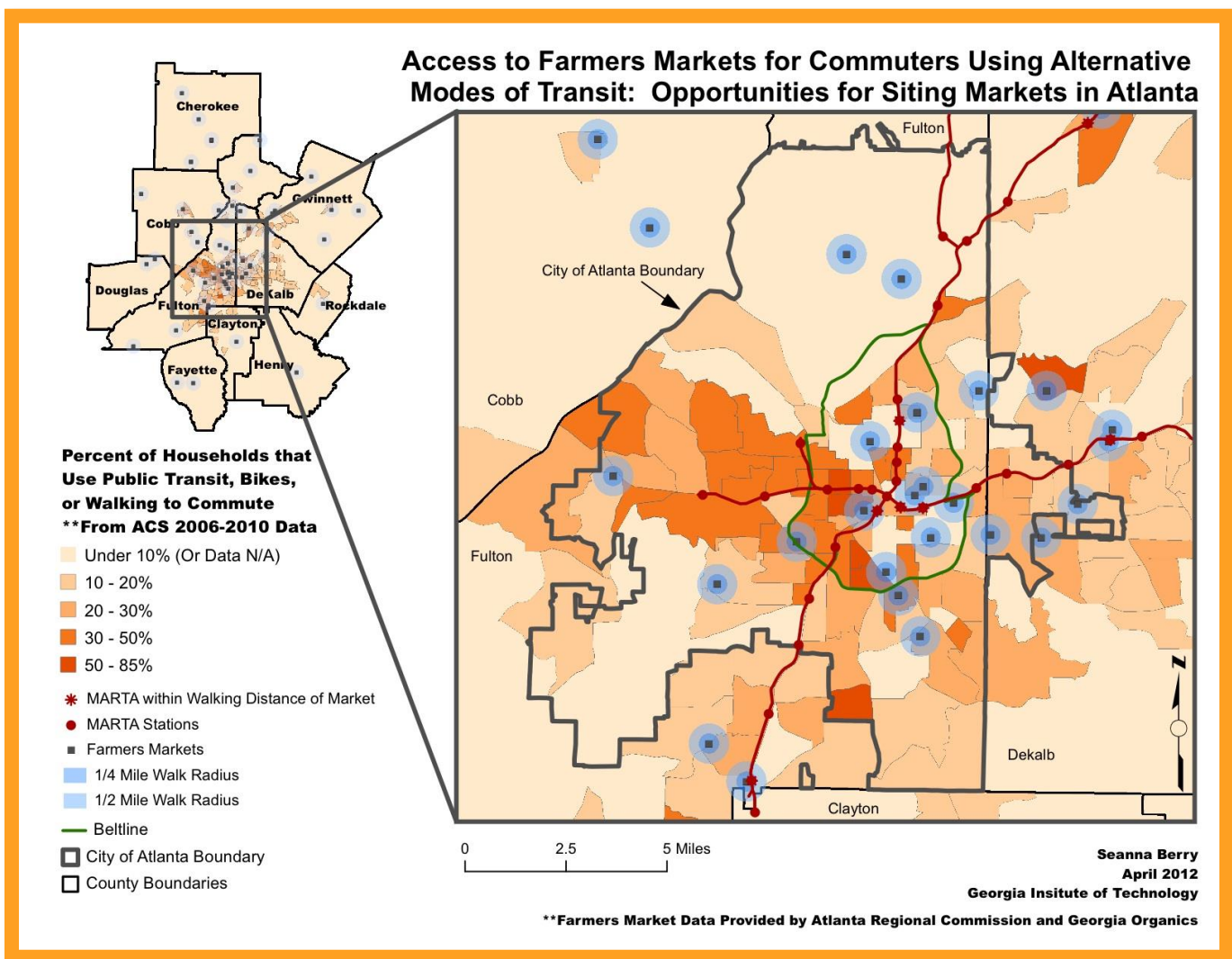


Figure 16: Farmers Market Locations and Comparison to Commuting Patterns

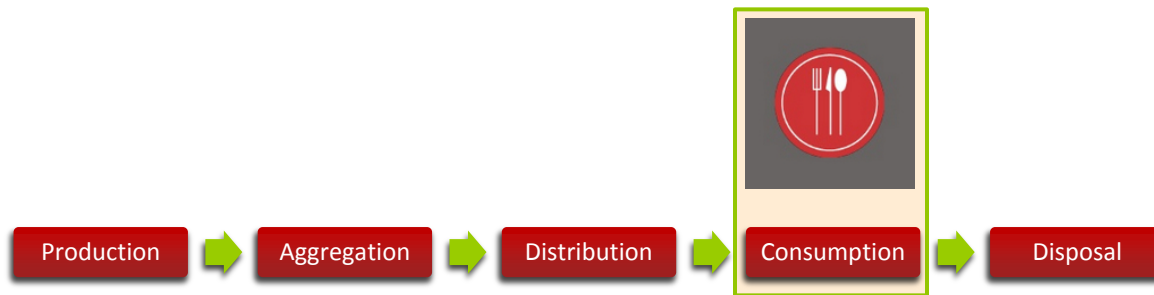
across all incomes. A regression analysis done using spatial distribution of markets in the 10-county Atlanta metro area indicates that farmers markets are more likely to be found in census tracts where walking, biking, and public transit are utilized as viable commuting options.²¹ This coincides with Philadelphia's findings that 75% of all farmers market customers polled walk or bike to the farmers market (Philadelphia Department of Public Health 2012). Low-income individuals with low access to a vehicle are at a significant disadvantage for accessing a range of fresh food options. The city could provide incentives for and prioritize applications for new farmers markets to be in pedestrian-friendly, transit-oriented areas.

Considering the volume of pedestrian activity immediately downtown and the potential for a busy market, it is surprising that there are no farmers markets that serve that area of the city. Further research might investigate the impact of the newly implemented farmers market ordinances on the siting of markets in Atlanta, and whether the parking requirement makes implementing a market in a densely settled area difficult. Involving land use planners at MARTA will be essential to the overall success of increasing markets near public transportation locations.

There are currently no year-round farmers markets in Atlanta that have 75% of their vendors providing locally-grown food²². The Sweet Auburn Curb Market has a placeholder on its website for a local produce farm stand that will be "coming soon." With its indoor location and accessibility to downtown, this market provides a valuable asset of fresh produce to area residents and employees. As Cincinnati and Detroit have discovered, a permanent year-round farmers market site can be a tool for economic development and neighborhood stabilization, in addition to providing a year-round venue for local food entrepreneurs. Identifying additional urban sites in Atlanta for a permanent, enclosed farmers market structure could include historic buildings or commercial areas that could support this type of development. Recommendations 5 and 6 explore the need for a strategic analysis at the neighborhood level of food access and how farmers markets may fill this role.

²¹ See Appendix A for a 2012 white paper analyzing farmers markets for the 10-county metro area

²² 75% of vendors must be local producers as a requirement to be approved as a farmer's market in the City of Atlanta



Consumption, arguably the most enjoyable aspect of the food system, includes not only purchasing food, but also cooking, preparing, and eating of food. However, the built environment can dramatically influence a community's eating habits. If local stores do not carry adequate varieties of fresh food and supermarkets are too far away, then unhealthy behaviors become a way of life. There is a distinction between access to food and access to healthy, nutritious, and affordable food, which is the basis of the definition of community food security (Food Security Coalition 2003). Research has indicated that access to fresh food does not always correspond to consumption. Public health researchers have also found that experiential education plays a critical role in increased consumption of fruits and vegetables. Educational gardens, cooking demonstrations, and the local farm-to-school movement are prominent examples of Atlanta's current strategies around healthy food consumption.



Figure 22: Cooking Demonstration at Clarkston Farmers Market

Community and Educational Gardens

A Georgia State study concluded that community gardening leads to improved health outcomes around nutrition, in addition to other social benefits (Campbell 2012). Researchers in a diverse, low-income community in Toronto had similar findings (Wakefield et al 2007). Alaimo et al (2008) found that adults with a household member involved in a community garden consumed fruits and vegetables 1.4 more times per day than the control group. Anecdotally, agricultural educators know that people who learn to grow food will also eat the food. Educational programs such as Habesha, Next Steps Youth Entrepreneur program, and others in the Atlanta area are teaching valuable skills while exposing youth to growing food. As the research indicates, community gardens are an ideal way to involve community members in healthy eating behaviors. Park Pride indicates that it provides technical assistance to 20 gardens on city-owned park land around Atlanta, and the Atlanta Community Food Bank provides support to over 100 community gardens in the area.

Cooking Demonstrations

Cooking demonstrations at farmers markets and neighborhood events are attempting to teach consumers to quickly and easily prepare nutritious meals. ALFI set forth goals around increasing the number of cooking demonstrations at farmers markets around Atlanta. To promote the at-home use of local, in-season produce, East Atlanta Village Farmers Market made use of a Communities Putting Prevention to Work grant to staff a chef demonstration tent for the season (Live Healthy Georgia). Truly Living Well similarly has a rotation of chefs at its farmers market stand to show simple and quick recipes using produce available at the market that week. The Fulton County Mobile Market comes free to neighborhoods to distribute fresh food; the only requirement is that the participant must attend a workshop with a cooking demonstration.

Farm to School

In 2007, sobering statistics indicated that Georgia was #2 in the nation for childhood obesity. This, as well as other data gathered, has mobilized public health officials to provide trainings and support for teachers, cafeteria staff, and community members at area children's schools. There is a rapidly growing movement of a farm-to-school program: the National Farm to School Network (NFSN) found that nationwide the number of farm-to-school programs jumped from fewer than 10 in 1997 to 12,500 in 2012. The inclusion of these programs has found (NFSN, 2012.):

- Improvement in K-12 eating behaviors, including choosing healthier options in cafeteria;
- consuming more fruits and vegetables through Farm to School meals and at home
- Demonstrated willingness to try out new foods and healthier options
- Enhanced overall academic achievement

Currently Georgia Organics has a dedicated staff member who is charged with making the linkages between farmers and academic institutions. Schools receive technical support in establishing both a garden and a curriculum, and consumption of the produce that is grown is encouraged. In 2010, they published a task force report and recommendations on increasing farm-to-school activities in the Atlanta Public School System. In order to accomplish increased student consumption of fresh food, the task force recommended installation of salad bars in cafeterias, a reward system for students, and the development of edible school gardens (Atlanta Public Schools Farm to School Task Force, 2010). Georgia Organics, as part of their annual conference, hosts a farm-to-school summit where stakeholders can meet to talk about their challenges and successes. This program, in conjunction with other behavior interventions, has shown success. Public health officials were glad to report this year that the obesity rate of children has dropped in the last five years; Georgia now ranks as the 17th state in childhood obesity (Georgia Department of Public Health 2013).

Case Studies

In 1992, Seattle passed a resolution by the city council to create community garden and open space goals. They recognized that community gardens share a significant share of produce to the community food banks and serve as a valuable asset to underserved populations. The resolution includes a strategy for interagency cooperation to identify community gardening sites, and a community garden to be designated within the city limits for every 2500 residents (ACGA 1999). Figure 23, right, shows a map of the 2013 inventory of community garden sites in the City of Seattle. They nearly tripled, growing from 27 in 1992 to 87 sites 20 years later. Seattle continues to expand this program: in late 2012, the city announced the creation of over 180 new plots on 17 new garden sites and 5 expanded gardens for its residents.

Analysis

No concrete targets have been set for increasing consumption of local food in Atlanta public documents, though there are stated goals around increasing the health of residents. Health advocates may set targets around decreasing the number of nutrition-related illnesses, such as heart disease, obesity, and diabetes. Tracking this data at the city or census tract level is difficult, as many health indicators are aggregated at the county level as the smallest unit of measurement.

The City of Atlanta's Office of Sustainability has identified community health and vitality as one of its impact areas to promote the wellness of its citizens, and the role of the built environment in meeting those goals. In 2008, the mayor's office declared an ambitious goal of access to local food within 10 minutes for 75% of the population by 2020. This language was similar to goals set by Philadelphia's Greenworks plan to bring 75% of residents within a 10-minute walk of local food (DVRPC 2010). Since that time, Atlanta's Office of Sustainability has stated that they are reevaluating goals and focusing more on land use and production rather than access goals. However, the declaration of city-wide food access goal with

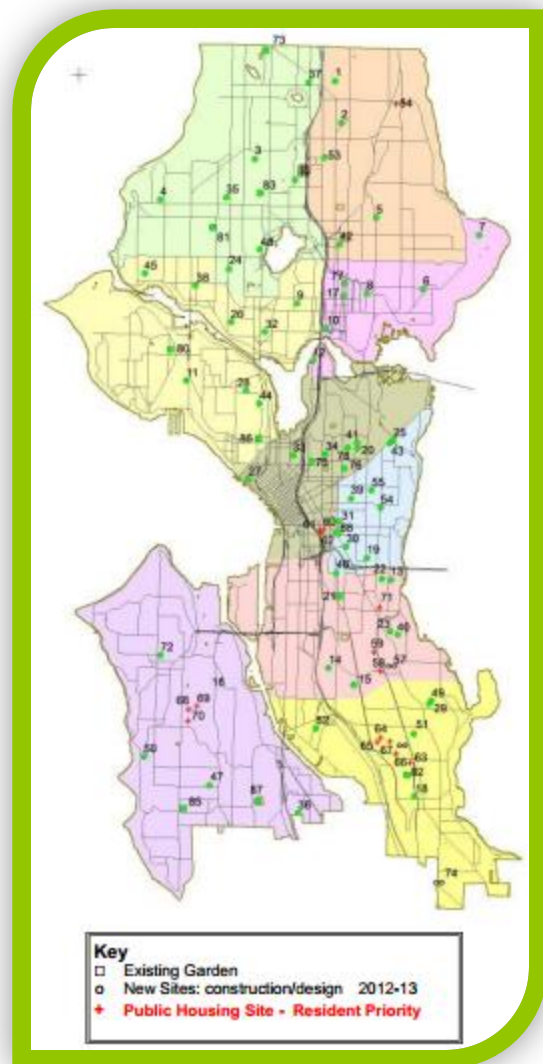


Figure 23: Locations of Seattle's City-Managed Community Gardens

Source:

<http://www.seattle.gov/neighborhoods/ppatch/locations.htm>

specific metrics can be a critical part of increasing community health. And while access does not equal consumption, opportunities exist to tie healthy eating educational programs into community garden activities and farmer's markets. Overarching goals for the city will help to determine the geographic areas that could benefit from nutritional and cooking programs. Recommendation 1 discusses the need for in-depth mapping of food assets at the city-wide level as a way of setting specific goals. Recommendations 5 and 6 discuss how a city's food asset mapping might help to identify overlapping of goals for transit-oriented development, livability initiatives, and public health programs to increase fresh food consumption.



Food waste diversion involves the separation of compostable, organic matter from other trash so that it can be used for compost, made into biofuel, or recovered as biogas. From an ecological framework, proper food waste diversion is a vital part of lowering a region's environmental footprint, decreasing greenhouse gas emissions, and reducing waste going to the landfill. Composting is the least expensive and low-tech of these solutions, and completes the ecological materials cycling for reuse in growing crops. Though composting is a valuable practice, antiquated regulatory frameworks often prohibit or severely restrict it on land not zoned for agricultural or industrial use.

Costs of Landfilling

According to the Environmental Protection Agency (EPA), the average American produces about 4.4 pounds of garbage a day, or a total of 1,600 pounds a year. The EPA estimates that nearly 12% of this trash that goes to landfill nation-wide is food waste. This organic waste sits with other garbage, typically in plastic liners without exposure to air and water, and it decomposes anaerobically. This anaerobic process emits methane, a greenhouse gas that contributes 21 times as much to atmospheric warming as carbon dioxide (EPA, n.d). While Georgia has a large poultry industry that also emits methane, municipal solid waste facilities are the largest emitters of methane in Georgia (GA EPD, 2009).

A 2005 waste characterization study shows that Georgia is on par with the nation's average of 12% food waste as a percentage of municipal solid waste, totaling 800,000 tons annually. Nearly half of the state's food waste comes from the Atlanta metro area (GA EPD, 2012). About 25% goes to municipal landfills, while 75% is deposited in privately owned large-scale facilities. The Georgia Department of Community Affairs (DCA) estimated the amount of remaining landfill space in a 2009 Disposal and Capacity Report, and found that all current permitted municipal solid waste landfill space will reach capacity by 2040 at current levels of disposal. Some areas, such as North Georgia, are projected to reach capacity in the next decade, and these estimates do not take population growth into account.

Developing an alternative waste management system that sees waste as resource to be collected, separated, and recovered further meets many city's waste reduction goals (Lehmann, 2011). With the proper infrastructure and system design, residential, restaurant, and industrial pre-consumer food waste can be taken to local farms or other managed sites to be composted. The advantage of using a farm site is that the farmer needs the soil amendments and will utilize the end-product on site. They are also already actively managing

the site. Proper attention given to aeration and the carbon/nitrogen ratio lessens the nuisance issues that are commonly associated with composting.

The University of Georgia Cooperative Extension names several environmental benefits to composting, including water and soil conservation, protection of groundwater quality, avoidance of methane productions and leachate formation in landfills, reduction of pesticide and fertilizer use, reduction of runoff, and restoration of compacted and marginal soils. Composting has further benefits in the food production system by providing a stable organic matter source for plant nutrients, buffering soil pH levels, suppressing plant disease and parasites, and reducing water and irrigation requirements (Risse & Faucette 2009).

In nature, waste materials are absorbed beneficially back into the local environment as nutrients. Cities don't do that. They work by way of taking resources from one place and dumping them somewhere else causing damage to nature. We need to turn this linear process into a circular process instead."

*– Herbert Girardet,
Creating Sustainable Cities*

Regulations

The barriers to implementing source separation and diversion of food waste at the state level are outdated regulatory frameworks, financial incentives to landfill rather than recycle, convenience of waste receptacles, a lack of infrastructure and composting facilities, and a lack of public education on the benefits of materials recovery. In stark contrast to these challenges is the establishment of an ambitious “Zero Waste Zone” in the convention center district of Atlanta that aims to divert all food waste, estimated at 34 tons of organic materials per month (EPA, 2012). Metro Atlanta’s only food waste composting facility, managed by the private company Greenco, was shut down due to nuisance complaints from neighbors in Barnesville and has had continued difficulty in finding a new site in which to relocate (Moghe, 2012).

State-level regulations

Georgia landfill tipping fees average between \$25 and \$40 per ton, and are lower than the national average (Risse and Faucette, 2009). This has resulted in Georgia importing waste from out of state, reaching nearly 2 million tons in 2007 (EPD, 2008). As landfills reach capacity and close, waste disposal and tipping fees to the businesses and institutions generating the waste will either climb, or more land will be set aside for landfills. But as the policies currently stand, there is little economic incentive to separate waste at the source or focus on reduction strategies.

In response to the diminishing landfill capacity, the state of Georgia set a 25% waste reduction goal to be achieved by 1996. While this goal was not achieved, legislative and voluntary programs have successfully reduced the amount of material disposed of in landfills. The state’s first action was a statewide ban on yard waste going into landfills (UGA, 2002).

Much of this diverted yard waste ends up in municipal composting operations. High in leaves and dried grass, these materials are primarily carbon and decompose slowly without the addition of nitrogen materials. Food waste is very high in nitrogen, and helps to speed up the composting process. If food waste was also diverted at the municipal level and added to the yard waste compost, it would be available more quickly for landscaping purposes and for resale or distribution to the consumer.

The state of Georgia recognizes and allows three levels of composting: exempt, permit-by-rule, and solid waste handling permit. The first requires no permit, and allows for yard trimmings, agricultural waste, and household waste to be composted on private property, on the same site on which it is generated. Georgia Soil and Water Conservation Commission has published a document that describes best management practices for siting composting facilities on farms to protect waterways (GASWCC, 2007). No mentions of compost siting regulations are made for households at the state level.

The next tier, permit-by-rule, requires that at least 75% of waste is generated at the site, and the other 25% can be brought in for on-site processing. The state requires that it be notified in writing, and that all local permits and ordinances are met. Someone must be staffing the site daily, and daily records must be kept of weight and volume of the waste brought on site. These records must be kept for 3 years. Also, the site must adequately meet air and water quality standards (GA EPD, 2009).

The next level above this is full solid waste handling, and requires extensive site assessment (wetland delineation, zoning, hydrogeological), a documentation of public hearing, and a design and operational plans prepared by a professional engineer. Under current Georgia law, community garden composting and food waste diversion to local farms is not legal without a permit-by-rule or MSW handling permit. In Georgia, food waste is to be treated the same as industrial sludge, industry by-products, garbage, and municipal sludge, all of which require a “Solid Waste Handling Permit” (GA EPD, 2009).

City of Atlanta Regulations

Atlanta Zoning Ordinances are structured similarly to those of the state, but specifically prohibit composting of food waste in any zones except industrial. Section 130-36(j) mentions yard trimmings as legal to compost as long as it is generated on site. While the term “compostable material” is defined as “...any organic materials that are source separated for processing or composting, such as yard trimmings and food waste,” the code itself prohibits the addition of any sort of food waste to residential compost. *Atlanta Code Section 130-2 (b)* prohibits “the existence, storage or accumulation of garbage, hazardous, putrescible solid waste or rubbish” on the grounds of public health. Here, the term “putrescible wastes” are defined as “...wastes that are capable of being decomposed by microorganisms. Examples of putrescible wastes include but are not necessarily limited to kitchen wastes, animal manure, offal, hatchery and poultry processing plant wastes and garbage.” A facility that accepts compostable material as defined above requires a solid waste handling permit,

which costs \$6500 annually and can only occur in enclosed buildings that are zoned as industrial.

Case Studies

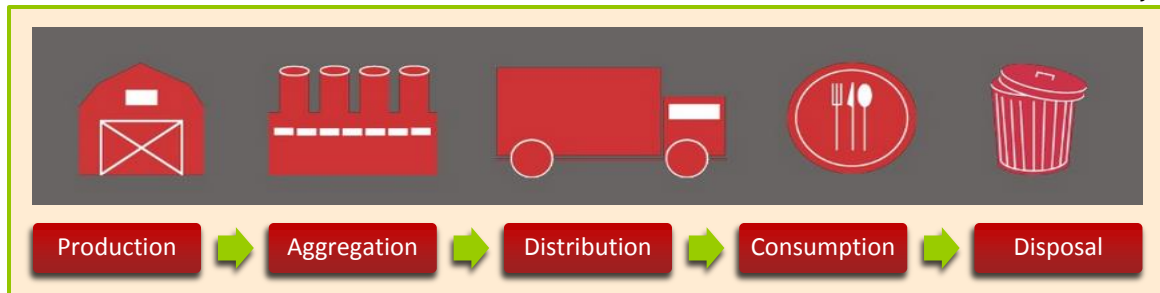
The above regulations in Atlanta and Georgia govern the material composition and operational standards of compost sites rather than the volume of material brought on site. Other states have moved more towards adoption of best management practices of composting facilities around stormwater management and nuisance concerns, and construction of a tiered system of governance based on size of operation and amount of material brought on site. Florida, California, Indiana, Maine, Massachusetts, Mississippi, Nebraska, and New York are among the states that have used a tiered permitting system for the last 15 years and have included source separated organics and food waste into their regulations (Compostable Organics out of Landfills by 2012).

The state of Wisconsin, for example, has adopted a tiered permitting system for composting based on volume. To encourage community gardens and neighborhood-scale composting, collection sites that accept less than 50 cubic yards do not need a permit from the state. Management practices and do not require submission of paperwork. Composting sites that manage between 50 to 5000 cubic yards require a site inspection, a plan of operation, and a one-time fee of \$550 to obtain a license. The license must be renewed annually, but is without a fee. Sites that are over 5000 cubic yards of source separated organics (or over 20,000 cubic yards of yard trimmings) are considered large scale facilities and must submit design and operation plans (Wisconsin Department of Natural Resources. 2011). All of these composting sites must adhere to guidelines about proper location siting and operation to protect waterways and to prevent nuisance to neighbors.

Growing Power is a non-profit organization that operates a 2.5-acre urban farm in Milwaukee, and a larger 30-acre farm outside of the city. The urban farm has an educational focus, with aquaponics, poultry, apiary (beekeeping), and a rainwater catchment system in addition to vegetable growing. They collect food waste, brewery waste, coffee grounds, newspaper, and yard waste in the amount of a staggering 180,000 pounds per week. All of this is waste that would otherwise go to a landfill, and instead is recycled into soil and compost to grow new crops without the use of petroleum-based fertilizers. The founder, Will Allen, conducts trainings to educate future urban farmers on how to start and run this integrated farming model (Growing Power, n.d). This model is possible due to the tiered regulations around composting and the allowance of compost feedstock from offsite locations.

Analysis

Truly Living Well is modeled after the Growing Power farm in Milwaukee. It too has a multiacre urban farm, and a larger suburban farm. It currently collects food scraps for its compost: coffee grounds from a nearby cafe, spent grains from a local brewery, and vegetable scraps from the local market. Georgia Power (the electric company) also brings woodchips for composting and mulching. Because of this food diversion, the farm doesn't spend money on artificial fertilizers, and is helping to build and remediate the soil in this formerly neglected urban area. While not currently enforced by the city, this activity is considered illegal under both the state and municipal policies governing food waste. The irony is that the city celebrates the success of this farm for its innovative reuse of abandoned land, neighborhood stabilization effort, resource recovery, food access for the community, and educational programs. Rather than continue to ignore the mismatch of ordinances to desired activities, the city of Atlanta might work to amend its current regulatory framework to encourage responsible composting. These suggestions are discussed in Recommendation 8.



The food system as a whole looks the intersections and interconnections of all of the above activities, and provides governance or guidance towards a more integrated system. A holistic food system is also integrated into the goals and long-range plans for a city or region. This chapter summarizes planning and policy-level documents from Atlanta's public and nonprofit sectors as they develop food systems goals and metrics.

Advocacy Groups

In 2008, the Atlanta Local Food Initiative conducted a planning process to outline 5-year goals around promoting localized food systems and healthy consumption of food. It was endorsed by over 85 public and private organizations in the Atlanta area. 7 specific goals were identified, with action items for each of the seven. Table 1 below shows a summary of the objectives and activities proposed by this plan.

Outcome / Goal	Activities	Sector
Increase sustainable farms, farmers, and food production in Metro Atlanta	Land suitability analysis	Production
	Policy revisions for food production	
	Identify owners for long term subleases on private land	
	Recruit growers to farm.	
Expand the number of community gardens	New community gardens on City of Atlanta park land	Production
	Initiate Adopt-a-Garden policies in other municipal parks	
Encourage backyard gardens, edible landscaping, and urban orchards	Educational programs	Production
	Incentives for planting edible and sustainable landscapes	
	Integrate edible landscapes into BeltLine plans, office complexes, neighborhood associations, landscaping companies	
	Pilot project for an urban orchard	

Launch Farm-to-School Programs	Develop goals and policies with school districts to encourage school gardens and local food procurement	Consumption
	Educational workshops and technical assistance for developing school gardens	
	Establish a Farm-to-School network for Atlanta	
Teach skills for cooking simple dishes made from fresh, locally grown food.	Integrate cooking demonstrations and skills into education curriculum	Consumption
	Launch a "Family Meal" campaign to encourage eating fresh, local foods at home with your family	
	Partner with cooking schools to expand public education around seasonal menus	
	Partner with WIC for distribution of healthy recipes using local, seasonal food	
Develop local purchasing guidelines and incentives for governments, hospitals, and other Atlanta institutions	Local purchasing policies for state and local governments	Distribution
Increase local, fresh food available in underserved neighborhoods	Increase farm stands in underserved neighborhoods	Distribution
	Integrate fresh food options into existing neighborhood outlets that sell food	
	Expand food production within communities by starting new gardens and agriculture projects	
Promote local food and improve access through grocery chains, farmers' markets, restaurants, and other food outlets	Annual "Buy Local" Campaigns	Distribution
	Improve distribution of the Georgia Organics Local Food Guide and online resources	
	Encourage grocery and convenience stores to purchase from local producers	
	Encourage businesses to serve locally produced food at their events	
Adapted from ALFI's <i>Plan for Atlanta's Sustainable Future</i> . 2008.		

Table 1: ALFI Food System Goals, 2008

The Atlanta Local Food Initiative (ALFI) has developed a set of priorities and metrics for the city level, and is in conversation with stakeholders working to amend the Dekalb County zoning ordinances around agriculture. ALFI conducted a survey in the summer of 2012 to gather metrics of the distribution of agriculture and local food sales, and presented data in map form at their annual conference in the fall.

Neighborhood

Several neighborhood organizations have included goals around fresh food access in order to bring attention to the lack of healthy food option. The neighborhood of Pittsburgh, as part of their Master Planning initiative, has outlined the establishment of community gardens, a local farmer's market, and fresh food access as three goals that will be led by their Resident Leadership Team as part of the master planning process (SNDISI, 2012). NPU-G (2011) and NPU-L (2011) have identified in their Community Master Plans the goal of increased food access or a fresh food outlet for the neighborhood. NPU-T has an Urban Agriculture Committee, which is working to apply for grants around access to food. The BeltLine Subarea Master Plan 1 (a portion of Southwest Atlanta) mentions the development of local food production and spaces for farmers markets as priorities as part of its guiding principles (BeltLine, 2010).

City

The 2011 Comprehensive Development Plan (CDP) outlines several strategies to increase food access, which is a change from the 2008 CDP in which food is not explicitly mentioned. This represents a paradigm shift towards increased attention towards planning for health in the built environment. Table 2, on the next page, identifies the specific activities that Atlanta has proposed to promote urban agriculture in its CDP. These goals impact all aspects of city planning and the many of the aspects of food systems planning, including economic development, land use, open space, and community health. It will influence how production, aggregation, distribution, and consumption of food will strategically occur in the city.

Outcome	Activity	Sector
Fresh Food Access	The Healthy Food Financing Initiative would leverage private investment through federal loans and grants, which could support existing grocery stores to finance healthy, affordable nutritious food. Partner with a Community Development Financial Institution (CDFI)	Economic Development, Health
	Establish a joint venture with Food Trust to successfully address the lack of supermarket access	Health
	Develop incentive for corner stores to provide healthy fresh food options	Health
	Provide tax exemptions utilizing the urban enterprise zones and business license fee reduction exemption for grocery stores located in the City's priority development areas	Economic Development, Health
	Utilize the New Markets Tax Credit (NMTC) to finance retrofit of existing stores to add fresh produce and/or to finance new grocery stores or other initiatives	Economic Development
Increased Urban Agriculture	Develop policies and programs to promote and finance urban agriculture and food entrepreneurship	Economic Development
	Explore small business with high growth potential such as urban agriculture. Small-scale urban agriculture can help create livable, walkable and sustainable communities, and implement Atlanta goals of sustainability and economic development	Economic Development
	Planning and policy initiatives to support urban agriculture, including the creation of green overlay zones as part of the zoning ordinances.	Land Use
	Open up underused public land for urban gardening / urban agriculture, including lawns of public buildings, utility rights-of-way, and even parts of underused parks	Land Use
Adapted from Atlanta Comprehensive Plan 2011, Implementation Strategies and Policies (p. 528-529) Accessed at http://www.atlantaga.gov/modules/showdocument.aspx?documentid=2821		

Table 2: Atlanta Comprehensive Development Plan references to food systems work

Other city documents also explicitly identify the need for food access and production. For example, the City of Atlanta's Office of Sustainability is in the process of releasing an updated version of their 2008 sustainability goals, which will include activities to promote food systems and community nutrition.

Region

The Land Use Coordinating Committee of the Atlanta Regional Commission convened a Local Agriculture Working group in 2011, made up of stakeholders to learn about, identify and connect areas of the regional food system and how they might intersect. The group began compiling best practices data around land use, zoning, and access, and connecting regularly with a broad-based coalition of dietitians, health professionals, planning commissioners, nonprofit leaders, researchers, policymakers, and economic development professionals. They have met throughout 2011 and 2012, seeking out leaders from other municipalities and cities in the United States. They have held discussions and presentations of projects in Cleveland and Philadelphia, as well as provided a platform for conversations on the local and

regional level. The committee members are involved in other coalitions and working groups in the areas of land use, food systems, health, state policy, economic development, and city planning. They have created a resource webpage around best practices and resources for local governments. The ARC staff included three areas of research around agriculture as goals for the working group:

- Create and update an inventory of active agricultural sites
- Develop the background research, framework and potential scenarios for a Regional Transfer of Development Rights program
- Identify activities that could further the success of regional farm-to-market programs

Plan 2040 is a regional document produced by the Atlanta Regional Commission as a comprehensive blueprint for livability and sustainability in the metro area. Regional leaders from the 20-county Atlanta region met to discuss and prioritize issues important for the growth and improvement of the region across all planning disciplines. The plan also engaged communities, regional nonprofits and state agencies (ARC 2012).

Plan 2040 outlines that “the ARC and local governments should pursue a systematic, strategic and comprehensive planning effort to acquire, protect and manage conservation lands, open space, green space and agricultural/farmlands in perpetuity in order to develop a green infrastructure network” (ARC 2010, p.15). It further emphasizes that a diversity of these different types of spaces are a critical part of land use planning for natural habitat, recreation, and rural preservation. Preservation of agricultural land and rural working landscapes are identified as needing further research (Plan 2040 Implementation Plan Update 2012). Food production is mentioned as a priority criteria for inclusion as a “regionally important resource” in the Regional Green Infrastructure planning process (ARC 2010). Food access, food distribution mechanism, and strategies around waste disposal are not mentioned in the document.

The Unified Growth Policy map is a regional analysis of land use and transportation conducted by the Atlanta Regional Commission. Developed in 2006, it evaluates how transportation infrastructure is supporting the planned land uses, and includes annual updates as part of the implementation of Plan 2040. While recreation districts and rural spaces are mentioned in the land use analysis, no specific regions are designated as open space, agriculture, or conservation land. This lack of specific mention may be a deterrent when trying to implement regional Transfer of Development Right programs or prioritize areas for agricultural preservation and food production.

Many of the in-town neighborhoods mapped in the UGP are termed “maturing neighborhoods. Goals for these areas are to implement lifelong communities and to develop infill strategies. Incorporating food systems language into this document may provide guidance for utilization of spaces for community gardens and small-scale food access. Improvement of health is also mentioned in the UGP and Plan 2040 framework, especially in the section on new areas of work that are needed.

All of the above regional, city, and neighborhood-level planning documents become part of how Atlanta will continue to shape and influence the development and improvement of its communities. They are providing a basis for city-level policy documents and introducing the necessity of planning for a resilient local food system.

Case Studies

The Delaware Valley Regional Planning Commission is the 9-county Metropolitan Planning Organization surrounding Philadelphia.²⁶ They developed a 5-step framework for municipalities that are interested in conducting a regional food system assessment. These steps are

1. Inform the Decision-making Processes by compiling data, researching alternatives, assessing impact, and educating stakeholders;
2. Encourage Sustainable Food Production through plans, policies and programming;
3. Improve Healthy Food Access through zoning, education, and incentives for retail operators;
4. Support Local or Regional Food Economy;
5. Minimize or Reuse Food Waste.

Each of the above steps has a list of tasks or objectives to be met, and the report highlights the importance of clarity around which stakeholders will be able to implement each task. Recommendation #1 in this report outlines the further steps needed to inform the decision-making process, which is emphasized by the DVRPC as a critical starting point. Their implementation tool can easily be adapted to the Atlanta region for identifying stakeholders, researchers, community groups, and evaluating how food systems intersect with all aspects of the other regional planning efforts.

Multnomah County, which includes the Portland, Oregon metropolitan area, published a document to develop and implement a long-term food action plan. They structured a Food Policy Council at the county level, and coordinated the project in four phases:

²⁶ Similar to the ARC, DVRPC is funded through federal grants from the USDOT Federal Highway Administration and Federal Transit Administration, Pennsylvania and New Jersey departments of transportation, and by DVRPC state and local member governments.

1. Synthesize background reports;
2. Engage the community through a Food Summit;
3. Develop an Action Plan
4. Implement the Plan

These steps included the development of a regional mission around food systems, synthesis of an existing conditions report, case study best practices, and a framework based on local recommendations for moving forward (Multnomah County 2010).

Analysis

While the 2012 Comprehensive Development Plan is a step towards identifying food systems as an important part of planning, it still has yet to be analyzed in a holistic way. Advocacy groups have taken the lead more so than the city or regional agencies to determine stakeholders, metrics, and goals. Several stakeholders are doing various programmatic activities and analyses in all parts of the Atlanta region. The food systems community, while tightly-knit and well-organized, still seems somewhat piecemeal without an overarching framework and an agency to “connect the dots.” The city of Atlanta could make more of an effort to institutionalize food systems planning, create measurable goals, identify the gaps in food systems activities, and disseminate this information to the public. While funding may be an issue, strategic partnerships could leverage the research capacity of area institutions to help provide data analysis. The development of metrics and strategies at the city and regional levels will create a roadmap that will help to equitably distribute the food systems activities. Recommendations 1, 2, 5, and 7 suggest ways to coordinate and organize governance of a holistic food system.

Moving Forward

Section II has investigated and analyzed how Atlanta is moving towards supportive policies for food systems, and has pointed out gaps and barriers that yet exist. Some key findings include:

- Agriculture can be a valuable interim land use for blighted and vacant land. There is a need for interagency coordination around a vacant land survey, an accurate data set of property ownership, and the identification of potentially suitable land for agriculture;
- Local food aggregation and distribution at the small and medium scales is a barrier for the economic success of small farmers. Mid-scale food hubs are currently in the development stage around the state of Georgia. Atlanta could identify an ideal site for a food aggregation facility for small-scale farmers, which could tie in with a large production site or permanent farmers market location;
- Access to local food is very limited for the population without a personal vehicle, and for those who commute by public transit. Farmers markets should be encouraged and prioritized near centers of public transit and downtown;
- The majority of Atlanta is considered to have low access to fresh healthy food, as defined by the USDA Food Access Research Atlas. This public health issue needs to be a major city-wide initiative and priority;
- Experiential education and involvement in community gardening have been shown to increase consumption of fresh fruits and vegetables. Community gardening sites on publicly available land should be identified and implemented, especially in underserved areas;
- Mapping of the food system is needed to prioritize food access areas, production and innovation sites, and locations for farmers markets and community gardens;
- Composting can be a valuable activity both for increasing nutrients in soil, and decreasing landfill waste. Open-air composting of food waste and vegetable scraps are currently prohibited in the city, and an updating of the ordinances are needed;
- Food systems policy and planning within the city and regional governance should be institutionalized to better create an overarching strategy.

While a number of suggestions and possible entry points have been raised in Section II, seven recommendations stand out as priorities to advance a robust and healthy food system. The majority of these recommendations are around land use analysis and mapping of the current food system. Public education is another major theme of the 7 recommendations.

Providing spaces for the community to learn about and experiment with the food that they eat is also critical to the success of a local food system. This includes having an abundance of community gardens that provide technical support, educational gardens and activities, farmers markets in highly visible locations for consumers who are unfamiliar with the phenomenon, the promotion of cooking demonstrations, and including language in official planning documents about the importance of the food system. Finally, the recommendations will underscore the need for a strategic and comprehensive governance of the food system to ensure that it aligns with other long-range planning goals for the city and for the metropolitan region.

Section III: Recommendations



Summary of Recommendations

The following recommendations are based on looking at Atlanta's current food system goals, current policies and ordinances, and best practices from other cities. Table 3, below, summarizes these recommendations and their associated activities.

Summary of Recommendations for Promoting Local Food Systems		
Recommendation		Activities
1	Research and analysis to inform the decision-making process	Food Asset Mapping
		Cost of Community Services Study (COCS)
		Conduct a land inventory
2	Explore the possibility of an urban agricultural incubator site	Appraisal of cost to maintain vacant and publicly-owned, unused lands.
		Develop a coalition for aggregating funding and site selection
3	Assist in the creation of a Groundworks Atlanta	Lend governmental support for small-scale brownfield reuse and community education
4	Identify and prioritize food access areas in the city	Food Asset and Access Mapping
5	Encourage farmers market locations in public transit accessible locations	Remove restrictive policies for farmers markets on land in the urban core
		Provide economic incentives for markets to locate near public transit stations
6	Conduct a regional analysis of the food system for the City of Atlanta	Tie food systems goals in with other planning goals around public health, the environment, and land use
		Develop recommendations on stakeholders and regulatory barriers at the regional scale
7	Amend City of Atlanta ordinances on composting	Allow for communal composting areas
		Create a tiered permitting system
		Conduct public education campaigns

Table 3: Recommendations for promoting food systems in the City of Atlanta

1. Research and analysis to inform the decision-making process

While the 2011 Atlanta Comprehensive Development plan recommends several activities to develop food access and urban agriculture goals, there is no one agency specifically mentioned to coordinate these activities. Lack of institutionalization of food systems planning within Atlanta's public sector will pose a major barrier to implementing some of the goals identified by ALFI, advocacy groups, and planning documents. If a governmental agency in which to "house" food systems can be identified, the strategic planning around these activities can be better coordinated. The Delaware Valley Regional Planning Commission (DVRPC), which governs the area around Philadelphia, recommends data gathering as a necessary first step for a regional food system assessment. The analysis involves three major activities:

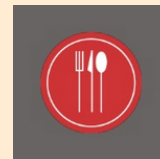
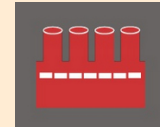
1. Food Asset Mapping / Community Food Assessment
2. Cost of Community Services
3. Land Inventory for Current and Potential Food Production

Food Asset Mapping

Food asset mapping is one undertaking that would help to explain spatially the activities occurring around the city and how they dovetail with open space preservation, stormwater mitigation, economic development goals, health promotion, and other community needs. This activity is already occurring at the neighborhood and city level in Atlanta²⁷. An example of regional food asset mapping is shown in Figure 24 on the next page. It geographically locates farmers markets and how they intersect with ARC Equitable Target Areas (areas of highly vulnerable populations) as well as census tracts designated by the USDA as food deserts.

ALFI, as part of its 2012 survey of the Atlanta food system, gathered data on the locations of community gardens, urban farms, and farmers markets in the metro area. The Atlanta Community Food Bank provides volunteer help and technical assistance to community gardens, and maintains a list of active gardens around the city. Similarly, Park Pride provides support to community gardens located on city-owned park property and has locational data. These nonprofit groups would be valuable partners with the city for obtaining current information of local infrastructure and activities.

Issues Addressed:



²⁷ Atlanta Metro Food and Farm Network is conducting mapping for some neighborhoods in the City of Atlanta. The Atlanta Local Food Initiative has conducted a survey and metrics report, which includes mapping at the city level. Researchers at Emory and Georgia Tech have been mapping food access and production at various scales.

Food asset mapping in Atlanta would allow for a spatial analysis of where gaps remain in the food system, and a closer look at the particular barriers in these areas.

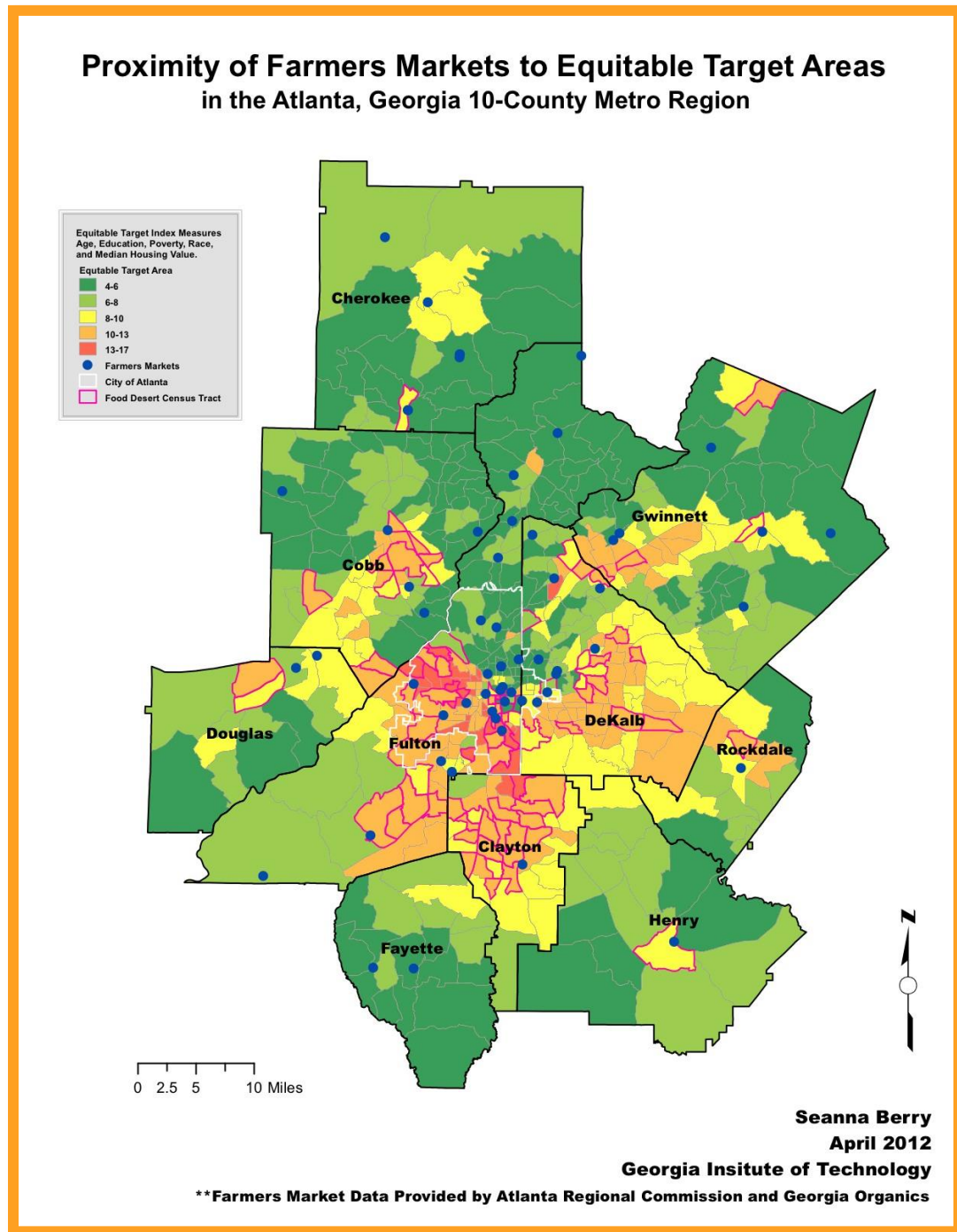


Figure 24: Example of regional food asset map

Cost of Community Services Study (COCS)

This tool looks at fiscal impacts of different land use decisions. It calculates the fiscal contribution of productive land uses such as privately owned farms, forest, and open space, while calculating the costs and benefits if that land were to be developed for a particular use, such as residential or commercial. The American Farmland Trust also advocates for COCS studies when working to preserve farm land, to be used in addition to conservation easements, transfer of development rights, and other tools for land use preservation. The Local Agriculture Committee in Plan 2040 identifies that staff will be conducting research around a regional Transfer of Development Rights program.

Land Inventory

A land inventory identifies current and potential land used for food production. Inventories also identify ownership, and an analysis of the barriers and opportunities for using vacant and underutilized land. The Local Agriculture Subcommittee at ARC has already identified that this is a desired outcome from the group, and ARC staff will be conducting an analysis of active agricultural sites.

Similar to the interagency cooperation shown in Indianapolis and Detroit, Atlanta can prioritize publicly owned property for use in food systems production and distribution. Invest Atlanta, the Fulton County Land Bank Authority, the City Planning department, and the Mayor's Office of Sustainability could form the foundation of this collaborative effort to spur economic development for market garden and urban farm sites.

The map in Figure 25, which appears on the next page and was described in the production chapter of Section II, indicates a preliminary land suitability analysis for publicly owned and vacant sites in food desert census tracts. It is based on best practices from other cities as to how to prioritize sites. The model design allows for newly updated information to be easily added, and prioritization of different criteria and layers.

"Deliverables [of land inventories] commonly include databases, sets of maps, recommendations outlining collaboration with public, private, and non-profit partners, and policies for land access and lease agreements."

-Delaware Valley Regional Planning Commission, 2010

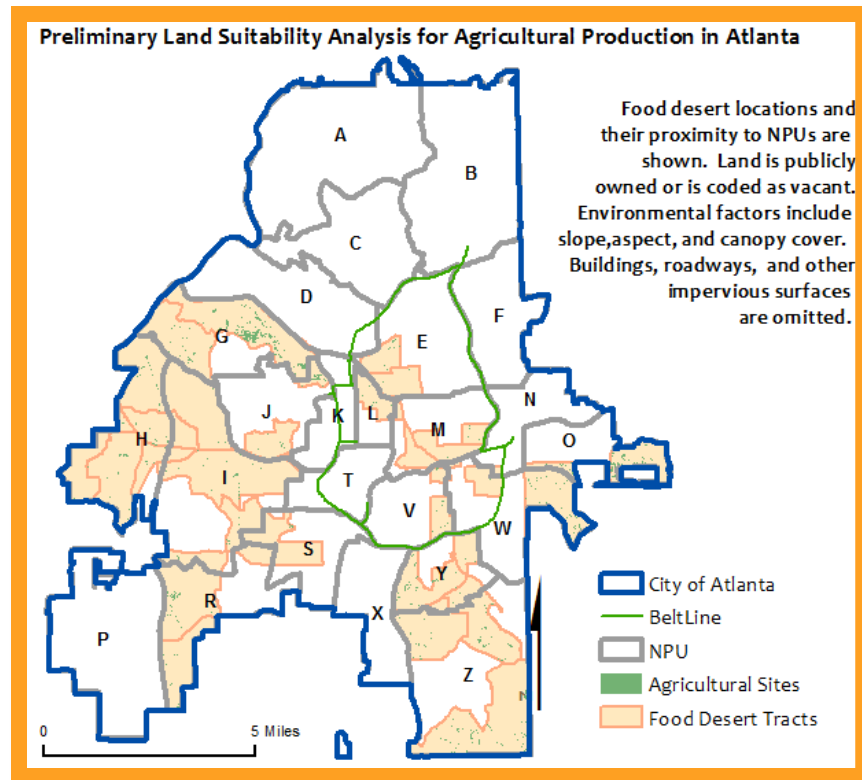


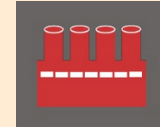
Figure 25: Map of Production Sites in Priority Areas of Atlanta

Based on the different functions of agricultural production, the city may wish to prioritize different types of sites in various locations. For example, urban agriculture production could be near other nuisance-type sites such as landfills as long as there is not concern about soil contamination. This may lessen concern about nuisance complaints arising from livestock, composting, or fertilizers. Farmers market sites, educational gardens, and community gardens should be closer to public transportation and population centers, and would have stricter rules about site design and sensitivity to neighboring uses.

2. Explore the possibility of an urban agricultural incubator site

One model that could be an interesting next step in the Atlanta region is the urban farm incubator model. These are currently being established around the country as solutions to economic development and vacant land issues in urban / suburban areas. Largely funded by USDA beginning-farmer grants, and combined with state agricultural extension funding and support, these business incubators aim to lower the barriers to farming by providing land, shared tools and equipment, training, and an aggregation/distribution facility for aspiring small-scale farmers. In Cleveland, the project was a partnership between the city's land bank, the USDA, a private developer, local foundations, and the state of Ohio's agricultural extension. All of these partners were required to navigate the barriers of land acquisition, zoning and regulations, startup costs, and project coordination.

Issues Addressed:



In order for this model to be successful in Atlanta a few initial steps must be taken to lay the groundwork. Much as Philadelphia, Cleveland, and Indianapolis did, an inventory must be done of vacant parcels owned by the development authority, land bank, code enforcement, and the city. Research into the money spent on maintenance, fire and police calls, and other expenses can help to justify the upfront costs of the project. Then these sites can be ranked by appraised value (as discussed in the land suitability analysis), but also by expense to maintain. These prioritized properties, or ones in areas that will soon be targeted for reinvestment, can be offered as a 5-year lease to urban agriculture enterprises, either on a site-by-site basis, or as a larger aggregated site. An established nonprofit or private developer with the financial means to purchase property can take advantage of the tax allocation districts and New Market Tax Credits, especially found along the BeltLine and other corridors targeted for redevelopment.

Because this endeavor requires reuse of former residential and industrial sites and could potentially change the character of the neighborhood, community groups must be supportive of the idea. Neighborhoods that have explicitly stated food security and job creation as a goal and have vast tracts of persistently vacant space are ideally suited for this type of project. Foundations and private donors with causes such as food security, health, environment, or underserved neighborhoods can provide the seed money for infrastructure, equipment, and staffing. The Home Depot Foundation, Community Foundation, Arthur Blank Foundation, Kellogg Foundation, Ford Foundation, among others, have previously funded these types of activities in and around Atlanta and other cities. The project could further leverage public funding incentives as loans, and technical assistance from state-funded horticultural and agricultural programs. A developer in the Atlanta area that is mission-driven around food security and agriculture as a neighborhood stabilization tool could be a great ally in establishing a larger site, if the city is unable to purchase the properties before reselling. The land would be held privately, or in a community land trust, while a nonprofit or worker cooperative could actively manage the site and projects. By tying all of these organizations

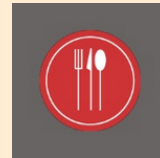
together to solve the intertwined issues of persistent vacancy and crime, food access, and lack of employment, Atlanta is well-suited to establish the next urban agricultural enterprise model of a small-scale incubation site.



3. Assist in the creation of a Groundworks Atlanta

Atlanta has a robust program for support and funding of brownfield redevelopment, designed to spur economic development and remove blighted and contaminated properties. However, the economies of scale for contamination cleanup often encourage only redevelopment of large properties or projects, leaving smaller sites neglected. Select cities around the country have established Groundworks Trusts, or nonprofit groups dedicated to public education and the remediation of brownfield sites. Funded through the National Park service and the national nonprofit trust, these organizations have been implemented in 20 cities. New Orleans, LA and Richmond, VA are the only cities in the Southeast region that have established Groundworks trusts.

Issues Addressed:



This nonprofit organization fills an important gap in brownfield redevelopment, often focusing on smaller sites that are less attractive to large-scale brownfield redevelopers and may have been sitting unused and blighted for years. Groundworks trusts establish a place-based mission that varies by city for cleanup or interim use of these spaces. Some cities have chosen to focus on watershed protection (DC), others on green infrastructure (New Orleans), and others on the establishment of community garden and growing spaces (Buffalo, Somerville, MA, and Portland, OR). Some cities do not explicitly choose a thematic focus, instead exploring different community needs based on different sites they have identified.

The National Park Service puts out a call for applications approximately every two years. A letter of intent, submitted by a local coalition of interested parties, is the first step to be accepted through this competitive program as a place-based trust. The national program advises that broad-based coalitions with city, nonprofit, and community support are most likely to be chosen. Selected cities will be invited to conduct a fully funded feasibility study, with \$5,000 available for assistance with the study. If the project is selected, an \$80,000 grant is available to implement the strategy. The host city must agree to make a modest (currently \$45,000 over 3 years) contribution to the Groundworks trust in their city to help it become established. After this 3-year period, the nonprofit organization is expected to support itself through external grant or foundation funding.



Figure 26: Community Gardening on Former Brownfield site
Source: Groundworks Buffalo

With Atlanta's numerous brownfields, it would be worthwhile to explore how a Groundworks Atlanta chapter might utilize some of these sites for community education, public space, community gardens, green infrastructure, or watershed protection. This could intersect with city goals around mitigating blight and increasing healthy food consumption through experiential education.



4. Identify and prioritize food access areas in the city

There are many activities occurring around food access in the City of Atlanta. Three zip codes in northwest Atlanta have been selected to receive federal funding for a pilot project to bring healthy foods to corner stores. Farmers markets are being used as a tool to bring fresh produce to food desert locations. However, these programs and projects should be guided by a city-wide analysis of the existing conditions around food distribution.

As the food access map shown below from Section II indicates, there are further opportunities for siting of distribution locations for fresh foods in the Atlanta area. This map only reflects larger supermarkets, which are just one form of access to fresh foods. Using the food assets map and cost of community services analysis suggested in Recommendation #1, food access areas can be systematically prioritized by the city based on spatial distribution, population density, and areas of need. Baseline data will provide indicators for measuring progress, and would ideally be measured by the Office of Sustainability or Sustainable Atlanta. Activities to promote could include an assortment of food

Issues Addressed:

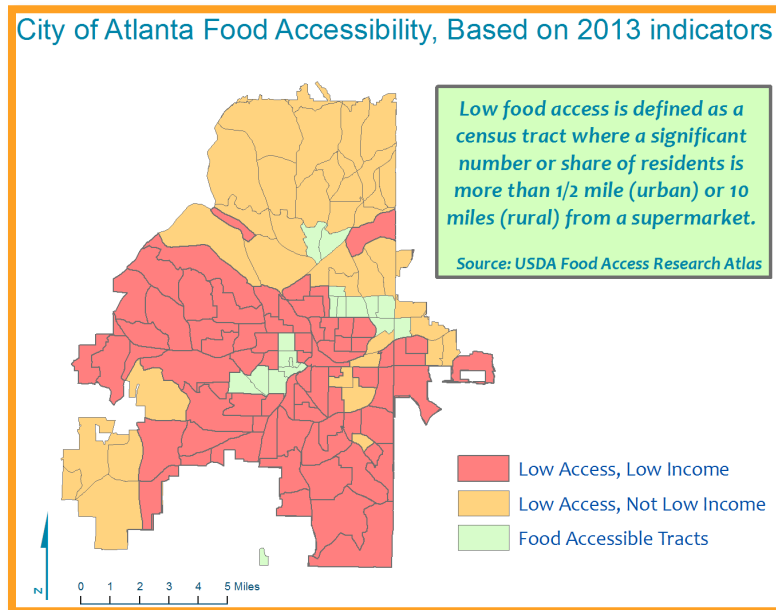
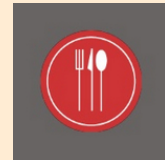


Figure 27: Example of food access map for City of Atlanta

security initiatives, such as farmers markets, aggregation hubs, food coop schemes, community gardens, and market gardens. By identifying and prioritizing areas that are already lacking in basic food access services, these activities can be concentrated in regions of highest need and areas with development and land reuse opportunity.

5. Encourage farmers market locations near public transit centers

Farmers markets are ideal in sites where there is an increased chance of “drop-in” customers. These customers are not actively seeking out a farmers market, but happen to be in the area. Besides providing a busier market atmosphere and increasing revenue for the farmer, pedestrian-oriented farmers markets are a valuable tool in public education about food systems. From understanding the concept of produce seasonality to watching a cooking demonstration, new customers who are not otherwise part of the local food movement can learn about its benefits and importance.

As the map below in Figure 28 indicates, there are currently just four markets located within ½ mile walk of a MARTA stations in the city, and none are in the downtown district. The distribution chapter in Section II discusses this map in more detail. This analysis presents an opportunity for siting of future farmers markets in transit-oriented development locations and near major public transportation hubs. The city might include incentives to encourage this behavior, such as waiving the special administrative permit fee or providing streamlined

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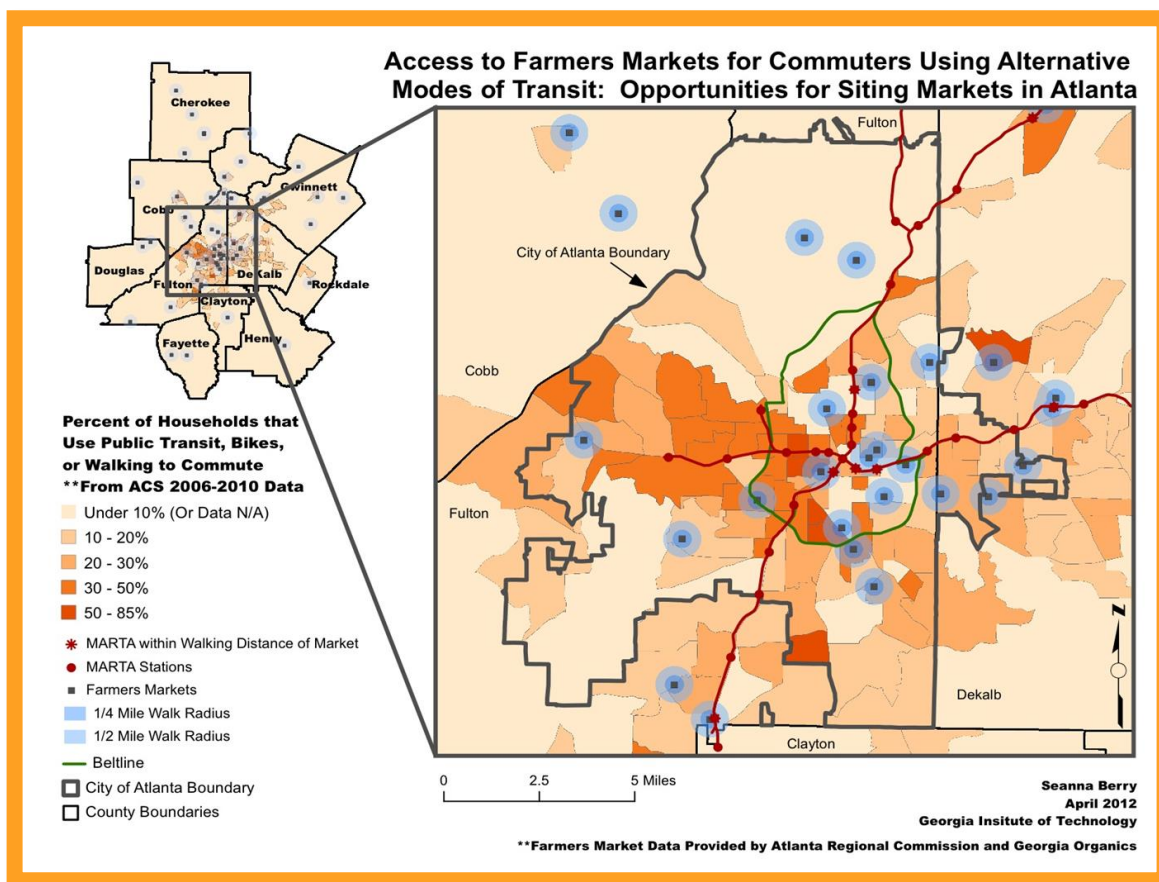
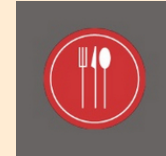


Figure 28: Analysis of Farmers Markets and Commuting Patterns

processing for markets that locate within walking range of MARTA stations or other high density areas. The western portion of the MARTA line is especially underserved by farmers markets, and yet has a high percentage of commuters who do not drive to work.

A land use and ownership analysis near MARTA stations could help to identify land that might be appropriate for market sites. MARTA itself could be approached to negotiate the use of its land for the actual siting of the market, or to provide some of the ordinance-required parking. While government agencies have been identified to work with and assist on this issue, there is no overarching farmers market authority to approach. This potentially points to the need for increased coordination among all of the farmers market managers in the Atlanta area to provide strategic direction for the siting and timing of markets.



6. Conduct a regional analysis of the food system for the City of Atlanta

A regional food system assessment is a tool that is used by many major metropolitan areas to identify and assess all of the interconnected activities around farming and food. Many local food systems would fit within the regional one, which in turn fits into a large scale global food system, as shown in Figure 31 at right (for larger graphic and source, refer to Section 1). Regional assessments would analyze the Tier 1 and Tier 2 levels.

There are several reasons for doing an analysis at this level, including ensuring that the land use and economic development goals of the region align with and include agricultural products. In addition, livability goals, community health, and sustainability initiatives of the region are inextricably linked to this food system. Environmental goals around stormwater management, nutrient runoff, regional water use, native habitat, and soil erosion can interconnect or conflict with rural and agricultural development priorities (DVPRC 2010). An analysis of Atlanta regional plans such as Plan 2040, the Unified Growth Policy Map, and the Regional Green Infrastructure plan indicate gaps in planning for food production and healthy communities.

The City of Atlanta is a central player in a community food assessment due to its economic, geographic, and policy influence in the region. Several of the activities mentioned above are happening already within the City of Atlanta, but it requires a regional organization to synthesize and analyze the connectivity of the system and see where the gaps and barriers remain. Only from this regional perspective will a diverse, well-distributed and interconnected food system emerge. The Atlanta Regional Commission, similar to regional planning commissions in Philadelphia,

Portland, and Seattle, would be ideally situated to perform the assessment. With the goals identified in the Local Agricultural Working Group, as well as those from existing regional documents, the ARC could perform a systematic evaluation from a 10, 20, or 28-county perspective. The knowledge of the staff and steering committee members would be sure to actively involve and engage the

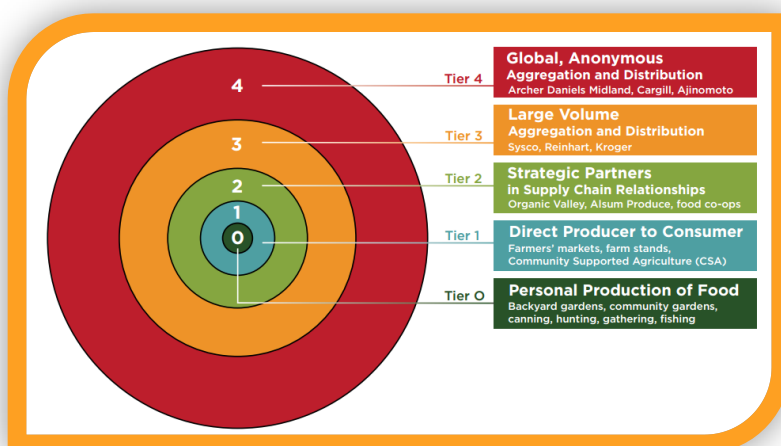
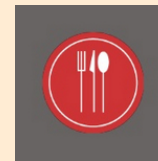
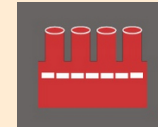
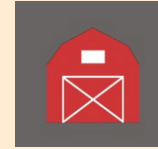


Figure 29: Differing tiers, or scales, of food production and distribution

Issues Addressed:



proper stakeholders. Research at area institutions including Emory University, Georgia Institute of Technology, the University of Georgia, Morehouse, and Spelman has been conducted and could be utilized, or partnerships for needed research could be established.

This presents an opportunity, as well as a challenge due to the high number of stakeholders, municipalities, and overlapping planning documents and regulations. However, through data gathering and analysis, some patterns may emerge around land preservation, transfer of development rights, health initiatives, job creation, and policy changes



7. Amend City of Atlanta ordinances on composting

In an ecologically holistic framework, proper food waste diversion is a vital part of lowering a region's environmental footprint, decreasing greenhouse gas emissions, reducing waste going to the landfill, and allowing proper nutrient cycling to return to the soil in the form of compost for agricultural and landscaping purposes. Though composting is a valuable practice, antiquated regulatory frameworks and barriers in the state of Georgia prevent its implementation. These include steep barriers to entry for composting facilities, differing definitions of the term compost, financial incentives to landfill rather than divert waste, a lack of infrastructure and composting facilities, and a lack of education around proper composting methods and its benefits. While much of the work to encourage composting must happen at the state level²⁸, there are several steps that Atlanta can take to explicitly allow small scale composting operations:

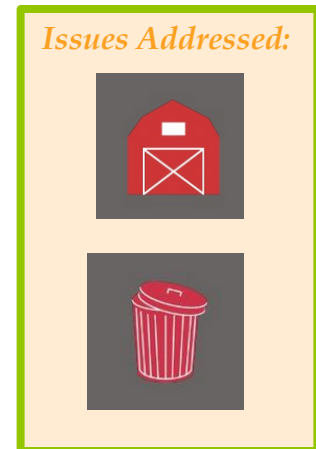
1. Allow the acceptance of compostable material from another site
2. Limit compost activity by volume or as an accessory land use
3. Public education campaign about benefits and proper method of composting

Considering the value of composting activities to urban agricultural sites, where soil is in need of added nutrients, it is worthwhile to update the codes to allow and regulate this activity. Many cities have addressed these issues using creative ordinances, such as designating composting as an accessory land use and limiting it to a small percentage of the parcel. Atlanta's zoning code should be updated to guide the appropriate siting, mixture, quantity, and nuisance abatement around small-scale composting.

Communal composting areas

Currently, composting (of yard trimmings only) is allowable for materials generated on site. This prevents urban farms from receiving valuable composting ingredients to decompose into nutrient-rich soil. Area businesses generate thousands of pounds of waste such as brewery spent grains, newspapers and cardboard, spoiled produce from supermarkets, coffee grounds, yard trimmings, and other raw produce-based materials that would be suitable for composting in an urban environment without contributing to nuisance.

Currently the zoning code prohibits food waste to be composted outside, even at the residential level. In order for a farmer to accept compost ingredients from offsite, he/she would fall under



²⁸ See Appendix C for 2012 white paper on policy interventions for waste diversion at the state level in Georgia

excessive regulations around site management, enclosure of waste, and expensive permitting requirements. These codes both discourage farmers and others from composting, and discourage restaurants and businesses from finding local composting sites. It also encourages farms and community gardens to compost in violation of the code, potentially leading to inappropriate siting or technique that can negatively impact waterways from nutrient runoff.

Changing the language of the ordinances to permit the acceptance of compostable material from another site would potentially allow hundreds of thousands of pounds of waste to be diverted from area landfills.²⁹ It would also allow businesses that might evolve around the pickup and delivery of food waste from restaurants to farms, which are currently prohibited due to business licensing and the current illegality of this kind of enterprise.

Create tiered permitting system

Understandably, there may be neighborhood and public concern about the potential siting of a facility that accept food waste. Composting can be safely added to the list of permissible activities by limiting compost activity by volume, similar to the state-level systems in Wisconsin. To encourage community gardens and neighborhood-scale composting, areas that don't exceed 50 cubic yards don't need a permit from the state. Composting sites that manage 500 cubic yards or less just need a site inspection, and to pay a one-time fee for this inspection to obtain a license. It is estimated that 500 cubic yards is enough to manage the food waste from a 2500-person community. (Wisconsin Department of Natural Resources. 2011). All of these composting sites must adhere to guidelines about proper location siting and operation to protect waterways and to prevent nuisance to neighbors. Atlanta could put into place rules that limit the amount of compost materials at any site, and could limit the percentage of land that may be covered by actively composting piles.

Public education

An educational campaign would be needed to convey the message that not all food waste is the same with respect to safe and hygienic composting. Raw and uncooked fruits and vegetables, coffee grounds, brewery grains, and fresh or dried plants materials are good ingredients for a healthy compost system. These need to be mixed in a balanced ratio of carbon to nitrogen to biodegrade efficiently and without nuisance. Other food waste such as cooked foods, meats, dairy and products high in fat and oils would likely not be appropriate for composting in densely settled areas.³⁰

²⁹ Growing Power, an urban farm enterprise in Milwaukee, diverts 180,000 pounds of waste per week through collection of compost ingredients from area businesses (Growing Power 2012).

³⁰ There are other non-nuisance methods for food waste disposal, such as black soldier fly larvae as part of integrated farm systems. See Appendix C for discussion.

Atlanta's code enforcement violations are nuisance and complaint-based, and several community gardens, urban farms, residences, and businesses currently compost without having received a citation. With the added public attention from the agricultural zoning amendments and the possible increase in urban farms and community gardens with composting facilities, however, the issue is soon to become more prevalent. The current ordinances were put into place to protect public health and avoid nuisance issues, and the creation of safe guidelines and education about composting will continue to achieve this goal. Since the City of Atlanta is serious about both lowering its ecological footprint as well as encouraging urban agriculture and community gardening, it is recommended to amend the current regulatory framework that constricts composting. With the proper local zoning and ordinances and relatively simple infrastructure changes, small-scale composting could be implemented in Atlanta to help meet the city's waste reduction goals.



Conclusion

This report highlights the progress in Atlanta towards maximizing local food access and allowing food production within the city limits. Numerous other accomplishments are underway and close to implementation that will affect urban agriculture and food access, but this report provides a snapshot of the current state of food systems in the City of Atlanta. Based on best practices from other regions, this report incorporates the specific structural challenges and opportunities for Atlanta, identifies linkages with other planning disciplines, and provides suggestions for activities that will continue to promote a food system that is vibrant, serves the community, promotes environmental health, and is economically viable.

The recommendations provide a roadmap to strengthening Atlanta's local food system using innovation and collaboration in the public sector. Research, mapping, and data gathering will help to create metrics for measuring public health, environmental, and economic indicators. Innovative projects such as farm incubator sites and a Groundworks trust will provide educational hands-on opportunities for residents while mitigating persistently vacant land. The creation of a framework around land access and lease agreements for urban agriculture will help to match food entrepreneurs with available land. Public health concerns and food deserts in the city will be addressed through an implementation of creative food access programs. These will be guided by an analysis of barriers and gaps in the food system, prioritized by geography. Finally, regulatory barriers that prohibit composting can be amended to allow food waste to be diverted from the landfills and recycled as soil on farms.

Atlanta has made incredible strides towards strengthening the local food systems. Language in support of food growing and access has appeared in municipal and regional planning documents in the last 5 years. Barriers to growing and selling food are being removed, and a system has been put into place to regulate these activities for public safety. A vibrant advocacy and nonprofit culture continues the programmatic efforts to educate on the importance of local and regional food systems in the Atlanta area. What has emerged through this analysis is an overall need for strategic direction and coordination of the food system activities. Rebuilding a localized system will not happen overnight, and will require persistence, patience, and governmental leadership. The implementation of the strategies and recommendations found in this report will provide a solid foundation for an integrated and healthy functioning food system in Atlanta.

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Appendix A:

Are Farmers Markets Meeting the Need of Food Deserts?

A spatial and economic analysis of market locations in the Atlanta Metro region (April 2012).

Local Food as a Sustainability Goal for Atlanta

In 2008, Mayor Kasim Reed set a goal as part of a sustainability initiative that by 2020, 75% of Atlanta residents will have access to local food within 10 minutes of their home.³¹ This can be accomplished through many mechanisms: community gardens, urban farms, community-supported agriculture distribution, and local produce sold in grocery stores. Farmers markets have also become increasingly popular as a way to connect the food consumer directly to the farmer. Nationwide, the total number of markets has grown over 90% in the last 5 years.³² The state of Georgia boasts a 600% increase in the number of markets³³. In Atlanta, while similar data is not readily available, there is an incredible demand for markets, so much so that there are often not enough farmers to fill the available booths at certain markets. Besides encouraging small to midscale farming in the region, farmers markets have been seen as a way to provide healthy, affordable, fresh food areas in areas that are lacking.

Several federal and state agencies, as well as nonprofits, are giving grants for the creation of farmers markets to address issues of food access. The USDA is also providing Healthy Food Financing Initiatives for areas designated as a food desert to attract food and grocery providers to areas lacking these amenities, and there is a federal program in which low-income residents can use their food stamp benefits at farmers markets.. The term food desert has become widely used and its definition sometimes misinterpreted, but for the purposes of this paper it is defined as by the USDA.³⁴ In their analysis, researchers analyzed data at the census tract level, evaluating income, ownership of a personal vehicle, vulnerability (children and seniors), and proximity to a supermarket. Tracts in which 1/3 or more of the population has low access to a market is designated as a food desert.

³¹ Atlanta Division of Sustainability, “Atlanta: Power to Change, Sustainability Plan Executive Summary 2010-2011.” <http://atlantasustainabilityweek.org/ATLSustainPlan.pdf>

³² USDA Agricultural Marketing Service, “Farmers Markets and Local Food Marketing”. Accessed April 23, 2012. <http://www.ams.usda.gov/AMSv1.o/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=fmrdirnkt>

³³ Georgia Organics, “Farmers Markets”. Accessed April 23, 2012. <http://www.georgiaorganics.org/farmers/farmersmarkets.aspx>

³⁴ USDA, “Food Desert Locator Documentation”. Accessed April 24, 2012. <http://www.ers.usda.gov/data/fooddesert/documentation.html>

The goal of this paper is to analyze the farmers market spatial distribution in the 10-county Atlanta metro region and compare it to food desert locations and other socioeconomic variables at the census tract level. One question to answer is whether the farmers market distribution model is serving the low income or low access population, or whether another strategy would be a better approach. It is hoped that this analysis will assist in the evaluation of metrics to reach Atlanta's local food access goal, looking at potential areas of the city that could benefit from these local food outlet.

Controversy around Food Deserts

Food deserts have become a topic of debate recently, with the publication of two studies and a New York Times article that call into question the actual lack of food access in these neighborhoods.³⁵ This debate centers more on the topic of food choices, and whether they are correlated with obesity and health. This paper, as will be explained in a moment, focuses on the importance of equitably distributed access to local food outlets both from a food security and a localized economy perspective, and does not explore the factors involved in personal choice and health.

Economic Theory

From an economics perspective, access to nutritious, affordable, and quality groceries would be considered a merit good. Research has shown that there is often not sufficient market demand in a neighborhood with low purchasing power to support a grocery store.³⁶ However, the normative policy mechanism is to correct for food deserts, based on the idea that food access is too valuable and fundamental of a good to be left to the free market where undervaluation may occur. This has led to public funding and grants for the creation of farmers markets, food pantries, and other venues to equalize quality food access.

Critics of the local food movement often point out its expense relative to grocery store prices, suggesting that farmers market food is more of a luxury good and an economic privilege than a viable replacement for food shopping. If this hypothesis is true, and farmers can charge more by catering to wealthier individuals, the regression model should show a correlation with market sites and higher income neighborhoods. To properly regulate the equitable distribution, a policy approach would need to subsidize or incentivize farmers to encourage their entry into a market in a lower income or limited access neighborhood.

³⁵ Kolata, Gina. "Studies Questioning the Pairing of Food Deserts and Obesity," April 17, 2012. New York Times. Accessed online April 29, 2012. <http://www.nytimes.com/2012/04/18/health/research/pairing-of-food-deserts-and-obesity-challenged-in-studies.html>

³⁶ Helling, Amy and D. Sawicki. 2003. "Race and Residential Accessibility to Shopping and Services", Housing Policy Debate, 14:1-2, 69-101.

A more positivist hypothesis is that farmers markets behave much as regular supermarkets and stores, following the population density as a proxy for demand. If this is the case, the model should show that the population density variable explains the presence of market sites.

Finally, the model tests for success of policies that have been encouraging the creation of farmers markets in lower income areas. While the USDA's online tool, the Food Desert Locator, was made public only in early 2011, public and private grants have been available for years to address equity in fresh food access. The presence of a nearby farmers market is compared with the presence of a food desert. If the policies currently in place are working to appropriately site markets in underserved areas, there should be a positive relationship between these variables.

Methodology and sources cited

Geospatial data on farmers markets was provided by the ARC, and was combined with the Food Desert database and several socioeconomic variables from the American Community Survey database. This information was compiled and analyzed in ArcMap 10.0, and a linear probability model was done in SPSS³⁷. A total of 61 farmers markets were mapped, and a ¼ mile buffer added to each market yielded a total of 132 tracts within close proximity.³⁸ The ACS survey data is available for 407 of the 521 census tracts within the 10-county Atlanta metro area. The regression model tested for the variables is listed below.

$$\begin{aligned} \text{Presence of Farmers Market} = & \beta_0 + \beta_1 \text{Population Density} + \beta_2 \text{Alternative Transportation Commuters} \\ & + \beta_3 \text{Percent Minority} + \beta_4 \text{Median Household Income} + \beta_5 \text{Presence of Food Desert} + e \end{aligned}$$

This methodology focuses on socioeconomic variables of census tracts and does not factor in gravity modeling or proximity to other grocery or retail outlets. The unit of analysis chosen is census tract level, as it is common to both the food desert data and the desired travel, income, and social variables.

³⁷ The dependent variable is binary, with 0 indicating no farmers market in proximity and 1 meaning presence of farmers market either in the boundary or within ¼ mile

³⁸ This ¼ mile buffer was added to correct for markets that were just on the census tract line, as well as to proxy for the average 5 to 10-minute walk.

Regression analysis

The regression results and descriptive statistics are shown in Figures 1A and 2A below, and a map showing spatial relationship is shown in Figure 3A.

The analysis shows that nearly 25% of census tracts in Atlanta are within close proximity to a farmers market. As the maps indicate, however, the census tracts vary substantially in size, ranging from less than a half-mile across to ones that span several miles. Location within a census tract does not guarantee that a market is accessible to the population, especially those without access to a vehicle.

Summary of Farmers Markets and Food Deserts in 521 Census Tracts in Metro Atlanta			
		Frequency	Percent
Proximity to Farmers Market	0	393	75.4
	1	128	24.6
	Total	521	100.0
Food Desert	0	442	84.8
	1	79	15.2
	Total	521	100.0

Figure 1A: Statistics for Census Tracts in Metro Atlanta

Collinearity statistics, while not shown in the table above, have a high tolerance and indicate that multicollinearity is not an issue. A population density variable was included in the model to ensure that the alternative commuting variable was not just capturing density and would be more statistically significant. The R^2 is low for this model, which is predictable due to the type of regression done with a binary dependent variable. Also, spatial variables such as proximity to major highways or supermarkets were not factored in. Nevertheless, the regression does indicate some interesting preliminary findings.

Dependent Variable, Proximity to Farmers Market					
Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.328	.120		2.734	.007
Population Density per Square Mile	0.0000170986	.000	.089	1.523	.128
Percent Taking Alt Transportation	.798	.242	.228	3.296	.001
Percent Minority	-.371	.104	-.271	-3.556	.000
Median Household Income (in 1000)	-.001	.001	-.037	-.482	.630
Food Desert (0=No, 1=Yes)	.111	.060	.094	1.835	.067
Highlighted variables are significant to the .05 level					

Figure 2A: SPSS Regression Analysis Results

Proximity of Farmer's Markets to Food Desert Census Tracts in the Atlanta, Georgia 10-County Metro Region

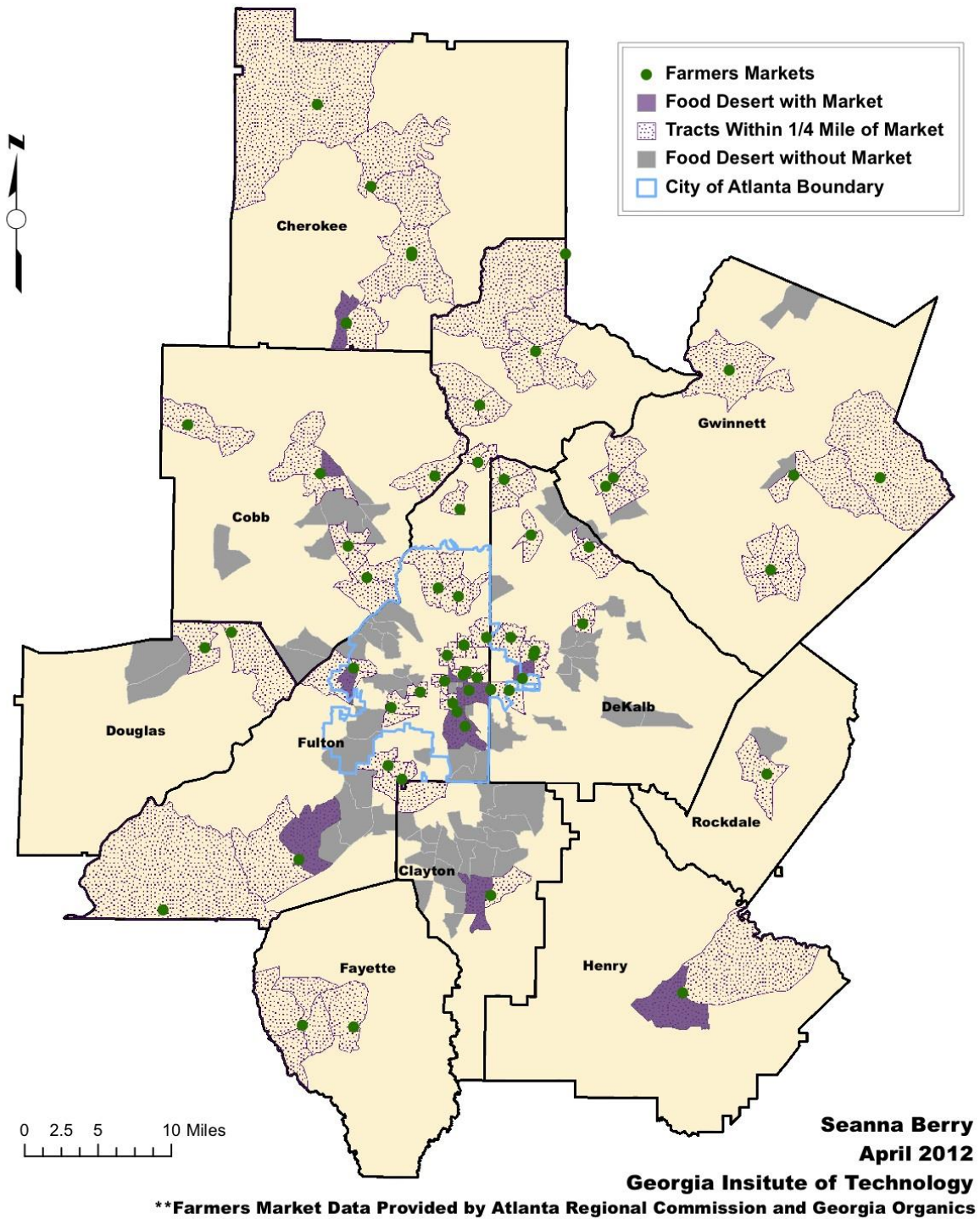


Figure 3A: GIS SPATIAL ANALYSIS OF FOOD DESERTS AND FARMERS MARKETS

Conclusion

The only variables that are not statistically significant predictors of farmers markets are population density and median household income. The population density hypothesis indicated that farmers markets would follow grocers in locating in dense areas. The household income variable hypothesized that markets were being sited in wealthy areas to provide expensive food as a luxury good. The hypothesis that food deserts are predictors of farmers market locations is statistically significant and positive, which suggest that there have been some successes in policies that promote farmer's markets as a form of food access. While farmers markets are not going to replace the need for access to a regular grocery store, they provide important visibility for local food systems and, if located properly, provide a convenient way to pick up vegetables in between larger shopping trips.

Two other variables were not part of the original three hypotheses but were of interest and are significant at the 99% confidence level. These variables are racial composition of a neighborhood and the percentage of workers who commute via public transit, walking, or biking. This model suggests that farmers markets in Atlanta are most likely to be found in neighborhoods where walking, biking, and public transit are more convenient and utilized as viable commuting options. The percent minority variable is significant and negative, indicating that markets are less likely to be found in communities of color. This could be for several reasons. It could be that there are more informal economies, or markets that are not registered (also meaning they are not eligible to receive SNAP benefits). It also could mean that the farmers market model is not well-known, successful, or viable for every neighborhood. The challenge of providing local food access is finding the mechanism that works best for each community. Perhaps a CSA model, or a traditional supermarket, or a community garden would be more appropriate.

Further studies could look at the data from various scales, such as a zip code analysis to see if the findings are consistent. The model could be made more robust using more neighborhood characteristics, proximity to churches or community centers, aggregated income per square mile, and proximity to other shopping and services. This analysis, while very preliminary, provides some intriguing opportunities for exploration of locating local food access points with public transportation or walkability in mind. Currently, only 7 markets are located within a ½ mile walk of a MARTA rail station. It also suggests that farmers markets could be distributed more equitably across communities of color. As is indicated on the map of Atlanta, some census tracts report that 50-85% of residents commute without a car. The goal of local food access within 10 minutes to Atlanta's residents can incorporate these findings to ensure that farmers markets and other distribution points are oriented towards the city's public transportation routes and in neighborhoods that are pedestrian-friendly.

Appendix B:

A Land Suitability Analysis for Agricultural Sites in the City of Atlanta (April 2013)

Many urban areas are being more strategic in locating agricultural activities. This is part due to fresh food access for underserved communities, and is also in response to residents' concern over the nuisance from community gardens and urban farms. Cities are using urban agriculture as a tool to address blight and vacancy, environmental health, poor supermarket access, joblessness, and poor public health indicators. See Figure 1B to the right for a brief list of some of the cities using food systems planning to prioritize locations for food growing.

The need for agriculture to be accessible, in a location suitable for growing plants, and yet buffered from neighboring uses requires a land suitability analysis to determine potential locations. There are also environmental considerations, such as slope and aspect, which will affect the plants' growth, access to the crops, and potential for nutrient or soil runoff.

Davis (2008) did a land suitability analysis for siting of community gardens in the City of Atlanta. His criteria are population density, proximity to census tract in which a garden is located, poverty rates, and parcels without buildings. He concludes that a further suitability analysis for Atlanta should include slope, tree canopy, impervious surface, water availability, zoning, and surrounding uses.³⁹ Richardson (2011) did a form of land use analysis using GIS, with a ranking scale that prioritized sites near greenways, streams, and sites between 1 and 5 acres. She also mapped ideal sites for their proximity to schools, hospitals, churches, other local food infrastructure, and renewal areas.⁴⁰

Figure 1B: Cities Using Food Systems Planning to Prioritize Agricultural Sites

- Philadelphia
- Detroit
- Indianapolis
- Chicago
- New York
- Baltimore
- Boston
- San Francisco
- Toronto
- Buffalo
- Seattle
- Madison, WI
- Portland, OR
- Minneapolis

This analysis will look at environmentally suitable sites that are prioritized by public or vacant land located in food desert census tracts. While the previous land suitability analyses omitted any parcels with buildings on them, there are several institutions and office buildings that occupy just a small portion of the overall property. In DeKalb county, for example, urban farm enterprises and institutions are negotiating subleases and agreements to produce crops on underutilized lawns and

³⁹ Davis, Brad. "Literature Review and Suitability Analysis for Community Garden Sites in Atlanta, GA." (Master's Option Paper, Georgia Institute of Technology, 2008. P.47.

⁴⁰ Richardson, Mary. "Identifying Opportunities for Urban Agriculture in Atlanta." Enterprise Innovation Institute presentation, Georgia Institute of Technology, September 2011.

yards⁴¹. Rather than exclude these parcels, the building footprint is erased in order to show the remaining parcel and its size. Furthermore, suitable sites are merged across parcel lines in order to show potential areas for aggregating sites. Once the other criteria of the land suitability have been applied, the best parcels will be inspected using online aerial photography or by visiting physically to assess their surface cover and condition.

Methodology

The City of Atlanta forms the boundary for the study, and all layers are clipped to the city limit shapefile. Also, all layers were reprojected into UTM so that meters are the standard unit of measure. The National Elevation Dataset provides elevation data at the 3, 10, and 30 meter scales. From this data, slope and aspect can be determined. 10-meter data for the Atlanta area was stitched together to create one continuous raster. Slope and aspect will be calculated from the elevation model.

Tree canopy cover is a major site consideration. University of Georgia has produced a statewide analysis of tree canopy, but it cannot be used at a level of detail finer than 1:100,000. Similarly, they have mapped impervious surfaces at the same scale. When looking at parcel data, the impervious surfaces have been interpolated at that level, so a local analysis with a finer degree of detail would be useful of both tree canopy and impervious surface in future analyses. Water features are evaluated in the model to be excluded, as are streets, highways and railroads. 100-year floodplains are considered, and added in as a layered weight.

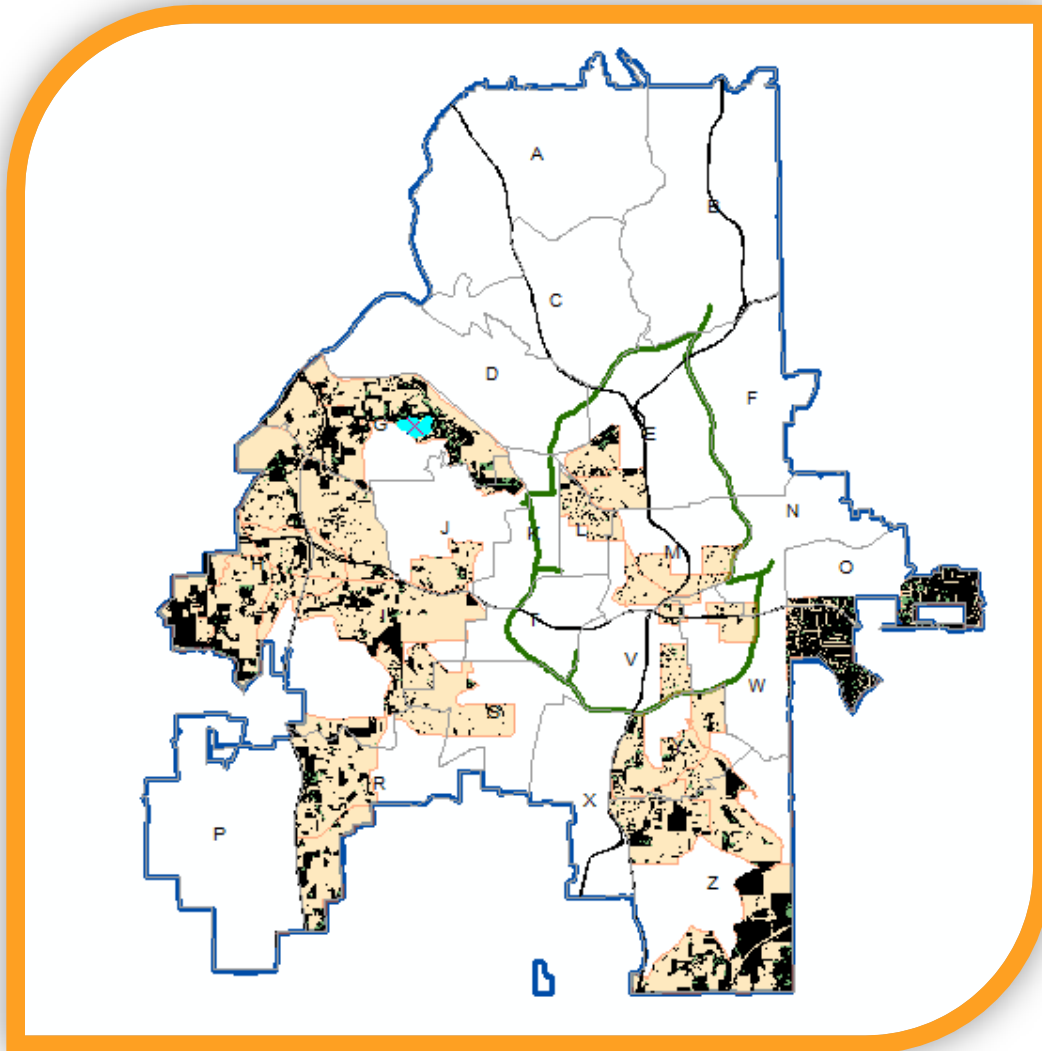
Socioeconomic variables are critical to measure when looking at food security and equitable distribution of food outlets. The USDA Food Desert Atlas provides an analysis at the census tract level of access to grocery stores by measuring American Community Survey and Census data on vehicle access, distance to grocery store, vulnerability, and poverty. While community gardens and urban farms may not solve the issue of food access and are not a replacement for a grocery store, a market garden that grows and sells its produce onsite may be a benefit to the neighborhood. Food desert tracts, defined as low income, low access census tracts were identified in the model, and all other suitable sites are limited to these tracts.

While data on land use was available, it is not evaluated in this model because there is precedent for most of the urban land use districts to allow farming. Some cities, such as Detroit and Cleveland, have located farm enterprises in low density residential areas due to the ability to aggregate large tracts of vacant and derelict land. Other cities like Boston are passing zoning ordinances that confine agriculture to areas designated as community commercial. There are numerous examples of farms locating on former industrial and brownfield sites. This model limits the site analysis to land that is

⁴¹ Oakleaf Mennonite Church, United Methodist Church, Northlake Church, Northlake Mall all have market gardens and urban farms currently operating on their properties.

considered vacant or owned by a public entity. To capture public land ownership, a wildcard search was done by the ownership attribute in the parcels shapefile⁴². Search terms included: city, Atlanta, MARTA, County, Land Bank, Code, State of Georgia, Authority, AHA. The resulting 1300 records were then manually examined to exclude privately owned land. Figure 2B below shows all publicly owned and vacant properties within the food desert census tracts. The neighborhood planning unit (NPU) letters are shown in the map below for reference.

Figure 2B: Vacant and Public Land in Food Desert Census Tracts, Atlanta, GA



⁴² Using code "OWNER" LIKE 'CITY %' OR "OWNER" LIKE '% CITY' to capture any ownership with the term "City" in the name.

Limitations to Analysis and missing data

As Figure 2B shows, the eastern part of Atlanta looks to have a lot of suitable acreage. This, however, is an error in the parcel data itself. Thousands of parcel records have no land use codes or ownership data, especially in the east and north parts of the city. They were included in the model, however, so as to capture all potential sites. This missing data makes it difficult to prioritize by land use, or to find publicly owned property. Accurate vacant land surveys are a challenge, especially in cities that have high real estate turnover and bank-owned properties. The vacant land survey in this analysis could only capture vacant land as defined by the land use code in the parcel shapefile, and does not accurately depict areas with blight and foreclosed homes.

Weighted Analysis

All of the land use criteria (public property, parks, and vacant parcels) and the food access criteria had a raster layer value of 1 or 0, and could not be included in a ranked analysis. Ideally, the land use analysis would weigh three factors: land use, environmental considerations, and socioeconomic variables. However, this analysis limits the environmental weighted analysis to food desert census tracts and public or vacant properties. All of the environmental analysis is done only on sites that meet both the land use and low food access criteria. Because the environmental factors are filtered through the lens of land use and food access, the current model does not allow land use or USDA food desert tracts to have a lower weight in the analysis. A description of the environmental analysis is described below, showing how each of the five layers were determined and then weighted.

Slope, aspect, canopy cover, 100-year floodplain, and impervious surface layers are developed, and weighted as shown in the table to the right. Canopy and impervious surface are given the highest weight, because these environmental limitations are more difficult to overcome. As will be discussed below, slope and aspect are important but the microclimates that they create can be more readily accommodated through design and planting techniques.

Layer Name	Percent weight
Slope	10
Aspect	20
Canopy	30
100 year Floodplain	10
Impervious Surfaces	30

Slope was broken into 6 different classes and scores. The higher the slope degree, while still possible for agricultural activity, becomes more difficult for navigating with vehicles, wheelbarrows, and tools. The layer will have a relatively low weight, since the slope of the property will not prevent its use if it is otherwise an ideal location.

Aspect is also broken into 6 classes, based on the cardinal directions. Running the aspect tool outside the model yields an analysis based on a circle with 0 degrees as due North. North is roughly 30 degrees on either side, so numerical calculation of North are 337.5 to 360, and 0 to 22.5. The table below shows the degree value, its corresponding cardinal direction, and the ranking given.

Degree measure	Direction	Ranking
-1	Flat / no	No Data
0-22.5	North	1
22.5 – 67.5	Northeast	3
67.5 – 112.5	East	7
112.5 – 157.5	Southeast	9
157.5 – 202.5	South	9
202.5 – 247.5	Southwest	7
247.5 – 292.5	West	5
292.5 – 337.5	Northwest	2
337.5 – 360	North	1

North is the least ideal location, because it receives the least sunlight both in the summer and winter. Southern exposure is optimum for a majority of annual crops, with eastern exposure a close second. Typically eastern and western-facing slopes do not get the number of hours of sun exposure that the plants require, and western facing slopes dry out more quickly and may receive hours of harsh afternoon sun in the summer that will affect plant health. Due to these horticultural requirements, the ranking of each directional aspect is given in the table, with a definite preference for south and eastern directions. This will have a moderate layer weight. While aspect is very important for growing, there are techniques that can be used to correct, or shade-tolerant or heat-

tolerant crops that could be used in these less-than-ideal locations.

Canopy cover, as mentioned above, was obtained at the 30 square meter raster level, and the authors cautioned not to use it for fine grain analysis. However, in the absence of another more precise canopy cover raster, this dataset was resampled to the 10 square meter scale and new data was interpolated using the bilinear method. The metadata of the original canopy cover raster measures the percentage of canopy cover on a scale from 0-20. The scale, its definitions, and the classification system are shown below.

As tree cover increases, the suitability of the property for growing vegetables decreases. Although the data is limited currently, it will have a higher layer weight due to the feasibility of growing crops under dense tree cover.

Scale	Percent canopy cover	Ranking in Model
0-1	0	9
1-3	1-15	9
3-5	15-25	8
5-7	21-35	7
7-9	35-45	6
9-11	45-55	4
11-13	55-65	2
13-15	65-75	1
15-17	75-85	1
17-20	85-100	1

Impervious Surface does not always preclude community gardens or urban farms. Truly Living Well, a demonstration farm site located in downtown Atlanta, has constructed raised beds on top of concrete pads, and uses mulch to help absorb rainfall and mitigate heat island. However, this method does have several tradeoffs, including more expense for higher side walls for containers, increased water usage, decreased soil moisture retention, inability to plant trees and shrubs, and decreased soil microorganism activity. While impervious surfaces will not be ruled out, they are less desirable locations.

	Percent	Ranking
Scale	impervious surface	in Model
0	0	9
1-3	1-15	8
3-5	15-25	7
5-7	21-35	6
7-10	35-50	5
10-12	50-60	4
12-15	60-75	3
15-18	75-90	2
18-20	90-100	1

Constraints using Raster Calculator

The table below shows the list of constraints to the model, or areas that will be omitted from possible sites. For example, streets, highways, railroads, lakes, rivers, and cemeteries are given a classification of 0 (unsuitable), and all areas outside of

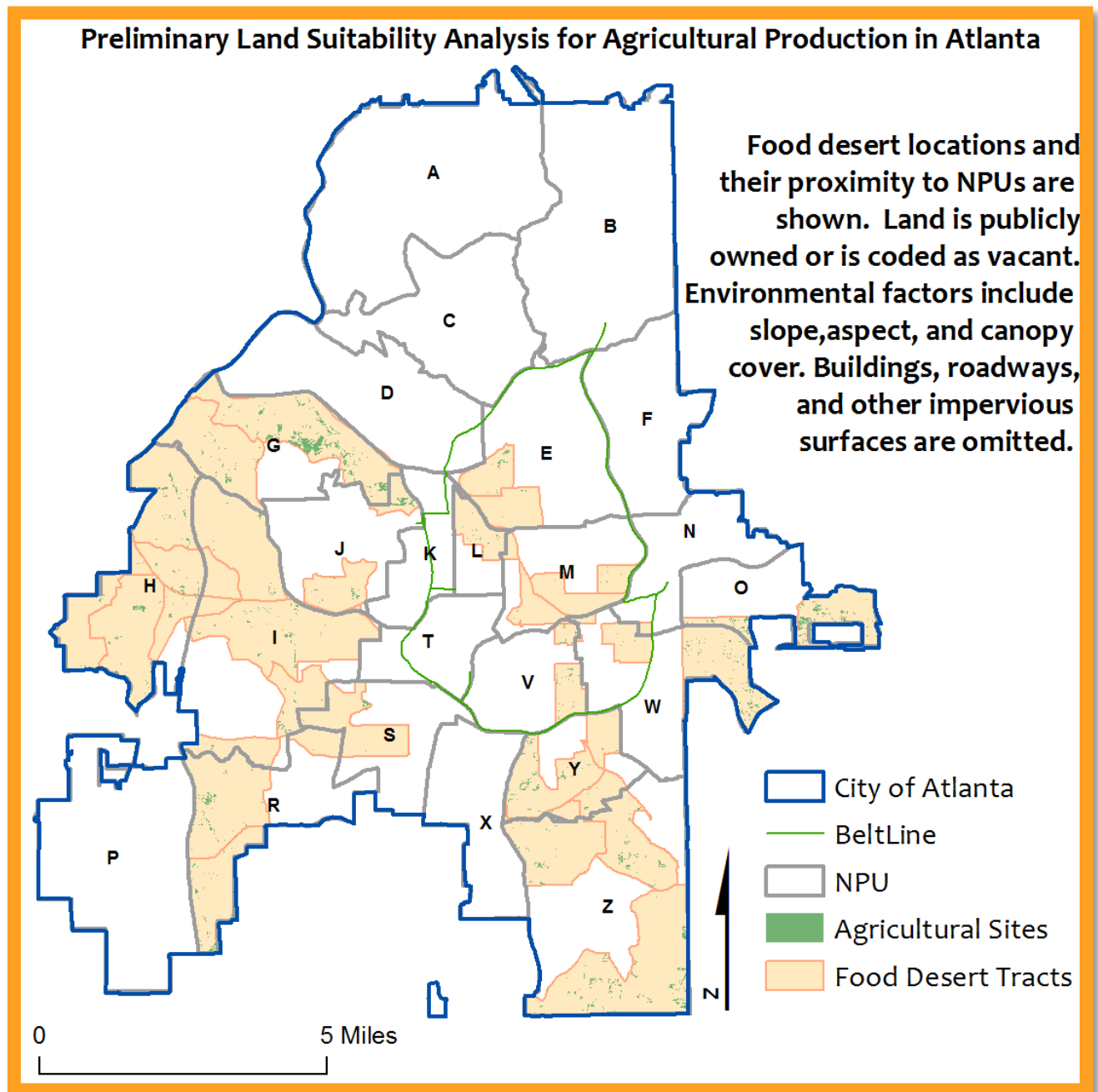
Layer Name	Reclass
Streets	0=Street, 1=No Data
Rivers	0=Rivers, 1=No Data
Highways	0=Highways, 1=No Data
Lakes	0=Lakes, 1=No Data
Railroads	0=Railroads, 1=No Data
Cemeteries	0=Cemetery, 1=No Data

this are classified as 1 (possibly suitable). Then all of the layers are combined using the *Raster Calculator* tool. During this process all 6 layers are combined into a new layer of 0's and 1's. Once this is combined with the Environmental Weight layer, it will omit the cells with a 0 value.

Final Steps

The top two weighted scores, 8 and 9, were extracted to find the cell sizes best suited for gardening. A parcel polygon file and buildings polygon file were combined using the erase feature to yield a parcel shapefile that removes the building footprint. Although building roofs are being used extensively for urban agriculture in cities such as Chicago and New York City, the purposes of this land suitability are to try and identify which underutilized parcels may be available for farming on the ground. This parcel shapefile with buildings excluded serves as an input mask for the weighted scores to create the Best Parcels layer. Next, this raster layer is converted back to a polygon for the purposes of merging and calculating acreage. Scores 8 and 9 are dissolved together to form larger tracts. These suitable sites are then restricted to publicly owned or vacant parcels within the food desert tracts in Atlanta. Once finished, all of the raster pixels are converted to a polygon shapefile so that adjacent sites may be merged. This also allows for calculation of acreage. The map on the following page, Figure 3B, shows all of the sites found in the City of Atlanta.

Figure 3B

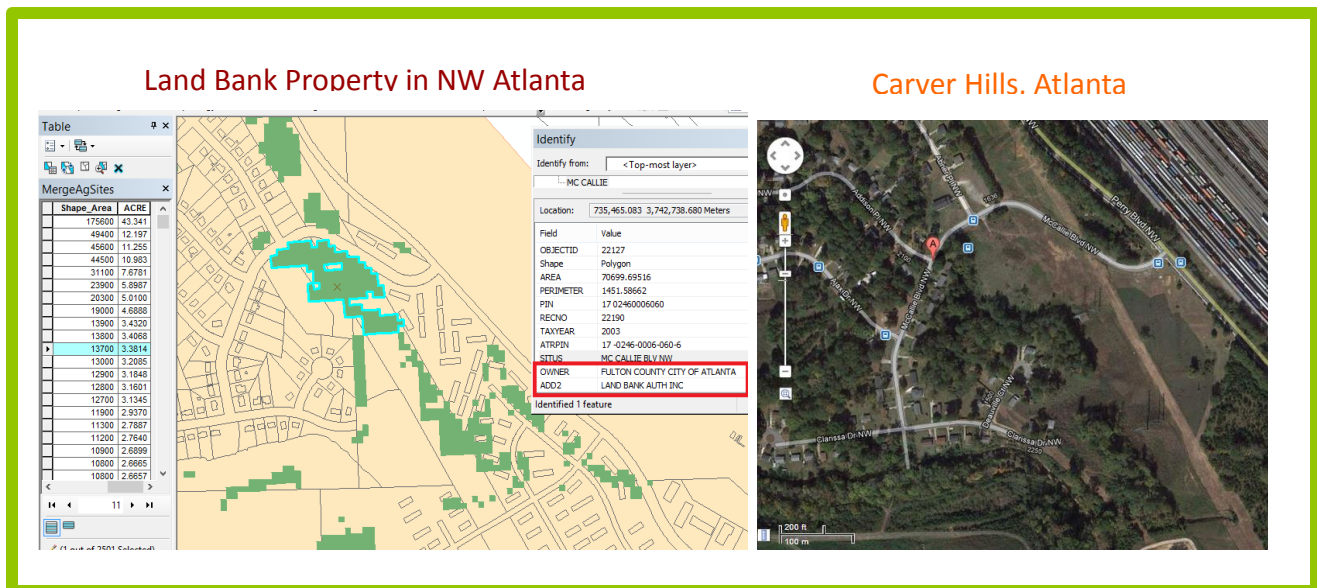


Findings

The environmental ranking of suitable sites yields 3,385 total acres in the City of Atlanta. By prioritizing the acreage by publicly-owned or vacant sites that fall within food desert census tracts, there are 65.58 acres. Using aerial photography to verify the sites, it was found that the 5 largest sites (over 10 acres in size) would be in an unsuitable location for community gardening use due to neighboring uses. For example, three sites in NPU-G are adjacent to landfills, the quarry, or junkyards. The site near the landfill could potentially be used for an urban farm location because there would not likely be nuisance complaints for possible odors from animals or composting operations. However, for community gardening and educational sites, areas under 4 acres seem to be more suitable and correct in the analysis. Figures 4B-6B below show close up views of suitable agriculture sites from the GIS interface, which shows ownership data when the underlying parcel is selected. The maps to the right are from Google aerial views and are done to verify the accuracy of the model.

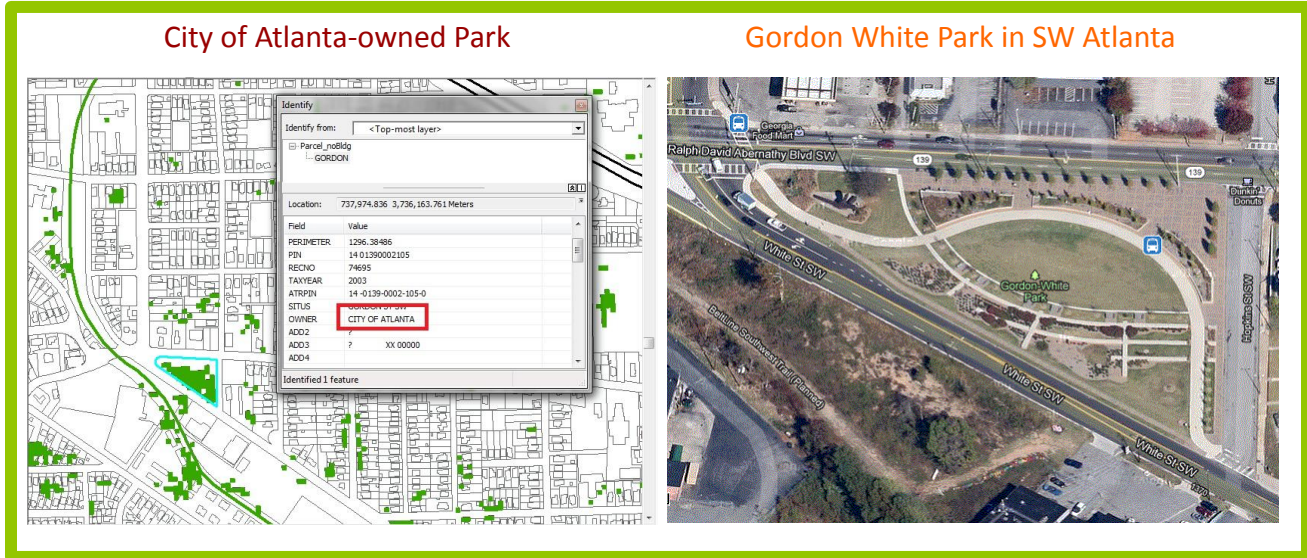
A land-bank owned property is correctly identified in the model, shown in Figure 4B. The blue highlighted portion in the picture on the left is over 3 acres in size. The aerial map view on the right indicates that this site is also located near homes, is on a bus line, and is without impervious surface or canopy cover.

Figure 4B: Suitable Agriculture Site on Land-Bank Property



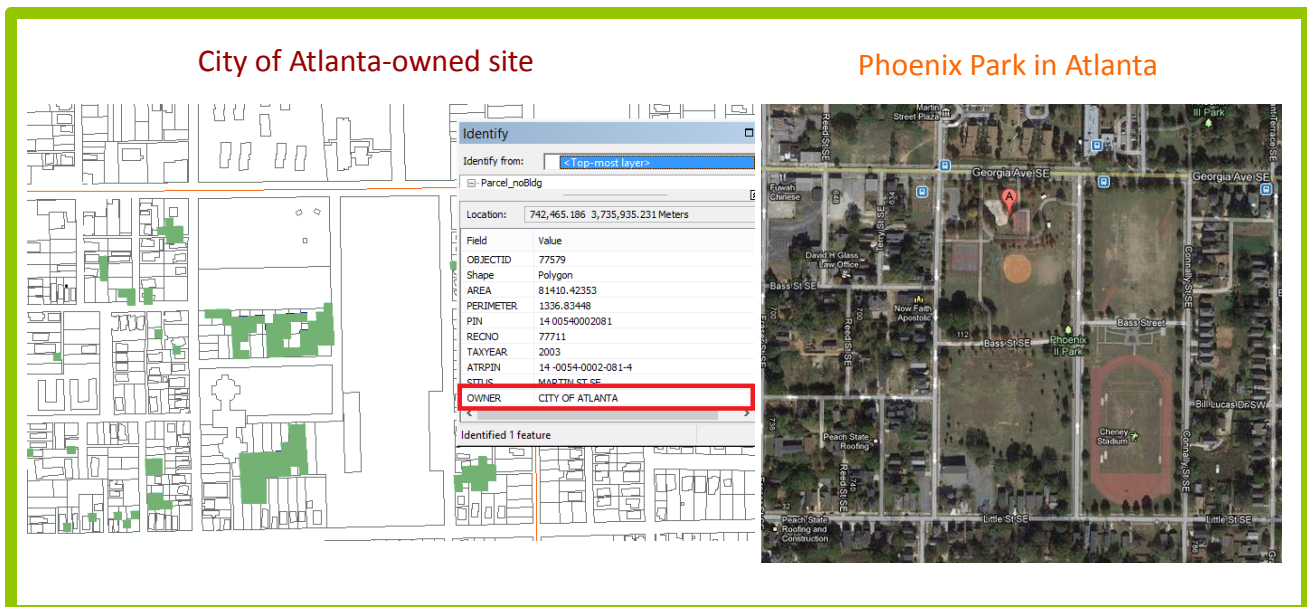
As Figure 5B below indicates, the model properly identifies the southern grassy portion of a city-owned park as a highly suitable site for agriculture. The map shows a large area in southwest Atlanta, relatively near to the BeltLine, that is owned by the City. The GIS map on the left shows a highlighted parcel in blue, with a large green area denoting suitable agricultural sites. The image on the right shows an aerial view of the park.

Figure 5B: publicly owned land suitable for agriculture



Many of these sites are on school properties, as the example shown in Figure 6B. This city-owned property is part of a sports complex, with a baseball, track, and football field. The model shows an open, grassy area on the southern portion of the site, outside of the sports facilities, which could potentially be used for an educational or community gardening site.

Figure 6B: City-Owned Site in Southeast Atlanta



Future Testing

A further analysis could include zoning and proximity to public water access. The construction of the model allows the input data (i.e. most recent census tracts or most recent parcel data) to be easily

substituted. The weighted analysis feature allows the layer weights to be customized based on stakeholder feedback using the Delphi Process or some other prioritization method.

The model could also benefit from a higher resolution canopy and impervious surface cover. As mentioned previously, the study done by University of Georgia was at a scale of 1:100,000. Since the data was interpolated at a 10 meter resolution, a more finely detailed input raster will yield more accurate results.

Other socioeconomic variables such as population density, proximity to community gardens, or aggregated land value by block group will help to explore the social and economic feasibility of the suitability analysis. These other variables could be added in future analyses.

Conclusion

Cities that are considering urban agricultural activities have found that a proper vacant land inventory and comprehensive database of all publicly owned sites is useful for an analysis. This land suitability analysis attempts to combine the publicly available data on vacancy and land ownership. While it is limited by the data available, this model shows how GIS can be useful to identify large acreage that is environmentally suitable for growing crops. It also attempts to locate these sites in areas where access to fresh, local food is most needed. Public and vacant properties are prioritized because their taxable land values are often low. This provides the city with an incentive to allow short to medium-term leases on publicly-owned property as a source of income. These sites do not need to be used for agriculture in perpetuity, but they may be ideal for interim land uses to mitigate blight, lower maintenance costs for the city or owner, and provide a source of fresh food to residents.



Appendix C:

Policy interventions for waste diversion at the state level in Georgia (December, 2012)⁴³

Food waste diversion is a vital part of lowering a region's environmental footprint, decreasing greenhouse gas emissions, reducing waste going to the landfill, and allowing proper nutrient cycling to return to the soil in the form of compost for agricultural and landscaping purposes. Though composting is a valuable practice, antiquated regulatory frameworks and barriers in the state of Georgia prevent its implementation. These include steep barriers to entry for composting facilities, differing definitions of the term compost, financial incentives to landfill rather than divert waste, a lack of infrastructure and composting facilities, and a lack of education around proper composting methods and its benefits.

Each of the above barriers can be addressed utilizing an appropriate policy intervention, and this briefing paper prioritizes three major tools to begin the process towards incentivizing food waste diversion and composting at the state and local level: creation of a tiered flexible permit system, regulation by performance standards, and taxing the tipping fees for landfill disposal. The first removes a barrier to entry for businesses, the second provides for appropriate environmental and community safeguards, and the third motivates a change in the public's behavior through an economic penalty for landfilling.

Recommendations

The following recommendations are made based on a review of composting best practices of other states, as well as a review of the policy context of municipal solid waste handling and composting in Georgia. An analysis of each of the three policy recommendations is summarized below.

Create a tiered permit system based on material volume of operation

Currently, Georgia allows three categories of compost facilities (GA EPD, 2009):

- Exempt: facilities that allow collection and decomposition of yard trimmings;
- Permit-by-rule: Allows only 25% of imported materials onto the site and has supervision and weighing of incoming material requirements;
- Full-scale municipal solid waste (MSW) handling facility: Application and fee, zoning, public hearing, engineer-approved design standards, closure plan, supervision and documentation requirements, incoming material weighing and description, operational plan, wastewater control

⁴³ For all references in this appendix, please see the overall References section beginning on Page 78

The above categories govern the material composition and operational standards of compost sites rather than the volume of material brought on site. Other states have moved more towards adoption of best management practices of composting facilities around stormwater management and nuisance concerns, and construction of a tiered system of governance based on size of operation and amount of material brought on site.

The state of Wisconsin, for example, has adopted a tiered permitting system for composting based on volume. To encourage community gardens and neighborhood-scale composting, collection sites that accept less than 50 cubic yards do not need a permit from the state. Similarly, farms can accept offsite organics for composting that follow best management practices and do not require submission of paperwork. Composting sites that manage between 50 to 5000 cubic yards require a site inspection, a plan of operation, and a one-time fee of \$550 to obtain a license. The license must be renewed annually, but is without a fee. Sites that are over 5000 cubic yards of source separated organics (or over 20,000 cubic yards of yard trimmings) are considered large scale facilities and must submit design and operation plans (Wisconsin Department of Natural Resources. 2011). All of these composting sites must adhere to guidelines about proper location siting and operation to protect waterways and to prevent nuisance to neighbors.

A California Polytechnic State University survey of state regulators conducted in 2011 indicates that a majority of states are now realizing that their composting regulations require updating to address food waste diversion (Yesiller et al, 2011). Florida, California, Indiana, Maine, Massachusetts, Mississippi, Nebraska, and New York are among the states that have used a tiered permitting system for the last 15 years and have included source separated organics and food waste into their regulations (Compostable Organics out of Landfills by 2012).

The creation of a tiered permitting system based on volume, similar to that of Wisconsin, would be ideal for Georgia. This will allow small and mid-size farmers, community gardens, and other smaller scale compost-making operations to accept food waste for the purposes of composting. This will eliminate the high and expensive barriers to entry that are required through obtaining a full municipal solid waste handling facility permit. Another potential benefit of having compost facilities at differing scales will potentially allow some to be established closer to the sources of the feedstocks. For example, the siting of MSW facilities are typically opposed by well-organized neighborhood and community groups as an environmental justice issue. This, along with zoning and land use laws, pushes the location of the facilities further away from the periphery of cities and densely populated areas. As a consequence, the per-mile cost to transport heavy feedstock loads⁴⁴ increases the overall operation costs and decreases the economic viability of such an operation. Allowing flexibility in sizes of operation will allow these sites to adapt to the surrounding land uses,

⁴⁴ According to a 2003 University of Georgia study, the per-mile rate for hauling materials is \$1.50 to \$2 per mile

prevent public outcry around a new MSW site, and possibly allow closer proximity to the source of food waste and compost feedstocks.

The Georgia Department of Community Affairs plans, manages, and analyzes the state's solid waste management efforts, as mandated by the 1990 Solid Waste Management Act (DCA). They also manage an education campaign to businesses and the public around waste reduction. The Georgia Environmental Protection Division (EPD) in the Department of Natural Resources governs the permitting process for MSW and permit-by-rule facilities, and runs a food residuals diversion initiative. The support of both of these agencies for an amendment is critical to its success. Both agencies are aware of the limitations and drawbacks of the current policy framework and its role in inhibiting composting activities. The EPD would continue to maintain its role in the permitting process, but may be required to provide site visits and review monitoring records in addition to reviewing applications. DCA would ramp up its outreach efforts from its current level in order to educate lawmakers and the public on the importance of composting and food waste diversion.

In the past, EPD has brought together a coalition of stakeholders, including private compost facilities, nonprofit recycling advocacy groups, and state officials⁴⁵ in order to identify barriers and work towards next steps. With budget cuts at the state level and lack of political will, these efforts to change state policy have not moved forward with EPD as the convener of this group. The establishment of a new Georgia Food Policy Council in 2012, along with a working group devoted to food waste diversion and composting, may be able to bring about a resurgence in the topic. A more favorable political climate now exists around composting and food waste issues due to increased interest in farming and gardening, the Zero Waste Zone initiatives in Atlanta, and more focus on decreasing landfill wastes. With the assistance of the coalition of private, nonprofit, and public stakeholders to help motivate and galvanize the public, it may be enough to revise the existing policies.

An analysis done in 2002 of current composting operations (including local government, private, institutional, and yard waste collection facilities) indicated that the capacity of the composting operations could easily handle a doubling of materials input. The study further indicated from survey and interview results that operators were not accepting more waste due to the expense and permitting process required to obtain a municipal solid waste handling permit (Governo et al, 2003).

Regulate by performance standard

The high regulatory barriers to obtaining a municipal solid waste handling permit for a composting facility are designed to protect the environment and neighboring land uses from

⁴⁵ Members included Atlanta Community Food Bank, Community Environmental Management, Inc, Greenco Environmental, Georgia Organics, Georgia Department of Agriculture, BioCycle, Institute for Local Self-Reliance, and the Georgia EPD (EPD website)

leachate, pathogens, and odor. Efforts to protect the surrounding environment through tightly controlled large scale composting facilities has led to the unintended consequence of a severe lack of compost facilities to accommodate food waste diversion, and still does not necessarily address the nuisance and contamination issues. For this reason, it is recommended that the state introduce further performance measures for quality control rather than burdensome operational standards and source materials restrictions.

In its first typology of compost facilities, exempt, Georgia's policy limits the material composition of to yardwaste and farm animal manure. This fails to address a large portion of organic waste that could be composted (food waste) and does not address odor or nuisance, pathogens that may be found in carnivore manure, or runoff issues. The next tier, permit by rule, regulates material only by limiting incoming feedstock to 25% of total volume. Again, this regulation doesn't get at the desired environmental protections or prevention of nuisance. The final category, the municipal solid waste handling permit, covers such protections, but at the level of handling hazardous materials and chemicals, sewage sludge, and other materials that would not need to apply to a composting facility.

To continue to protect the environment and community, while promoting the beneficial services of compost facilities, the state can adopt performance standards as a way to monitor compliance. Currently, the state does name some performance standards around MSW sites as they relate to supervision, posted information, cleanliness, and sanitation (EPD, 2009). The standards that we propose go further, aiming to address the underlying environmental, public safety, and nuisance concerns. Examples of some of these performance standards would include:

- Testing of the resulting compost for pathogens and consistent nutrient content that will dictate its end-use:
- Methods to avoid odors, noise, and other nuisance and safety concerns;
- Prevention of water pollution, leachate, and groundwater contamination
- Plan for maintenance of necessary Carbon: Nitrogen ratio
- Control of air pollution and bioaerosols

To illustrate the gaps in Georgia's composting policy, a case study of Greenco will be briefly discussed. Greenco became the first private food waste handling facility permitted in the state of Georgia. Though it met all of the requirements for a MSW facility, numerous nuisance (odor, noise, animal) complaints about its Barnesville facility caused public outcry demanding its closure. Efforts to relocate to a new facility closer to Atlanta were met with a rallying cry of environmental justice concerns and NIMBYism in Dekalb County (Moghe, Cauthen, 2012). This recent news has greatly contributed to the unfortunate public perception of compost facilities as sources of nuisance and something to prevent.

This case study points out the flaws in equating a compost facility as a MSW site. Windrowing, the method that Greenco used, is an open-air method of composting that turns the organic material

daily to introduce oxygen and speed up decomposition. This method can create odors, especially if high in fats, oils, meats, and dairy products. Greenco, as part of its MSW permit, was also allowed to and did accept animal carcasses for processing (Emory, 2011). Had specific performance indicators been required around the recipe, or had required monitors been in place around odor and nuisance, it may have prevented the types of materials that the company agreed to accept.

By contrast, the following example of a sustainable farming technique using an integrated system of animals for nutrient cycling would not be eligible to accept food waste under the current Georgia regulations. Food waste that is heavy in oils, fats, meats, and dairy is problematic in its smell while decomposing and attracts vermin. Various methods can be utilized to mitigate the nuisance, typically through in-vessel composting methods. Another method is the use of the larval stage of the soldier fly, which will digest up to its own body weight in any type of organic waste material every day. Similar to grubs, these soldier fly larvae (SFL) are a high protein food source for ducks, chicken, or fish. Growing Power, an intensive sustainable farm located in the city of Milwaukee, uses such a system of aquaculture to be able to compost some of the diverted food waste that it accepts. Wisconsin's permitting system that governs the quantity of material rather than the process by which breakdown must occur allows for creativity and flexibility in attaining the goals of food waste diversion in a site-appropriate manner.

There are numerous aquaculture facilities located in the area, but none of them currently accept food waste as the main fish food source due to the regulatory barriers that prohibit residential composting in Atlanta. Truly Living Well is currently constructing its aquaculture facility, and students at Georgia Tech have assisted them in determining the amount of food waste required daily to sustain an aquaculture tank and use of SFL in the breakdown process (Arkfab, 2011). When operational, this has significant potential for waste diversion and nuisance-free materials cycling on a 3-acre site in an urban residential location. The Oakhurst Community Garden, a demonstration garden in a residential area in Dekalb County, accepts neighbor's compost, and uses the SFL method, in part, to feed its on-site flock of chickens.⁴⁶

By addressing the true causes of concern around compost facilities, the performance measures will help to allay public opposition and fears through proof of meeting accepted monitoring indicators. Allowing for flexibility in operation and processing methods will also facilitate technological innovation as described above, and allow for site-appropriate adaptation. (Compostable Organics out of Landfills by 2012).

Creation of such a performance measurement system has its drawbacks, however. The current system requires extensive up-front application and reporting process, and minimal to no subsequent reporting to the state. DCA and EPD representative have indicated in personal communication that

⁴⁶ This is from author's own personal observation during a site visit, and from a composting workshop offered on site.

the staffing and budget cuts in recent years have severely restricted the ability of the state programs to run effectively and to propel regulation changes. The introduction of a new system that could require more paperwork, annual monitoring, and site visits could be a burdensome to the existing EPD staff. Without additional funding for capacity, the current staffing is a major barrier to implementation.

A tax on waste disposal tipping fees

A major barrier to the success of composting operations in Georgia is the fee structure for waste disposal, also called tipping fees, that remain low relative to many states in the country. While these tipping fees remain low, there is little economic incentive for businesses, industries, municipalities, and residential customers to divert food waste. In effect, the low tipping fees encourage the undesirable behavior of landfilling. This mismatch with policy leads to the conclusion that in order to make composting operations more economically viable and landfilling less appealing, the cost to throw things away must increase. Besides benefiting organics diversion, the increase in tipping fees also has the additional benefit of encouraging recycling activities, and reuse of construction and demolition materials. The proposed tax on tipping fees, as is done in many other states, would help to fund alternative disposal methods, composting programs, and recycling efforts. With the State of Georgia's budgetary woes and limited staff capacity, this tax would provide assistance in monitoring and outreach efforts.

An evaluation was done of other alternatives that would incentivize composting and discourage the landfilling of organics, and have come to the conclusion that increasing the cost to landfill materials is the best economics-based policy tool. Creating tax breaks for compost facilities to help subsidize their tipping fee rates will still not change the behavior of the majority of residents and businesses. Attempting to create a ban on organic waste from landfills would be difficult to enforce and unlikely at this time without proper education and an alternative disposal method at the source already in place.

There is the capacity at the existing composting facilities and in the infrastructure to accommodate such a policy change. As mentioned previously in the brief, the existing facilities had the capacity to double operations as of 2002. Since then, at least two of these composting facilities have ceased operation, citing economic hardship. While there is the capacity at the composting facilities, there is not currently the necessary infrastructure for pickup and source separation for residential and commercial purposes. This is where a residential pilot project would be beneficial, as well as improvements on the Zero Waste Zone program and operation.

Currently, public and private institutions are leading the food waste diversion effort through challenges to minimize their waste. Area universities such as Emory, Agnes Scott, and Georgia Tech have contracted with Greenco in previous years to pick up their food residuals for composting. Much more expensive than landfilling, these initiatives have generated positive public relations and the institutions are seen as the vanguard of food waste diversion in the Atlanta area. However,

multiplying these efforts will continue to prove difficult as long as the tipping fees in Georgia remain between \$20 and \$40 per ton (Governo, 2003).

This policy proposal is likely to be met with a high amount of public opposition. The culture is very much entrenched in the ability to throw things away cheaply, without having to source separate or recycle. An increase in landfill fees from an added tax would be felt across the board by all homeowners and businesses. The increasingly small number of private solid waste handlers in the state would also likely vigorously fight the proposal. Public officials may be wary of the new policy's contribution to an increase in illegal dumping. Its only chance for success is a highly influential lobby or advocacy group, or a policymaker willing to sponsor such a bill for environmental or fiscal reasons.

Due to the unpopularity of this policy recommendation and the lack of existing infrastructure, this would be a later phase following the passage of the initial tiered permitting system. The change in the permitting system will encourage small-scale composting and demonstration sites, and then creating performance standards for monitoring will help to positively change the public perceptions around composting. While these measures are being implemented, a coalition of advocacy groups committed to C&D waste diversion, deconstruction and reuse, recycling, and food waste / composting can begin to coalesce and advance the agenda to levy a landfill tax. .

Conclusion

A key component to the success of any of the above policy recommendations is public education around the basic science and benefits of composting. Food waste diversion is a true triple-bottom line sustainability effort in that it benefits the environment, the local economy, and the community. However, lack of understanding of the benefits and fear of nuisance, bugs, vermin, and leachate have caused a culture of NIMBYism and prohibitive regulations. A two-pronged education and outreach approach is needed: one to promote compost to the public, and one directed to facility managers around proper compost production and monitoring techniques. The 2002 University of Georgia survey indicated that a major barrier to the economic feasibility of compost was a variable and low-quality end product (Governo, 2003). The nutrient content, texture, pH, and heavy metal components varied widely, making it difficult to market and sell. Furthermore, low C:N ratio, poor recipe, low temperature, and introduction of Fats, oils, greases, and animal proteins can promote nuisance and odor. Creating composting facilities that behave less like MSW facilities will go a long way towards shifting public perception. Allowing small-scale compost demonstration projects such as Truly Living Well in Atlanta and the Oakhurst Community Gardens in Decatur help to remove the mystery and stigma around composting. These educational efforts, combined with the state-level policy changes recommended throughout the briefing paper, will best implement a coordinated composting effort in Georgia to help meet waste reduction goals and extend the capacity of the remaining landfills.

Appendix D: Potential Funding Sources with Descriptions

FEDERAL FINANCIAL RESOURCES

USDA, Agricultural Marketing Service

Farmers Market Promotion Program (FMPP)

Designed to facilitate and promote farmers markets and other direct-to-consumer market channels for agricultural products. The emphasis is on direct-to-consumer marketing, including multi-farm CSAs and online buying clubs.

Authorized activities: Research and feasibility studies, business planning, equipment purchase, and training and technical assistance.

Funding: The maximum amount awarded for a proposal cannot exceed \$100,000.

Eligible applicants: Agricultural cooperatives, producer networks, producer associations, local governments, nonprofit corporations, public benefit corporations, economic development corporations, farmers market authorities, and tribal governments.

For more information: Competitive grants are awarded annually. www.ams.usda.gov/FMPP

Contact: Carmen Humphrey, Program

Manager: 202-720-8317 or Carmen.

Humphrey@ams.usda.gov.

Specialty Crop Block Grant Program (SCBGP)

Administered by Agricultural Marketing Service

Enhances the competitiveness of specialty crops (fruits, vegetables, tree nuts, dried fruits, horticulture, nursery crops, and floriculture), including locally grown and consumed specialty crops. Supports a State's specialty crop funding priorities, including Statewide and local food systems, all of which must solely support specialty crops, including school and community gardens; farm-to-school programs; good agricultural practices and good handling practices certification and training for farmers; development of cooperatives and local or regional e-commerce that support the processing, aggregation, and distribution of locally grown specialty crops; and improving access to specialty crops in underserved communities.

Authorized activities: Research and feasibility studies, business planning, marketing and promotion, and training and technical assistance.

Funding: Varies by State.

Eligible applicants: Block grants are awarded directly to State departments of agriculture.

For more information: www.ams.usda.gov/scbgp

Contact: Trista Etzig: 202-690-4942 or

trista.etzig@usda.gov; John Miklozek:

202-720-1403 or john.miklozek@usda.gov;

or Jenny Greer, 202-205-

3941 or jenny.greer@usda.gov.

USDA, National Institute of Food and Agriculture

Community Food Projects Competitive Grant Program (CFP)

Administered by National Institute of Food and Agriculture

Designed to increase food security in low-income communities by developing linkages between sectors of the food system, supporting the development of entrepreneurial projects, and encouraging communities' long-term planning.

Authorized activities: Research and feasibility studies, business planning, construction, working capital, and marketing and promotion.

Funding: \$10,000 to \$300,000

(lasting 1 to 3 years).

Eligible applicants: Nonprofit entities that need a one-time infusion of Federal assistance to establish and carry out multipurpose community food projects.

For more information: www.nifa.usda.gov/funding/rfas/pdfs/11_community_foods.pdf

Contact: Jane Clary, National Program

Leader, Nutrition/Extension: 202-720-3891 or jclary@nifa.usda.gov

Sustainable Agriculture Research and Education (SARE)

Administered by NIFA through cooperative agreements with regional offices in Northeast, North Central, Southern, and Western regions. Advances sustainable innovations in American agriculture.

Supports research on topics such as on-farm renewable energy, pest and weed management, sustainable communities, agro-forestry, marketing, and more.

Authorized activities: Research and feasibility studies (but no business planning), training, and technical assistance.

Funding: Research and Education

Grants: \$10,000 to \$200,000 or more.

Professional Development Grants: from \$20,000 to \$120,000.

Producer Grants: between \$1,000 and \$15,000.

Other grant types in some regions.

Eligible applicants: Nonprofit organizations, researchers, and individual producers.

For more information: You can find

links to regional Web sites at www.sare.org

Contact: Rob Hedberg: rhedberg@nifa.usda.gov

Development Program (BFRDP)

Administered by National Institute of Food and Agriculture

For costs associated with education, training, outreach, and mentoring beginning farmers and ranchers, as long as the costs are normally allowable and reasonable. Funds can be used to pay beginning farmers to participate in the program; paid internships are allowed. May be used for acquisition of non-fixed equipment for use on the project, including high tunnels. It may not be used for the planning, repair, rehabilitation, acquisition, or construction of buildings or facilities or to buy land, match International Development Association funds, purchase equipment for starting farm or ranch businesses, or for research activities.

Authorized activities: Training and technical assistance, and equipment purchase (non-fixed).

Funding: No minimum; maximum award \$250,000 for up to 3 years (\$750,000 total).

Eligible applicants: Collaborative, State, tribal, local, or regionally based networks or partnerships of public or private entities, which may include the State cooperative extension service, community-based and nongovernmental organizations, colleges or universities (including institutions awarding associate degrees), or any other appropriate partner. Others may be eligible to apply.

For more information: BFRDP.125

Contact: Siva Sureshwaran, National

Program Leader, Division of

Agricultural Systems: 202-720-7536 or ssureshwaran@nifa.usda.gov.

U.S. Department of Health and Human Services

Community Economic Development Grants (CED)

Administered by Administration for Children and Families, Office of Community Services

Provides technical and financial assistance for the creation of employment and business opportunities in low income communities. Serves the dual purposes of facilitating access to healthy food options and creating job and business development opportunities in low-income communities.

Includes projects addressing the elimination of food deserts and that finance grocery stores, farmers markets, and other retail sources that provide access to fresh nutritious food. Includes projects that collaborate in the Healthy Food Financing Initiative through New Market Tax Credits; Community Development Financial Institution Funds; or loans, grants, or promotions through the U.S.

Department of Agriculture. Uses for funding include startup or expansion of businesses or commercial activities; capital expenditures such as the purchase of equipment or real property; allowable operating expenses; and loans or equity investments. Types of projects funded include business incubators, shopping centers, manufacturing businesses, and agriculture initiatives.

Finances grocery stores, farmers markets, and other sources of fresh food.

Authorized activities: Construction, marketing and promotion, working capital, training, technical assistance, equipment purchase, and land lease or purchase.

Funding: The maximum grant award is \$800,000. Funds may cover project costs for business start-up or expansion and the development of new products and services that focus on the elimination of food deserts or that provide communities with access to healthy foods.

Eligible applicants: Private, nonprofit community development corporations (CDCs) having a 501 (c)(3) status and experienced in developing and managing economic development projects. For purposes of this grant program, the CDCs must be governed by a board of directors consisting of residents of the community and business and civic leaders. The principal purpose of the CDCs must be planning, developing, or managing low-income housing or community development activities. Faith-based and community organizations are also eligible to apply.

Example projects: Grocery stores, farmers markets, business incubators, and healthy food access initiatives.

Encourages grantees to focus on environmental industries, such as green products, recycling, renewable or alternative energy, or urban agriculture and horticulture.

For more information: www.acf.hhs.gov/programs/ocs/ced/index.html

Contact: Thom Campbell, Office of
Community Services, Administration
for Children and Families: 370
L'Enfant Promenade SW, Washington,
DC, 20447 or 202-401-5483 or thom.campbell@acf.hhs.gov.

Community Transformation Grants

Administered by Centers for Disease Control and Prevention Creates healthier communities by building capacity to implement policy, environmental, programmatic, and infrastructure changes. Supports implementation of interventions in five strategic areas:

- Changes in weight
- Changes in proper nutrition
- Changes in physical activity
- Changes in tobacco use prevalence
- Changes in emotional well-being and overall mental health.

Capacity-building awards help build coalitions, train staff, conduct needs assessment, and develop action plans. For example, they might create social and physical environments that support healthy living and ensure that healthy choices are the easy choice by increasing the availability of and access to healthy and affordable food options such as fresh fruits and vegetables. They might increase consumer choice and eliminate food deserts.

Implementation awards help communities operate programs that improve health and wellness. Note that these grants do not permit research, but recipients may carry out evaluation activities to document the impact of their funded programs.

Authorized activities: Training, technical assistance, and evaluation studies.

Funding: In 2011, Capacity-building awards were between \$50,000 and \$500,000. Implementation awards were between \$500,000 and \$10 million for States, local governments, and nonprofit organizations; between \$50,000 and \$150,000 for territories; and between \$100,000 and \$500,000 for tribal and American Indian/Alaska Native consortia.

Eligible applicants: State and local jurisdictions, national networks of community based organizations, State or local nonprofits, and Native American tribes

For more information: www.cdc.gov/Features/CommunityGrants/

Contact: John R. Lehnerr: ctg@cdc.gov or jrl5@cdc.gov.

U.S. Department of the Treasury

Community Development Financial Institutions (CDFI) Program

Administered by Community Development Financial Institutions Fund

The CDFI Program has two distinct components: financial assistance (FA) and technical assistance (TA). In both cases, funding goes to financial intermediaries (CDFIs) who provide finance to third parties. This program does not provide direct funding to specific projects, but CDFIs can choose to fund almost any aspect of a project. FA awards can be used for financing capital, loan loss reserves, capital reserves, and operations. TA awards can be used for personnel (salary and fringe benefits), training, travel, professional services, materials and supplies, equipment and other capital expenditures, and other service delivery-related costs.

Authorized activities: Must be funded through a CDFI: Research, feasibility studies, business planning, construction, land lease or purchase, marketing and promotion, working capital, equipment purchase, training, and technical assistance.

Funding: FA awards are up to \$2 million. TA awards are usually awarded up to \$100,000.

Eligible applicants: Certified CDFIs (financial institutions: banks, thrifts, credit unions, loan funds, and venture capital funds) with a principal mission of serving underserved populations or distressed communities. Food

hubs should contact a local CDFI to learn about funding opportunities.

For more information: www.cdfifund.gov/what_we_do/programs_id.asp?programID=7

Contact: Ruth Jaure, CDFI

Program Manager: 202-622-9156 or jaurer@cdfi.treas.gov.

New Market Tax Credit (NMTC)

Administered by Community Development Financial Institutions (CDFI) Fund

Similar to the CDFI Program, the New Markets Tax Credit program makes allocations to financial entities called

Community Development Entities (CDEs). CDEs use the tax credits to raise capital, which is then invested in projects as debt or equity. Individuals trying to fund specific projects should work with CDEs that received allocations, rather than apply directly to the CDFI Fund.

Authorized activities: Working capital.

Funding: \$250 million in authority for the NMTC and \$25 million for financial assistance to CDFIs devoted to helping finance healthy food options. The NMTC credit is taken over a 7-year period and equals 39 percent of the amount of original investment. The credit rate is 5 percent of the original investment amount in each of the first 3 years and 6 percent of the original investment amount in each of the final 4 years.

Eligible applicants: Certified community development entities (CDEs), or entities that have CDE certification applications pending with the CDFI Fund.

For more information: www.cdfifund.gov/what_we_do/programs_id.asp?programID=5

Contact: Robert Ibanez, NMTC

Program Manager: 202-927-6232 or cdfihelp@cdfi.treas.gov.

U.S. Department of Housing and Urban Development

Community Development Block Grant Program (CDBG)

Administered by Office of Community Planning and Development

Works to ensure decent affordable housing, to provide services to the most vulnerable in our communities, and to create jobs through the expansion and retention of businesses. The CDBG program contains many program

areas: Entitlement Communities, State Administered CDBG, Section 108 Loan Guarantee Program, Insular Areas, Disaster Recovery Assistance, and the Neighborhood Stabilization Program. Activities must be CDBG eligible and meet one of the following three national objectives of the CDBG program: benefit low- or moderate income persons, prevent or eliminate slums or blighted areas, or address an urgent community development need.

Authorized activities: Land lease or purchase, construction, equipment purchase, working capital, and training and technical assistance.

Funding: Approximately \$4.5 billion was available in 2011. Provides annual grants on a formula basis to local government and States.

Eligible applicants: Metropolitan cities and urban counties and nonentitlement communities.

For more information:

portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs

Contact: Stan Gimont, Director, Office of Block Grant Assistance: 202-708-3587

Sustainable Communities Regional Planning Grants

Administered by Office of Sustainable Housing and Communities Supports planning efforts that integrate housing, land use, economic and workforce development, transportation, and infrastructure investments. Places a priority on partnerships, including nontraditional partnerships such as arts and culture, recreation, public health, food systems, regional planning agencies, and public education entities. There are two funding categories: *Group 1 Funds* can be used to support the preparation of regional plans for sustainable development. Funds will support stakeholder-driven visioning and scenario-planning exercises that address and harmonize critical land use and investment decisions, support cost-effective and sustainable transportation and water infrastructure investments, designate lands for conservation and ongoing agricultural use, proactively consider risks from disasters and climate change, and develop sophisticated mapping resources that communities can access to address these and other regional planning issues. *Group 2 Funds* can be used to support efforts to modify existing regional plans. Eligible activities include tasks necessary to develop a regional plan for sustainable development and align investments with this plan; to improve management capability to implement the plan; and to develop relevant policy, planning, and evaluation capacity.

Authorized activities: Research and feasibility studies, business planning, land lease or purchase, training and technical assistance.

Funding: Grants range from \$400,000 to \$5 million.

Eligible applicants: Multi-jurisdictional and multi-sector partnership consisting of a consortium of government entities and nonprofit partners.

For more information: www.sustainablecommunities.gov

Contact: Dwayne S. Marsh: 202-402-6316 or SustainableCommunities@hud.gov.

Community Challenge Grants

Administered by Office of Sustainable Housing and Communities

Fosters reform and reduces barriers to achieving affordable, economically vital, and sustainable communities. Can be used for efforts such as amending or replacing local master plans, zoning and building codes to promote mixed-use development, and the rehabilitation of older buildings and structures with the goal of promoting sustainability at the local and neighborhood levels. Eligible activities include: development and implementation of local, corridor, or district plans and strategies that promote livability and sustainability while avoiding residential and small business displacement; comprehensive reviews to develop and prioritize revisions to zoning codes, ordinances, building standards, administrative regulations or actions, or other laws to remove barriers and promote sustainable and mixed-use development; develop building codes that balance energy-efficient rehabilitation of older structures and the creation affordable and healthy housing; and development of community-scale energy strategies and implementation plans and climate adaptation plans. Authorized activities: Research and feasibility studies, business planning, land lease or purchase, training and technical assistance.

Funding: The minimum award size is \$100,000 and the maximum award is \$3 million.

Eligible applicants: State and local governments, including U.S. territories, tribal governments, political subdivisions of State or local governments, and multi-State or multi-jurisdictional groupings.

For more information: portal.hud.gov/hudportal/documents/huddoc?id=2011scccnpnfa.pdf

Contact: Sunaree K. Marshall: 202-402-6011 or SustainableCommunities@hud.gov.

U.S. Department of Commerce

Public Works and Economic Development Program

Administered by Economic Development Administration (EDA)

Supports the construction or rehabilitation of essential public infrastructure and facilities to help communities and regions leverage their resources and strengths to create new and better jobs, drive innovation, become centers of competition in the global economy, and ensure resilient economies.

Projects include investment in water and sewer systems, broadband, industrial access roads, industrial and business parks, port facilities, rail spurs, skill-training facilities, business incubator facilities, and brownfield redevelopment.

Authorized activities: Construction and equipment purchase.

Funding: In 2010, the average investment was \$1.7 million; investments ranged from \$500,000 to \$2 million. This average is informational only and is not intended to restrict the size of future awards.

Eligible applicants: District organizations; Indian tribes or a consortium of Indian tribes; State, city, or other political subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities, and consortiums of political subdivisions; institutions of higher education or consortiums of institutions of higher education; and public or private nonprofit organizations or associations acting in cooperation with officials of a political subdivision of a State.

For more information: www.eda.gov/contact.htm
 Contact: Phil Saputo: 202-482-6331 or psaputo@eda.dopc.gov.

Economic Adjustment Assistance Program (EAA)

Administered by Economic Development Administration

Provides a wide range of construction and non-construction assistance, including public works, technical assistance, strategies, and revolving loan fund projects, in regions experiencing severe economic dislocations that may occur suddenly or over time. EAA is designed to respond flexibly to pressing economic-recovery issues and is well suited to help address challenges faced by U.S. communities and regions.

Authorized activities: Feasibility studies, planning, technical assistance, construction, equipment purchase, and working capital (revolving loan funds).

Funding: In 2010, the average size of an investment was \$550,000; investments ranged from \$100,000 to \$1,250,000. However, this average is informational only and is not intended to restrict the size of future awards.

Eligible applicants: District organization; Indian Tribes or consortia of Indian tribes; State, city, or other political subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities or consortia of political subdivisions; institutions of higher education or consortia of institutions of higher education; and public or private nonprofit organizations or associations acting in cooperation with officials of a political subdivision of a State.

For more information: www.eda.gov
 Contact: Phil Saputo: 202-482-6331 or psaputo@eda.dopc.gov.

FOUNDATIONAL GRANTS

Cedar Tree Foundation

Program name: Sustainable Agriculture; Environmental Education; Environmental Health

Funding interests: Focus on environmental justice, and conservation, with a particular interest in urban agriculture

Grant size: Generally \$10,000–\$100,000

Geographic focus

Website: www.cedartreefound.org

Eligibility

Submission Info: Process begins with a Letter of inquiry. The fund managers will request full proposals for those projects whose letters indicate a good fit with the philanthropy.

GRACE Communications Foundation

Funding interests: The development of sustainable, community-based food production and regional food distribution networks; Public awareness of how sustainable agriculture contributes to social, environmental, economic and personal health; Policies that promote sustainable use of water

resources for energy and food production; Policies that protect and promote clean drinking water; The development of small-scale distributed renewable energy systems; Increased public awareness of how individuals can improve their physical and emotional health.

Website gracelinks.com

Kresge

Program name: Health

Funding interests: Reducing health disparities among children and adults living in the United States

Grant size: Previous grants between \$250,000 and \$750,000

Geographic focus: National

Website: www.kresge.org/programs/health

Eligibility: Nonprofits and government entities at the local, State and national levels

Submission Info: Varies, depending on the program – visit website for more information

W.K. Kellogg Foundation

Program name: Healthy Kids

Funding interests: Improve food systems by engaging local leaders in communities and schools (parents and other stakeholders) to deliver healthier foods to all children and achieve related policy changes. Transform food deserts into food oases by increasing engagement of local communities in all aspects of food production and delivery, including related research and policy changes.

Grant size: \$5,000–\$3 million

Geographic focus: National

Website www.wkkf.org/what-we-support/healthy-kids.aspx

Eligibility: No individuals

Submission Info: Rolling submission

