

# CASE STUDY 3

## BrightFarms

When Brooklyn-based BrightFarms first launched, CEO Paul Lightfoot envisioned building hydroponic greenhouses on the top of grocery store roofs and vacant city lots. The startup attempted to build a giant rooftop in Sunset Park, Brooklyn and a soiled parcel of land in Washington D.C. However, despite their best efforts, regulatory and operational challenges plagued both ventures, eventually forcing the company to abandon their original sites and operate in areas outside of urban cities. In Brooklyn, the roof required engineering work that could not be completed on time, and in D.C., the parcel of land required environmental remediation that also required extensive completion time. The lack of appropriate regulatory framework in both locations created these project delays. The company's decision to relocate the D.C. project to the outskirts of Culpeper County, Virginia had considerably more success. Labelled as an 'agricultural project' rather than 'industrial' as in the case of D.C. and Brooklyn, the permitting process only took one week, as opposed to one year in D.C. BrightFarms serve as an example of how the lack of resources and appropriate urban agriculture regulatory structure in the current landscape of many cities is a major hindrance to potential entrepreneurs.





POLICY  
RECOMMEN-  
DATATIONS



It is not an argument between soil-based growing and high-tech farming, it is about recognizing that there is a breadth and a variety of urban agriculture in New York City. All groups should be heard, lifted, and supported for urban agriculture to be truly equitable.

QIANA MICKIE  
JUST FOOD



*Mickie Q (March 12, 2018). Phone interview with [J DeMarco].*

## GOVERNANCE

1) Establish a coordinating governmental body [agency or division] comprising relevant public, community and private stakeholders and practitioners to advance urban agriculture policies.

## INTENDED OUTCOMES

- + Aligns the relevant stakeholders to coordinate and actualize necessary urban agriculture policies.
- + Establishes a centralized resource or hub, which encourages and supports the existing multilateral landscape of current urban agriculture practices.

## LEAD AGENCIES

- + Office of Management and Budget,
- + Department of Parks and Recreation,
- + Department of Education,
- + Department of Health and Mental Hygiene,
- + Department of Sanitation,
- + Office of Sustainability,
- + Office of Food Policy,
- + Department of City Planning,
- + Department of Small Business Services
- + Department of Housing Preservation and Development

## FUNDING AND RESOURCE IMPLICATIONS

Time from experts within the key city agencies is needed to develop effective regulations. The costs of implementing, training, and enforcing these regulations must be accounted for. Ultimate funding mechanism will rely on location of office.

## PRECEDENTS

Other cities have established offices of urban agriculture either within other departments (Baltimore, Boston), as standalone agencies (Atlanta), or issue specific working groups (Minneapolis). However, establishing these offices often require delicate and well-coordinated efforts to include support from various city agencies and stakeholders. Moreover, these offices should be reinforced by the existing political structure. For instance, in 2010 the city of Boston created an Office of Food Initiatives (OFI) to address the city's increasing demand for fresh local food. Several task forces operated under OFI - an Urban Agriculture department and a Food Safety Council. These teams complemented each other and the Mayor's Office to inclusively craft a holistic plan. It is important to note that not all offices or coordinating bodies were successful - Chicago's top-down implementation of policy initiatives failed to address needs of grassroots stakeholders which ultimately stifled the growth of urban agriculture.

## DESCRIPTION

The integrated structure of the coordinating governmental body provides the means of promoting timely issues, streamlining interactions between stakeholders, and allows for oversight and equitable political representation of stakeholders. A concern is that despite the city's numerous offices dedicated to sustainability, food safety, and environmental protection, the City lacks a specifically designated urban agriculture office or department, or a comprehensive and centralized resource. Precedence in other cities (and within New York) provides a suitable structure for the office, the main issue is determining the appropriate office, division or agency to house the entities for urban agriculture.

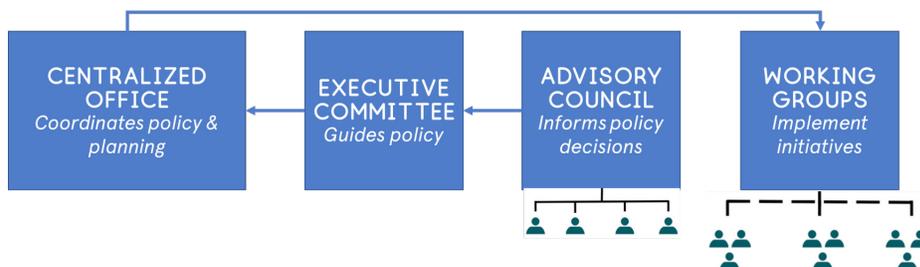
**The Centralized Office** operates as a central hub and figurehead for urban agriculture in New York City. They will coordinate the policy and planning of urban agriculture through a singular mission and agenda for the city. They will also be responsible for creating working groups and supplying them with necessary resources and direction.

**The Executive Committee** will establish meeting agendas, guide the strategic direction and work of the advisory council, and monitor the feasibility of policy initiatives. Members include a Mayor appointee, City Council appointee, Director of the Centralized Office, and 3 members voted in by the Advisory Council.

**The Advisory Council** is a permanent, rotating body of stakeholders representing those who live and work within the New York City, including; marginalized gardening communities, relevant city government appointees, youth leaders, academic researchers, commercial farmers, non-profit institutions and businesses and food and nutrition advocates and educators. The council will have an extensive membership of individuals whom are representative of the entrepreneurial, community, and education stakeholders.

**The Working Groups'** purpose is to work on issue specific policy oriented initiatives, chosen through the agenda outlined by the Executive Committee. The different working groups will consist of city agencies/ departments whose works relates directly with the initiative (ie. DCP and zoning), as well as including relevant members of the council. Based on the initiative the working groups will have varying time-scales for completion, as certain initiatives will have a larger scope.

### Proposed Organizational Structure

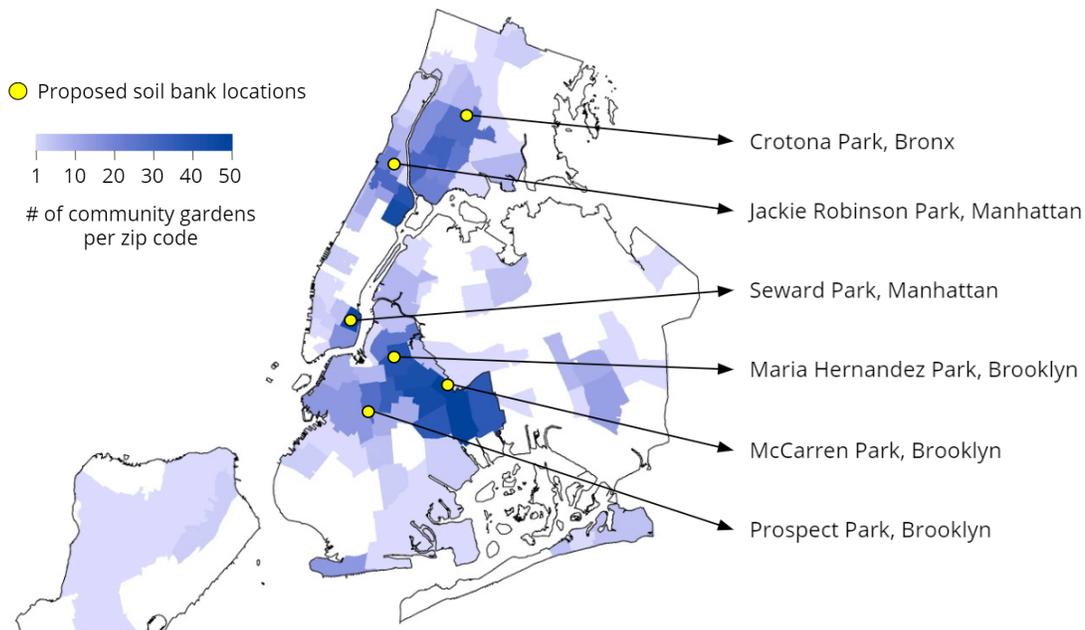


<b>GOVERNANCE</b>
2) Promoting involvement and awareness for everyday New Yorkers through a clearly stated central goal along with a marketing campaign around urban agriculture.
<p><b>INTENDED OUTCOMES</b></p> <ul style="list-style-type: none"> <li>+ Increased participation in urban agriculture from New Yorkers.</li> <li>+ Heightened awareness of the other benefits that urban agriculture provides to the city.</li> </ul>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES</b></p> <p>Department of Parks and Recreation, Department of Education, Department of Environmental Protection, Department of Health and Mental Hygiene, Office of Sustainability, Office of Recovery and Resilience</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>Time and funding required to develop the right goal for the public and marketing costs to promulgate the goal</p>
<p><b>PRECEDENTS</b></p> <p>Million Trees Movement, AgLanta Conference</p>

## DESCRIPTION

Environmentally-focused initiatives in New York City have benefited from marketable and recognizable campaigns, like the recent Million Trees NYC initiative all the way back to Earth Day. Devising a goal and campaign in the same vein can increase the general public's awareness of urban agriculture initiatives within their own neighborhoods. The end result could be a newfound appreciation for the issues of urban agriculture in addition to greater participation rates. A popular and recognizable champion has helped popularize other initiatives in the past, the celebrity advocate for urban agriculture in New York City is not established.

One example would be the creation of a publicly-available waitlist database for community gardens. It is hard to say which neighborhoods throughout the five boroughs have the greatest need for more community gardens. Plus, multiple interviewees have cited that there are instances when people that live within a couple of blocks of community gardens that have been there for years are not aware that these spaces exist. Generally, there should be a mechanism that allows community gardens to track garden participation better. This mechanism could be as simple as an app that NYC Parks GreenThumb creates to show where community gardens are, what their operating hours are, and if there's a waitlist to become a member. A database like this will also help both the government and citizens understand the spatial distribution of garden participation.



**Figure 7:** Proposed soil bank locations based on spatially correlating public parks with high density areas of community gardens in New York City.

## REGULATIONS

3) Investigate the feasibility of updating specific zoning ordinances to improve the conformity of urban agriculture as it is actually practiced.

## INTENDED OUTCOMES

- + Broaden the definitions of “agriculture” within existing use groups to include the varied and modern implementations of urban agriculture.
- + Allow agricultural access to all three main district classifications: Residential, Commercial, and Manufacturing. Currently Commercial uses are all but prohibited.
- + allow products of urban agriculture to be sold from lots zoned in “Residential” districts.
- + Permit urban agriculture as a “as-of-right” use in all districts to promote its development.
- + Permit small-scale entrepreneurs working on community gardens access to commercial markets.

## PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES

Department of City Planning, Department of Buildings, Office of Management and Budget, Department of Parks and Recreation, Department of Health and Mental Hygiene, Community Gardens

## FUNDING AND RESOURCE IMPLICATIONS

Task force functions would require time from members and resources to organize meetings, produce and distribute findings, and ensure the adoption of resultant amendments.

## PRECEDENTS

New York City’s Zone Green Amendment utilized similar task force to develop regulations around green infrastructure; definitions are also set in comprehensive zoning codes of Boston and Baltimore.

## DESCRIPTION

Several other major American cities have adopted more specific language around urban agriculture within their planning and zoning regulations. Within New York City, urban agriculture represents a significant and growing use for existing land; especially previously-vacant lands. To ensure consistency in future development, this solution suggests the Planning Department must **determine the feasibility of adopting a broader range of definitions for urban agriculture** (ie: hydroponics, controlled-environment agriculture, etc.) within its use groups.

Within the city's Zoning Resolution, Use Groups 4 and 17 are the only ones which specifically mention "agriculture" as a permitted use. These use groups represent Community Use Facilities (non-commercial) and manufacturing functions, respectively. Commercial application of agriculture are wholesale excluded from those pertinent use groups. From a survey of urban agriculture methods available in other parts of the country, this is a major restriction for many types of urban agriculture ventures. Through the Zone Green Text Amendment of 2012, rooftop commercial agriculture became permitted and more than half of existing commercial farms in New York City employ this method. **This recommendation is to include all methods of urban agriculture (beyond rooftops) access by amending Use Group 6, which relates to commercial food-producing facilities.**

Today, a new generation of urban growers recognizes the entrepreneurial potential of urban agriculture, despite being unable to officially sell its products beyond the borders of the residential zone. **This policy solution recommends that the statutes around "Home Occupation" in Residential districts include provisions for products of urban agriculture.**

While the expectation is that only a small fraction of community gardeners will attempt to become entrepreneurs, the options should be available for all practitioners. This is especially true given that over 80% of GreenThumb community gardens are located in Residential districts under the "Community Facility Use" use group. This use group does not permit commercial activity. However, a majority (58%) of these gardens are also located on land now owned by the Department of Parks and Recreation, which is a longtime supporter of New York's entrepreneurs on parkland.

Community gardens have historically operated outside the strictures of zoning regulations by taking over vacant plots of land. Today, urban agriculture is the primary use on many community gardens, yet the Zoning Resolution only views "agriculture" as an accessory use; equating it the same as a shed. **This solution recommends updating the Zoning Resolution to include "agriculture" as an as-of-right use in Use Group 4.**

Living Lots NYC, a map created by 596 Acres, has identified "Vacant Lots of Opportunity", which are underutilized lots around New York City not currently being used by community gardeners or other groups. This organization advocates for the productive use of these spaces. By cross referencing Living Lots NYC data (downloaded on March 22, 2018) with the Department of Planning's Zoning Tax Lot data (downloaded on March 21, 2018), researchers determined information about the zoning of community gardens and Vacant Lots of Opportunity (Appendix, Figure 2 and Figure 3). For the gardens that had zoning information (389), 80% of them are in residential zones.



# CASE STUDY 4

## City of Boston and Article 899

The city of Boston placed urban agriculture on the forefront of their food policy through the addition of Article 89 to its zoning code. The process started with the Mayor's Office of Food Initiatives collaborating with the Boston Redevelopment Authority (BRA) and Urban Agriculture Working Group, which also consisted of many stakeholders in the public and nonprofit community. Over the course of two years, they conducted research and held monthly stakeholder meetings with community members, scholars, business owners, and volunteers to carefully craft an amendment to Boston's zoning code that encourages urban agriculture. This product, Article 89, passed in 2013. Their process shows that the addition of a zoning policy for urban agriculture involves a wide array of stakeholders and requires significant time to accomplish.

Moreover, the BRA recognized that even with the addition of Article 89, zoning policies are difficult to navigate due to its inherently complex structure. BRA subsequently created a friendly-user guide, "Article 89: Made Easy," that is meant for the average Boston citizen interested in urban agriculture to understand the regulations. To ensure the integrity of residential areas that may have historical or other sensitive settings, the government incorporated a Comprehensive Farm Review process for certain urban farms in residential areas. The design and operational details are submitted to the BRA and planning staff for approval or modification before implementation.

Lastly, Boston promoted urban agriculture and its newly incorporated Article 89 by working with a tech company, Fathom Urban Design to create a mobile application called "urb.ag." The app allows residents to input their location or desired address, which then provides zoning information, what regulations apply, and if certain activities such as building aquaponics or raising animal husbandry applies. These series of initiatives taken by Boston highlights the importance of stakeholder input, zoning code change, and policy transparency that allows for successful urban agriculture.

<b>REGULATIONS</b>
<p>4) Establish urban agriculture as a planned community service and as a component of resilience; additionally, maintain a fair quota of community gardens per district.</p>
<p><b>INTENDED OUTCOMES</b></p> <ul style="list-style-type: none"> <li>+ Ensures the land tenure of existing community gardens spaces in spite of institutional priorities placed on housing and other private development.</li> <li>+ Creates avenues of growth for urban agriculture in communities that are currently underserved.</li> <li>+ Expands the total amount of green infrastructure within the city.</li> </ul>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES</b></p> <p>Department of City Planning, Department of Parks and Recreation, Department of Environmental Protection, Department of Health and Mental Hygiene, Community Gardens, Private Developers</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>Time from experts within the key city agencies is needed to develop effective the feasibility study and subsequent development of regulations. The costs of implementing, training, and enforcing these regulations must be accounted for.</p>
<p><b>PRECEDENTS</b></p> <p>Seattle’s P-Patch Community Gardens have the goal of obtaining one community garden per 2,500 city residents.<sup>8</sup> The siting of the community gardens is aided by a process that promotes social equity, especially in low-income areas. The City of Seattle allocated \$2 million as part of its Parks and Green Spaces Levy to support the construction of four new gardens over two acres. They far surpassed the initial goal, building 28 gardens over 8.1 new acres, meaning that community gardens can be an effective way of using city funding.</p>

## DESCRIPTION

Community gardens are increasingly being displaced and/or closed by affordable housing developments in New York City. Moreover, community gardeners are defined singularly as “stewards” of land owned primarily by the Department of Parks and Recreation. With neither the “status” of ownership nor a continuous source of funding, materials and gardeners, in place, these gardens are prone to closure.

The closure of each community garden or farm scan lead to diminished productivity as green infrastructure as well as the loss of a social gathering space and the respite from the city’s concrete landscape the gardens provide. Devising a just, transparent, and regularized system of ownership or long-term leasing for community gardens is important for:

1. Reinforcing the sense of community cohesion and connectedness for all city residents;
2. Contributing to the Department of Environmental Protection’s permanent green infrastructure, stormwater management goals among other resilience objectives;
3. Ensuring that all communities, as they pursue greater quality of life for themselves, their children and their fellow residents, can build and maintain a community garden.

The recommendation is to establish a pathway for developing such a land-tenure system to protect existing gardens and promote its potential future use.

**Option 1** | Establishment of community gardens through the lens of green infrastructure. New York City’s Department of Environmental Protection (DEP) established the Green Infrastructure Plan in 2010, which identified “Priority Tributary Areas” that are most susceptible to sewage overflows during rain events. With a goal to install 10 acres of green infrastructure for every 100 acres of impermeable surface by 2030, to date, only installed 0.7 acres have been installed, falling far behind on meeting this goal. A quota system for community gardens can be based on these “Priority Tributary Areas”, which can legitimize community gardens as a city service and protect existing and future spaces. **A task force should be established between the Department of Environmental Protection and the Department of Planning and a report on the feasibility of this kind of allocation presented to the New York City Council Committee on Land Use.**

**Option 2** | Allow Community Boards to establish initiatives for making urban agriculture a land-use priority in each district. Through the Uniform Land Use Review Procedure (ULURP), **community boards could require review of any lands that are currently used as community gardens or are potential future sites.** This option would defer the to each community on how it prioritizes urban agriculture against other land uses.

**Option 3** | Provide a **moratorium on development for community garden spaces under GreenThumb for a period of five years**, renewable when the community garden can prove it meets certain conditions. These conditions could include revision of each community garden’s charter, minimum membership quotas, and agreements to report production data. This type of system puts the fate the garden in the members’ hands.

<b>REGULATIONS</b>
<p>5) Encourage future developers (private and public) to include urban agriculture in the project plan as “open space” or “Privately-Owned Public Spaces”.</p>
<p><b>INTENDED OUTCOMES</b></p> <ul style="list-style-type: none"> <li>+ Make urban agriculture a feasible and attractive option for developers to include into new building developments—residential or commercial alike.</li> <li>+ Establish partnerships between developers and commercial ventures.</li> <li>+ Urban agriculture used as community space should be registered with GreenThumb as a new garden.</li> </ul>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES:</b></p> <p>Department of City Planning, Department of Buildings, Office of Management and Budget, Economic Development Corporation, Private Developers, Community Gardens</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>Time from experts within the key city agencies is needed to develop effective regulations. The costs of implementing, training, and enforcing these regulations must be accounted for.</p>
<p><b>PRECEDENTS</b></p> <p>Bronx Via Verde that includes rooftop agriculture as part of its programming (among other private developments with urban agriculture).</p> <p>Gotham Greens has a rooftop greenhouse located on a Whole Foods grocery store in the Gowanus neighborhood in Brooklyn.</p>

## DESCRIPTION

*There are several options for engaging developers to include urban agriculture either for community and residential use or as commercial partnerships.*

**Option 1** | *Utilize Privately Owned Public Space (POPS) as ways of integrating urban agriculture in return for other developer concessions. The 1961 POPS amendment to the Zoning Resolution provided the first inclusion of accessory open space planning within the city. While many renditions of plazas exist for this service, none knowingly exist as urban agriculture. Incorporating urban agriculture (specifically community-accessed urban agriculture) can be a method of keeping POPS active and vibrant while increasing the amount of spaces for urban agriculture and green infrastructure throughout the city. In conjunction with existing grants for green infrastructure through the Department of Environmental Protection, this could attract developers to make urban agriculture a more viable option.*

**Option 2** | *Similarly, an “open space set-aside” exaction for community gardens could be included in future affordable housing developments under the Mayor’s plan to protect community gardens from displacement. This exaction requires a small quantity of open space for each developed plot of land. Combined with other incentive (such as green infrastructure grants), the open space set-asides could reap large benefits for retaining community gardeners when affordable housing takes precedence in New York City.*

# CASE STUDY 5

## Via Verde Complex<sup>11,12</sup>

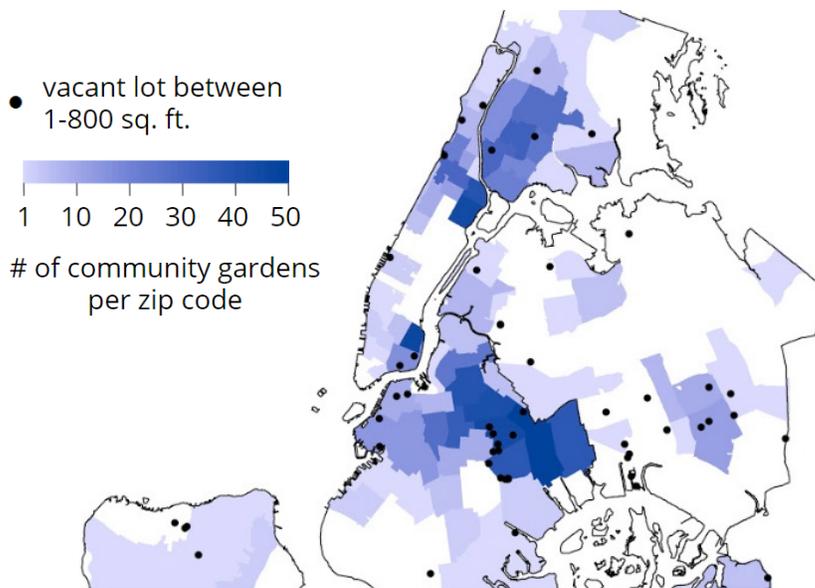
Located on a brownfield site in the South Bronx, the Via Verde is a mixed-income residential complex that succeeds in offering sustainable design with affordable housing. Managing Director Paul Freitag of Jonathan Rose Companies, one of the two developers in the project, notes the regulatory challenges surrounding development and zoning. Special permits were needed since many of the project's unique features did not meet standard city requirements. However, these challenges were mitigated with the development team taking proactive steps in working closely with city agencies and all related stakeholders, including the New York City Council, Bronx Community Board 1, New York State Department of Environmental Conservation, New York State Research and Development Authority, New York Department of Housing and Development, and New York Department of Housing Preservation and Development. As a public-private partnership, the project had much support and resources, including a city-owned development site. In total, the project consisted of 19 public, private, and nonprofit funding sources. The project success indicates that POPs or other open set-aside spaces (recommendation 4) would greatly benefit developers that plan to incorporate sustainable designs and rooftop gardens into their housing projects. Via Verde's most prominent feature are the green roofs that include community-grown gardens, solar panels, and storm-water reclamation systems.

# CASE STUDY 6

## The Power of Data in Urban Agriculture

Throughout the development of these recommendations, data was useful to further understand the role of urban agriculture, to validate some recommendations with evidence, and to spur more questions about how urban agriculture can be more beneficial.

One creative use of data can be to identify vacant lots that are most likely to become future locations for urban agriculture. Among the existing vacant lots across the five boroughs, there is competition with other needs such as affordable housing. However, upon closer inspection, there are 77 lots across the city that are under 800 square feet, which is an undesirable size for housing development but accessible to gardeners,



**Figure 8:** Underutilized vacant lots under 800 sq. ft. that are too small for affordable housing development, but potentially feasible for community members to grow food there.

## OPERATIONS

6) Create a comprehensive database of metrics, using existing data and new data sources, for measuring the benefits and progress of urban agriculture.

## INTENDED OUTCOMES

- + A membership census of each practitioner of urban agriculture, from community gardens to school gardens to entrepreneurial ventures.
- + A measure of tangible metrics such as harvest yields, rainwater capture, water use, types of products grown, distribution networks.
- + A survey of intangible metrics such as practitioner satisfaction, improvements needed, demand for members, etc.

## PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES

Department of City Planning, Department of Parks & Recreations' GreenThumb, Department of Environmental Protection, Department of Education, Office of Management and Budget

## FUNDING AND RESOURCE IMPLICATIONS

Funding to investigate, develop, and aggregate all sources of data and the technological infrastructure needed to manage the database and its publications.

## PRECEDENTS

City of Boston - app for new farms and gardens;  
Farming Concrete - collected operational data worldwide;  
596 Acres - New York-specific maps about available land;  
Department of Parks and Recreation - Annual parks review.

**DESCRIPTION**

Community gardens and community farms should prioritize documenting the quantitative and qualitative benefits that these spaces provide to people so organizing around them is easier if and when development threatens community gardens across the city. Data-centric programs such as 596 Acres are elevating the level of discourse surrounding the benefits of urban agriculture. Beyond the land-use issues that 596 Acres focuses on, there is a wealth of data that can be aggregated among other sources such as GreenThumb, Department of Environmental Protection, and Department of Education to provide a more holistic case for advancing the benefits of urban agriculture (through the centralized coordinating body). The Department of Parks and Recreation already has a census and review system for its parks system, but does not include its GreenThumb community gardens. Expanding and centralizing the data could be used to identify gardens or parks in need of improvement and assistance.

<b>OPERATIONS</b>
7) Provide summer scholarships for NYC high school students to gain education and training in urban agriculture through immersive experience
<p><b>INTENDED OUTCOMES</b></p> <p>+ Due to the breadth and success of New York City schools incorporating gardening into their science curriculum, an entire cohort of students may be passionate about the potential of urban agriculture. Such a program would provide each student appreciable skills useful in the workforce and within the urban agriculture. Given the challenges in staffing urban agriculture sites, this program may provide timely and knowledgeable labor.</p>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES</b></p> <p>Department of Education, Department of Youth and Community Development, Department of Parks and Recreation, Department of Small Business Services, Department of Parks &amp; Recreation's GreenThumb, GrowNYC</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>This is a mission-driven body that will require time and financial resources from a variety of sources to remain effective. Main costs include grant funding, operations for developing curricula and training</p>
<p><b>PRECEDENTS</b></p> <p>Grants for young farmers exist at a national, state, and even regional level. GrowNYC even has grants for regional entrepreneurial farmers, but not student grants.</p>

## **DESCRIPTION**

Over 40% of New York City public schools have access to urban agriculture in a variety of forms, from garden site visits to onsite school gardens to indoor hydroponic labs. Within these “living laboratories,” students gain an immersive and tangible experience with biology and their food systems. Urban agriculture serves as an important part of STEM education curricula, provides skills for career readiness, and generates ideas for entrepreneurs. Developing a more robust base of human capital is essential to perpetuating community gardens and farms. Therefore, creating buy-in through younger generations is a central step in continuing a successful community farm and garden landscape in New York City.

For urban agriculture to stay relevant in New York City into the next generation, the city must recognize and develop those students that are most passionate about the intersectionality of issues addressed by urban agriculture. Three programs can strengthen the full “ecosystem” of urban agriculture within the context of education:

1. Strengthening the existing curriculum at the elementary and middle school levels;
2. Creating apprenticeship programming at the high-school level – with scholarships and immersive programming;
3. Designing and development workforce development training as an extension

<b>OPERATIONS</b>
8) Qualify existing urban agriculture projects for continuing green infrastructure grants.
<p><b>INTENDED OUTCOMES</b></p> <ul style="list-style-type: none"> <li>+ New York City recognizes existing urban agriculture projects as beneficial green infrastructure, which justifies further municipal investment.</li> <li>+ Out of pocket costs can be lowered for practitioners, which can turn into more city-wide membership</li> </ul>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES</b></p> <p>Department of Environmental Protection, Department of Parks and Recreation, Office of Recovery and Resiliency, Department of Education, Community Gardens, Entrepreneur Growers, School Gardens</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>In addition to the value of the annual grant funding, the Department of Environmental Protection should conduct research on the operational costs of community gardens overall, which can provide more accurate and effective grant allocations.</p>
<p><b>PRECEDENTS</b></p> <p>Detroit Water and Sewerage Dept. \$2.3M grant for continuing operations on green infrastructure projects.</p>

## DESCRIPTION

*Within the conversation of resilience, green infrastructure provides tangible ecosystem services for limiting combined sewage overflows. Currently the Department of Environmental Protection (DEP) has zoned areas according to need of green infrastructure, and grant funding is provided only to new projects. However, existing urban agriculture projects are not eligible for grant funding, which requires its members to search for operational funds in other places. Studies support the effectiveness of community gardens and farms in containing rainwater, and the EPA's guidelines for green infrastructure stress the importance of operations and maintenance costs. The DEP can view these grants as payment for ecosystem services rendered by the community garden, which will help defray out-of-pocket expenses made by garden members. Such grants can be traced through GreenThumb and backed by their continued relationship with each garden.*

*Further, to date, it has cost DEP over \$500 million to install less than one acre of green infrastructure for every 100 acres of impermeable surface to meet the goals of its 2010 Green Infrastructure Plan. However, to be on track to meet the 2030 goals, in less than 2 years, DEP is supposed to have over 6 times as much installed capacity as it does today. To that end, DEP is committed to spending nearly \$1 billion more to achieve its goal by 2030.<sup>10</sup> Since community gardens are producing ecosystem services through stormwater management, these expenditures may be better spent investing in expanding urban agriculture in NYC. While DEP also administers a grant program for private property owners and community-based organizations to build green infrastructure, grants are only for new projects. Plus, at this point, the City is only a fraction of the way to its green infrastructure goals for 2030 and needs to consider more cost-effective and quickly scalable ways to manage stormwater, like bolstering support for community gardens.*

<b>OPERATIONS</b>
<p>9) Improve urban agriculture operations through streamlining access to adequate soil and water supplies, building networks for distribution, and providing best practices training.</p>
<p><b>INTENDED OUTCOMES</b></p> <ul style="list-style-type: none"> <li>+ Increased frequency and supply of soil and compost for practitioners through the Clean Soil Bank and the Dept. of Sanitation Compost Project.</li> <li>+ Improve access to water that is not reliant on the weather (rainwater harvesting) or bureaucratic processes (hydrant permit).</li> <li>+ Establish a program for improving the operations of gardens and farms directly through contact with experts.</li> </ul>
<p><b>PRINCIPLE STAKEHOLDERS AND LEAD AGENCIES</b></p> <p>Department of Parks and Recreation, Department of Sanitation, Office of Environmental Remediation, Community Gardeners, Cornell Cooperative Extension</p>
<p><b>FUNDING AND RESOURCE IMPLICATIONS</b></p> <p>Alignment and connection of the different agencies and initiatives will require time and meeting locations.</p> <p>Funding and skilled personnel for improvement of existing gardens will be required.</p>
<p><b>PRECEDENTS</b></p> <p>Atlanta – Grows-A-Lot Academy program for practitioners</p>

## DESCRIPTION

One drawback of the decentralized nature of urban agriculture in New York City is unequal access to vital resources like soil and water. GreenThumb provides access to soil for establish gardens, but infrequently. Community gardeners cite lack of access to soil as a operational difficulty in starting farms. The Office of Environmental Remediation preserves good soil from excavation from development with projects that need soil. The Dept. of Sanitation's Compost Project is actively looking for new outlets for the city's organic compost in an effort to meet OneNYC's waste reduction goals.

Some community gardens do not have direct access to water, and must either tap a nearby fire hydrant (with permission) or collect rainwater. The feasibility of connecting to the city's water supply and reducing the need for indirect water sources must be discussed.

Even though contamination levels are similar to other cities, community gardeners should take safety precautions when working with soils in urban areas. For example, the combination of simple soil management practices and appropriate human behavior before, during, and after working with soil can reduce gardeners risk of exposure to pollutants that persist in the soils of the city. It is important to note that plants relationship to these contaminants is different depending on which one you are talking about. For example, plants do not uptake lead readily so there's a higher risk being exposed to lead by working with the soil than eating the plants themselves. Barium has an opposite relationship so there's a higher risk of exposure from eating plants contaminated with barium than working with the soil. The U.S. Environmental Protection Bureau (EPA) has a helpful webpage called "Resources about Brownfields and Urban Agriculture" with fact sheets and guidelines for cities like New York to implement into local policy.<sup>13</sup> By keeping soil pH levels at appropriate levels and regularly monitoring soil contamination levels, soil-based gardeners can not only better protect themselves, they can also educate community members about the origins and effects of pollutants in the city. Groups like the Legacy Lead Consortium for New York City and Healthy Soils, Healthy Communities are working to educate New Yorkers about these contaminants and the ways in which they can safeguard themselves and their family. Although it is important to be aware of the contaminants that exist in the city, the benefits of community gardening far outweigh the risks, even if some of the benefits are difficult to quantify.

*Additionally, urban growers must be afforded a way to continue improving; whether it is the garden's grounds, the methods used for cultivation, or the end use of the produce. A program for city-wide garden improvement may be established to provide free assistance in expanding a garden's capabilities. At a city-wide level, the continued improvement of gardens may increase crop production, participation, and infrastructure resilience.*



# THE BIG PICTURE

Urban agriculture combines two fundamental human innovations that are classically at odds, the city and the farm. It combines the best qualities of both; human ingenuity and persistence when facing ever-growing constraints. This is exemplified by alternative methods of agriculture (like hydroponics) that use less water and land than conventional farming. However, a conventional farmer would think twice before utilizing hydroponics, and a modern city planner might not consider the farm as a reasonable use of land. Urban agriculture is a paradox, yet it perseveres in many forms like community farms and school gardens.

This report has one primary goal, for New York City's government to embrace the paradox and treat urban agriculture as a vital city service.

What began as reclamation of vacant corners of the City has ended up growing organically into hundreds of decentralized networks, each one employing urban agriculture for its own benefit. This means it is a great task to unite all the varied practitioners, from the ones who grow food to preserve a cultural heritage to the ones who see a reasonable investment. However, the benefits are worth the effort.

Because of its heterogeneity, there is no "silver bullet" to improve and expand urban agriculture. It already engages youth in science, technology, engineering, art and mathematics (STEAM) education, shows promise in workforce development in farming, and connects people to their own cultures and communities. Most recently, as this report advocates, it is a tool for improving urban resilience. Therefore, this report is not a plan to manage growth, instead it aims to fundamentally advance understanding about and change our attitudes: urban agriculture is a vital city service and residents will directly benefit from its increased use and promotion.



*Eagle Street Rooftop Farm, Brooklyn<sup>58</sup>*

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58 <https://www.facebook.com/rooftopfarmer/photos/a.110448052325132.6299.105973792772558/721382294565035/?type=3andtheater>

## SUPPLEMENT 1: RESILIENCY

In terms of resiliency, New York City (NYC) has made great strides in the past decade due to comprehensive plans like Mayor Bloomberg's PlaNYC 2030 and Mayor de Blasio's subsequent OneNYC. The economic cost of unsustainable and inefficient city operations, compounded by the increasing susceptibility to climate change effects, prompted a thorough discussion of what the city needs to do to become more resilient. Resiliency is essentially



# APPENDIX

the ability of a system to rebound from a perturbation. After Hurricane Sandy hit in 2012 the Bloomberg administration chose to focus on the physical environment as a means of making NYC safer. However, this ignored a much broader definition of resiliency which came out of the Rockefeller Foundation's 100 Resilient Cities initiative, which includes, "chronic food and water shortages."<sup>59</sup> As a critique to PlaNYC, food and agriculture advocates helped to create food policy plans in the form of FoodNYC, compiled by then Manhattan Borough President Scott Stringer and the later FoodWorks, compiled by then City Council Speaker Christine Quinn. FoodWorks made a clear aspiration for the city to become "a leader in food system's change."<sup>60</sup> These plans set out a vision and goals of city government to address and strengthen local food systems which influenced the updated version of PlaNYC, released in 2011.<sup>61</sup> Though it included considerations for food, PlaNYC 2.0 lacked any capital investments, as urban agriculture policies were not seen as "actionable."<sup>62</sup> With de Blasio's OneNYC, there was an earnest effort to broaden the definition of resiliency, binding income inequality with sustainability and creating more space for the development of urban agriculture and cultivation.

Through OneNYC's Vision 2, *Healthy Neighborhoods, Active Living*, there has been a concerted effort to include a greater focus on the development of urban agriculture such as commitments to study emerging opportunities, creation of larger scale urban farms, supports for nutrition education, and promotion of farm stands, among other initiatives.<sup>63</sup> There have also been great efforts by Gale Brewer (Manhattan Borough President) and Eric Adams (Brook-

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59 100 Resilient Cities (2016). Our Cities. Accessed from <http://www.100resilientcities.org/cities/>

60 New York City Council (2010). FoodWorks: a vision to improve NYC's food system. The New York City Council, New York City.

61 Campbell LK (2016). Getting Farming on the Agenda: Planning, Policymaking, and Governance Practices of Urban Agriculture in New York City. *Urban Forestry and Urban Greening*: 19, pp. 295-305, doi:10.1016/j.ufug.2016.03.011

62 City of New York (2007). PlaNYC: A Greener, Greater New York. Accessed from [http://www.nyc.gov/html/planyc/downloads/pdf/publications/full\\_report\\_2007.pdf](http://www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf)

63 City of New York (2015). OneNYC: The Plan for a Strong and Just City. Accessed from <http://www1.nyc.gov/html/onenyc/index.html>

lyn Borough President), to increase focus on developing urban agriculture in their respective boroughs and have called for a greater city-wide effort to encourage its development. It is now well understood that urban agriculture can have great and multifarious benefits in terms of social resilience;<sup>64</sup> however, agricultural activities are stretched across bureaucratic silos. A lack of coordination has made it difficult to properly appraise the benefits of urban agriculture in a meaningful way, thus it is difficult to map out its potential. Despite having a robust and extensive history of urban agriculture, NYC lacks a comprehensive goal or a governance structure which encourages wider civic engagement and involvement in farming and gardening. For instance, GreenThumb, as part of the Department of Parks and Recreation, is not included in the parks rating system and does not receive the same amount of attention as other park infrastructure.<sup>65</sup> If urban agriculture is better accounted for and understood for its many co-benefits outlined throughout this report, there could be greater integration of it into NYC's resiliency planning and how it relates to physical and social infrastructure.

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64 Cohen N, and K Reynolds (2014). Resource Needs for a Socially Just and Sustainable Urban Agriculture System: Lessons from New York City. *Renewable Agriculture and Food Systems*: 30(01), pp. 103-114, doi:10.1017/s1742170514000210

65 Campbell LK (2017). *City of Forests, City of Farms: Sustainability Planning for New York City's Nature*, Cornell University Press, Ithaca, NY, USA, ISBN: 9781501707506