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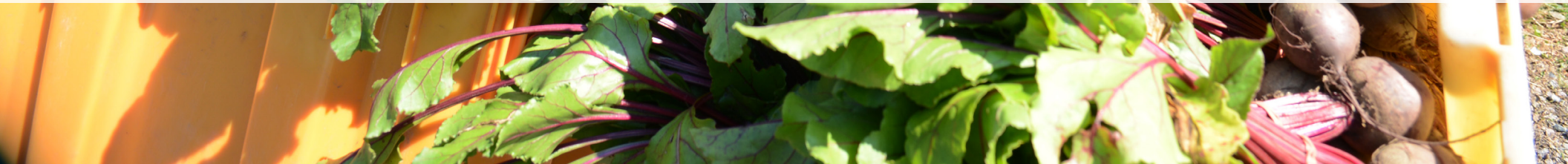
Article 89 Made Easy:

Urban Agriculture Zoning For The City of Boston



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INTRODUCTION

Why "Made Easy"?

Article 89 is the newest addition to the Boston Zoning Code that applies citywide. The Zoning Code is a legal document that establishes rules around land use, building dimensions, and permitting requirements for the city. Through the Zoning Code, Boston promotes community development in a way that is consistent with the needs, desires, and character of the city's neighborhoods.

Because zoning language can be difficult to understand, Article 89 Made Easy attempts to translate Article 89 into plain English. The Boston Redevelopment Authority hopes that residents interested in urban agriculture find the guide a helpful way to navigate Article 89. Whether you are interested in starting a farm, adding a greenhouse to your building, or raising chickens in your backyard, this guide helps to demystify what may seem like

confusing regulations.

What is Urban Agriculture?

Urban agriculture takes many forms, from ground-level produce farms to rooftop greenhouses to backyard honeybees. Through the addition of Article 89, the City of Boston has updated its Zoning Code to facilitate the development of many diverse urban agriculture activities. Article 89 focuses on reducing barriers to commercial agriculture, thereby promoting economic opportunity and self-sufficiency for food producers. Boston already allows significant personal and community gardening activities, which is unchanged by Article 89.

Why Farm in the City?

Urban agriculture holds the promise of boosting food access in Boston's underserved communities, providing new opportunities for local business growth, and developing knowledge and education about healthy eating. Urban farms in Boston can be a source of fresh produce for neighborhoods, local restaurants and shops, as well as an opportunity for community-supported enterprises to fill valuable educational and social roles. The practices addressed in Article 89 allow Boston residents to grow and access healthy foods while ensuring farming activities remain compatible with their urban surroundings.

Key Zoning Terms

Several common zoning terms appear throughout. Depending on location, the Zoning Code treats land uses as Allowed, Conditional, or Forbidden.

- Allowed uses are permitted outright (meaning no public hearing is required), but may require administrative permits, approvals and/or reviews (e.g., water permits, fire permits).

- Conditional uses may be permitted, but first require a public hearing before and approval by the Zoning Board of Appeals before a conditional use permit is granted.

- Forbidden uses require a variance granted by and a public hearing before the Zoning Board of Appeals. A variance grants permission to deviate from the Code's requirements. It is often more difficult to obtain a variance

TYPES OF URBAN FARMS

Tomatoes growing in the Food Project's Greenhouse in Roxbury, MA

Article 89 allows farming in different parts of the city based on the underlying zoning districts, the size of the proposed farm, and the nature of its operations. In many cases, Article 89 allows farming outright, meaning no public hearings are required, although special permits and/or administrative reviews may be required by other city affiliates (i.e., Boston Landmarks Commission, Boston Fire Department, Boston Parks and Recreation Department, Boston Water and Sewer Commission, Boston Public Health Commission, etc). For larger farms, Article 89 may require *Comprehensive Farm Review* (an administrative review conducted by BRA staff) or a *Conditional Use Permit* (requiring a public hearing).

Urban farms fall into one of two general types: ***Ground-level Farms*** and ***Roof-level Farms.*** The following sections explain where Article 89 allows farms of each type based on their size and location.

Ground-Level Farms

As the name suggests, a ground-level farm refers to a farm located on the ground plane. Such farms may include row crops planted in the ground or raised beds, farm structures such as greenhouses, hydroponics, aquaponics and aquaculture, and/or other farm practices. Article 89 sets forth rules that govern the uses of land (i.e., whether a use is *allowed*, *conditional*, or *forbidden*) for ground-level farms based on their size and location. All ground-level urban farms up to one acre (43,560 square feet) are allowed outright in all zoning districts in the city. Ground-level farms greater than one acre are allowed in industrial areas and are conditional in all other areas.

For details of zoning for ground-level farms, see Section 89-4.

The Food Project's Ground-Level Urban Farm in Roxbury, MA

USE REGULATIONS FOR GROUND-LEVEL FARMS

Zoning*	Small (less than 10,000 SF)	Medium (10,000 SF - 1 acre)	Large (greater than 1 acre)
Residential (e.g., 1F, 2F, MFR)	Allowed	Allowed	Conditional Use
Commercial (e.g., L, LC, NS, B, CC, EDA)	Allowed	Allowed	Conditional Use
Industrial (e.g., I, M, LI)	Allowed	Allowed	Allowed
Institutional (e.g., IS, NI, CF)	Allowed	Allowed	Conditional Use

*Zoning categories in this table and following tables are generalized. For specific zoning sub-districts, see Article 89, Appendix C.

Roof-Level Farms

Roof-level farming offers the opportunity to use space more efficiently, moderate building temperatures, and create a greener city.

Because roof-level farming involves greater technical complexity than ground-level farming, compliance with the building/safety and fire codes is required. For example, the Boston Fire Department requires a Fire Protection Engineering Report for all rooftop farming operations.

Roof-Level Open Air Farms

As shown in the accompanying table, open air roof-level farms up to 5,000 square feet are allowed in all zoning districts and subdistricts. Open air roof-level farms greater than 5,000 square feet are conditional in all residential and small scale commercial subdistricts, and allowed in all other districts and subdistricts.

Roof-Level Greenhouses

Roof-level greenhouses are conditional in all residential and small scale commercial districts and subdistricts, and allowed in all other zoning districts.

For details about zoning for roof-level farms and greenhouses, see Section 89-5.

USE REGULATIONS FOR ROOF-LEVEL FARMS

USE REGULATIONS: URBAN FARM, ROOF-LEVEL AND ROOFTOP GREENHOUSE				
	Open Air			Rooftop Greenhouse
GENERALIZED ZONING CATEGORY	**Small (less than 10,000 sq ft)**	**Medium (10,000 sq ft - 1 acre)**	**Large (greater than 1 acre)**	**Any Size**
Residential (e.g., 1F, 2F, MFR)	Allowed	Conditional Use	Conditional Use	Conditional Use
Small-scale Commercial (e.g., L, LC, MFR/LS)	Allowed	Conditional Use	Conditional Use	Conditional Use
Large-scale Commercial (e.g. NS, B, CC, EDA)	Allowed	Allowed	Allowed	Allowed
Industrial (e.g., I, M, LI)	Allowed	Allowed	Allowed	Allowed
Institutional (e.g., IS, NI, CF)	Allowed	Allowed	Allowed	Allowed

Ledge Restaurant
Dorchester, MA
4,000 SF

Freight Container Farming

Freight containers are an emerging medium for hydroponics and aquaponics. Originally designed for shipping by train, these containers can become obsolete for shipping after about five years when their refrigeration units fail. Thousands of obsolete freight containers are available to be recycled for other purposes. Because they already come with insulation, they are ideal for growing year-round in a climate controlled, artificially illuminated environment. Due to the efficient nature of hydroponics and aquaculture, relatively large amounts of food can be grown in these small containers.

The "Farming Practices" section of this Guide (under "hydroponics" and "aquaponics") describes how Article 89 deals with freight container farming. For use regulations for freight container farming, see Article 89, section 11(1) and (2). For design review requirements, see Section Article 89, Section 11(4).

Typical freight container (40 ft x 8 ft)

Example of produce growing in a freight container
PodPonics - Atlanta, GA

The interior of a freight container farm lab

FARM STRUCTURES

Urban farming includes more than just rows of planted crops. Urban farms will often use farm structures that provide specialized growing environments, extend the growing season, offer storage space for equipment, and serve other important functions. For farm structures on ground-level urban farms, Article 89 requires that farms comply with the height limits and setback requirements of the underlying zoning district in that neighborhood (http://www.bostonredevelopmentauthority.org/zoning). Rooftop greenhouses cannot be higher than twenty-five feet, and setbacks for any rooftop greenhouse are determined through the building/safety and fire codes.

SEASON-EXTENDING STRUCTURES

A **COLD FRAME** is a temporary, unheated outdoor structure used for protecting seedlings and plants from the cold. Under Article 89, cold frames may be no higher than thirty-six inches (36") and may be erected for up to 6 months during any given calendar year.

A **HOOPHOUSE** is an outdoor structure made of flexible PVC piping or other material covered with translucent plastic, constructed in a "half-round" or "hoop" shape, generally tall enough for a person to enter standing up.

A **GREENHOUSE** is a permanent structure made of glass, plastic, or fiberglass in which plants are grown year-round under controlled temperature and humidity settings. Both ground-level and rooftop farms use greenhouses.

FARM STANDS include tables, stalls, or tents operated by a farmer for the sale of agricultural or horticultural products. [Cross reference to the new Markets/Sales section]

Please see Section 89-12 for use regulations and placement guidelines of farm stands.

SHADE PAVILIONS and **GAZEBOS** provide space for farm workers and visitors to rest, escape the sun, and perhaps prepare the produce for sale.

SHEDS are utilized on many farms to store tools and equipment, or as a space to pack farm products.

Signage

All ground-level urban farms need to post at least one identification sign stating only the name of the urban farm and contact information. The identification sign cannot exceed six square feet in total area, and must be affixed to a fence or a structure at a height of no more than four feet from the ground.

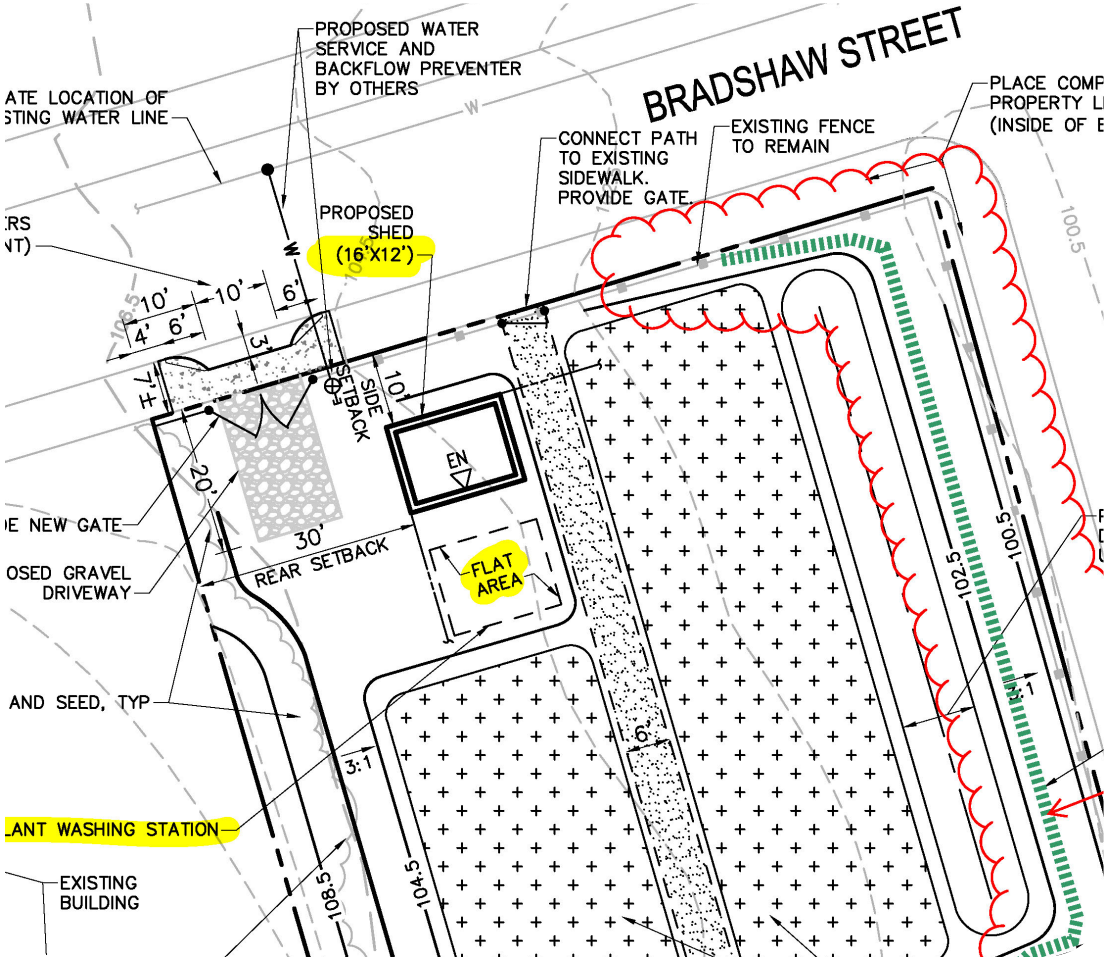
Temporary farm stand signs are allowed to advertise farm stands on any permitted urban farm but can only be in use during sales hours. They must be removed and stored when the farm stand is not in operation, and cannot encroach upon sidewalks, driveways or other rights-of-way.

Farms may apply for more signage than what is required or allowed in Article 89 (e.g., more than one sign, larger dimensions). BRA review of this additional signage will occur either under Comprehensive Farm Review (see Chapter 3 of this document), or if the farm is not undergoing CFR, through an administrative BRA staff level review called Comprehensive Sign Design Review.

Urban farm sign that meets the requirements of Article 89

Temporary farm stand signs that meet the requirements of Article 89

COMPREHENSIVE FARM REVIEW



Text

Article 89 introduces Boston to uses, structures, and activities that will be new to the city's landscape and neighborhoods. Because the BRA expects new urban farms to operate in residential areas, sensitive siting and design will play an important role in promoting good relations between residents and farmers. Through Comprehensive Farm Review (CFR), the BRA will work with farmers to make sure that the farm will be a good neighbor in that agricultural activities of a certain scale will be designed and operated to be sensitive to their surroundings. CFR is an administrative review by the BRA Urban Design staff and will take up to 45 days after the farm plan is submitted.

See Section 89-6 for more information.

When is CFR Required?

Article 89 requires CFR for urban farms depending on size and location within a certain type of zoning district. The threshold for CFR also depends on whether agricultural activities take place at ground level or on a rooftop. In general, Article 89 requires the least intensive review for urban farms in industrial subdistricts with no abutting residential properties or zoning districts. Alternatively, CFR will be required the most for rooftop farms and greenhouses locating in residential and small scale commercial districts due to potential visual and lighting impacts on neighbors.

This vacant site in Roxbury is just over 10,000 square feet. A site this size would require CFR.

USE REGULATIONS AND CFR REQUIREMENTS GROUND-LEVEL FARM			
ZONING	**Small (less than 10,000 sq ft)**	**Medium (10,000 sq ft - 1 acre)**	**Large (greater than 1 acre)**
Residential (e.g., 1F, 2F, MFR)	Allowed / No CFR [2]	Allowed / CFR	Conditional Use
Commercial (e.g., L, LC, NS, B, CC, EDA)	Allowed / No CFR [2]	Allowed / CFR	Conditional Use
Industrial (e.g., I, M, LI)	Allowed / No CFR [1, 2]	Allowed / No CFR [1, 2]	Allowed / CFR
Institutional (e.g. IS, NI, CF)	Allowed / No CFR [2]	Allowed / CFR	Conditional Use
[1] Exception: Any Ground-Level Urban Farm in any Industrial (without residential uses) Subdistrict where the property abuts a Residential Subdistrict			
[2] Exception: Any Ground-Level Urban Farm in a Neighborhood Design Overlay District (NDOD) or Greenbelt Protection Overlay District (GPOD)			

CFR for Ground-Level Farms

Any ground level urban farm which occupies less than 10,000 square feet does not require CFR in any zoning district. Any ground-level urban farm greater than 10,000 SF will require either CFR or a conditional use permit, depending on the zoning district in which it is located, and whether the location abuts a residential zoning district or is within a Neighborhood Design Overlay District (NDOD) or a Greenbelt Protection Overlay District (GPOD). CFR for ground-level urban farms between 10,000 square feet and one acre will not involve the Zoning Board of Appeals. However, once a farm exceeds one acre in size, CFR no longer applies and a conditional use permit (Zoning Board of Appeals) is required with BRA Design Review before the farm can be permitted. This can take up to 6 months to obtain.

See the chart at the top for more detail.

USE REGULATIONS AND CFR REQUIREMENTS ROOF-LEVEL FARM				
ZONING	**Small (less than 10,000 sq ft)**	**Medium (10,000 sq ft - 1 acre)**	**Large (greater than 1 acre)**	**Any Size**
Residential (e.g., 1F, 2F, MFR)	Allowed / No CFR [2, 3]	Conditional Use	Conditional Use	Conditional Use
Small-scale Commercial (e.g., L, LC, MFR/LS)	Allowed / No CFR [2, 3]	Conditional Use	Conditional Use	Conditional Use
Large-scale Commercial (e.g., NS, B, CC, EDA)	Allowed / No CFR [2, 3]	Allowed / CFR	Allowed / CFR	Allowed / CFR
Industrial (e.g., I, M, LI)	Allowed / No CFR [2, 3]	Allowed / No CFR [1, 2, 3]	Allowed / CFR	Allowed / CFR
Institutional (e.g., IS, NI, CF)	Allowed / No CFR [2, 3]	Allowed / No CFR [2, 3]	Allowed / CFR	Allowed / CFR
[1] Exception: Any Roof-Level Urban Farm in any Industrial (without residential uses) Subdistrict where the property abuts a Residential Subdistrict				
[2] Exception: Any Roof-Level Urban Farm in any Subdistrict that contains a Farm Structure visible from a public street or public open space				
[3] Exception: Any Roof-Level Urban Farm in a Neighborhood Design Overlay District (NDOD) or Greenbelt Protection Overlay District (GPOD)				

CFR for Roof-Level Farms

Open air roof-level farms that are >5,000 square feet will require either CFR or a conditional use permit, with a few exceptions. A conditional use permit is required in more sensitive zoning districts (i.e., containing residential) while CFR is required in less sensitive zoning districts. See the chart above for more detail.

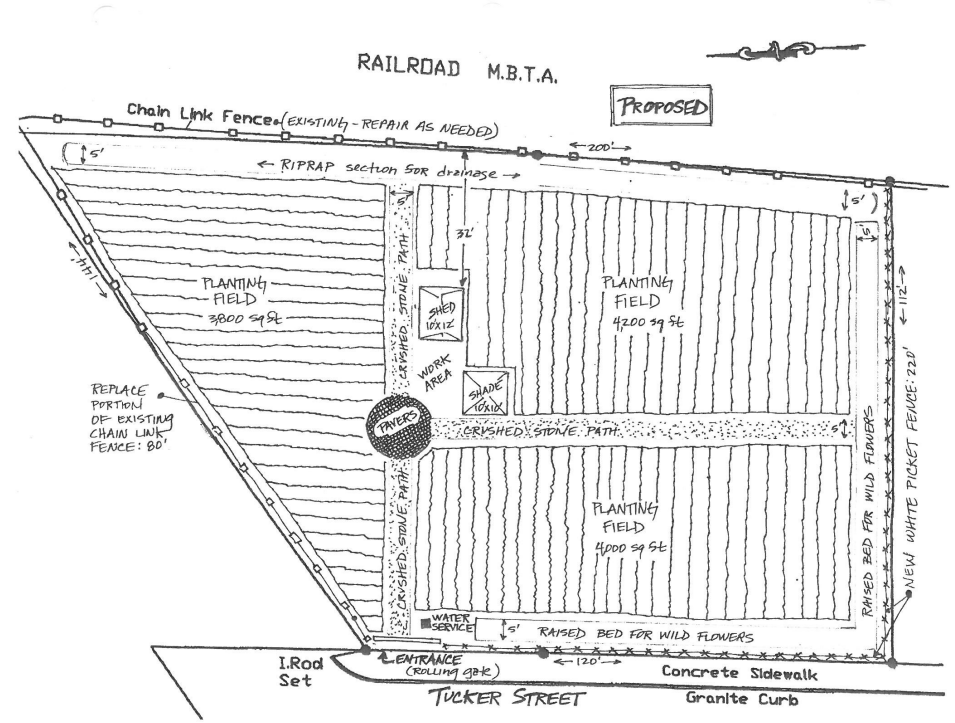
Rooftop greenhouses require a conditional use permit in all residential and small-scale commercial/mixed use districts. Rooftop greenhouses allowed outright in all other zoning districts will require CFR.

Brooklyn Grange- Flagship Farm
Long Island City, NY
43,000 SF

CFR PROCESS

Once the farmer is certain that the urban farm will be allowed outright, the BRA Urban Design Department works with the farmer on CFR. The assigned BRA designer helps to ensure that the farm plan is complete and assists the farmer in creating a design that minimizes potential issues for neighbors.

CFR does not require professionally drawn plans; farmers may submit plans and designs that are hand-drawn sketches as long as required information is clearly shown. Within five days of receiving the full farm plan design package, the BRA will notify the Mayor's Office of Neighborhood Services, the relevant City Councilor and neighborhood association, and all property owners within 300 feet of the proposed urban farm. The BRA will accept comments from those groups for 14 days, and relevant comments addressing design only will be taken into consideration as part of the review.



Example of a sketch plan required for CFR

CFR cannot stop a farm from moving forward given that it is an allowed use. Within no more than 45 days of receiving and reviewing the complete farm plan application, the designer will stamp the completed farm plan design package. The farmer can then submit it to the Inspectional Services Department (ISD) along with any other relevant and required approvals from other city affiliates for issuance of a use and occupancy permit.

DESIGN REQUIREMENTS

There are certain requirements for CFR that must be met before a farm plan design package is stamped.

Screening
Composting and loading and disposal areas abutting public streets, public parks, or residential zones or uses must be screened from view. Farms may use fencing, walls, or natural landscaping as screens, which must be at least 50% opaque and between 3' and 6' in height.

Maintenance
Farms should be well-maintained in healthy growing condition, especially in the off-season. Farms should try to use indoor storage for materials and supplies and parking should not be visible from the public way if possible.

ReVision Urban Farm - Victory Programs, Dorchester, MA
Half-acre in size

DESIGN GUIDELINES

The majority of CFR involves recommended guidelines that, if followed, can help farms thrive in an urban setting and be good neighbors. The guidelines deal with materials, layout, and lighting. In general, the guidelines reflect the principle that urban farms should take into account the special characteristics of the site and the character of the surrounding neighborhood. For a detailed list of guidelines, please consult Article 89, Section 6.

Site Plan and Layout

Urban farms should be planned to enhance the areas facing the street and surrounding spaces. Driveways should be sited to minimize traffic impacts. Activities such as composting, storage, parking, and disposal should be located in the rear of side yards rather than the front, and be adequately screened.

Fencing

Fencing should be made of masonry, pickets, decorative metal, post and rail, wrought iron, shadow box, coated chain link, or board-type wood. Plywood sheeting or uncoated metal chain link fences are discouraged.

Landscaping

Landscaping, especially if street-facing, should be compatible with the surrounding environment. Newly planted trees and shrubbery should be of sufficient height and size to screen while keeping in mind the need for sun penetration to crops. Unless they will interfere with farming, mature trees and shrubs should be maintained unless this is not possible.

Lighting

Lighting should be limited to what is required for safe operation while not creating a nuisance to neighboring properties. A lighting schedule and plans to mitigate fugitive light should be provided.

Materials

Greenhouses and hoophouses should be mostly transparent and secured to the ground.

Hoophouse in construction; all farm structures will be reviewd under CFR

Fencing will be reviewed under CFR

The layout of this roof-level open air urban farm would be reviewed under CFR

ADDITIONAL REVIEW

Other types of review already exist for development in certain neighborhoods, and may also apply to any proposed urban farm proposal. Besides the permits and regulations discussed elsewhere in the guide for activities such as composting and keeping animals, the following types of review may apply in certain parts of the city.

Neighborhood Design Review

Some neighborhoods have adopted zoning that requires design review for buildings, even if they conform to the zoning, just to ensure compatibility with neighborhood character and design. If the urban farm is an allowed use and will include farm structures larger than 750 SF in Roxbury, Roslindale, or Hyde Park, it will require Design Review from the BRA even if it is not required to go through CFR.

NDOD Design Review

Additionally, Boston has established Neighborhood Design Overlay Districts (NDOD) in certain residential communities in the city to preserve their historic architectural character and protect pedestrian environments. In an NDOD, farm structures of greater than 300 SF that are visible from a public street or public open space will trigger BRA Design Review. All roof-level farms and rooftop greenhouses in an NDOD will have to undergo BRA Design Review. Check with the BRA to see whether the property is within an NDOD.

Historic District Review

The Boston Landmarks Commission conducts a separate review of development in Historic Districts, which are listed below.

- Aberdeen Architectural Conservation District
- Back Bay Architectural District
- Bay State Road/Back Bay West Architectural Conservation District
- Bay Village Historic District
- Historic Beacon Hill District
- Fort Point Channel Landmark District
- Mission Hill Triangle Architectural Conservation District
- South End Landmark District
- St. Botolph Architectural Conservation District

Department of Parks and Recreation

To manage traffic congestion, enhance air quality and vegetation, and preserve open space and scenic natural areas, properties along some Boston roadways fall within Greenbelt Protection Overlay Districts (GPOD). Urban farms being proposed in GPODs require review by the Department of Parks and Recreation. Please contact the BRA to determine whether the property is in a GPOD.

Boston Conservation Commission

Within one hundred feet of a wetland, floodplain, or waterbody, an urban farm will require review by the Boston Conservation Commission. Please contact them at (617) 635-3850 if the urban farm is located near a wetland or waterway.

Boston Water and Sewer Commission

All farm plan applications will need to be reviewed by the Boston Water and Sewer Commission, especially if the urban farm will require tapping into the City's water system.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FARMING PRACTICES

City Growers- Glenway Street Urban Farm
Dorchester, MA
11,400 SF

SOIL SAFETY

Soil contamination is a common concern for growing vegetables and other edible plants in urban soil.

Much of the land in U.S. cities has some level of soil contamination, and Boston is no exception. Common contaminants include lead, cadmium, arsenic, zinc, and polycyclic aromatic hydrocarbons (PAHs). Once contaminants find their way into soil, they can be difficult to extract and can pose health risks. The costs of removing and disposing contaminated soil can be prohibitively expensive. Fortunately, there are far less expensive and safe ways to prevent harmful exposure to soil contaminants.

The greatest risk to humans from contaminated soil is from ingesting small amounts of soil through the mouth or from breathing in airborne dust. Skin contact with soils containing certain contaminants can also pose health risks. Some edible plants take up and accumulate contaminants in their roots, shoots, and leaves. For example, root vegetables (such as carrots and beets) have a higher potential for accumulating contaminants. Green leafy vegetables such as cabbage, collards, and kale can accumulate lead on the exterior of their shoots and leaves. However, there is generally minimal risk from eating most plants grown in contaminated soil. The *main risk* is from eating plants without washing them first.

Since 1991, the City of Boston has been successful in reducing the incidence of lead poisoning for children under six years of age from 42.3% to less than 1% in 2010. Through the work of the Boston Public Health Commission ("BPHC"), the City of Boston has been a leader on this issue and continues to be a leader in developing Soil Safety Guidelines for Commercial Urban Farming. For more detail on soil safety, see Article 89, Section 7.

Raised Bed Method

The Environmental Protection Agency (EPA) has adopted a Best Practice Method, known as the "Raised Bed Method," for dealing with soil safety issues in urban environments. A raised bed is a contained volume of clean, imported soil built atop a geotextile barrier (a type of synthetic landscape fabric with selected permeability) to cover the ground surface. This barrier allows for water drainage but prevents root uptake from the contaminated soil below. This method has a proven track record of safely and effectively minimizing exposure to contaminated soil.

Raised beds without frames on Lucerne Street in Dorchester, MA

The Boston Public Health Commission recognizes the value of urban farming from a public health perspective, but also acknowledges the health risks from potentially contaminated urban soils. For this reason, BPHC has developed the following Soil Safety Guidelines for Commercial Urban Farming.

Soil Safety Guidelines for Commercial Urban Farming

All commercial urban farms in the City of Boston must obtain "certification of compliance" with the Soil Safety Guidelines for Commercial Urban Farming.

The soil safety guidelines require these steps be taken to ensure soil safety:

When using the raised bed method:

- Place a commercial grade geo-textile fabric over the native soil.
- Form raised beds. If using lumber, use untreated lumber.
- Import clean soil for the raised beds. Before importing the soil to the farm, have the soil tested using a laboratory that can test according to specified US EPA testing methods. This includes soil that is added after the initial inception of the farm.
- Submit the lab test results to Boston Public Health Commission.

If intending to grow in native soil:

- Submit documentation that the site has undergone an environmental site assessment by a Qualified Environmental Professional or Licensed Site Professional. Such an assessment can involve significant costs; therefore, the raised bed method is usually preferred.

In terms of the actual permitting process, the following steps must be taken:

- As part of the Use and Occupancy Permit for an Urban Farm, complete a Commercial Urban Farming Soil Safety Compliance Certificate Application with the BPHC.
- The BPHC will review the Commercial Urban Farming Soil Safety Compliance Certificate Application.
- Once all requirements of the Commercial Urban Farming Soil Safety Compliance Certificate Application are satisfied, BPHC will provide a letter to ISD to certify compliance.
- Once it receives the letter from BPHC, ISD will issue the Use and Occupancy Permit.

All commercial farmers should consult with the Soil Safety Guidelines for Commercial Urban Farming, available at [provide link].

COMPOSTING

Rich, clean soil is a necessity for urban farms

Farmers can increase the quality of their soil by composting, which uses decomposing leaves, grass, and other spent growing materials to provide a natural fertilizer. Composting reduces the solid waste destined for landfills and can provide an excellent, inexpensive, and organic soil nutrient.

Farmers must carefully manage their composting to avoid creating nuisances for themselves and their neighbors. By following the composting requirements of Article 89, state regulations and several best practices, farmers in Boston can create more fertile growing environments while avoiding odors and pests.

A well-maintained ground-level composting bin

COMPOSTING ON A GROUND LEVEL FARM

Article 89 is intended to allow farmers to compost enough on their farms to support farming activity on site (as opposed to supporting farming on another farm). Article 89 refers to this practice as "accessory composting" because it is not the primary use of the lot, which is farming. Article 89 establishes the following requirements for accessory composting on ground level urban farms:

- Accessory composting is allowed on any urban farm.
- Accessory composting may only occupy up to 7.5% of a ground-level farm property.
- No composting operations or structures may be placed within 5 feet of property lines.
- If the farm is in a residential or commercial district, no composting operations or structures may be located in the front yard or a side yard abutting a street.

Accessory composting must also be registered with the Massachusetts Department of Agricultural Resources (MDAR) UNRESOLVED under the Agricultural Composting Program, 330 CMR 25.00. [This may change.]

ROOF-LEVEL COMPOSTING

Roof-level farms that practice onsite composting will use **COMPOST BINS**. The placement and use of compost bins is discussed in Article 89, Section 8.

Roof-level composting must be contained within enclosed bins

Article 89 allows accessory composting on any rooftop farm. Because of concerns about heat and safety, however, any composting on a roof level farm must be contained within an enclosed bin to prevent nuisances and fire hazards. Composting bins may not occupy more than 7.5% of the roof area.

COMPOSTING FOR COMMERCIAL PURPOSES

Under limited circumstances, Article 89 permits larger composting operations for commercial purposes—that is, composting to sell or distribute to other commercial farmers and/or gardeners. In such instances, composting would be considered a *primary use* on the lot.

Composting as a primary use necessarily involves significant amounts of compost and requires special knowledge and expertise to manage. Also, any commercial composting operation must obtain special permits under the Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) administered by the Commonwealth of Massachusetts Department of Environmental Protection. In recognition of its complexity and the special knowledge and expertise required, composting as a primary use is restricted to industrial districts as a conditional use only. Otherwise, composting as a primary use is forbidden.

PERMITTING

For an explanation of conditional uses and conditional use permits, please see page 7.

Hydroponics project at Warren County High School
Arcata, CA

HYDROPONICS

Hydroponics is the cultivation of plants in a solution of circulating, nutrient-rich water rather than in soil

Hydroponics allows more efficient, flexible, and denser cultivation than does conventional plant agriculture. The direct application of water to plants reduces water loss from evaporation or runoff and enables greater precision in nutrient application. The lack of soil allows for greater plant density and mobility. Climate control allows plants to be grown in non-native regions year round. Article 89 simplifies access to these opportunities by establishing more permissive use regulations for hydroponics in many parts of the city.

Properly disposing of water that may contain waste matter, pesticides, or antibiotics presents a challenge to hydroponics. Hydroponic practices must comply with relevant state and federal laws regarding water discharge.

Produce growing hydroponically in a freight container
PodPonics - Atlanta, GA

REQUIREMENTS

Given that hydroponics activities do not involve the cultivation of fish, Article 89 supports them in many zoning districts as shown in the table in this page. Hydroponics as a *primary use* are *allowed* in all zoning districts except residential districts, where they are a conditional use. The exception is when hydroponics activities are a primary use in *freight containers* - the use regulations are somewhat more restrictive in this case especially in the more sensitive residential and mixed-use zoning districts. Hydroponics as an *accessory use* are *allowed* in all districts and subdistricts. Again, where hydroponics as an accessory use occurs in *freight containers*, the use regulations are somewhat more restrictive for the same reason mentioned above.

Hydroponics practitioners must follow federal and state guidelines about water use and discharge noted on page 28 of Article 89.

DESIGN REVIEW

Any hydroponics facility that involves the construction or addition of more than 750 square feet is subject to BRA Design Review.

PERMITTING

For an explanation of conditional uses and conditional use permits, please see page 7.

For more information on hydroponics, see Article 89, Section 11.

A **PRIMARY** use is one that encompasses more than 25% of the lot

An **ACCESSORY** use encompasses up to 25% of the lot

HYDROPONICS	PRIMARY USE		ACCESSORY USE	
	Use Regulation	Exception: Freight Containers	Use Regulation	Exception: Freight Containers
Industrial	Allowed	Allowed	Allowed	Allowed
Institutional	Allowed	Conditional	Allowed	Allowed
Large Scale Commercial	Allowed	Conditional	Allowed	Allowed
Small Scale Commercial	Allowed	Conditional	Allowed	Conditional
Residential	Conditional	Forbidden	Allowed	Forbidden

AQUACULTURE & AQUAPONICS

Aquaculture is the cultivation of fish and shellfish in a controlled environment

Aquaculture systems come in many configurations, densities and scales depending on the type of facility and the fish being raised.

Well-managed aquaculture can produce large quantities of fish from relatively small systems.

Aquaponics is the cultivation of fish and plants together in a closed environment

Aquaponics uses natural processes to convert fish waste to nutrients for plant growth. In addition to all the benefits of aquaculture and hydroponics, aquaponics has the advantage of a self-filtering cycle that requires less water, produces less wastewater, and reduces maintenance and cleaning.

Aquaculture facility cultivating barramundi (Asian seabass) Australis - Turner Falls, MA

Article 89 simplifies access to aquaculture and aquaponics by permitting these uses in many different zoning districts throughout the City, including permitting small-scale facilities in residential zoning districts. Because they both involve the cultivation of fish, aquaponics and aquaculture are treated essentially the same way by Article 89.

REQUIREMENTS

Primary Use

As shown in the table on the next page under Article 89, aquaculture and aquaponics facilities as a *primary use* are allowed in industrial and waterfront commercial districts, are conditional in institutional and commercial districts (except Waterfront Commercial), and are forbidden in residential districts*.

Accessory Use

Aquaculture and aquaponics facilities as an *accessory use up to 750 square feet* are allowed in all districts*, with the exception of those cultivated in freight containers, to which more restrictive use regulations apply especially in the more sensitive residential and mixed-use zoning districts (see table next page). Aquaculture and aquaponics facilities as an *accessory use larger than 750 square feet* are allowed in industrial, institutional and large scale commercial districts, and are conditional in small scale commercial and residential districts, with the exception of those cultivated in freight containers, to which more restrictive use regulations apply for the same reason mentioned above (see tablenext page).

Outdoor aquaculture tanks at William McKinley High School - Honolulu, HI

An accessory aquaponics system up to 750 SF would be allowed in all residential zoning districs

***Note:** There are two exceptions to the above:* in East Boston (Articles 53) and South Boston (Article 68) aquaculture facilities as a primary or accessory use are expressly forbidden. Modifying the applicable zoning in these neighborhoods to be consistent with Article 89's provisions for aquaculture and aquaponics in the rest of the City would require neighborhood specific zoning amendments for each of these neighborhoods.

Indoor aquaponics facility at Growing Power in Milwaukee, WI

Inddoor aquaponics facility

AQUACULTURE/ AQUAPONICS	PRIMARY USE	ACCESSORY USE (up to 750 SF)		ACCESSORY USE (>750 SF)	
	Use Regulation	Use Regulation	Exception: Freight Containers	Use Regulation	Exception: Freight Containers
Industrial	Allowed	Allowed	Allowed	Allowed	Allowed
Institutional	Conditional	Allowed	Allowed	Allowed	Allowed
Large Scale Commercial	Conditional [1]	Allowed	Allowed	Allowed	Allowed
Small Scale Commercial	Conditional	Allowed	Conditional	Conditional	Conditional
Residential	Forbidden	Allowed	Forbidden	Conditional	Forbidden

[1] Allowed in Waterfront Commercial

MARKET AND SALES

FARMERS' MARKETS

Over the past six years, the number of farmers' markets in Boston has increased, from 13 in 2004 to over 28 markets in 2013. With assistance from the Mayor's Office of Food Initiatives, the Health Division of the Inspectional Services Department administers a very successful farmers' market program.

Under Article 89, farmers' markets are a defined use and are allowed anywhere in the city where a retail use is allowed by the underlying zoning. Otherwise, they are a conditional use.

Farmers' Market in Boston, MA

Farm stands are allowed where urban farms are allowed

FARM STANDS

While urban farms may sell their produce to stores and restaurants, providing the produce at a farm stand for the average city resident to buy is common sense. Farm stands are now recognized and defined in Article 89. Accessory farm stands not exceeding 200 square feet in floor area are allowed wherever urban farms are allowed and wherever else retail is allowed by underlying zoning. Otherwise, farm stands are conditional. Farm stands must be placed so as not to encroach onto sidewalks, driveways or other rights of way.

Applicable regulations for farm stands are found in Section 89-12 of Article 89.

KEEPING OF ANIMALS

BACKGROUND

Even before the adoption of Article 89, the existing Boston Zoning Code already set forth use regulations for the keeping of hens and bees. The map on page 47 of this guide shows where the keeping of hens and bees is allowed, conditional or forbidden in Boston. A larger scale version of this map is available on the Urban Agriculture Rezoning Initiative page of the BRA website.

In those neighborhoods of Boston where the "Base Code" applies (such as Back Bay, Beacon Hill, Downtown, Fenway, and South Boston), the accessory keeping of hens and bees is generally conditional. In other neighborhood districts where the Base Code has been replaced by more recent zoning (such as Jamaica Plain, Hyde Park and Roxbury), the keeping of hens and bees is generally conditional in commercial and industrial subdistricts and otherwise forbidden. As shown on the map, in certain zoning districts, the keeping of hens and bees is even allowed--but these areas are few and far between.

Article 89 has not changed the use regulations for the keeping of hens and bees that were already in effect prior to Article 89's adoption. In other words, the colors on the map have not changed with Article 89. What is new in Article 89 are more specific numerical and dimensional requirements for coops and hives that apply when the keeping of hens or bees is a conditional use.

*Note: Zoning for the keeping of animals *besides* hens and bees is not addressed in Article 89.

Independent of zoning, a permit to keep a coop or a hive in your backyard is required through ISD's Health Division. Thus, after an approval is provided at the ZBA (if applicable) to keep your coop or hive, you still need to get a permit at ISD.

To change the use regulations for the keeping of hens and bees (that is, to change whether they are allowed, conditional or forbidden), there are two different remedies depending on whether the "Base Code" applies or not. For areas of the City covered by the Base Code , a single zoning amendment could be made to change the use regulations for all zoning districts covered by Based Code. For all other neighborhoods not covered by the Base Code, a zoning amendment would be required for *each neighborhood district*—for instance, for Jamaica Plain, an amendment would be required to Article 55, the Jamaica Plain Neighborhood District.

To initiate the zoning amendment, a neighborhood would have to pursue the petition process described in the next section.

NEIGHBORHOOD PETITION PROCESS

Local beekeeper Noah Wilson-Rich

1. The applicant should be a Neighborhood Council, or an individual, group of individuals or an organization that can demonstrate support of neighborhood groups, associations, and business groups that are recognized by the Mayor's Office of Neighborhood Services (MONS).

2. The Applicant submits a request for a zoning text amendment to the BRA's Zoning Department demonstrating majority support for neighborhood groups and organizations recognized by MONS. This support would best be demonstrated through letters of support.

3. The BRA schedules up to two community meetings for neighborhood review of the proposed zoning text amendment and places a notice of the meeting in the Boston Herald and relevant local newspaper.

4. The Applicant assumes responsibility for disseminating information to neighborhood residents, constituents and stakeholders about the merits of the proposal and championing the project in the neighborhood. Applicant also assumes a lead role in community meetings as champion of the proposed zoning text amendment; the BRA's role in community meetings will be to explain the procedural and technical aspects of the proposed zoning text amendment.

5. The Zoning Commission conducts a public hearing on the proposed zoning text amendment. If more than one neighborhood were interested in pursuing a zone change related to the keeping of animals and/or bees at the same time, it may be possible to consolidate the public hearings before the Zoning Commission and BRA Board.

6. The mayor of Boston signs zoning text amendment, it becomes incorporated into the Boston Zoning Code, and is effective immediately.

STRUCTURES FOR ANIMALS

A local coop in Somerville, MA

A **COOP** is an enclosed shelter in which a chicken lives. See Article 89, Section 9 for guidelines for chicken coops.

Rooftop hives on the Fairmount Royal York Hotel Toranto, Canada

A **HIVE** is a manufactured receptacle or container prepared for the use of honey bees that includes movable frames, combs, and substances deposited into the hives by honey bees.

HENS

Hens provide an inexpensive source of fresh, great tasting and nutritious eggs.

Hens also produce excellent fertilizer, help control weeds and bugs, and make good pets. For their own well being, as well as for the happiness of neighbors, hens must be properly maintained and cared for. Article 89 conditions for hens are designed to maximize the health and productivity of hens and minimize problems for owners and neighbors.

Coop and Run Conditions

- *Maximum Height*: 8 feet
- *Maximum Footprint:* 48 square feet
- *Coop Area:* Minimum 2 square feet per hen, and 1 nest box for every 3 hens
- *Runs*: Minimum 4 square feet per hen.
- *Yard Area:* Runs cannot occupy more than 25% of a rear yard.
- *Materials*: Must use washable and sanitizable material, like treated wood. Runs must be made of strong material (like wood) and covered in a wire mesh. All runs must be predator-proof.
- *Property Line:* Coops and runs must be set back at least 5 feet. In residential districts, minimum distance from main neighboring building/house is 15 feet.

Other Conditions

- Front yards and side yards that border a street are off limits in all residential and commercial districts.
- *Screening* is required for any part of a coop or run that is closer than 5 feet to a property line, that is in a front yard or a side yard, or that can be seen from the street. Screening must include fence that is at least 60% opaque or landscaped buffer least 4 feet tall.
- Free-Ranging of hens allowed ONLY:
    - In fenced yards
    - When supervised
    - With approval of all residents and property owners who have legal access to the premises

For more detail, see Article 89, Section 9.

BEES

In their role as pollinators, honey bees help to increase the quantity and quality of plants around the city.

Their honey production, as well as their wax, provide an entrepreneurial opportunity for beekeepers. Because of the rising interest in beekeeping and concern over the recent colony collapse epidemic, many other cities have revised their zoning regulations to allow urban beekeeping, which is now estimated to account for up to 40% of the honey produced in the United States.

In addition to the conditions listed below, all beekeeping must comply with all applicable state and local laws and regulations.

For more details on the keeping of honey bees, see Article 89, Section 10.

A new natural comb growing within a frame

General Conditions

Hive Limit: 2 (backyard), 3 (urban farm)

Height Limit: 5 feet

Size Limit: 20 cubic feet

Fresh Water Supply: maintained within easy access to all beehives to prevent bees from congregating at other water sources on nearby properties.

Owner Contact Information: visibly posted to be used by a city or state inspector or by a member of the public with questions or concerns.

Brooklyn based beekeeping advocate, Tim O'Neal, sells his honey at local farmers' markets

Setback and Location Conditions

Ground Level Beekeeping

From Property Line: No setback needed if there is a wall, fence, or other barrier at the edge of the property. When there is no such barrier, beehives must be back 5 feet from property line.

From Sidewalks: Beehives cannot be located closer than 10 feet from a public sidewalk.

From Main Building on Neighboring Property: Beehives that are closer than 20 feet to the main building on an adjacent property cannot face that building, unless permission is granted in advance in writing from the owners of the adjacent property. In that case, a 6 foot high flyway must be constructed so that the bees fly upward instead of toward the adjacent property (see Zoning Code for required flyway details).

Front Yard in Residential and Commercial Districts are off limits to beehives. Side Yards that border a street are also off limits to beehives.

Rooftop Beekeeping

Setback from Edge of Roof: 6 feet

Setback from Adjacent Building: If the beehive is located within 20 feet of the exterior wall of an adjacent building that has walls as tall as or taller than the roof of the building in questions, a 6 foot tall flyway must be constructed (see Zoning Code for required flyway details).

Example of a simple bee box

APPENDICES

Text

BEST MANAGEMENT PRACTICES

Below is a resource list to help you learn more about Best Management Practices for the topics covered in Article 89.

Aquaculture

University of Massachusetts Amherst Cooperative Extension - The UMass Extension Aquaculture Team compiled a handbook describing best management practices for finfish aquaculture http://extension.umass.edu/aquaculture/projects/best-management-practices-finfish-aquaculture-massachusetts

Environmental Protection Agency – operating procedures, schedules of activities, maintenance procedures, and other management practices that aquaculture operations can use to prevent or reduce pollution http://www.epa.gov/agriculture/anaqubmp.html

Massachusetts Aquaculture Association - a trade association formed in 1986 to promote the continued development of shellfish and fish farming, and to improve some of the conditions affecting aquaculture in Massachusetts today http://www.massaquaculture.org/

Massachusetts Department of Agriculture Resources – maintains a website which compiles information about standards for aquaculture in the state of Massachusetts: http://www.mass.gov/eea/agencies/agr/about/divisions/aquaculture-program-generic.html

ALEARN - Alabama Cooperative Extension System and Auburn College of Agriculture collaborated to create resources for commercial aquaculture practitioners http://www.aces.edu/dept/fisheries/aquaculture/BMP.php

Hydroponics

Texas A&M AgriLife Extension - information on commercial, home and hobby hydroponic vegetable production, mostly from the TAEX publication on Greenhouse Vegetable Production http://aggie-horticulture.tamu.edu/greenhouse/hydroponics/index.html

Cornell University – Biological and Environmental Engineering – provides Grower's Handbooks for hydroponic production of specific crops http://www.cornellcea.com/resourcesPublications/CornellPublications/index.html

Ohio State University Hydroponic Crop Program - designed to foster hydroponic greenhouse vegetable businesses by providing horticultural, marketing, business planning and greenhouse design support http://www.oardc.ohio-state.edu/hydroponics/t01_pageview2/Decision_Support.htm

Aquaponics

ATTRA National Sustainable Agriculture Information Service - provides an introduction to aquaponics with brief profiles of working units around the country https://attra.ncat.org/attra-pub/summaries/summary.php?pub=56

University of Hawai'i at Manoa College of Tropical Agriculture and Human Resources – information on food safety concerns and procedures specific to aquaponic production www.ctahr.hawaii.edu/oc/freepubs/pdf/FST-38.pdf

Aquaponic Gardening: a step-by-step guide to raising vegetables and fish together. - By Sylvia Bernstein. A do-it-yourself home manual, focused on creating your own aquaponic system

Composting

Massachusetts Department of Agricultural Resources - offers a Guide to Agricultural Composting, available at http://www.mass.gov/eea/agencies/massdep/recycle/reduce/commercial-institutional-and-agricutural-composting.html

Cornell Waste Management Institute - provides a helpful list of how-to resources for composting at http://cwmi.css.cornell.edu/smallscale.htm

[Need to consider special "best practices" for rooftop composting.]

Markets & Sales

The many existing farmers' markets in and around Boston offer many models for successful management. The following organizations and contacts may be helpful to anyone looking to join an active market or start a new one:

David Webber, Farmers' Market Coordinator, Massachusetts Department of Agricultural Resources
David.Webber@state.ma.us
(617) 626-1754

Jeff Cole, Executive Director, Federation of Massachusetts Farmers Markets
jeff@massfarmersmarkets.org
(781) 893-8222

Jennifer Obadia, Farmers' Market Subcommittee Chair, Boston Collaborative for Food and Fitness:
bostonmarkets@gmail.com
(617) 636-3415

Backyard Hens

Backyard Chickens - is a website devoted to do-it-yourself chicken raising http://www.backyardchickens.com/

Legalize Chickens In Boston - is a local citizens organization working to amend neighborhood zoning codes to allow the keeping of chickens: http://legalizechickensinboston.org/

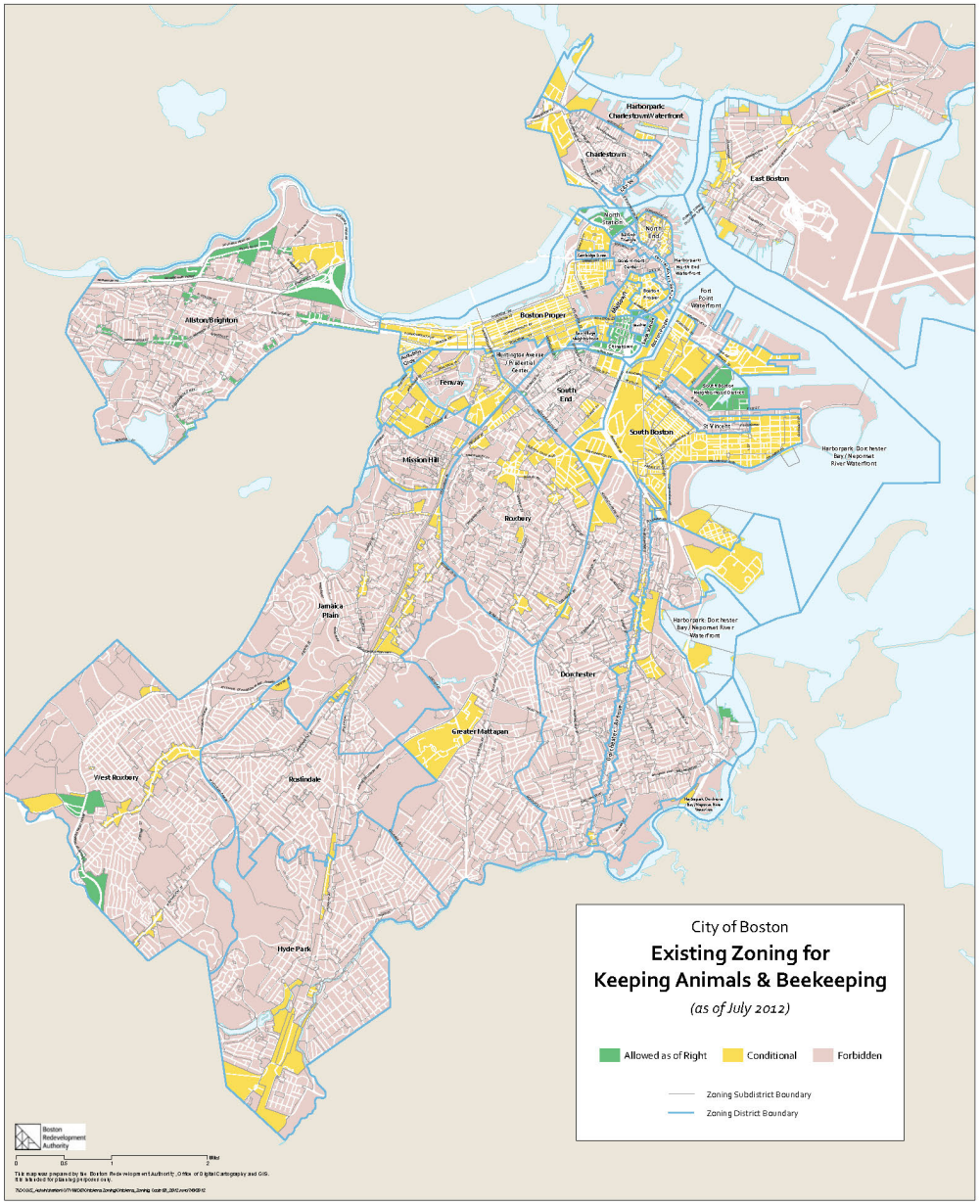
Soil Safety

Environmental Protection Agency - produced a document describing best management practices for farming in and around contaminated soils: http://www.epa.gov/brownfields/urbanag/pdf/bf_urban_ag.pdf

The EPA also maintains a website for contaminated site remediation: www.clu-in.org/ecotools/urbangardens/cfm

Allendale Farms - provide kits for making raised beds are available

ANIMAL ZONING MAP



Text

ADDITIONAL RESOURCES

CFR PERMIT

LIVE FOWL PERMIT