

Urban Agriculture Code Audit

Milwaukee, Wisconsin



EJ Showcase Pilot Project

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FINAL

U.S. EPA Region 5

Acknowledgements

This code audit project was the collective effort of Milwaukee organizations and City representatives dedicated to promoting and fostering urban agriculture and thereby making access to healthy foods and fresh produce easier for vulnerable populations. EPA convened a workshop of 26 city officials, neighborhood organizations, and urban gardening practitioners to identify the issues and barriers to urban gardening in Milwaukee. Their participation and thoughtful feedback throughout the effort contributed to the preparation of this code audit.

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Forward

This code audit was funded by EPA Region 5 as part of the Environmental Justice Showcase Pilot Project in Milwaukee, Wisconsin. The project is part of a national initiative announced in November 2009 by EPA Administrator Lisa Jackson. The Environmental Justice Showcase Communities pilot projects take a collaborative, community-based approach to improving public health and the environment, with a focus on areas where there are disproportionately burdened or vulnerable populations.

Through the pilot, EPA Region 5 is working to further the redevelopment of Milwaukee's 30th Street Industrial Corridor. The corridor, a former rail line in the north-central part of the city, is home to low-income communities of color. This project seeks to improve the human, environmental and economic health of these neighborhoods by redeveloping Brownfields along the corridor, implementing environmentally preferable stormwater management practices, and developing urban agriculture. For additional information on the pilot project, please visit: <http://www.epa.gov/compliance/ej/grants/ej-showcase.html>.

I. Executive Summary

Purpose

Practitioners of urban agriculture in Milwaukee, Wisconsin are involved in a broad cross-section of agricultural, community development, educational, commercial and industrial enterprises. Many urban agriculture establishments from community gardens to more intensive farming operations, such as those operated by Walnut Way and Growing Power, are located in residential areas but include uses that go beyond those typically permitted in residential districts. In addition, as urban agriculturalists produce more significant amounts of food, there is a growing need for industrial-level processing centers for input and output products such as compost and packaged produce.

The Milwaukee Urban Agriculture Code Audit offers recommendations for addressing potential barriers to urban agriculture that have been identified based on review of the Building and Zoning Code of the City of Milwaukee, Wisconsin (Volume 2 of the City Code of Ordinances) and through conversations with city staff and local urban agriculture practitioners. The purpose of the audit is to identify, for city staff, areas of the code that may: (1) need clarification of existing code language, (2) present potential barriers to the practice or expansion of urban agriculture, or (3) warrant expansion to include explicit support for and regulation of urban agriculture uses. The document also offers a review of best practices from other cities and states that is intended to provide fodder for further development of Milwaukee's Building and Zoning Code.

Approach

Three primary tasks were involved in this code audit: stakeholder interviews, a targeted review of the Milwaukee's Building and Zoning Code and research on best practices. While the initial scope of the project was a code audit for the zoning code, discussions with city staff resulted in an expansion of the scope to include the state and municipal building code. Given the broad nature of building code regulations, it was agreed that stakeholder interviews would be used to identify targeted areas for review of both the building and zoning codes.

Key Findings and Recommendations

The audit found that Milwaukee's Building and Zoning Code provides a solid basis for fostering the practice of urban agriculture across the city. By approaching urban agriculture as a use category in the zoning code, the City encourages the citywide distribution of agriculture and agriculture-related uses, particularly in residential and industrial districts. Milwaukee is considered a leader in the field of urban agriculture because of municipal support for both the rapid growth of the local urban agriculture sector and innovations from local practitioners such as Growing Power's Vertical Farm. Recommendations for augmenting the building and zoning codes to expand support of urban agriculture and agriculture-related uses include:

Areas for Clarification

1. Update the agricultural use category in the zoning code to include beekeeping and aquaculture.
2. Clarify use classifications in the zoning code for beekeeping and chicken keeping and update Chapter 78 of the City Code of Ordinances as needed.
3. Clarify whether accessory storage structures, such as sheds, may be permitted accessory uses on sites where agriculture is the principal use.

4. Clarify the conditions under which landscaping regulations and setback requirements may apply to agricultural uses, including non-structural uses such as gardens.

Potential Barrier

Work to ensure that below-grade structural remnants, such as basements, do not present a cost barrier for agricultural reuse of vacant, city-owned properties. The City can support this goal by ensuring potential property owners understand the City's "as is, where is" policy regarding property transfers and by clarifying what documentation regarding razing and fill activity may or may not be available for the property under consideration.

Areas for Additional Definition and Regulation

1. Consider refining the use definition for Agricultural Use as appropriate to include considerations such as scales of agricultural use, accessory versus principal use, whether agricultural products are intended for sale, and regulation of sales in residential districts.
2. Consider expanding the definition of agricultural use to include a general category for agricultural structures, developing standards regarding where such structures can be located, and addressing structural considerations.
3. Consider adding a definition, structural standards and permissible use categories for rainwater harvesting systems such as cisterns to the building and zoning code.
4. Consider adding use definitions and classifications to the zoning code for food processing and commercial/industrial scale composting operations.

II. Introduction

This report offers recommendations for addressing potential barriers to urban agriculture that have been identified based on review of the Building and Zoning Code of the City of Milwaukee, Wisconsin (Volume 2 of the City Code of Ordinances) and through conversations with city staff and local urban agriculture practitioners. The purpose of the audit is to identify for city staff areas of the code that may: (1) need clarification of existing code language, (2) present potential barriers to the practice or expansion of urban agriculture, or (3) warrant expansion to include explicit support for and regulation of urban agriculture uses. The document also offers a review of best practices from other cities and states that is intended to provide fodder for further development of Milwaukee's Building and Zoning Code.

The code audit was initiated by stakeholders involved with the urban agriculture partnership wing of EPA Region 5's Environmental Justice Showcase Pilot Project. The partnership recognizes the important role that urban agriculture plays in the revitalization of urban neighborhoods and improving public health, especially in low-income and vulnerable communities living in food deserts. The partnership is exploring how public policies can support the growing demand for urban gardens and improved access to healthy foods in the City of Milwaukee.¹ Funding for the audit is being provided by EPA Region 5.

Following the Introduction chapter, the Approach chapter describes the methodology used for the audit. The Context and Priorities chapter describes the current state of the practice of urban agriculture in Milwaukee and the priorities identified by stakeholders. The Building and Zoning Code Review chapter contains a detailed analysis of Milwaukee's code; review findings are summarized in the Findings chapter. The Best Practices chapter explores precedents that other cities and states have employed to address issues raised by the code audit findings. The Recommendations chapter summarizes recommendations for code updates moving forward. Appendices include a Use Classifications Table for agriculture and agriculture-related uses, a list of additional resources and project contacts.

¹ For additional information on the Environmental Justice Showcase Pilot Project in Milwaukee, Wisconsin, see <http://www.epa.gov/compliance/ej/grants/ej-showcase.html>.

III. Approach

Three primary tasks were involved in this code audit: stakeholder interviews, a targeted review of the Milwaukee's Building and Zoning Code and research on best practices. While the initial scope of the project was a code audit for the zoning code, discussions with city staff resulted in an expansion of the scope to include the state and municipal building code as well. Given the broad nature of building code regulations, it was agreed that stakeholder interviews would be used to identify targeted areas for review of both the building and zoning codes.

Stakeholder Interviews

The goal of the stakeholder interviews was to identify local priorities for and felt-barriers to urban agricultural uses in the City of Milwaukee. These considerations helped to target the building and zoning code review. City staff and stakeholders engaged in the Milwaukee Environmental Justice Showcase Pilot Project identified a list of stakeholders for interviews. Table 1 notes the full list of stakeholders and interview dates. Appendix I includes full interview summaries from each conversation. Key considerations are highlighted in Chapter IV: Context and Priorities, and additional considerations are integrated into relevant sections of Chapter V: Building and Zoning Code Review.

Table 1. Stakeholder Interviews

Organization/Entity	Interviewee	Date
City of Milwaukee	Clifton Crump, Redevelopment Authority Matt Howard, Office of Sustainability Dr. Paul Hunter, Consultant to the Department of Health Yves LaPierre, Redevelopment Authority	November 8, 2011
City of Milwaukee	Chris Rute, Development Center	November 22, 2011
City of Milwaukee	Gloria Stearns, Planning Consultant to the Departments of Public Works and Community Development	December 2, 2011
Fondy Food Center	Young Kim, Executive Director	November 14, 2011
Growing Power	<i>Not available for an interview during the project timeframe</i>	
Sweet Water Organic	<i>Not available for an interview during the project timeframe</i>	
Walnut Way Conservation Corp	Sharon Adams, Program Director	November 3, 2011

Building and Zoning Code Review

Based on the priorities and barriers identified through stakeholder interviews, documents related to Milwaukee's zoning and building codes were reviewed. The zoning code was read in its entirety, with particular attention to definitions and use categories related to urban agriculture. Building code review was targeted to:

- Chapter 218 – Razing of Buildings
- Chapter 225 – Plumbing and Drainage
- Chapter 239 – Accessory Buildings and Structures
- Chapter 289 – Filling of Land

In addition, the City Code of Ordinances, Chapter 78 – Animals was reviewed for building and zoning code-like regulations related to structures for beekeeping and chicken keeping. The Wisconsin State Building Code was reviewed as needed dependent on building code issues raised by stakeholders.

Chapter V: Building and Zoning Code Review summarizes the existing language in the code related to urban agriculture and also identifies areas where the existing code may have gaps, create confusion or present direct barriers to urban agriculture. Because stakeholder discussions tended toward use-specific priorities, the code review focuses more heavily on zoning code issues than building code issues, although both are explored.

A number of tables throughout Chapter V help to summarize information in the existing code related to urban agriculture. Tables 2 through 6 identify uses, buildings and structures related to urban agriculture, their definitions and corresponding code sections. These tables also may include additional considerations noted during the code review or during stakeholder interviews. Table 7, located in Appendix I, identifies use classifications related to urban agriculture.

Best Practices Research

Based on the findings of the code review, best practices research was targeted to a number of specific topic areas where Milwaukee’s code could potentially be expanded to support the emerging types of uses in Milwaukee’s urban agriculture sector. These topic areas include:

- I. Defining Agricultural Use
- II. Defining and Regulating Structures and Buildings for Growing Crops
- III. Rainwater Harvesting
- IV. Sales in Residential Districts
- V. Food Processing
- VI. Commercial/Industrial Scale Composting

The research was geared toward identifying a diverse range of examples from existing municipal and state codes that could provide fodder for further development of Milwaukee’s Building and Zoning Code. Because zoning codes, in particular, tend to be specific to the values and development goals of a particular community, no attempt was made to provide a ranking of these examples. Rather, emphasis was placed on gathering a range of examples. Examples are documented in alphabetical order by the associated city or state.

Research focused on several documents that provide an overview of best practices in the field. Some of these documents were shared by local stakeholders; others were located through a Google search. In instances where these overview documents did not provide examples relevant to the above topics, a Google search was used to locate examples of municipalities or states that have set related standards. Where possible, code examples are cited directly in the text. For a list of additional resources including the documents reviewed, see Appendix II.

In addition, Milwaukee currently has a team exploring best practices related to water access on urban agriculture sites. This Urban Agriculture Code Audit report touches on water access issues, particularly as related to building code support for rainwater harvesting; however, it does not attempt to duplicate the water access group’s more in-depth efforts to explore best practices for water access.

IV. Context and Priorities

Milwaukee, Wisconsin is a leader in the field of urban agriculture. In 2008, Milwaukee was ranked 6th in “Local Food & Agriculture” in the SustainLane city sustainability rankings.² Innovative urban agriculture practitioners, such as nonprofit groups like Growing Power and Walnut Way Conservation Corp (Walnut Way) and for-profit entities such as Sweet Water Organics and Central Greens, have made strides in the development of new growing strategies including aquaponics and vertical farming methods. In addition, these urban agriculture groups have integrated the local food sector with neighborhood development initiatives to create local jobs and affordable housing. Municipal support for urban agriculture has resulted in the addition of agriculture uses to the zoning code, the introduction of permitting for the keeping of honeybees and chickens to the City Code of Ordinances, and the approval of zoning changes that allow the development of intensive urban agricultural uses within city limits, for example, Growing Power’s Vertical Farm. In addition, the City’s Seasonal Garden Plot Pilot Permit Program gives individuals licenses to garden vacant land for a single growing season, and the Department of City Development can offer three-year leases to community agriculture groups.^{3, 4}

Practitioners of urban agriculture in Milwaukee, Wisconsin are involved in a broad cross-section of agricultural, community development, educational, commercial and industrial enterprises. Many urban agriculture establishments from community gardens to more intensive farming operations, such as those operated by Walnut Way and Growing Power, are located in residential areas, but include uses that go beyond those typically permitted in residential districts. In addition, as urban agriculturalists produce more significant amounts of food, there is a growing need for industrial-level processing centers for input and output products such as compost and packaged produce.

Milwaukee experiences a number of challenges related to the growing urban agriculture sector. The City has no single staff person dedicated to the advancement of urban agriculture, and there is no single information source on city regulations related to urban agriculture. City staff note that there is sometimes confusion over uses allowed by the zoning code and over the scale of agriculture appropriate in traditional neighborhood settings. In addition, innovations by urban agriculture practitioners are often outside the scope of the existing building and zoning code. This audit will seek to address some of these concerns.

Stakeholder interviews identified a number of additional priorities and considerations that helped to guide and target the audit, including:

- *Agricultural reuse of vacant property:* Debris remaining on city-owned vacant lots that are transferred to urban agriculture practitioners can present a cost barrier to reuse of the property.
- *Accessory storage structures:* Accessory storage structures such as sheds are needed to support sites where gardening is the primary use.

² SustainLane 2008 U.S. City Rankings. (2008). “Local Food and Agriculture.” Online. <http://www.sustainlane.com/us-city-rankings/categories/local-food-agriculture>. Retrieved 14 December, 2011.

³ City of Milwaukee. (2011). “Neighborhood Agriculture.” Online. <http://city.milwaukee.gov/CityRealEstate/Neighborhood-Gardens.htm>. Retrieved 14 December, 2011.

⁴ City of Milwaukee. (2011). “Urban Agriculture.” Online. <http://city.milwaukee.gov/Urban-Agriculture.htm>. Retrieved 14 December, 2011.

- *Growing structures:* Growing structures such as hoophouses, greenhouses and vertical farms can increase the potential for year-round agriculture projects. In some cases, growing structures such as hoophouses have been exempted from commercial building code standards because they are primarily agricultural structures.
- *Water access:* Water access is an ongoing challenge for agriculture practitioners. Rain barrel and cistern water collection systems could harvest rainwater for irrigation use on agricultural properties that do not have access to municipal water.
- *Agriculture and agriculture-related uses:* Many nonprofit organizations involved in urban agriculture are also active in community development through initiatives such as job training and job creation, educational tours, community-based agriculture and food preparation classes, and residential, commercial and industrial development.
- *Compatibility of uses in residential districts:* Urban agriculture and agriculture-related uses in residential areas need to be compatible with their residential surroundings, including adequately addressing parking and potential increases in traffic due to sales, office space and educational offerings.
- *Emerging uses:* Emerging uses in urban agriculture include food processing and packaging, food warehousing and large-scale composting.

V. Building and Zoning Code Review

Milwaukee's Building and Zoning Code is contained in Volume 2 of the City Code of Ordinances. Chapters 200 – 290 comprise the building code, and Chapter 295 comprises the zoning code. The building and zoning code's purposes, stated in section 200-002, are:

to protect the health, safety and welfare of all persons establishing minimum standards for the design, construction, structural strength, quality of materials, adequate egress facilities, sanitary facilities, natural lighting, heating and ventilating, energy conservation and fire safety for buildings, to regulate the maintenance of buildings and structures, equipment and sanitation and to regulate occupancy and use of all buildings, structures and premises.

This section of the report identifies aspects of the existing code that support the practice of urban agriculture in the City of Milwaukee, as well as places where the existing code may have gaps, create confusion or even present barriers to the expansion of urban agriculture. Topics include:

- I. Defining Urban Agriculture
- II. Existing Uses Related to Urban Agriculture
 - a. Existing Use Classifications
 - b. Use Classifications for Beekeeping and Chicken Keeping
 - c. Compatibility of Uses in Residential Districts
 - d. Siting of Gardens
 - e. Application of Landscaping Standards
- III. Desired Uses Related to Urban Agriculture
- IV. Structures and Buildings Related to Urban Agriculture
 - a. Livestock-Related Structures
 - b. Accessory Storage Buildings
 - c. Structures and Buildings Used for Growing Crops
 - d. Building Code Standards for Structures Used Primarily for Growing Crops
- V. Rainwater Harvesting
- VI. Razing and Fill Standards

I. *Defining Urban Agriculture*

In zoning, urban agriculture can be treated as a district or a use category. Some cities choose one approach or the other, and some use a hybrid approach. Milwaukee's zoning code treats agriculture as a use category. Section 295-203-14 offers the following definition:

Agricultural Uses

- a. "Plant nursery or greenhouse" means an establishment engaged in growing crops of any kind within or under a greenhouse, cold frame, cloth house or lath house, or growing nursery stock, annually or perennial flowers, vegetables or other garden or landscaping plants. This term does not include a garden supply or landscaping center.
- b. "Raising of crops or livestock" means the growing of crops, including any farm, orchard, community garden or other premises or establishment used for the growing of crops or the use of land or buildings for the keeping of cows, cattle, horses, sheep, swine, goats, chickens, ducks, turkeys, geese or any other domesticated livestock if permitted by the health department under the provisions of ch. 78.

This definition forms the foundation for the practice of urban agriculture in the City of Milwaukee. Definitions of related structures, buildings and uses are listed in Tables 2 through 6.

The current definition of Agricultural Uses is restricted to types of structures and agriculture, and does not offer any definition of scale of operations. Some stakeholders suggested that it would be useful to add a series of definitions that relate to the three scales of agriculture currently being undertaken in Milwaukee: personal gardens, community gardens and urban farms.

In addition, while Section 295-203-14.b refers to the raising of a multitude of kinds of livestock, Chapter 78 of the City Code of Ordinances permits only bees and chickens at this time. Beekeeping is not specifically mentioned in the definition of “raising crops and livestock.” Additionally, aquaculture is not mentioned in the zoning or building code at all.

II. Existing Uses Related to Urban Agriculture

Practitioners of urban agriculture are involved in a broad cross-section of agricultural, community development, educational, commercial and industrial enterprises. Many urban agriculture establishments from community gardens to more intensive farming operations, such as those operated by Walnut Way and Growing Power, are located in residential areas but include uses that go beyond those typically permitted in residential districts. In addition, as urban agriculturalists produce more significant amounts of food, there is a growing need for industrial-level processing centers for input and output products such as compost and packaged produce.

II.a. Existing Use Classifications

Table 7, in Appendix I, illustrates use classifications across the various zoning districts for Agricultural Use and other uses related to urban agriculture. As shown in the table, Agricultural Use is permitted by right in residential and industrial districts, by special use permit in commercial districts and institutional districts, and prohibited in most downtown districts. In park districts, some Agricultural Uses are permitted by right and some are permitted as a limited use. Uses related to urban agriculture span at least 12 of the city’s 16 designated use categories.

Agricultural Use and urban agriculture-related uses are currently taking place predominantly in residential districts through home gardens, community gardens and community development entities engaged in multiple scales of urban agriculture. Urban agriculture-related uses are anticipated to expand in industrial districts as demand for local food processing and composting grows and as community development entities seek to generate local jobs in the urban agriculture sector.

II.b. Use Classifications for Beekeeping and Chicken Keeping

Although the raising of crops and livestock is permitted by right in residential districts and industrial districts and by special use permit in a number of additional districts (see Table 7), Chapter 78 of the City Code of Ordinances may seem to restrict beekeeping and chicken keeping to residential areas. Beekeeping is not explicitly restricted; however, some city staff interviewed for the audit interpreted the ordinance as restricting beekeeping to residential areas. Relevant language includes:

- 78-6-2 Neighborhood approval required. Before a permit is issued for the keeping of bees the following process must be followed: (a) Once a permit is applied for all property owners within a circular area having a radius of 200 feet, centered on the premises for which a permit has been requested, shall be notified by the commissioner. This shall be done via first class U.S. mail. (b) Property owners shall have 14 working days to file a written objection and request for a hearing of the commissioner if they object to the granting of a permit. [...]
- 78-6-3 A permit authorizes the keeping of honey bee hives on a premise, provided the following: (a) No more than 2 hives are allowed on a lot. [...]

Chicken keeping is explicitly restricted to residential areas. Relevant language includes:

78-6.5-2	Neighborhood approval required. Before a permit is issued for the keeping of chickens, the applicant shall obtain the written consent of the owner of the property where the chickens shall be kept and owners of all directly or diagonally abutting properties, including those across an alley. Written consent shall be provided at the time of the application.
78-6.5-3	Keeping of chickens allowed. The keeping of up to 4 chickens, with a permit, is allowed on a residential premise [...]

II.c. Compatibility of Uses in Residential Districts

Nonprofit and for-profit entities engaged in urban agriculture serve a wide variety of community development functions in addition to their agricultural activities. For some organizations, such as Growing Power, development activities such as tours, commercial sales and specialty school classes may be focused nearly entirely on agricultural topics. For other organizations, such as Walnut Way, activities including agriculture-related tours or classes may be part of a suite of community development initiatives (e.g., affordable housing, community center space and neighborhood-based job creation) that all include agricultural components.

In either case, because of their emphasis on community development, these nonprofit and for-profit entities tend to be located in residential districts and may introduce uses that are not traditionally considered compatible with neighborhoods. In addition, these uses may be co-located in one building or on one or more contiguous lots, which can create confusion over how to handle zoning and site planning issues. Concerns noted in the interviews regarding compatibility of uses in residential districts include:

- **Sales:** The zoning code currently limits or prohibits sales uses such as Retail, Outdoor Merchandise Sales and Seasonal Markets in residential districts. Seasonal markets and on-site sales may be allowed up to 180 days on site, per Section 295-503-2-U. Many practitioners would like expanded permissions to include these activities on site.
- **Educational Uses:** Urban agriculture organizations often offer tours or specialty classes for school groups and community members. The zoning code currently limits or prohibits specialty schools in some residential districts. Tour offerings can create parking concerns as noted below.
- **Community Centers:** Community center uses are allowed by special use permit in some residential districts and prohibited in others.
- **Offices:** General office uses are prohibited in some residential districts and allowed as limited uses or by right in others.
- **Parking:** The intensive use of agriculture-related facilities for sales, offices, education and community center uses can lead to concerns regarding traffic intensity on residential streets and availability of parking. Some city staff note that the city currently tends to turn a blind eye to violations such as parking on non-paved surfaces at these sites.

In some instances, urban agriculture practitioners have achieved their desired uses by applying for special use permits. In other instances, practitioners have chosen the route of applying for a zoning change from existing residential zoning to Planned Development District to create site-specific zoning.

II.d. Siting of Gardens

The zoning code does not contain specific language regarding the application of required setbacks to urban gardens where structures such as trellises are not involved. Additionally, it does not provide guidance on whether gardens are allowed in all parts of the yard or restricted to side and back yards. This may be particularly important on residential properties where the location of the principal structure and the configuration of the lot may have implications for the location of the garden related to factors such as sun access and slope.

II.e. Application of Landscaping Standards

It is unclear whether the landscaping standards of Section 295-405 apply to urban gardens. For instance, some crops, such as corn, could violate landscaping standards related to size of plantings. Some city staff noted that because Agricultural Use is allowed by right as primary use in residential areas, landscaping standards do not apply, except where one of the following activities is occurring on the premises: the screening of parking lots and similar motor vehicle uses, storage and salvage yards, and dumpsters and mechanical equipment. However, there is no specific language clarifying this in the zoning code, and the regulations may be confusing to the common reader.

III. Desired Uses Related to Urban Agriculture

In addition to the uses already defined in the zoning code and enumerated in Table 7 practitioners and city staff mentioned the growing need for the following types of uses, which are not currently defined in the zoning code:

- *Light, community-based food processing facility:* Practitioners would like the ability to provide an on-site location for community members to wash, dry, chill and store produce grown in their community gardens.

Walnut Way had hoped to build such a facility behind their community center for both staff and community members to utilize. Ideally the facility would be approximately 1,000 square feet in order to support the non-value added processing of 2 tons of food annually. The residential zoning of the community center property presented a barrier for this use.

- *Food warehousing, processing, packaging and distribution facilities:* Practitioners are also interested in promoting economic development and local jobs through the conversion of vacant industrial properties and buildings into centers for food warehousing, processing, packaging and distribution. These types of facilities could potentially handle a higher degree of value-added food processing, such as a production kitchen, than the community-based food processing facility.

Walnut Way sees a niche market for warehousing and packaging locally-grown food for corner stores, which want to offer fresh produce for customers, but cannot accept the size of shipments received by chain groceries.

- *Composting, soil processing, packaging and distribution:* As local agriculture expands, there is a growing need for locally produced compost and soil. Vacant industrial properties and buildings could be converted to this use.

IV. Structures and Buildings Related to Urban Agriculture

The building and zoning code defines many types of structures and buildings related to urban agriculture. Tables 2 through 6 identify structures and buildings that are integral to the promotion of urban agriculture including structures and buildings not yet defined in the building and zoning code. Standards for structures related to beekeeping and chicken keeping are defined in Chapter 78 of the City Code of Ordinances and are included here also, although they are not technically part of the building and zoning code.

IV.a. Livestock-Related Structures

At this time, the only types of livestock permitted in the City of Milwaukee are chickens and honeybees. Chapter 239 of the building code contains some design standards applicable to these structures. Section 295-505-3-N of the zoning code also provides an exemption from general accessory structure design standards for chicken coops in residential districts in instances where the coops meet certain size requirements. Relevant language may include:

295-505-3-N n. Chicken Coops. Chicken coops, under s. 78-6.5, shall not be subject to any of the regulations of this subsection if the covered portion of the coop is 50 square feet or less in size and 10 feet or less in height.

More detailed standards for structures related to beekeeping and chicken keeping are defined in Chapter 78 of the City Code of Ordinances. Although not technically part of the building and zoning code, this section of code provides similar standards and regulations for the design, construction, location and sanitation of these structures. Table 2 identifies structures related to beekeeping and Table 3 identifies structures related to chicken keeping.

Table 2. Beekeeping Structures

Structure	Existing Definition	Code Section(s)	Considerations
Apiary	The assembly of one or more colonies or bees at a single location.	Regulatory Ordinances: 78-1-2 Building Code: 239-7; 239-1	Section 78-6-3 provides the following building and zoning code-like standards: design, construction, location and sanitation.
Beekeeping Equipment	Anything used in the operation of an apiary, such as hive bodies, supers, frames, top and bottom boards and extractors.	Regulatory Ordinances: 78-1-6 Building Code: 239-7; 239-1	
Colony	An aggregate of bees in a hive consisting principally of workers, but having, when perfect, one queen and at times many drones, including brood, combs, honey and the receptacle inhabited by the bees.	Regulatory Ordinances: 78-1-10 Building Code: 239-7; 239-1	
Hive	An aggregate of bees consisting principally of workers, but having, when perfect, one queen and at times many drones, including brood, combs, honey and the receptacle inhabited by the bees.	Regulatory Ordinances: 78-1-26 Building Code: 239-7; 239-1	

Table 3. Chicken Keeping Structures

Structures	Existing Definition	Code Section(s)	Considerations
Chicken Coop	None	Regulatory Ordinances: 78-6.5 Building Code: 239-7; 239-1	Section 78-6.5-3 provides the following standards: design, construction, location and sanitation.
Chicken Yard	None	Regulatory Ordinances: 78-6.5 Building Code: 239-7; 239-1	

Although the code provides specific definitions of structures related to beekeeping, it contains no definitions of structures related to chicken keeping. However, it does provide design, construction, location and sanitation standards for both types of structures.

No challenges related to beekeeping and chicken keeping were reported by urban agriculture practitioners interviewed for this audit; however, it is important to note that there may be some conflict between the locational standards provided in Chapter 78 and zoning districts approved for Agricultural Uses in Chapter 295. For further discussion, see the Use Classifications for Beekeeping and Chicken Keeping (Section V.II.a of this report).

Also worth noting is that the code does not contain definitions or standards for structures related to the husbandry of fish through aquaculture.

IV.b. Accessory Storage Buildings

Sheds are commonly used at community garden and urban farm locations as on-site storage locations for garden tools and materials. They may also be used in conjunction with rain barrels and other water storage devices as part of a water catchment system. In residential districts, if more storage space is required, an accessory building that meets the building code standards for a garage structure may be used (295-505-3-f). Table 4 indicates the definitions and applicable code sections for accessory sheds and larger accessory buildings.

Table 4. Accessory Storage Buildings

Building	Existing Definition	Code Section(s)	Considerations
Accessory Shed; Shed	An accessory building of not more than 150 square feet in floor area and not more than 14 feet in maximum height.	Building Code: 239-11; 239-1; 200-08-2.5 Zoning Code: 295-201-544	May be used for storage of tools and materials as well as rain water catchment
Accessory Building Larger than a Shed	None	Building Code: 239-1 Zoning Code: 295-505-3-f	Design standards for a garage may be used for accessory buildings larger than a shed in residentially-zoned districts.

Some confusion exists over whether accessory storage buildings can be constructed on residential lots where agriculture is the primary use and where no principal building exists. In the interviews, some members of the city staff and the public interpreted the zoning code to indicate that accessory structures cannot exist on lots where there is no principal *building*. Other city staff interpreted the code to mean that where a lot has a principal *use* (whether a residential building or an agricultural use such as a community garden), accessory structures such as sheds are allowable. Relevant language from the residential district section zoning code may include:

295-505-3-b Principal Building Required. No accessory building shall be located on a lot not containing a principal building. If a principal building on a lot is removed, any accessory building on the lot shall also be removed within 60 days and the premises made compliant with this code.

Additionally, staff noted that while the code allows up to two accessory structures by right in residential areas, some community garden locations have needed more than two sheds to accommodate tools and materials for their users. In these instances, users have applied for, and been granted, a special use permit to construct the additional sheds. Relevant language from the residential district section of the zoning code may include:

295-505-3-d Maximum Number. Not more than two accessory buildings may be located on a single lot.

IV.c. Structures and Buildings Used for Growing Crops

The expansion of urban agriculture in Milwaukee has introduced the need for new types of structures for growing crops. These structures may at times be considered accessory and at other times be considered primary depending on their scale and whether a primary building is present on the premises (295-505-3-b).

Table 5. Structures and Buildings Used for Growing Crops

Structure	Existing Definition	Mentioned in the Definition of Agricultural Use (295-203-14-a)	Considerations
Cloth House	None	Yes	A number of hoophouses, measuring approximately 20 feet by 40 feet, have recently been permitted by the City as agricultural structures, meaning that commercial building code standards were not applied. This may create precedent for similar permitting procedures for other structures and buildings used primarily for growing crops. See the following section for further discussion.
Cold Frame	None	Yes	
Greenhouse	None	Yes	
Hoophouse	None	No	
Lath House	None	Yes	
Vertical Farm	None	No	Although Vertical Farm is not defined as a use in the Zoning or Building Codes, precedent language may be found in an approved General Plan Development application described below.

To date, the City of Milwaukee has approved a zoning designation for one Vertical Farm building. In 2010, Growing Power applied for, and received, a General Plan Development zoning designation for a property that included a proposed “Vertical Farm.” Although no language regarding Vertical Farm uses has been incorporated into the zoning code, city staff point to language from Growing Power’s approved General Plan Development application as a precedent, including:

Exhibit A as of 11-8-10

Vertical Farm. The conceptual design being developed by Growing Power and The Kubala Washatko Architects, Inc. will expand and improve Growing Power’s greenhouse and aquaponics operations currently spread over a two-acre site located in the City of Milwaukee. With a maximum height of 85 feet, the five stories of south-facing greenhouse areas will allow production of plants, vegetables and herbs year-round. Expanded educational classrooms, conference spaces, demonstration kitchen, food processing and storage, freezers, and loading docks will further support Growing Power’s expanding mission as a local and national resource for learning about sustainable urban food production. Administrative offices, volunteer spaces, and staff support areas will be closely connected to greenhouse and educational areas to allow for active observation and participation.

Cast-in-place tilt-up concrete panel construction will provide an affordable, energy efficient, structurally stable and long-lasting building shell appropriate for intensive farming operations. The vertical exterior wall panels will be broken into smaller forms and window openings to provide an appearance that will not be monolithic in nature. The vertical farming concept can also be applied to the re-use of abandoned industrial buildings often found in urban centers. Several existing historic greenhouses will be preserved on-site.

Note that while this building includes a greenhouse space for growing crops, it also contains uses such as administrative offices, volunteer spaces and staff support areas.

IV.d. Building Code Standards for Structures Used Primarily for Growing Crops

Wisconsin does not have a building code specific to agricultural structures and buildings. In addition, the Commercial Building Code may be interpreted to exclude agricultural structures and buildings on the

basis that they are not public buildings. Relevant language from the Wisconsin State Building Code may include:

- Comm. 61.02 (2) This code does not apply to buildings or situations listed under the exclusions in s. 101.01 (11) and (12), Stats., or under the exemptions in s. 101.05, Stats.
- s. 101.01 (13) “Public building” means any structure, including exterior parts of such building, such as a porch, exterior platform, or steps providing means of ingress or egress, used in whole or in part as a place of resort, assemblage, lodging, trade, traffic, occupancy, or use by the public or by 3 or more tenants. [...]

The City has set a precedent for exempting structures such as hoophouses from commercial building code standards. These structures have instead been permitted based on engineering analysis related to their ability to withstand weather elements such as wind and snow. However, there is no standardized codification of the types of structures and buildings that will be exempted from the code.

V. Rainwater Harvesting

Rainwater harvesting is of interest on lots where public water is not available for irrigation. In these instances rain barrels may be attached to sheds or other accessory structures to catch and store rainwater. Section 225-4-2.5 of the building code regulates rain barrel use, specifically overflow discharge. Table 6 indicates the definitions and applicable code section for rain barrels.

Table 6. Rainwater Harvesting Containers and Structures

Structure	Existing Definition	Code Section(s)	Considerations
Rain Barrel	An above-ground prefabricated storage receptacle with an automatic overflow diversion system that collects and stores stormwater runoff from the roof of a structure that would have been otherwise routed into a storm drain.	Building Code: 225-4-2.5	None at this time.

City staff have heard practitioners express interest in using cisterns to store larger amounts of water than that held by rain barrels. The building code does not define cisterns. It also does not provide guidance for rainwater harvesting systems beyond rain barrels or for reuse of harvested rainwater (e.g., standards for non-potable and potable reuse).

VI. Razing and Fill Standards

In the context of the national foreclosure crisis, preparing vacant and abandoned land for reuse has taken on new and heightened significance in communities nationwide. Milwaukee is no exception and has dedicated significant staff time and expertise to moving vacant lots back into private ownership. Some agriculture nonprofits, such as Walnut Way, have been able to acquire property from the City for expansion of agricultural uses.

Often these vacant lots have buildings or structures which must be razed prior to transfer of the property. Chapter 218 of the building code provides regulations for the demolition of buildings and structures. Chapter 289 of the building code provides regulations for the filling of land.

The way houses are razed and the method and type of fill has implications for urban agriculture. In one instance, a local nonprofit obtained a city-owned lot and discovered remnants of a basement while

installing a water collection system. Removal of these materials can be cost prohibitive for nonprofits. Relevant razing and fill standards in Chapter 218 may include:

- 218-6-1 [...] All walls, floorings and structural remnants shall be removed to a depth of 2 feet below the adjacent grade.
- 218-6-8-a All materials not to be used for fill in excavated areas shall be removed from the premises as the demolition work continues.
- 218-6-8-b To prevent a public hazard or the creation of a public nuisance, upon completion of demolition, the premises shall, unless a permit for new construction has been issued, be filled where necessary with soil or other approved inorganic material not greater than one foot in dimension and graded to the level of the lot grade adjoining the building site, with allowance made for settlement.
- 218-6-8-c Once graded, the premises shall be returned to an erosion-free and dust-free condition by utilizing suitable landscaping, grass, trees, shrubs or other planted ground cover, or by other suitable means approved by the commissioner. If the premises is located in a downtown zoning district, compliance with s. 295-705-8-a shall be required.

Relevant fill standards in Chapter 289 may include:

- 289-1-5 Solid fill means earth, clay, soil, ground, stones and rocks, as well as broken concrete not exceeding 12 inches in diameter, or any mixture or combination thereof.
- 289-5-1 The top of the filled area shall be free from concrete and relatively free from gravel, and the topmost 4 inches of the fill material shall be soil suitable for growing grass.

The regulations do not require the complete removal of basements or other subterranean structures. The regulations also permit mixed-material fill within 4 inches of ground level. In both instances, there could be cost impacts for installation of agriculture-related infrastructure.

When transferring properties to new owners, regardless of end use, the City of Milwaukee has an “as is, where is” policy and recommends that the prospective owner assume there will be fill on the property. In some instances, where razing has been conducted by the City, records may be available to provide a more detailed indication of what may be present underground. In other instances, where razing was conducted by another entity or was not conducted recently, records may not be available.

When leasing or permitting gardens on city-owned property, the City of Milwaukee advises that agriculture practitioners are responsible for bringing in clean soil and working above ground in raised beds to avoid potential soil contamination concerns that exist for most urban properties.

VI. Findings

Milwaukee's Building and Zoning Code provides a solid basis for fostering the practice of urban agriculture across the City. By approaching urban agriculture as a use category in the zoning code, the City encourages the citywide distribution of agricultural uses, particularly in residential and industrial districts. Milwaukee is considered a leader in the field of urban agriculture because of municipal support for both the rapid growth of the local urban agriculture sector and innovations from local practitioners such as Growing Power's Vertical Farm. Findings from review of Milwaukee's Building and Zoning Code include areas for clarification of existing code language, potential barriers in the existing code and areas where the code could be expanded to include explicit support for and regulation of urban agriculture uses.

Areas for Clarification

In some instances, additional clarification could create consistency across the code and eliminate potential confusion:

- Beekeeping , chicken keeping and aquaculture
 - Aquaculture is not mentioned as part of the definition of agricultural use; nor is it mentioned in the building code or Chapter 78 of the City Code of Ordinances.
 - Beekeeping is not mentioned as part of the definition of agricultural use, but is clearly a use supported by Chapter 78 of the City Code of Ordinances.
 - Chicken keeping is included in the definition of Agricultural Use, which is permitted by right in residential and industrial districts and by special use permit in a number of other districts; however, Chapter 78 of the City Code of Ordinances limits chicken keeping to residential properties.
 - Similar clarification may be needed for beekeeping. The City Code of Ordinances does not explicitly limit beekeeping to residential properties; however, some staff interpret this to be the intent of the ordinance.
- Siting considerations
 - Accessory sheds are permitted on residential properties where there is a principal building. There is some confusion over whether sheds can be accessory on residential sites where agriculture is the principal use. Although some staff interpret this to be the intent of the ordinance, it is not explicitly stated.
 - Similarly, clarification is needed on the circumstances in which landscaping regulations and building setback regulations apply to agricultural uses, specifically non-structures such as gardens. Although the regulations might not apply to agricultural uses in most circumstances, the circumstances that would trigger the regulations may not be apparent to the common reader.

Potential Barriers

Only one potential direct barrier to urban agriculture was identified in stakeholder conversations. One stakeholder raised concerns about whether existing razing and fill standards in the building code

adequately support agricultural reuse. In instances where the City is transferring a vacant property to an urban agriculture nonprofit entity, there was concern that remaining structures below the required razing level may create a cost barrier to redevelopment.

Potential Areas for Additional Definition and Regulation

Finally, there were a number of instances where desired uses could present an opportunity for updating code language to reflect the growing types of uses in Milwaukee's urban agriculture sector, including:

- I. Defining Agricultural Use
- II. Defining and Regulating Structures and Buildings for Growing Crops
- III. Rainwater Harvesting
- IV. Sales in Residential Districts
- V. Food Processing
- VI. Commercial/Industrial Scale Composting

I. Defining Agricultural Use

Current zoning code definitions do not address scales of agricultural use; instead the definitions focus on growing food in structures such as greenhouses and raising crops and livestock. City staff indicated a specific interest in refining the definition of Agricultural Use based on three scales of use: home gardens, community gardens and urban farms.

II. Defining and Regulating Structures and Buildings for Growing Crops

Although the Agricultural Use category of the zoning code mentions several types of structures used for growing crops (e.g., cloth house, cold frame, greenhouse, lath house), neither the zoning code nor the building code offer definitions for these structures. In addition, the Milwaukee Development Center has seen a recent rise in the number of applications for construction of hoopouses, which also are not defined in the code.

Further, the emerging use of structures that are primarily used for growing crops, such as hoopouses, raises the question of when it may be appropriate to waive Commercial Building Code standards for such structures. At the moment, the City addresses this question on a case-by-case basis during the permitting process. Codification of building standards for structures such as hoopouses could streamline the permitting processes, creating efficiencies for permitting staff and further encouraging the use of such structures.

III. Rainwater Harvesting

Urban agriculture practitioners in need of water access are interested in developing more extensive rainwater harvesting systems than those currently regulated by Section 225-4-2.5 of the building code. Additional language may be needed to codify building standards for structures such as cisterns, ensure adequate drainage of yard and roof areas, and regulate end uses for harvested rainwater.

IV. Sales in Residential Districts

Some stakeholders raised the issue of compatibility of sales in residential districts. Milwaukee's code currently permits some types of sales such as sit-down restaurants, general retail establishments and

seasonal markets in specific residential districts. Other types of sales, including outdoor sales, are not permitted in residential areas.

V. Food Processing

There is a growing desire for food processing uses in Milwaukee's urban agriculture community. These uses include light food processing uses that could potentially be compatible with residential areas to larger scale industrial processing uses. Milwaukee's zoning code does not currently address food processing at any scale.

VI. Commercial/Industrial Scale Composting

There is also a growing desire for commercial/industrial scale composting facilities in Milwaukee. Again, the zoning code does not currently address this use category.

VII. Best Practices

Based on the findings related to potential areas in Milwaukee’s Building and Zoning Code for additional definition and regulation, this chapter will explore precedents for the following topics:

- I. Definitions of Agricultural Use
- II. Defining and Regulating Structures and Buildings for Growing Crops
- III. Rainwater Harvesting
- IV. Sales in Residential Districts
- V. Food Processing
- VI. Commercial/Industrial Scale Composting

I. *Definitions of Agricultural Use*

Municipalities have defined agricultural uses based on a variety of standards including type of use, scale, and whether the plants or products are intended for sale. The following sample definitions illustrate a range of approaches to defining agricultural uses. For an additional survey of definitions, see *Urban Agriculture: A Sixteen City Survey of Urban Agriculture Practices across the Country* (Turner Environmental Law Clinic, 2011).

Chicago, Illinois

Section 17-17-0104-H of the Chicago Zoning Ordinance offers the following description of urban farming operations:

Urban Farm.

Growing, washing, packaging and storage of fruits, vegetables and other plant products for wholesale or retail sales.

1. Indoor Operation. All allowed activities must be conducted within completely enclosed buildings. Typical operations include greenhouses, vertical farming, hydroponic systems and aquaponic systems.
2. Outdoor Operation. Allowed activities are conducted in unenclosed areas or partially enclosed structures. May include indoor operations in conjunction with outdoor operations. Typical operations include growing beds, growing fields, hoopouses and orchards.
3. Rooftop Operation. All allowed activities occur on the roof of a principal building as a principal use or accessory use. Typical operations include growing beds and growing trays.

Cleveland, Ohio

Section 336 of the Cleveland Zoning Code creates an Urban Garden District. Individual properties that are used for agricultural purposes may be rezoned to this district. The district defines two separate garden types, in part, by whether crops will be consumed or donated by the grower or sold for profit:

Community Garden: An area of land managed and maintained by a group of individuals to grow and harvest food crops and/or non-food, ornamental crops, such as flowers, for personal or group use, consumption or donation. Community gardens may be divided into separate plots for cultivation by one or more individuals or may be farmed collectively by members of the group and may include common areas maintained and used by group members.

Market Garden: An area of land managed and maintained by an individual or group of individuals to grow and harvest food crops and/or non-food, ornamental crops, such as flowers, to be sold for profit.

Kansas City, Kansas

Section 88-805-06 of the Kansas City Zoning and Development Code divides agricultural uses into several types and scales as follows. This allows for a more nuanced use classification system throughout the zoning districts.

Crop Agriculture: The use of land for the production of row crops, field crops, tree crops, timber, bees, apiary products or fur-bearing animals.

Animal Agriculture: The feeding, breeding, raising or holding of cattle, swine, poultry or other livestock, whether held in a confinement area or open pasture.

Urban Agriculture: A home garden, community garden, or community supported agriculture (CSA) farm.

1. Home Garden

A garden maintained by one or more individuals who reside in a dwelling unit located on the subject property to grow and harvest food and/or horticultural products for personal consumption or for sale or donation. [...]

2. Community Garden

An area of land managed and maintained by a group of individuals to grow and harvest food and/or horticultural products for personal or group consumption or for sale or donation. [...]

3. Community Supported Agriculture (CSA)

An area of land managed and maintained by an individual or group of individuals to grow and harvest food and/or horticultural products for shareholder consumption or for sale or donation.

Additionally, Section 88-312 offers setback and height regulations for row crops and specifies that crop agriculture may be an accessory or a primary use.

San Francisco, California

Definitions in Section 102 of the Planning Code separate agricultural endeavors by scale:

Neighborhood Agriculture: A use that occupies less than 1 acre for the production of food or horticultural crops to be harvested, sold, or donated and comply with the controls and standards herein. The use includes, but is not limited to, home, kitchen, and roof gardens. Farms that qualify as Neighborhood Agricultural use may include, but are not limited to, community gardens, community-supported agriculture, market gardens, and private farms. [...]

Large-Scale Urban Agriculture: The use of land for the production of food or horticultural crops to be harvested, sold, or donated that occur: (1) on a plot of land 1 acre or larger, or (2) on smaller parcels that cannot meet the physical and operational standards for Neighborhood Agriculture.

Seattle, Washington

Section 23.84A.002 of the Land Use Code defines five categories of Agricultural Use and explicitly excludes gardening uses in cases where gardening uses are incidental to principal uses and if plants or their products are not offered for sale.

Agricultural Use means any of the following:

Animal Husbandry: A use in which animals are reared or kept in order to sell the animals or their products, such as meat, fur or eggs, but does not include pet daycare centers or animal shelters and kennels. [...]

Aquaculture: A use in which food fish, shellfish or other marine foods, aquatic plants, or aquatic animals are cultured or grown in fresh or salt waters in order to sell them or the products they produce. [...]

Community Garden: A use in which land managed by a public or nonprofit organization, or a group of individuals, is used to grow plants and harvest food or ornamental crops from them for donation or for use by those cultivating the land and their households. [...]

Horticulture: A use, other than an urban farm, in which plants are grown for the sale of them or their products or for use in any business, and in which other customarily incidental products may be sold. [...]

Urban Farm: A use in which plants are grown for sale of the plants or their products, and in which the plants or their products are sold at the lot where they are grown or off site, or both, and in which no other items are sold. [...]

"Agricultural use" does not include landscaping or gardening that is incidental to a residential use or business if plants or their products are not sold.

Note that Seattle also has extensive codification of regulations relating to the impacts of urban farms in residential districts. Language related to this issue may be found in Section 23.42.051 of the Seattle Municipal Code.

II. Defining and Regulating Buildings and Structures Related to Urban Agriculture

As buildings and structures related to urban agriculture become more prominent across the urban landscape, some cities are choosing to update the definition sections of their building and zoning codes to include these buildings and structures. Often, regulations regarding setbacks, height restrictions, building coverage standards are incorporated into the zoning code following adoption of these definitions.

Examples of building code standards for these structures are more difficult to locate; however, New Jersey has adopted standards for exempting hoophouses from permitting requirements.

Cleveland, Ohio

Section 336 of the Cleveland Zoning Code offers definitions for greenhouses, hoophouses, and coldframes:

Greenhouse: A building made of glass, plastic or fiberglass in which plants are cultivated.

Hoophouse: A structure made of PVC piping or other material covered with translucent plastic, constructed in a "half-round" or "hoop" shape.

Coldframe: An unheated outdoor structure consisting of a wooden or concrete frame and a top of glass or clear plastic, used for protecting seedlings and plants from the cold.

These and other agriculture-related structures are permitted as accessory uses in the Urban Garden District, subject to the supplemental regulations of Section 336.05 which include setbacks, height restrictions, building coverage standards, signage standards, etc.

State of New Jersey

Section 3.14(b)23ii(4) and 3.24(b)23ii(5) of the New Jersey Uniform Construction Code contain regulations regarding exemption from permitting requirements for hoophouses. Hoophouses that meet certain standards related to purpose, contents, foundations, width, egress and covering material may be exempted. Relevant language includes:

- (4) A temporary greenhouse, also called a “hoophouse” or “polyhouse,” used exclusively for the production or storage of live plants, shall be exempt from the permit requirements of the Uniform Construction Code if it meets the following criteria:
 - (A) There is no permanent anchoring system or foundation;
 - (B) There is no storage, temporary or otherwise, of solvents, fertilizers, gases or other chemicals or flammable materials;
 - (C) The structure is no wider than 31 feet and there is an unobstructed path of no greater length than 150 feet from any point to a door or fully accessible wall area; and
 - (D) The covering of the structure is of a material no greater than six mils (152.4 micrometers) in thickness, conforming to N.F.P.A. 701 standard that yields approximately four pounds of maximum impact resistance to proved egress through the wall.
- (5) The provisions of (b)23ii(4) above notwithstanding, if a temporary greenhouse contains any device subject to the electrical subcode or any mechanical equipment subject to the mechanical subcode, then a permit shall be required for the device, system or fixture only. If the temporary greenhouse is connected to a potable water system, a permit shall be required for the backflow prevention devices only.

Seattle, Washington

Chapter 28.84A of the Land Use Code offers definitions for the following structures:

- Green roof: A landscaped area on the roof of a structure.
- Greenhouse: A structure, or portion of a structure, made primarily of glass or other translucent material, for which the primary purpose is the cultivation or protection of plants.
- Solar greenhouse: A solar collector that is a structure or portion of a structure utilizing glass or similar glazing material to collect direct sunlight for space heating purposes.

Seattle’s code also contains regulations for greenhouses pertaining to factors such as height and setbacks, including accessory greenhouses and greenhouses attached to principal buildings.

III. Rainwater Harvesting

Rainwater harvesting is a developing area of building code regulation. Neither the Universal Plumbing Code nor the International Plumbing Code adopted by many states, directly address rainwater harvesting systems. States and municipalities have taken a variety of approaches to regulating rainwater harvesting for non-potable uses, ranging from extensive regulation of all non-potable uses to exemption from building code standards for systems providing water solely for irrigation uses.

Texas Water Development Board

The Texas Manual on Rainwater Harvesting (2005), published by the Texas Water Development Board, provides information on rainwater harvesting system components, water quality and treatment, water balance and system sizing, rainwater harvesting guidelines and cost estimation. It also provides case studies on rainwater harvesting, including the Lady Bird Johnson Wildflower Center in Austin, Texas where up to 70,000 gallons of rainwater can be stored in on-site cisterns for reuse in garden and landscaping irrigation. The system collects approximately 300,000 gallons in an average rainfall year and the rainwater is used exclusively for non-potable irrigation.

State of Oregon

Oregon has approved rainwater harvesting systems as an alternate method of providing water for nonpotable uses. Alternative Method Ruling No. OPSC 08-03 addresses standards for residential and commercial uses of nonpotable water including hose bibbs, toilets, urinals, clothes washing and heating, ventilation and air conditioning water supplies. The ruling provides the following exemption for irrigation uses:

Rainwater harvesting systems used in commercial or residential applications that only provide irrigation are exempt from this ruling and the plumbing code. Rainwater under this alternate method may only be collected from roofs.

The ruling also provides standards for system components including gutters, piping, storage tanks, pressure tanks and pumps.

State of Washington

The Washington State Building Code incorporates extensive amendments to the Uniform Plumbing Code to address rainwater harvesting. Section 51-56-1600 addresses gray water systems including nonpotable reuse water systems and rainwater harvesting systems. The code defines the components of a rainwater harvesting system, regulates the permitting process, addresses requirements for cisterns including size, siting, overflow, pumps and piping. The code specifically includes systems that collect rainwater for plumbing fixtures, industrial applications and irrigation purposes.

IV. Sales in Residential Districts

Sales of urban agriculture products in residential districts may create unintended impacts on nearby residences such as increased traffic and parking congestion. Zoning codes may regulate a variety of aspects of sales, including:

- The types of urban agriculture uses that may include sales on site.
- The types of residential districts permit sales by right or by special use permit.
- The types of products that may be sold (e.g., fresh produce, horticulture, value-added products).
- The permissible hours or dates of sales activity.
- The structures related to sales.

Cleveland, Ohio

For urban garden properties that have been rezoned to an Urban Garden District classification, sales are permitted on site. These properties may be located in neighborhood areas, although they are no longer zoned residential. Section 336.03 of the Land Use Code permits “occasional sales of items grown at the site” for community gardens and “the sale of crops produced on the site” for market gardens.

Section 336.05 further clarifies that, “Seasonal farm stands shall be removed from the premises or stored inside a building on the premises during that time of the year when the garden is not open for public use.”

Kansas City, Kansas

According to Sections 88-312-01 and 88-312-02 of the Kansas City Zoning and Development Code, Kansas City permits sales in residential districts in the following instances:

- Sales are permitted by-right on properties zoned R-80, the City’s lowest density residential district. This district allows sales of “whole, uncut, fresh food and/or horticultural products grown on crop agriculture property” (88-312-01-A-1-a).
- In residential zoning districts other than R-80, sales may be allowed by special use permit.
- Additional regulation of sales occurs by use type:
 - Home Garden: Food and/or horticultural products grown in the home garden may be used for personal consumption, and only whole, uncut, fresh food and/or horticultural products may be donated or sold on-site within a reasonable amount of time of its harvest. The sales may only take place during the period of May 15 through October 15.
 - Community Garden: Sales and donation of only whole, uncut, fresh food and/or horticultural products may occur on-site on otherwise vacant property, but may not occur on residentially zoned and occupied property, except property zoned R-80.
 - Community Supported Agriculture: Sales and donation of only whole, uncut, fresh food and/or horticultural products grown on the CSA property may be allowed.

San Francisco, California

Section 102.35 of the San Francisco Planning Code regulates the sale of food and horticultural crops grown in Neighborhood Agriculture plots as follows:

- (5) Sale of food and/or horticultural products from the use may occur between the hours of 6 a.m. and 8 p.m.
- (6) In all districts, sales, pick-ups, and donations of fresh food and horticultural products grown on-site are permitted. In every district except “Residential Districts,” value-added products where the primary ingredients are grown on-site are permitted.

Seattle, Washington

Section 23.42.051 of the Seattle Municipal Code states that, for Urban Farms in residential districts, “retail sales and all other public uses of the farm shall begin no earlier than 7:00 a.m. and end by 7:00 p.m. every day of the week.”

V. Food Processing

A number of municipalities have adopted use categories that include food processing uses. Some have chosen to create special zoning districts that encourage the location of food processing uses near urban agriculture or other “green” uses. Other municipalities include food processing as an industrial use subcategory.

Boston, Massachusetts

The Olmsted Green Smart Growth Overlay Zone, described in Article 87A of the Boston Zoning Code and Enabling Act, contains a use category for “food production uses including a farm, garden, food production center and/or incubator and food oriented retail.” The overlay zone is a smart growth zone intended to promote density, mixed use and green uses. No further description of “food production center and/or incubator” is given.

Burlington, Vermont

Section 4.4.3 of the Burlington Comprehensive Development Ordinance creates an Agriculture Processing and Energy district and includes dimensional standards and density regulations. Parking is intended to be hidden from street view. The district description is as follows:

The Agricultural Processing and Energy (E-AE) district is intended primarily to accommodate enterprises engaged in the manufacturing, processing, and distribution of agricultural goods and products, and those related to the generation of energy from renewable sources. This district is intended to serve as a community of manufacturing and service businesses that work together to improve their environmental and economic performance. [...]

Portland, Oregon

Section 33.920.300 of the Portland Zoning Code includes food processing and storage in the Manufacturing and Production subcategory of Industrial Uses. The use category includes language identifying use characteristics, accessory uses, examples and exceptions, as follows:

Manufacturing And Production firms are involved in the manufacturing, processing, fabrication, packaging, or assembly of goods. Natural, man-made, raw, secondary, or partially completed materials may be used. Products may be finished or semi-finished and are generally made for the wholesale market, for transfer to other plants, or to order for firms or consumers. Goods are generally not displayed or sold on site, but if so, they are a subordinate part of sales. Relatively few customers come to the manufacturing site.

The Manufacturing and Production subcategory includes warehouses and offices as accessory uses and assumes that, “relatively few customers come to the manufacturing site.”

VI. Commercial/Industrial Scale Composting

Large-scale composting operations may be included in zoning districts related to waste and recycling or industrial uses. Considerations for appropriate use classification may include on-site storage; potential for off-site impacts such as noise, smells or dust; distribution methods; traffic intensity, including potential for truck traffic; and potential for on-site sales.

Chicago, Illinois

Section 7-28-10 of the Municipal Code of Chicago includes a definition of composting operations, and Section 7-28-15 codifies composting standards, with a particular focus on health and safety regulations. Standards include regulations regarding nuisance, rat and vector control, surface water, mixing, moisture level and sewage restriction. Section 17-17-0105 D of the Chicago Zoning Code allows Class III Recycling Facilities to engage in composting operations.

Garden composting operations of less than 5 cubic feet where materials are generated and reused on site are exempted from permit requirements. Additional definitions in Section 7-28-10 include compost, composting, composting material, food waste, landscape waste, vectors, organic waste and wood waste.

Portland, Oregon

Section 33.920.300 of the Portland Zoning Code includes composting in the Waste-Related subcategory of Industrial Uses. The use category includes language identifying use characteristics, accessory uses, examples and exceptions. The Waste-Related characteristics description is as follows:

Waste-Related uses are characterized by uses that receive solid or liquid wastes from others for disposal on the site or for transfer to another location, uses that collect sanitary wastes, or uses that manufacture or produce goods from the biological decomposition of organic material. [...]

The Waste-Related subcategory includes offices and repackaging of materials as accessory uses. It does not explicitly prohibit or allow on-site sales of products.

VIII. Recommendations

This chapter identifies a range of recommendations for Milwaukee’s Building and Zoning Code from areas that could use clarification, to identification of potential barriers to urban agriculture and finally areas for additional definition and regulation.

Recommendations identified under the Areas for Clarification section are items where different sections of the code could be better aligned, or where current implementation and application of the code may be more liberal than a strict reading of the code would permit. In these instances, there is already a body of practice to guide any changes to the code and the recommended changes may be relatively simple to incorporate.

The recommendation identified under the Potential Barriers section was specifically called out by a stakeholder as potential barrier to the expansion of urban agriculture in Milwaukee. An approach for addressing the barrier is offered.

Recommendations identified under the Areas for Additional Definition and Regulation section are issues and uses that may not be fully addressed by the current code. These emerging areas of practice could be better supported by integrating definitions, structural standards, and permissible use categories into the code; however, they may require more extensive research, public discussion and debate than the other recommendations in this chapter.

Recommendations and associated considerations include:

Areas for Clarification

1. *Update the agricultural use category in the zoning code to include beekeeping and aquaculture.*

For consistency with section 78-6 of the City Code of Ordinances, consider adding beekeeping to the definition of “raising crops and livestock (Section 295-201-473 and 295-202-14) Due to growing practitioner interest in aquaculture, consider adding aquaculture to the definition as well.

2. *Clarify use classifications in the zoning code for beekeeping and chicken keeping, and update Chapter 78 of the Milwaukee City Code of Ordinances as needed.*

To clarify the discrepancy between sections 78-6 and 78-6.5 of the City Code of Ordinances and the use classifications for Agricultural Uses in the zoning code, consider adding a note to the zoning code clarifying that the zoning code permits beekeeping and chicken keeping in any district that allows the raising of crops and livestock, but that Chapter 78 of the City Code prohibits chicken keeping and beekeeping on non-residential properties.

Consider creating consistency between the zoning code and Chapter 78 of the City Code of Ordinances by aligning the types of properties where chicken keeping and beekeeping are allowable.

3. *Clarify whether accessory storage structures, such as sheds, may be permitted accessory uses on sites where agriculture is the principal use.*

A strict reading of zoning code section 295-505-3-b would indicate that accessory structures such as sheds are not permitted on residential district properties without a principal building. The code could be updated to admit accessory structures where agriculture is the primary use.

4. *Clarify the conditions under which landscaping regulations and setback requirements may apply to agricultural uses, including non-structural uses such as gardens.*

To the everyday reader, it may be unclear whether the landscaping regulations and setback requirements in the zoning code -apply to non-structural agricultural uses. Consider adding a statement clarifying that these regulations and requirements do not apply to non-structure agricultural uses, except in the following instance. Landscaping regulations may apply to non-structural agricultural uses if one of the following activities is occurring on the premises: the screening of parking lots and similar motor vehicle uses, storage and salvage yards, and dumpsters and mechanical equipment.

If landscaping and setback regulations are desired for non-structural agricultural uses, consider developing regulations specific to these uses. Municipalities such as Kansas City have addressed this issue by providing specific height and setback regulations for growing row crops directly in their definitions of agricultural uses (see page 23 of this report).

Potential Barrier

Work to ensure that below-grade structural remnants, such as basements, do not present a cost barrier for agricultural reuse of vacant, city-owned properties. The city can support this goal by ensuring potential property owners understand the City's "as is, where is" policy regarding property transfers and by clarifying what documentation regarding razing and fill activity may or may not be available for the property under consideration.

While most urban agriculture practitioners work largely above ground in raised beds due to urban soil quality concerns, some practitioners with more extensive operations (e.g., urban agriculture nonprofit entities) may need to install below-grade amenities such as irrigation systems. For a nonprofit entity, encountering remnants of a below-grade structure such as a basement could create a cost-prohibitive barrier to installation of such amenities.

The City could consider flagging property transfers of city-owned vacant property where the potential property owner has indicated they are considering agriculture as an end use. In these instances, City staff could discuss the "as is, where is" policy with the purchaser and clarify what razing and fill-related documentation may available. In instances where the purchaser is considering below-grade amenities such as irrigation systems, city staff might clarify that the purchaser understands the potential cost implications of encountering remnants of below-grade structures on the property.

Areas for Additional Definition and Regulation

1. *Consider refining the use definition for Agricultural Use as appropriate to include considerations such as scales of agricultural use, accessory versus principal use, whether agricultural products are intended for sale, and regulation of sales in residential districts.*

Milwaukee's current definition for Agricultural Use is permissive and contains minimal regulations on urban agriculture. This approach can make it easier to permit urban agricultural activities.

Where additional guidance or regulation is desired, considerations may include scale, accessory and principal uses, sales versus personal use, and sales in residential districts. For examples of city codes that incorporate such considerations, see pages 22-24, 26-27 of this report.

2. *Consider expanding the definition of agricultural use to include a general category for agricultural structures, developing standards regarding where such structures can be located, and addressing structural considerations.*

Although Milwaukee's current definition for Agricultural Use references multiple types of structures and buildings used for growing crops, definitions for these structures and buildings are absent from the building and zoning code as are structural standards and guidance on where these structures can be located. Use of these types of structures is likely to continue to rise, as indicated by recent building applications for hoophouse structures.

Adding a general category for agricultural structure to the definition of agricultural use could eliminate the need to name and define every type of agricultural structure. For examples of city codes that incorporate considerations such as structural standards and guidance on where agriculture-related structures can be located, see pages 24-25 of this report.

Offering structural standards in the City of Milwaukee Building Code that exempt these structures and buildings from Commercial Building Code standards could expedite permitting processes. For an example of a state code that offers permit exemptions for hoophouses meeting certain standards, see pages 24-25 of this report.

3. *Consider adding a definition, structural standards and permissible use categories for rainwater harvesting systems such as cisterns to the City of Milwaukee Building and Zoning Code.*

Milwaukee's Building Code currently contains a definition and standards for use of rain barrels but does not address other types of rainwater harvesting systems. There is growing practitioner interest in using rainwater harvesting systems with cisterns for additional water storage capacity, particularly on sites where municipal water is not available for agricultural use. Addition of a plumbing code section on rainwater harvesting that would encompass both rain barrel and cistern-based systems could address this need. For examples of plumbing codes that address rainwater harvesting, see pages 25-26 of this report.

4. *Consider adding use definitions and classifications to the zoning code for food processing and commercial/industrial scale composting operations.*

Both city staff and urban agriculture practitioners have identified that urban agriculture has significant potential to become an economic driver for the City of Milwaukee and for creating local jobs. Practitioners have expressed interest in both food processing and large-scale composting operations. Neither use is addressed in the zoning code, although existing use categories such as Storage, Recycling and Wholesale Trade Uses and Industrial Uses may cover some aspects of the processing/composting use.

In the case of food processing, it may be appropriate to consider creating a new use category all together; composting operations, depending on scale, could be incorporated into one of the existing use categories mentioned above. Considerations for appropriate use classification may include on-site storage; potential for off-site impacts such as noise, smells or dust; distribution methods; traffic intensity, including potential for truck traffic; and potential for on-site sales. For examples of city codes that incorporate food processing and composting uses, see pages 27-29 of this report.

Appendix I. Use Classification Table

Table 7. Use Classification for Agriculture-Related Uses

	Educational Uses (295-303-3)	Community-Serving Uses (295-303-4)	Commercial and Office Uses (295-303-5)			Health Care & Social Assistance Uses (295-303-6)	General Service Uses (295-303-7)	Motor Vehicle Uses (295-303-8)		Accommodation and Food Services Uses (295-303-9)
			General Office	Retail Establishment, General	Outdoor Merchandise Sales			Social Service Facility	Catering Service	
Residential Districts	RS1-RS5	N	N	N	N	N	N	N	N	N
	RS6	L	L	L	L	L	L	L	L	L
	RT1-RT3	N	N	N	N	N	N	N	N	N
	RT4	L	S	L	L	S	L	N	N	L
Residential Districts	RM1-RM2	N	S	N	N	N	N	N	N	N
	RM3-RM7	L	S	L	L	N	L	N	N	L
	R01	Y	S	Y	L	N	L	N	N	Y
	R02	Y	S	Y	L	N	L	N	N	Y
Commercial Districts	NS1	Y	S	Y	L	S	Y	N	S	Y
	NS2	Y	S	Y	L	S	Y	N	S	Y
	LB1	Y	S	Y	L	S	Y	N	S	Y
	LB2	Y	S	Y	L	S	Y	N	S	Y
Commercial Districts	RB1	Y	S	Y	L	S	Y	S	S	Y
	RB2	Y	S	Y	L	S	Y	S	S	Y
	CS	Y	S	Y	L	S	Y	N	S	Y
	C9A	Y	S	L	L	S	L	N	S	L
Downtown Districts	C9B	Y	S	Y	Y	S	S	N	S	Y
	C9C	Y	S	Y	Y	S	S	N	S	Y
	C9D	Y	S	Y	S	N	N	N	S	Y
	C9E	Y	S	L	Y	S	N	N	S	Y
Downtown Districts	C9F	Y	S	Y	Y	S	N	N	S	Y
	C9G	Y	S	Y	Y	Y	Y	N	S	Y
	C9H	S	S	Y	S	S	Y	S	Y	Y
	I01/I02	S	N	Y	N	N	N	L	Y	L
Industrial Districts	IL1/IL2	S	N	Y	N	N	N	S	Y	L
	IM	S	S	Y	Y	L	N	S	Y	Y
	IH	N	N	L	N	N	N	Y	Y	L
	PK	S	L	N	L	N	N	N	N	L
Special Districts	TL	Y	S	Y	L	N	S	N	N	S

Key

Y	Permitted Use. This use is permitted as a matter of right subject to all performance standards.
L	Limited Use. This use is permitted only when the use meets the standards of sub. 2 of the relevant zoning district.
S	Special Use. This use is permitted only if the board approves a special use permit.
N	Prohibited Use.

Table 7 (continued). Use Classifications for Agriculture-Related Uses

	Storage, Recycling & Wholesale Trade Uses (295-303-11)		Industrial Uses (295-303-14)			Agricultural Uses (295-303-14)		Utility and Public Service Uses (295-303-15)		Temporary Uses (295-303-16)	
	Wholesale & Distribution Facility, Indoor	Wholesale & Distribution Facility, Outdoor	Manufacturing, Light	Manufacturing, Heavy	Manufacturing, Intense	Research & Development	Plant Nursery or Greenhouse	Raising of Crops or Livestock	Small Wind Energy System	Seasonal Market	Live Entertainment Special Event
Residential Districts	RS1-RS5	N	N	N	N	N	Y	Y	L	L	L
	RS6	N	N	N	N	N	Y	Y	L	L	L
	RT1-RT3	N	N	N	N	N	Y	Y	L	L	L
	RT4	N	N	N	N	N	Y	Y	L	L	L
	RM1-RM2	N	N	N	N	N	Y	Y	L	L	L
	RM3-RM7	N	N	N	N	N	Y	Y	L	L	L
	R01	N	N	N	N	N	Y	Y	L	L	L
R02	N	N	N	N	N	N	Y	L	L	L	
Commercial Districts	NS1	S	N	N	N	N	S	S	Y	L	L
	NS2	S	N	N	N	N	S	S	Y	L	L
	LB1	L	S	L	N	N	S	S	Y	L	L
	LB2	L	S	L	N	N	S	S	Y	L	L
	RB1	L	S	L	N	N	S	S	Y	L	L
	RB2	L	S	L	N	N	S	S	Y	L	L
	CS	Y	S	L	N	N	S	S	Y	L	L
Downtown Districts	C9A	N	N	N	N	N	N	N	Y	L	L
	C9B	S	N	L	N	N	Y	N	Y	L	L
	C9C	S	N	L	N	N	Y	N	Y	L	L
	C9D	N	N	N	N	N	N	N	Y	L	L
	C9E	N	N	L	N	N	Y	N	Y	L	L
	C9F	S	N	L	N	N	Y	N	Y	L	L
	C9G	Y	N	Y	N	N	Y	N	Y	L	L
Industrial Districts	C9H	Y	N	Y	N	N	Y	N	Y	L	L
	I01/I02	Y	S	Y	N	N	Y	Y	Y	L	L
	IL1/IL2	Y	Y	Y	S	N	Y	Y	Y	L	L
	IM	Y	S	Y	S	N	Y	Y	Y	L	L
Special Districts	IH	Y	Y	Y	Y	S	Y	Y	Y	L	L
	PK	N	N	N	N	N	L	Y	Y	L	L
	TL	N	N	N	N	N	S	S	S	L	L

Key	
Y	Permitted Use. This use is permitted as a matter of right subject to all performance standards.
L	Limited Use. This use is permitted only when the use meets the standards of sub. 2 of the relevant zoning district.
S	Special Use. This use is permitted only if the board approves a special use permit.
N	Prohibited Use.

Appendix II. Additional Resources

- Hodgson, Kimberley, Campbell, Marcia Caton, and Bailkey (2011). *Urban Agriculture: Growing Healthy, Sustainable Places*. Chicago, Illinois: American Planning Association.
- Mogk, John E., Kwaitdowski, Sarah, and Weindorf, Mary J. (2010). *Promoting urban agriculture as an alternative land use for vacant properties in the city of Detroit: benefits, problems and proposals for a regulatory framework for successful land use integration*. Detroit, Michigan: Wayne University Law School.
- Morales, Alfonso and Kettles, Greg. (2009). Zoning for public markets and street vendors. *Zoning Practice*, 25 (2), pp. 1-9.
- Mukherji, Nina and Morales, Alfonso. (2010). Zoning for urban agriculture. *Zoning Practice*, 27 (3), pp. 1-7.
- New Jersey Department of Agriculture in consultation with the New Jersey Department of Community Affairs. (2004). *Fact sheet for temporary greenhouses under the New Jersey Uniform Construction Code*. New Jersey: Author.
- Texas Water Development Board. (2005). *The Texas manual on rainwater harvesting*. Austin, Texas: Author.
- Turner Environmental Law Clinic. (2011). *Urban agriculture: a sixteen city survey of urban agriculture practices across the country*. Atlanta, Georgia: Author.
- University at Buffalo, The State University of New York. (2011). *Planning to eat? Innovative local government plans and policies to build healthy food systems in the United States*. Buffalo, New York: Author.

Appendix III. Federal and Municipal Contacts

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