Urban Agriculture in Colony Park: 
Growing a Sustainable Community

Contents
Urban agriculture and the larger food system  2
Sustainability Goals and Planned Urban Agriculture in Colony Park 3
Colony Park Food Forest 4
Waste Management: Cambio Verde, Curitiba 7
Integrated Urban Agriculture: Agritopia 8
Value Added Products: La Morada de Los Andes 10
Integrated Urban Agriculture: Todmorden 12
Stormwater Management: Agriculture as Green Infrastructure 13
Living with Agriculture: Kleingarten 16
Composting and Waste Management 18
Urban Agriculture: Horizontal Surfaces 20
Urban Agriculture: Vertical Surfaces 21
Economic Development and Incentives 22
Appendix: Additional Resources 25
CRP 384 Urban Agricultural Systems
Fall 2014
University of Texas at Austin
School of Architecture
Community and Regional Planning Program
Introduction

Urban Agriculture in the Larger Food System

The global food system is unsustainable in its current form. There is a disconnect between production incentives and the nutritional needs of consumers. Much of our food travels hundreds or even thousands of miles before it reaches a local retailer using fossil fuels in the process. Many people go hungry while food rots. In 2013, there were 17.5 million households in the United States considered food insecure.\(^1\) Food insecurity is a household-level economic and social condition of limited or uncertain access to adequate food.\(^2\) In Austin, 19% of children are food insecure.\(^3\)

Although food production has always existed in cities, it has been pushed out in the modern era. Edwin Marty, Food Policy Manager in the Office of Sustainability at the City of Austin, has estimated that Austin produces just 1% of its food. With the reduction in urban food production communities have lost the collective knowledge required to grow food and many do not know how to prepare seasonal, regionally grown foods.

Food access can be limited by the neighborhood that a family lives in. A food desert is defined by the USDA as “an area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities.”\(^4\) 78724, the zip code where Colony Park is located, currently qualifies as a food desert.\(^5\)

Urban Agriculture can help address these problems by providing healthy, low cost, local food that is less environmentally costly to produce and distribute. An educational component of an urban agriculture program could teach community members how to prepare accessible, seasonal foods which would increase their self-reliance. Urban agriculture can stimulate local economies and contribute to community development.

“Communities have found that gardens beautify areas, build a sense of community among neighbors, and abate criminal activity in or near vacant lots. These gardens also prevent trash accumulation, illegal dumping, and littering.” - University of Baltimore

---

Sustainability Goals & Outcomes for Colony Park
Colony Park has the potential to be a national model for sustainable modern living. The master planning team has drawn upon best practices and evidence-based sustainability metrics from national and local sources. At the national level these include the 10 principals of "One Planet Living" and HUD's Livability Principles' models, as well as the EPA and DOT's benchmarks for sustainable development. At their core, these entities advocate for strategies that place value upon:
- Health and happiness of residents
- Supporting the local economy and building a local green job market
- Fostering local culture and community, respecting existing communities
- Protecting nature as an amenity for residents and to reduce habitat loss
- Sustainable water use and management
- Supporting local and sustainable food systems
- Using local and sustainable materials
- Provide more transportation choices to create safer streets, reduce pollution, and encourage physical activity
- Working toward zero waste and zero carbon emissions, which translate to a consumer cost-savings in energy use as well as pollution reduction
- Promoting land use and housing equity

At the local level, city experts from the Parks and Recreation and Resources & Recovery departments were consulted. And most critically, the Imagine Austin and CodeNEXT guiding documents of the City of Austin have been heavily drawn upon. The city has identified the following as central to its future development:
- Growing Austin as a compact, connected city
- Integrate nature into the city
- Provide paths to prosperity for all
- Increase access to community services, food, and civic/community engagement
- Develop as an affordable and healthy community
- Sustainably manage water, energy, and other resources
- Support arts and cultural events and activities

Urban Agriculture to Further Sustainability Goals
While one can easily understand urban agriculture as a system that can address nutrition, food access and security, and provide educational opportunities, it has a myriad of other benefits that can directly support many of the goals listed above. It can also sustainably address stormwater management, land use equity, carbon offsetting and urban heat island mitigation, local job growth, enhancing community connectivity, reducing waste and carbon emissions, protecting nature and habitat, and encourage higher levels of physical activity among residents.

Rethinking Urban Agriculture in the Colony Park Master Plan
Small community gardens are incorporated into each of the neighborhoods in Colony Park. While it is very exciting that this is a feature of all communities, the scale of the plots the community gardens occupy is small relative to the size of the site. Only 1.2 acres has been designated as community garden space.

Here you can see the size of the community gardens, highlighted in red, is small in comparison to the scale of the neighborhoods.

---

When urban agriculture has the potential to contribute to so many of the City's desired sustainability outcomes, identifying additional opportunities to integrate agriculture into the master plan can be a low-cost development strategy that will be advantageous for Colony Park.

What follows is an analysis of typologies of urban agriculturally-focused communities and case studies of successful projects from North America and beyond that can serve as models for urban agriculture in Colony Park.

Each option has been analyzed and the benefit of its implementation quantified, resulting in a menu of options that can be employed at either a broad scale across the site, or at a site scale within select neighborhoods.
Colony Park Food Forest
An important aspect of the Colony Park Master Plan (CPMP) is the issue of food production. This section will address the importance of a food forest that will be implemented in the CPMP. It will also look at methods from another food forest which can provide inspiration and help to explain ways in which it can benefit the community.

Current Colony Park Master Plan
The current CPMP has set aside land for recreational purposes that will include a food forest and school garden. This land is located on steeper hills that can provide immersive views and naturalistic pathways for exploration. Feedback from residents has shown that they have a strong desire for a food forest. Aaron Nu'man, a local resident, is enthusiastic about the idea and has designed a plan containing vegetables and various types of fruits and herbs that he believes would benefit the community.  

Beacon Food Forest
Funded by the Seattle Department of Neighborhoods and maintained by dozens of volunteers, Beacon food forest contains edible fruit trees, a berry patch, and a nut tree grove that provides shade and sustenance. There are over 200 different types of edible plants and it is open for anyone to stop by and pick from.  

Beacon forest also has ‘snack paths’ containing fruits such as strawberries and mulberries that are available for picking. If Colony Park implemented snack paths, children could have easy access to fruits and vegetables. There is a main path that is used every day by children on their way to school. The path spans over grassy hills and is about 1 mile in length which is ample space for various edible varieties. A few examples of fruit trees that grow well in the Austin climate are native Texas persimmon, Texas barberry, peaches, apricots, figs, plums, pomegranates, pecans, walnuts. One pecan tree can yield about 50 lbs of pecans per year. An apricot tree can produce up to 500 pieces of fruit per year, and a peach tree can produce 200 peaches with proper care. While these trees can be planted along the snack path, they would also be great candidates for the food forest located next to the school. Children could visit the food forest during lunch or after school for a quick snack or whenever they are hungry. One of the main benefits is that healthy fruits and vegetables would be readily available and wouldn't cost anything.

The CPMP has also provided a plan for a school garden. There is a main corridor connecting the school to the garden which has a great opportunity to become a ‘naturalistic gateway’. Having a direct connection to the school will not only provide easy access to food, but also links nature to the school. Similar to the snack path, the gateway could also contain various edible fruits and nuts.

Linking the school garden and food forest can create a refuge for children and adults alike. An edible food forest is a great opportunity to provide a place for community gatherings and celebration of food.

---

10 Beacon Food Forest Website: http://www.beaconfoodforest.org/
Beacon food forest video: http://vimeo.com/43583846
12 Fruit Trees for Austin: http://easytexasgardens.blogspot.com/2013/01/basic-fruit-trees-for-central-texas-and.html
13 Pecan Production Guidelines For Small Orchards And Home Yards . Extension.arizona.edu
14 Tree Plantation http://www.treeplantation.com/fruit-trees.html
Colony Park Master Plan for Food Forest

One of the Beacon Food Forest snack paths
Foodurbanism.org

Fruit trees along the snack paths
Fastcoexist.com
Waste Management

Cambio Verde: Waste Management Increases Access to Jobs, Food and Public Transport

A great example of a waste management that is layered into other programs of the city is *Cambio Verde* in Curitiba Brazil. This program targets disadvantaged neighborhoods with green job programs that exchange waste for food, restore habitats and promotes environmental stewardship in schools throughout the city. In the late 1970's Curitiba suffered heavily from urban sprawl and environmental degradation. Since the implementation of this program in the late 1990's, nearly all 5 rivers that run through the city have been restored. An average of 28,000 tons of waste are exchanged for food each year, at a rate of four pounds of trash exchanged for one pound of fruits and vegetables.

This program is also coordinated with the Curitiba’s world renowned Bus Rapid Transit System (BRT), which enables passengers to use a bus ticket as a voucher for food discounts at *Cambio Verde* collection sites. Since *Cambio Verde* introduction, Curitiba has become the greenest city in South America based on amount of green space per inhabitant. Furthermore it has the highest rate of use for public transit among large cities.

*Cambio Verde* is significant for Colony Park as an example of expanding the scope of a maintenance crew to be a model program that creates jobs and increases both access to food and public transport. Colony Park has a huge tract of land that is going to come under increased urban pressure, putting the area at a greater risk of environmental degradation. *Cambio Verde* serves as an outstanding example of a program that fosters community support to maintain their surrounding environment.

Locals trade in their recyclables for produce through Curitiba’s Câmbio Verde program. Photo: Mark Ellis.

---

15 Curitiba Municipal Website: www.curtiba.pr.gov.br/conteudo/cambio-verde-smab, December 12th, 2014
16 *Americas News Quarterly Magazine*: www.americasquarterly.org/content/tale-two-cities-curitiba Dec 12, 2014
Integrated Urban Agriculture

Agritopia - Gilbert, Arizona

Located in Gilbert, Arizona, Agritopia is a mixed-use 166-acre residential development with an urban farm as the central feature of its design. It was the first traditional neighborhood development in the Phoenix area and among the nation’s first mixed-use communities to integrate working agriculture. Rather than focus on community gardens for its residents, the Farm at Agritopia, as in most similar developments across the country, is privately owned and operated, designed to serve as the key element in the community. Crops from the farm’s 20-acres of pastures, gardens, and orchards include dates, peaches, citrus, beets, basil and other herbs, a broad mix of lettuce, carrots, tomatoes, and more. Additionally, the farm is designed to incorporate animals into its production mix: bees for honey, chickens for eggs, and goats and cows for milk and cheese. These products serve Joe’s Farm Grill, the Coffee Shop, and the Farm Stand, all located within Agritopia and open throughout the year.

Agritopia has 452 residential lots featuring a mix of cottage and classic style homes ranging from 1,300 to 3,200 square feet, in addition to carriage home bungalows. Homes have been reported to sell at 10% above Average Market Value. An 118-unit senior assisted living and 250 luxury apartments are under development. Including 60,000 square feet of commercial uses, the community is greatly focused on connectivity through the use of small lots, narrow roadways, rear parking allies, front porches, and a community center. Agritopia also features integrated sports fields, pocket parks, a green belt, and access to regional parks.

Developers across the country are gaining interest in this concept. They are beginning to realize that unlike a golf course, which costs millions to build and maintain, they can provide a green space that actually earns a profit and could potentially give them a tax break for preserving agricultural land. Current residents enjoy being able to walk down the street with their kids to get fresh, healthy food. For people who enjoy gardening and growing their own food but find it difficult to find the time to do it, a community such as Agritopia gives them the opportunity to have a farm without all the responsibility.

---


could potentially adopt Agritopia’s model as a way to maximize the production of its gardens and food forest, in order to bring access to healthy fresh foods to a greater number of its residents and existing surrounding communities.

As a valuable reference to insights from developers, architects, and farmers on the concept of building communities with farms, please consult the following report from the Liberty Prairie Foundation: http://www.prairiecrossing.com/libertyprairiefoundation/LPF-Publication9-10.pdf.
Value Added Products

La Morada de Los Andes

Urban agriculture can be expensive and is not always economically feasible. That is why many urban farms might specialize in selling "value added products" rather than the raw produce. Examples of this might include honey, cheese, jams, and pickled vegetables. A little bit of extra work in the processing side of production can result in much higher prices for crops. This makes urban farms more economically feasible and can help to create jobs in the production of these value added products.

La Morada de Los Andes is an example of a housing community that has not only incorporated housing into agriculture, but has incorporated the production of value added products. There are 83 home sites located on 1,010 acres in Valle de Uco, a grape-growing region in Argentina. The development is built in the middle of a vineyard, with all of the lots facing the vines, and includes its own winery. The developers are selling "vineyard life," as it is phrased on the development’s website. Residents can participate in wine making at the winery as much or as little as desired. Each household also receives 30 bottles of wine annually.19

---

While wine production might not be in high demand in east Austin, the idea of incorporating the production of value added products into housing could be integrated into Colony Park. This could provide some additional food security for the neighborhood as well as provide some economic opportunity for those who might have trouble going elsewhere in the city to work.
Integrated Urban Agriculture

Todmorden

Urban agriculture is not limited necessarily to a single form. However, it often takes the form of a lot in an urban environment, sometimes on a roof, where crops are grown in rows and maintained like a farm that would be located outside of the city. While this approach makes management of the crops relatively easy, it leaves a lot of urban land out of the picture that could be used for agricultural production. Medians, right of ways, and planters can also be used for agricultural production to help create an edible landscape rather than just a isolated gardens on empty lots.

Through the "Incredible, Edible Todmorden" campaign, the city of Todmorden in the United Kingdom has become a center of local food production. In particular, the people of Todmorden originally implemented guerilla gardening techniques and started growing food in unlikely places, or pretty much anywhere agriculture could fit. Food was growing in graveyards, in front of stores, and at train stations. Eventually it became policy for urban gardening to be implemented on public land20. Similar methods could be used and implemented in Colony Park to provide an edible landscape that is incorporated into the built environment. This can provide access to fresh produce in areas that are not served by a grocery store while creating a more decentralized urban agriculture system.

---

Stormwater Management

Agriculture as Green Infrastructure for Stormwater Management

The utilization of agricultural land as green infrastructure for stormwater management has proven to be a successful strategy for preserving soil, flora and fauna, as well as agriculture and open spaces. Providing stormwater infrastructure that allows a significant size of land to flood is ideal for enhancing nutrients in the soil, but large land tracts are rare in urban environments. Furthermore, many urban environments have had their water cycles disrupted due to high impervious cover and lack of continuous green space.

Image source: American Society of Landscape Architects: Daniel (Zhicheng) Xu, Purdue University

www.asla.org/2013studentawards/128.html

The use of reclaimed water is one of the largest sources for irrigating urban crops and landscapes. This includes water from rooftops, roads, parking lots, storm water drains or polluted streams. However, there are a lot of concerns regarding stormwater pollutants and the safe consumption food that uses reclaimed water. Some agricultural crops are great for phytoremediation, the uptake and capture of pollutants by plants/crops which removes them from soil and water. For example corn and other grains are great at removing lead or cadmium from contaminated sites. However, this agriculture would not be fit for human consumption. Several species of fruit and nut trees capture pollutants and do not transfer them to the fruit and may be as better choice if the community wishes to consume food from a polluted area.
The image below shows a detail section of a fully integrated landscape with the built environment that takes advantage of water from street, rooftops, ground and stores this water underground or in garden beds. This highlights the importance of infiltration for soil nutrition and moisture through swales, rain gardens and food gardens. The Colony Park master plan includes rain gardens and swales but they fall short in layering stormwater function and agricultural production.


The Austin Energy Green Building Council\(^1\) provides a calculator for water recollection from rooftops, drainage areas, as well as condensate. It will also tabulate how much water will need to be stored based off landscape size and plant type, or storage needs based on human use patterns like 140 gallons per day, which is a goal sought for by Austin’s sustainability plan. The Colony Park master plan should utilize this tool for all new building and landscape typologies. For example, if Overton Elementary was equipped with a rooftop rainwater harvesting system it could capture about 1.5 million gallons per year. There are 716 students at Overton Elementary, which equates to approximately 50,000 gallons used each day. The table below shows an example of this calculator, and the amount of rain harvest per month and irrigation needs for Overton Elementary.
## Condensate Collection Data Table

<table>
<thead>
<tr>
<th>Ventilation CFM:</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Type:</td>
<td>School</td>
</tr>
<tr>
<td>Constant or Variable CFM?</td>
<td>Variable</td>
</tr>
<tr>
<td>Approximate CFM Reduction:</td>
<td>25%</td>
</tr>
</tbody>
</table>

(Use 0% for Constant CFM)

## Building Occupancy Schedules Table

(Building Occupancy Schedules from ASHRAE 90.1-2004)
- **Retail**: M-F 6 AM - 9 PM; Sa 6 AM - 10 PM; Su 8 AM - 5 PM
- **Office**: M-F 6 AM - 10 PM; Sa 6 AM - 6 PM
- **School**: M-F 7 AM - 10 PM; Sa 8 AM - 1 PM
- **Hotel or 24-Hour**: 24 hours, 7 days per week
- **Restaurant**: M-F 7 AM - 3 AM; Sa 9 AM - 3 AM; Su 10 AM - 3 AM

## Total Water Collection Table

<table>
<thead>
<tr>
<th>Month</th>
<th>Irrigation Demand (gal/mo)</th>
<th>Plumbing Demand (gal/mo)</th>
<th>Avg. Rainfall on Roof (gallons)</th>
<th>Avg. Condensate Produced (gallons)</th>
<th>Avg. End of Month Storage (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>2,166</td>
<td>15,812</td>
<td>88.784</td>
<td>2</td>
<td>12,667</td>
</tr>
<tr>
<td>February</td>
<td>2,879</td>
<td>14,300</td>
<td>119.040</td>
<td>1</td>
<td>12,667</td>
</tr>
<tr>
<td>March</td>
<td>4,655</td>
<td>15,812</td>
<td>91.264</td>
<td>6</td>
<td>12,667</td>
</tr>
<tr>
<td>April</td>
<td>5,705</td>
<td>15,322</td>
<td>143.344</td>
<td>14</td>
<td>12,667</td>
</tr>
<tr>
<td>May</td>
<td>8,173</td>
<td>15,812</td>
<td>218.240</td>
<td>23</td>
<td>12,667</td>
</tr>
<tr>
<td>June</td>
<td>6,963</td>
<td>15,322</td>
<td>169.136</td>
<td>19</td>
<td>12,667</td>
</tr>
<tr>
<td>July</td>
<td>8,790</td>
<td>15,812</td>
<td>88.800</td>
<td>18</td>
<td>12,667</td>
</tr>
<tr>
<td>August</td>
<td>8,877</td>
<td>15,812</td>
<td>100.688</td>
<td>18</td>
<td>12,667</td>
</tr>
<tr>
<td>September</td>
<td>6,733</td>
<td>15,322</td>
<td>159.712</td>
<td>18</td>
<td>12,667</td>
</tr>
<tr>
<td>October</td>
<td>5,337</td>
<td>15,812</td>
<td>173.600</td>
<td>9</td>
<td>12,667</td>
</tr>
<tr>
<td>November</td>
<td>3,334</td>
<td>15,322</td>
<td>101.680</td>
<td>9</td>
<td>12,667</td>
</tr>
<tr>
<td>December</td>
<td>2,252</td>
<td>15,812</td>
<td>108.128</td>
<td>1</td>
<td>12,667</td>
</tr>
<tr>
<td>Total</td>
<td>67,863</td>
<td>186,275</td>
<td>1,560,416</td>
<td>138</td>
<td></td>
</tr>
</tbody>
</table>

Living with Agriculture

Kleingarten (Small Garden Colony)

Another typology highlighted in the colony park master plan is the eco cottage, although its specific dimensions are uncertain. One typology that could be of use to the Colony Park project is the allotment gardens of Europe. In Germany the Kleingartenkolonie (Small Garden Colony) rose to popularity in the 19th century as a way of making use of unused urban land and contributing to local food production. These gardens were rented to the inner city poor in order to grow food. Lease agreements required the growth of certain percentages of edible plants. Little houses less than 500 square feet serve as summer cottages on tiny plots of land and provide an escape from the city in the city. Garden colonies, especially in Berlin, continue to be an extremely popular pastime and a point of community pride--there are often years-long waits for plots.

Gartengemeinschaft Papestrasse (Garden Colony), Berlin, Germany

Colony Park's plan calls for eco cottages could become an iteration of the Kleingarten. Eco cottages could be rented at a subsidized cost where lower income residents are required to grow food for themselves and

---

22 http://www.stadtentwicklung.berlin.de/umwelt/stadtgruen/kleingaerten/
23 http://instagram.com/p/oskiJF-nLWx/
could sell excess through local venues at Colony Park contributing to the economic development of the area and fostering a unique horticultural identity.

In just a 20 foot by 10 foot (200 square feet) plot there could be enough to make a serious impact on someone's annual food expenses. Using just half of that, the other used for housing, one could grow fresh produce or could sell excess fruits and vegetables to other members of the community. Having such a small plot can be seen as advantageous because there is little to care for. In just 100 square feet of garden space one can grow nearly $700 worth of produce per year.\textsuperscript{24} Although this is only a sample statistic of what can be produced in 100 square feet, one can infer that growing one's own fruits and vegetables could at least cut down on money spent to purchase fresh produce.

This concept of the small garden colony as a landscape of production not just ornamentation presents the opportunity for affordable housing that is tied with healthier living and food production on site at a small unit scale.

Figures showing the scale of typical Berlin garden colonies in comparison to city fabric

\begin{itemize}
\item Google maps 2014
\item Allotments of the Schoeneberg-southern area\textsuperscript{25}
\item Google Maps 2014
\end{itemize}

\textsuperscript{25} http://www.kleingartenkolonie-gruene-aue.de/Kleingaerten_des_Schoeneberger_Suedgelaendes.htm
Composting and Waste Management

Compost Collection

The Colony Park Master Plan features compost collection by Austin Resource Recovery among its goals for processing organic area waste in the future. This intention is rooted in Austin's 2040 Zero Waste Plan, a vision that has led the City of Austin to begin a Curbside Organics Collection Pilot in an effort to keep at least 90% of discarded material out of the landfill. In 2012, an average of 4.38 pounds of waste was generated per person per day. It is estimated that organic materials make up two thirds of the solid waste stream, indicating that efforts to compost in Colony Park could save 2.89 pounds of waste per person per day from entering the landfill. The Austin Resource Recovery pilot program for compost collection began retrieving yard trimmings, food scraps, and food-soiled paper during the week of December 31, 2012. In February 2014, Austin Resource Recovery began collecting compost from 6,500 additional households and provides weekly service to 14,000 Austin households. The Colony Park Master Plan is written in such a way that each building in the Colony Park Master Plan is designed to allow for adequate space to be allocated for the collection of yard trimmings and compostables in either outdoor or garage space. These provisions are included in the plan with the hope that Austin Resource Recovery will expand its compost collection program to the Colony Park neighborhood.

In preparation for this expansion of the services offered by Austin Resource Recovery, it may be advisable to reference the example set by the city of San Francisco. The municipality neither allows recyclables nor compostables to enter its trash. Instead, plants, food, and soiled paper must be disposed of in each household’s green compost bin. San Francisco's city-wide mandatory composting and recycling program has been in effect since October 2009, creating nutrient-rich soil that is used in local farms, and therefore serves as an example that the City of Austin's Curbside Organics Collection Pilot may learn from and expand upon as it becomes further ingrained within the services provided by Austin Resource Recovery.

Integrated Composting Practices in a Community

While the City of Austin's Curbside Organics Collection Pilot retrieves organic material from the curb and turns the waste into a nutrient-rich soil that is donated to landscape public places and sold to commercial vendors for sale, the intent in Colony Park is to establish community-based composting facilities that could support agricultural practices within the neighborhood. The Colony Park composting system is expected to range in scale from backyard to neighborhood-wide efforts. A similar effort may be found in the town of Annapolis Royal in Nova Scotia. The town promotes home and neighborhood composting for

---

30 Ibid.
33 Ibid.
37 Ibid.
the management of organics as part of the town’s zero waste goal. Colony Park could learn from the Annapolis Royal example by providing large neighborhood composters for those who cannot participate in backyard composting as a result of health or location constraints. The neighborhood composters are built and maintained by the town so that residents are able to compost essentially any type of household organic food scraps and yard waste. In the Colony Park Master Plan, meats and other protein byproducts are not allowed to enter the compost out of concern that the compost processes properly. The Annapolis Royal example demonstrates how composting may be more thoroughly integrated into the Colony Park neighborhood. Furthermore, the town of Annapolis Royal sells Green Cones that are used for backyard composting of food scraps and grease. The town of Annapolis Royal additionally provides subsidies for the Green Cones and backyard composters that are used by households throughout the town, a role that Colony Park could adopt as well. The example of Annapolis Royal is one to which Colony Park can refer for methods by which to integrate composting practices more holistically into the neighborhood.

40 Ibid.
43 Ibid.
Urban Agriculture and Buildings

Horizontal Surfaces
The Colony Park master plan talks about maximizing value through lot and building design. Some of the ways this is described is through providing solar fences, south facing roofs, and a minimum of one off street parking space to provide flexibility in backyard design.

The design character of buildings varies based on the regulating plan which in turn determines the building type per zone. Although there will be a myriad of building typologies within the master plan, the commonality between all buildings is that there are potential horizontal (roofs and yards) and vertical (balconies and facades) surfaces that can be utilized for urban agriculture.

This can be especially true in residential building types, where front yards can be transformed into edible properties, instead of a typical suburban lawn. A variety of fruit or vegetable that is seasonal also serves to beautify the front of house, and transform the garden seasonally.

Similarly, roofs have the potential to not only reduce urban heat island values by being planted, but can also be a source of food for the family/community occupying the building. In addition, planted roofs have the potential to be sustained by energy produced from solar panels, thereby maximizing value of the lot which is in line with the Colony Park masterplan guidelines.

An example of an integrated food production system is the proposal put forward by Romses Architects for Vancouver's 2020 Challenge competition. As seen in the image below, the buildings serve as points of sustainable energy integrating renewable energy and food production across a residential neighborhood. As the neighborhood densifies, the food web will densify, thus promoting a self sustaining community within Colony Park.

Image source: Romses Architects via Designboom.com

**Vertical Surfaces**

Building Integrated Agriculture can provide more than just fresh, local food. Integrating vegetation into buildings can improve energy management, air quality, interior comfort and worker productivity. With its high yields and efficient use of resources, urban hydroponic food production also provides urban food security and eases pressure on the environment from conventional agriculture. The proposed idea in the Colony Park master plan is how vertical planes of buildings can be incorporated into the urban agriculture in different ways based on the buildings type, scale and functions.

- One of the great examples of these vertical planes is a double skin green facade in the office building in Tokyo. This green wall is designed with vegetation on the interior as well as exterior. Integrated with the building are urban farming facilities that occupy roughly 20% of the entire office space and support 200 species of fruits.

- In the master plan of colony park, porches are required on the front of all single family homes, with the minimum of 8 feet wide, which could provide additional space for growing food.
- In the balconies of stacked multi-family, mixed used, retail and institutional buildings using both hydroponic and soil based farming is recommended.

---

**Economic Development and Incentives**

This graphic presents the main forms of urban agriculture and food-related businesses. With the specific examples provided above in mind, community members can consider how these options will address their needs and goals. Given the forward-thinking nature of the Colony Park plan, innovative hybrids of these various forms should be considered and encouraged.

![Rural-Urban Agriculture Continuum](image)

From Kimberly Hodgson's *Urban Agriculture: Growing Healthy, Sustainable Places.*
**Goal-Related Actions in the Imagine Austin plan**
Whichever type of food production, processing, or retailing will best meet the community's needs, these city directives will be of assistance in starting up and maintaining the project. The city offers a variety of support strategies for both small and larger scale development, from community gardens and food stands to urban farms and grocery stores.

<table>
<thead>
<tr>
<th>E A18: Promoting the formation of worker-owned and community-owned businesses (co-ops) that sell local products. Providing tax incentives for locally-owned businesses. Expanding economic opportunities and measurable results for Minority- and Women-Owned Business Enterprise (MBE / WBE) firms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E A21: Establish strategies, incentives, or investments in healthful outdoor activities and venues that generate economic benefits to local businesses while promoting wellness.</td>
</tr>
<tr>
<td>CE A12: Support local farmers by creating incentives and removing regulatory barriers, offering tailored small business support, and creating public information campaigns to promote local food.</td>
</tr>
<tr>
<td>CE A14: Identify and map food deserts and provide incentives for full service grocery stores and farmers markets to locate in these underserved areas.</td>
</tr>
<tr>
<td>S A8: Make healthy and local foods accessible, particularly in underserved areas, by removing barriers and providing incentives for the establishment of sustainable community gardens, urban farms, neighborhood grocery stores, farmers markets, and farm stands and mobile vegetable sales carts.</td>
</tr>
<tr>
<td>S A10: Develop partnerships with public and private stakeholders to promote awareness and educate residents about healthy food choices, sources, and preparation, including keeping up-to-date and accessible data on community garden plot availability, cooking classes, and city and county property for neighborhood gardens and family farms, and the sale of sustainably produced and culturally appropriate food at farmers markets, farm stands, mobile vegetable carts, and neighborhood grocery stores.</td>
</tr>
</tbody>
</table>

**Loyola Innovation District & Town Center**

*The Loyola Town Center (LTC) and Innovation District is the front door of the Master Plan. This mixed use place is planned to be a unique retail, service and restaurant destination drawing from a larger geographic area.*

While the town center will be a great location for grocery stores, farm stands, restaurants, and cafés, the innovation center may also provide opportunities for food- or agriculture-related enterprise. The innovation district's combination of education, job-training, and economic development make it a promising site for boosting local food systems. The plan emphasizes innovative “green tech” trades and demonstration projects, both of which could accommodate urban agricultural development. The planned Eco-Concierge service could provide support to these projects by providing information and programming to stimulate community interest and involvement.

---

Nonprofit Resources
Many nonprofit foundations provide grant-based support for urban agriculture projects. For-profit food businesses may not always make affordable healthy food more accessible to lower-income residents. A development designed to remain affordable to area residents should be equally committed to bringing low-cost nutritional food into Colony Park and the surrounding neighborhoods. While the city intends to make this goal a priority by encouraging for-profit enterprise, they also recognize the need for nonprofit partners. Fortunately Austin is home to a rich array of non-profit models as well as an active volunteer culture.

The Sustainable Food Center’s *Grow Local* program offers gardening classes and leadership training aimed at starting and maintaining community gardens. They also provide a resource sharing program, *Spread the Harvest*, which distributes free gardening supplies to over 10,000 gardeners in the Austin area. [http://sustainablefoodcenter.org/programs/grow-local](http://sustainablefoodcenter.org/programs/grow-local)

Texas Community Building with Attorney Resources (C-BAR) provides free legal resources and business law services to nonprofit organizations serving low-income communities, from incorporating new entities and obtaining IRS tax exempt status to providing guidance on governance matters and employment law. [http://texasbar.org/](http://texasbar.org/)

Texas C-BAR also provides information and training for small businesses serving low-income communities through the Legal Assistance to Microenterprises Project (LAMP). [http://lamp.texasbar.org/](http://lamp.texasbar.org/)

Source: *Colony Park Sustainable Communities Initiative Master Plan*
Appendix

Additional Foundation and Government Resources
National Sustainable Agriculture Coalition grassroots guide to 2014 Farm Bill initiatives related to local and regional food systems, including funding for farmers markets, farm to school grants, food insecurity nutrition incentives, value-added producer grants:
http://sustainableagriculture.net/publications/grassrootsguide/local-food-systems-rural-development/

The Wallace Center's Healthy Urban Food Enterprise Development provides case studies, research, innovative models, guides, webinars, and toolkits: http://www.wallacecenter.org/hufed/

The Wallace Center's Community Food Enterprise provides detailed case studies of innovative models for food-related businesses with smaller scale, modest ambition, limited local ownership, and high social standards:
http://www.wallacecenter.org/communityfoodenterprise/

Business Alliance for Local Living Economies works to identify and connect pioneering leaders, spread solutions, and attract investment toward local economies:
https://bealocalist.org/attracting-investment

Start2Farm is a database of programs and resources for beginning farmers and ranchers in the United States:
http://www.start2farm.gov/

WIC Farmers Market Nutrition Program (Texas Department of Agriculture):
http://www.squaremeals.org/Programs/FarmersMarketNutritionProgram.aspx

Texas Young Farmer Grant (Texas Department of Agriculture):
http://www.texasagriculture.gov/GrantsServices/RuralEconomicDevelopment/TexasAgriculturalFinanceAuthority/YoungFarmerGrant.aspx