

Existing Conditions: INTRODUCTION

Massachusetts' local food system is a complex network of consumers, workers, businesses, owners, and supporting organizations engaged in an array of activities, including fishing, farming, preparing, marketing, distributing, serving, and eating food. This network works to produce food that nourishes our communities, sustains businesses and workers, and supports responsible stewardship of our land and water. Historically a rich agricultural and fishing State, Massachusetts is a leader in direct to consumer sales of agricultural products, and is among the leading states in production of a number of specialty crops.

In recent decades, momentum in our local food movement has grown. Demand for local food is increasing, and farmers markets, community supported agriculture and fisheries programs, farm to school initiatives, cooperatives, and other local food markets are springing up throughout the Commonwealth and are making locally produced foods available to a broader population. Local and state governments around the nation are helping to grow vibrant local food systems, and Massachusetts has been a leader in many ways.

As Massachusetts works to increase local production, it is important to acknowledge that its food system does not exist in isolation, and that there are some imbalances between our food production and consumption. Massachusetts is the third most densely populated state in the nation, giving farmers, fishermen, and food producers in the State access to many consumers. However, high land prices and a short growing season limit production capacity. Additionally, although seafood catches in the Commonwealth surpass the amount of fish consumed by Massachusetts residents, most of that catch is exported, and much of the fish eaten in the State is imported. As such, we are deeply connected to the global food system.

Consolidation of the national and global food supply chain over the past 50 years has helped to fuel recent interest in growing local food systems. In the past century, the number of U.S. farms has declined, while the average farm size has increased significantly.¹ Technological advances and greater urbanization following World War II accelerated the shift from a predominantly locally-based agricultural system, to a national and global system. On-farm mechanization and availability of chemical fertilizers enabled higher production yields and crop specialization. Today, U.S. agriculture is highly regionalized and industrialized, with most corn and soybeans grown in the Midwest, and most vegetables in California.

As the agricultural landscape changed in the U.S., international food markets developed and expanded, and businesses throughout the food supply chain scaled up and consolidated. Improvements to transportation and shipping systems, and advancements in refrigeration made it possible to import food from around the world. Free trade agreements enabled easier exchange of goods across international borders. And a growing U.S. immigrant population demanded a greater variety and diversity of foods.²

¹ Dimitri, Carolyn, Anne BW Effland, and Neilson Chase Conklin. (2005). "The 20th century transformation of US agriculture and farm policy." Accessed April 2015 from http://www.ers.usda.gov/media/259572/eib3_1_.pdf.

² Martinez, Steve. (2010). "Local food systems; concepts, impacts, and issues." USDA, Economic Research Service.

Whereas in the early 1900s most people in the U.S. got their food from local supply chains and often produced their own food, by the end of that century the majority relied on more distant and complex food markets to meet their food needs.

There are many challenges inherent in such a complex, global system. The world's population has quadrupled in just the past 100 years, now exceeding seven billion people, all in need of food. Droughts, flooding, and extreme weather events are compromising some food production and changing where agriculture can happen. Land use patterns are changing, with development competing with agriculture for limited and irreplaceable fertile soils. Food safety has become a greater concern, with small contaminations having potentially large consequences as food is produced in large quantities in central locations and then travels long distances to consumers. The combination of these pressures makes food production increasingly unpredictable, and can result in swings in food prices.³

Hunger and diet-related health concerns remain significant challenges. In the United States, 14.3 percent of people don't have enough to eat.⁴ More than one third of U.S. adults are obese and their obesity is making many of them ill.⁵ These issues disproportionately impact our population across race and class lines. Poor, minority, and single-parent households experience food insecurity more than the general populations.⁶ Minority populations experience obesity and other diet-related illness at higher rates than national averages.⁷ Even with better conditions than much of the rest of the nation, Massachusetts must address the complex causes of food insecurity and poor health impacting residents, such as inadequate income, lack of transportation and other barriers. As long as these barriers exist, hunger and poor nutrition will continue to have significant social and economic consequences for many residents.

Climate change poses increasing challenges to food production and yields worldwide. Shifting global weather patterns are influencing the geography of arable land, and rising sea temperatures are impacting marine ecosystems. More extreme temperatures, rainfall, and pest and disease migration are impacting land-based agriculture; warming temperatures and acidification of the ocean are prompting marine habitat migration; and occurrences of algal blooms and disease are compromising marine life and health.⁸ Climate change modeling scenarios anticipate that crop yields will be more negatively impacted in the Southern Hemisphere, whereas warmer temperatures and longer and more productive growing seasons may be experienced in the Northern Hemisphere – suggesting that developing countries will be more negatively impacted than developed countries.⁹

³ Graziano da Silva, José. (2012). "Tackling the Root Causes of High Food Prices and Hunger." World Food Programme. Accessed April 2015 from <https://www.wfp.org/news/news-release/tackling-root-causes-high-food-prices-and-hunger>.

⁴ "Food Security in the U.S: Food Security Status of U.S. Households in 2013." (2015). USDA, Economic Research Service. Accessed April 2015 from <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#foodsecure>.

⁵ "Overweight and Obesity." (2014). Centers for Disease Control and Prevention. Accessed April 2015 from <http://www.cdc.gov/obesity/data/adult.html>.

⁶ Alisha Coleman-Jensen, Christian Gregory, Anita Singh. (2014). USDA, Economic Research Service. Accessed April 2015 from http://www.ers.usda.gov/media/1565410/err173_summary.pdf.

⁷ "Overweight and Obesity." (2014). Centers for Disease Control and Prevention. Accessed April 2015 from <http://www.cdc.gov/obesity/data/adult.html>.

⁸ Kalra, Naveen, Subhash Chander, H. Pathak, P.K. Aggarwal, N.C. Gupta, Mukesh Sehgal, Debashis Chakraborty. (2007). "Impacts of Climate Change on Agriculture." *Outlook on Agriculture* 36, no.2 (2007): 109-118.

⁹ Rosenzweig, Cynthia and Martin L. Parry. (1994). "Potential impact of climate change on world food supply." *Nature* 367, no. 6459 (1994): 133-138.

Massachusetts' temperatures are anticipated to increase over the next century to resemble today's temperatures in Virginia and North Carolina.¹⁰ These changes could result in higher agricultural yields, but some land-based agricultural industries – such as cranberry, maple syrup, and dairy – are likely to be threatened.^{11,12,13} Migration of species, like cod to cooler waters farther north, and impaired habitat and development of shellfish could further compromise the Massachusetts seafood industry.¹⁴

Attention to the needs of the food system workforce is critical as well. With more than one billion food system workers around the world, international farm labor accounts for about 35 percent of global employment.¹⁵ In the United States 16 percent of the workforce is employed in the food system, a larger percentage than any other employment sector.¹⁶ These employees work at farms, slaughterhouses, processing facilities, warehouses, grocery stores, and restaurants. Most food sector jobs are lower-wage and offer limited employee benefits and few opportunities for advancement, and the workers responsible for producing our nation's food use food stamps at twice the rate of the rest of the U.S. workforce.¹⁷

It is within this context that the goals and recommendations of the Massachusetts Local Food Action Plan have been developed. This chapter provides a more detailed examination of the issues and data within our State that frame our local food system, and provide a basis for the changes called for in this plan.

10 "Climate Change: Impacts & Adaptation: Climate Impacts in the Northeast." (nd). U.S. Environmental Protection Agency. Accessed April 2015 from <http://www.epa.gov/climatechange/impacts-adaptation/northeast.html>.

11 Hanson, Emma, Matt Hazel, Christa Mayfield, Nina Rogowsky. (2014). "Climate Change and the Maple Syrup Industry in Massachusetts." Tufts University on behalf of the Massachusetts Food Policy Council. Unpublished.

12 Cunningham, Hilary, Kate Schaffner, Emily Dimiero. (2014). "Climate Change Adaptation and Mitigation Recommendations for Massachusetts Dairy Producers." Tufts University on behalf of the Massachusetts Food Policy Council. Unpublished.

13 Foster West, Erin, Elena Martinez, Ashley McCarthy, Max Wall. (2014). "Climate Change and Cranberry Cultivation in Massachusetts." Tufts University on behalf of the Massachusetts Food Policy Council. Unpublished.

14 Ayache, Nicole, Abigail Harper, Leah Hermens, Hannah Sobel. (2014). "Massachusetts Marine Fishing and Climate Change." Tufts University on behalf of the Massachusetts Food Policy Council. Unpublished.

15 "Industries and Sectors: Agriculture; plantations; other rural sectors." (nd). International Labour Organization. Accessed April 2015 from <http://www.ilo.org/global/industries-and-sectors/agriculture-plantations-other-rural-sectors/lang--en/index.htm>.

16 Dawson, Gloria. (2014). "The Hands that Feed Us." *Gastronomica: The Journal of Food and Culture* 14 no.2 (2014): 95-97.

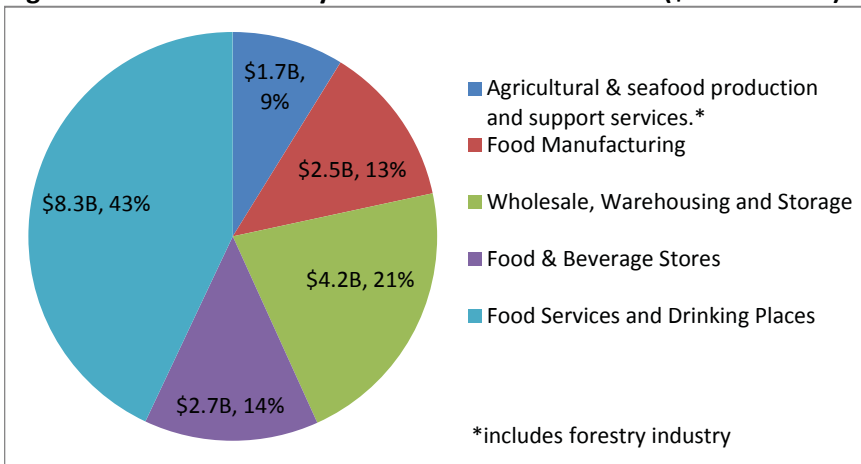
17 Dawson, Gloria. (2014). "The Hands that Feed Us." *Gastronomica: The Journal of Food and Culture* 14 no.2 (2014): 95-97.

Food System Businesses

The following section offers summary data for food system businesses in Massachusetts. Subsequent sections delve deeper into the data for the various food system sectors. *Note: Data Collection and Analysis Methods: This plan has adopted the method for assessing food system data developed by Vermont Farm to Plate’s Methodology for Assembling Food System Establishments and Employment to estimate the total number of food system establishments. The reason for using the Vermont method is the value of shared data. It is hoped that all New England states may eventually use a consistent method for calculating their respective food system employment and establishment numbers. Using this approach, each state will be better able to collaborate on issues that cross state lines. An example of the findings of the Vermont Farm to Plate method can be viewed at <http://www.vtfoodatlas.com/getting-to-2020/17-jobs-and-establishments>. The Methodology for Assembling Food System Establishments and Employment is included in the Appendices of this document.*

Economic Data

Figure EC.1: 2012 Food System Gross State Product (\$19.3 Billion)



The food system’s 2012 gross state product was \$19.3 billion or 4.5% of total gross state product. Food services and drinking places made up nearly half the food system gross state product.

Sources: Bureau of Economic Analysis and InfoUSA 2011

Note: seafood production and support services draws from value-added data. Data on seafood landings is available in the Fishing section.

Table EC.1: Change in Number of Food System Businesses 2002 to 2012

Category	2012 Total Establishments	% Change 2002-2012
Farm Inputs	1,542	4%
Wholesale Distribution	1,457	-2%
Manufacturing	1,479	12%
Food and Beverage Stores	6,714	9%
Food Services and Drinking Places	19,115	11%
Food Production (includes fishing)	11,034	13%
Total Food System Businesses	41,341	10%

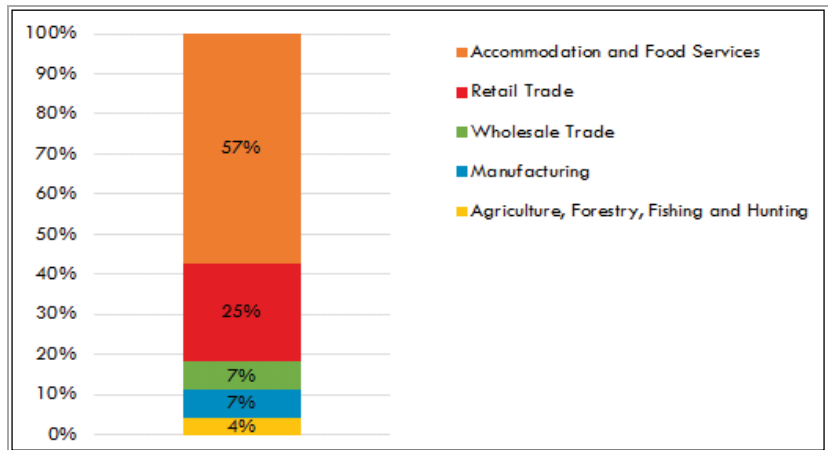
The number of food system businesses increased 10% between 2002 and 2012. The number of all businesses in the state increased by 12% during the same time.

Source: EOLWD ES-202, Census Nonemployer Statistics, USDA Census of Agriculture 2012
 Note: Farm Inputs include support activities for crop production and animal production, support activities for forestry, and veterinary services. Wholesale Distribution includes grocery and related product merchant wholesalers, farm product raw material merchant wholesalers, farm supplies merchant wholesalers and refrigerated warehousing and storage. Manufacturing includes food, beverage and tobacco manufacturing. Food production includes farms, fishing, hunting, and trapping.

Food System Workers Demographics

There are approximately 426,000 food system workers in our State’s food system, and food system workers residing in the State make up about ten percent of the Massachusetts workforce. Between 2002 and 2012 the number of food system workers increased 13 percent, as compared with the State’s overall workforce which increased three percent.

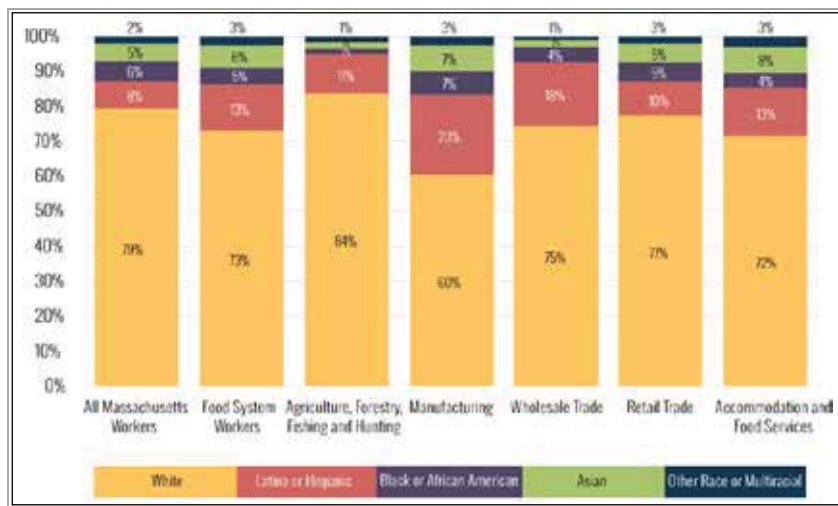
Figure EC.2: Food System Workers by Industry



Food system workers in accommodation and food service jobs account for over half of all food system workers.

Source: U.S. Census Bureau ACS Public Use Microdata Sample, 2007-2011.

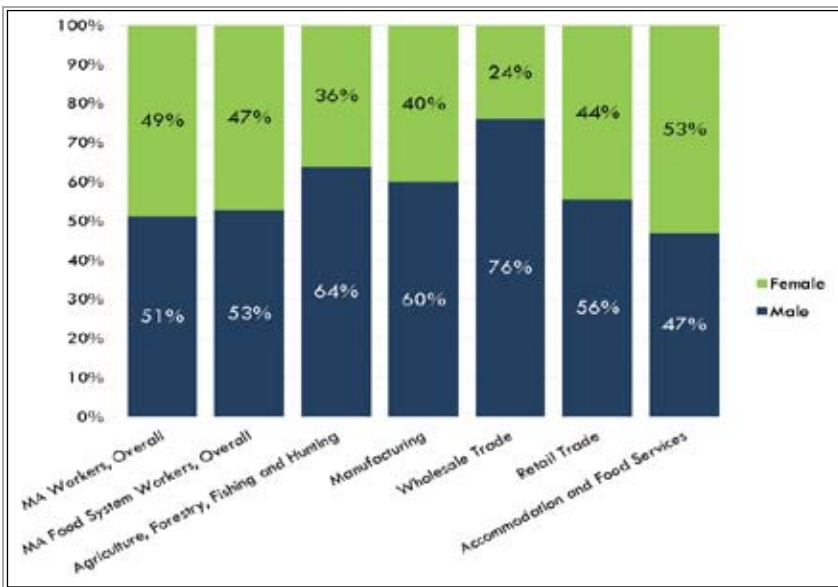
Figure EC.3: Food System Workers by Race and Ethnicity



Source: U.S. Census Bureau ACS Public Use Microdata Sample, 2007-2011.

Non-white workers make up 21% of the overall workforce and 27% of the food system workforce. The sector with the largest share of non-white workers is food manufacturing.

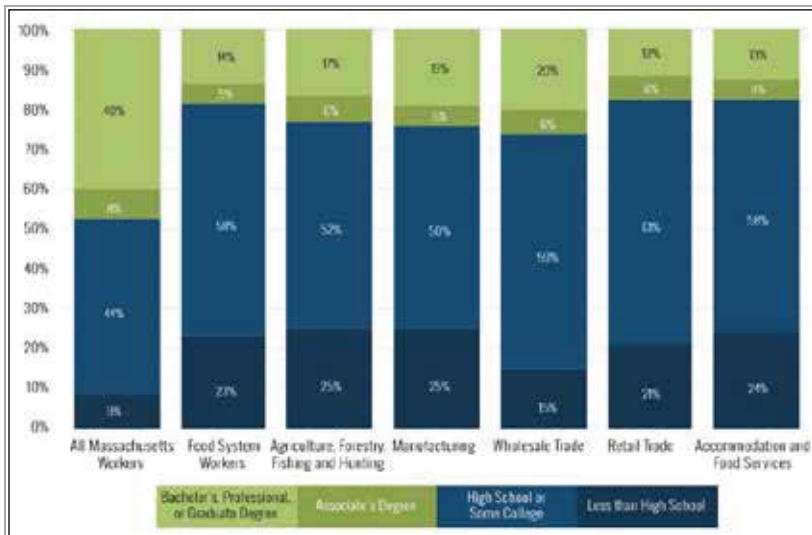
Figure EC.4: Food System Workers by Gender



Source: U.S. Census Bureau American Community Survey Public Use Microdata Sample, 2007-2011.

Food system workers are 53% male and 47% female. Wholesale trade employs the fewest females, while accommodations and food services employ the greatest number of females.

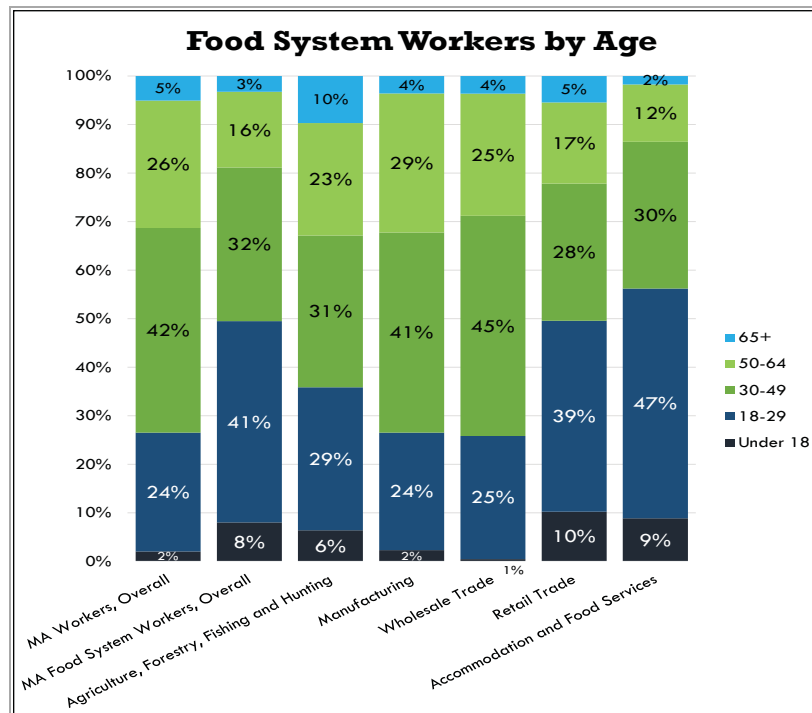
Figure EC.5: Food System Workers by Educational Attainment



Just 20% of food system workers have a college degree, while nearly 50% of Massachusetts workers overall have college degrees.

Source: U.S. Census Bureau American Community Survey Public Use Microdata Sample, 2007-2011.

Figure EC.6: Food System Workers by Age



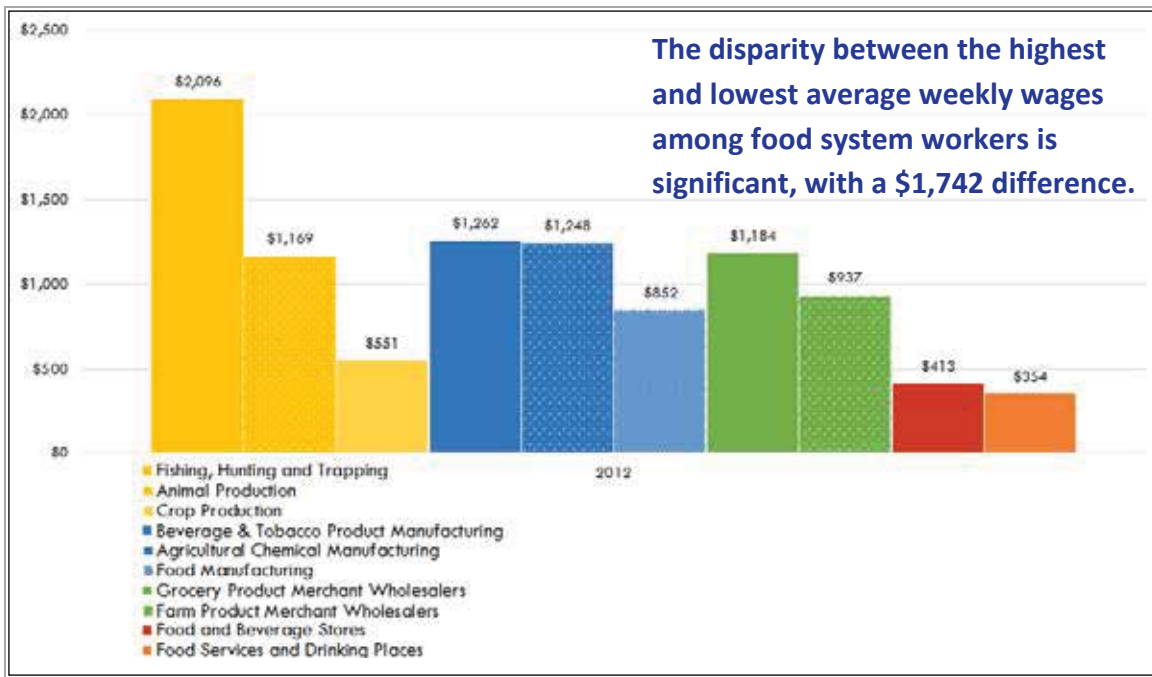
Workers in the food system are, on average, younger than the statewide workforce overall. Nearly 50% of the food system workforce is 29 years and younger, compared to about 25% of our overall workforce.

Source: U.S. Census Bureau American Community Survey Public Use Microdata Sample, 2007-2011.

Food System Wages

In 1912, Massachusetts was the first state to pass a minimum wage law. Massachusetts is one of 29 states (and the District of Columbia) with a minimum wage rate higher than the federal wage rate (\$7.25/hour).¹⁸ As of Jan 1, 2015, the minimum wage in Massachusetts is \$9.00/hour. It is scheduled to increase to \$10.00/hour in 2016, and to \$11.00/hour in 2017. Massachusetts has a separate rate for agricultural workers, currently \$8.00 per hour.¹⁹ Tipped employees in Massachusetts must be paid a service rate of \$3.00/hour. If they do not receive \$9.00/hour after tips, the employer must make up the difference. The service rate will increase to \$3.35/hour in 2016 and \$3.75/hour in 2017. In addition, some Massachusetts farms employ migrant farm labor through the federal H2A Program. The minimum wage for workers through this program is \$11.26/hour.

Figure EC.7: Food System Average Weekly Wages 2012



Source: MA Executive Office of Labor and Workforce Development (EOLWD).

Notes on wage data: All yearly data are adjusted for inflation to 2012 dollars. Beverage and tobacco product manufacturing is included, but alcoholic beverage merchant wholesale is excluded, to be consistent with VT methodology. Wages for restaurant and bar workers include tips.

¹⁸ National Conference of State Legislatures. (2015). State Minimum Wages | 2015 Minimum Wage by State. Accessed October 2015 <http://goo.gl/XVe2AY>.

¹⁹ MA Attorney General Office. (2015). Minimum Wage. Webpage accessed November 2015 <http://goo.gl/Adfaj3>.

Existing Conditions: LAND

Massachusetts is home to slightly more than two percent of the country’s residents, while the value of our State’s agricultural production is less than a fraction of one percent of the nation’s total agricultural production. These numbers, though, belie the important role our State plays in food production for our region. Our State has some of the best farmland soils in the world and has the potential to increase agricultural production. The challenges to doing so include competing interests in farmland, including using farmland for housing development. If this development of farmland continues, our State’s agricultural capacity will be increasingly limited. This section examines land-related topics, including development pressures, zoning and land use, farmland protection programs, and other information relevant to farmland.

Land in Farms, Farm Size, and Ownership

The amount of land devoted to farming has dramatically decreased since the early 1900s, when according to the 1920 USDA Census of Agriculture, there were nearly 2.5 million acres of land in farms in the State. After this time, there were shifts toward industrialization and away from an agricultural economy. Farmland began to be developed for roads, houses, and other uses. The amount of land in farms has decreased by nearly two million acres since then, to 523,517 acres of land in farms according to the 2012 USDA Census of Agriculture 2012, which defines a farm as “any place that produces \$1,000 or more of agricultural products.” There are recent signs of a slowing or even reversing of the land loss trend in our State. While most of the U.S. witnessed a decline in agriculture from 2007 to 2012, Massachusetts was one of the few states that experienced growth (about one percent) in both acres in farmland and number of farms. Farmland in our State includes cropland, woodland, pasture, and other uses. The Farming section discusses land in farms by agricultural use and size.

Table EC.2: Massachusetts Farmland Ownership in Acres by Principal Operator in 2012

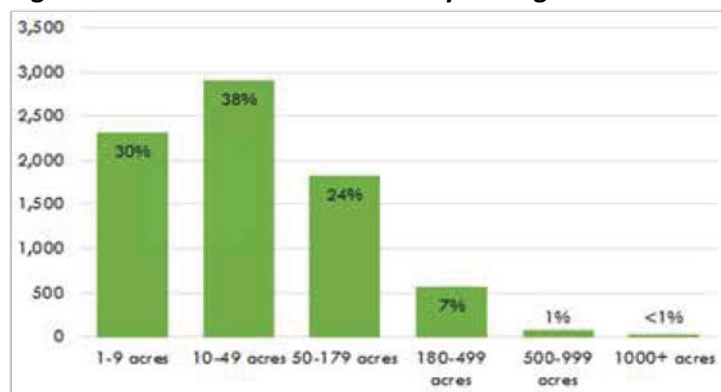
	Senior principal operator w/ next generation operator	Senior principal operator w/ no next generation operator	All senior principal operators	All farms
By Ownership (acres)				
Owned	28,001	132,543	160,544	435,233
Rented	4,660	358	5,018	88,284

Source: American Farmland Trust; USDA Census of Agriculture 2012: Tables 1, 2 and 8.

Note: Senior farmer is 65 years or older.

Senior farmers own about 37% of farmland and about 83% of that farmland does not have a next generation operator identified.

Figure EC.8: Massachusetts Farms by Acreage Size in 2012



Source: USDA Census of Agriculture, 2012, Table 1. Historical Highlights.

68% of farms are smaller than 50 acres. Only a little over 1% of farms are 500 or more acres.

Over 88,000 acres of farmland is leased or licensed by farmers, often based on informal, handshake agreements. These types of agreements, while offering some amount of flexibility to both the land owner and farmer, can have detrimental impacts on the person farming the land. These can include unpredictability on the person farming the land, including insecure or overly-short term tenure, both of which discourage investment in or improvement of farmland.

Cost of Land and Taxes

Massachusetts farmland is valued at an average of \$10,400 per acre, fourth highest in the nation.¹ The high cost of farmland is a considerable barrier to increasing production. It contributes to the fact that the cost of doing business in the State for farmers is higher than in other parts of the country and that farmers are often carrying more debt. The high cost of farmland also makes it more challenging for communities, land trusts, and the State to conserve land.

While there is no aggregate accounting of property taxes collected on farmland in Massachusetts, there has been some data analysis for individual municipalities. In every case, both for Massachusetts towns as well as for towns around the nation, these Cost of Community Services (COCS) studies found that working agricultural land generates significantly more public revenues than they cost their municipality in public services.² A 2009 study conducted by American Farmland Trust in Deerfield, Massachusetts, for instance, found that for every \$1 paid in taxes by owners of that town's agricultural land, 33 cents of services were returned.

Causes of Farmland Loss

Population growth, low-density development and sprawl, climate change, limited funding for preservation, insufficient technical support for farmers, a decline in the number of children who wish to follow in their farming family's career, and many other factors all create significant challenges to keeping land in farming, to ensuring availability of farmland for those who want to farm it, and to increasing food production to meet increasing demand.

¹ USDA NASS. (2015). *Land Values 2015 Summary: August 2015*. Accessed October 2015 from <http://goo.gl/uEDI5y>.

² American Farmland Trust. (2010). *Fact Sheet: Cost of Community Services Study*. Accessed October 2015 from <http://goo.gl/uL3Sgg>.

Mass Audubon's 5th Edition of *Losing Ground: Planning for Resilience* indicates that 1.1 million acres of land, or 21 percent of Massachusetts, are developed, mostly in the eastern half of the State.³ At the same time, the State's population has increased by three percent between 2010 and 2014, and is projected to increase by an additional 12 percent from 2010 to 2035. See demographics in the Food Access, Security, and Health section for more information. From 2005 to 2013, approximately 38,000 acres of land were converted to development in Massachusetts, translating to a loss of 13 acres per day through this eight-year period, which is significant given this time period includes the years of the Great Recession.⁴

Some of the State's best farmland – flat, open, and with nutrient-rich soil – is located in and along river valleys, often within floodplains. Climate change may threaten production on some of this farmland, and associated flooding could mean farmers having to abandon farm fields or change the types of crops grown. Climate change could drive farmers to seek less vulnerable farmland and could further increase the demand for farmland located away from river valleys and floodplains.

In addition to extreme weather events damaging farmland, climate change is projected to impact farmland in other ways, according to the EPA.⁵ Warmer temperatures associated with climate change could cause some crops to grow faster, but that faster growth rate could reduce crop yields.⁶ Increases in CO², also associated with climate change, have been found in studies to decrease the quality of forage, meaning cattle and other grazing livestock have to eat more to get the same nutritional benefits.⁷ Both these conditions could increase the need for more farmland and could intensify the demand for farmland overall.

Farmland Protection Programs and Strategies

As of May 2015, there were 74,122 acres of permanently protected land whose primary purpose is agriculture, based on the Massachusetts Office of Geographic Information (MassGIS) data. The economic slow-down of the last decade slowed development and increased preservation -- according to the *Losing Ground* report using MassGIS data, from April 2005 through April 2013, 120,389 acres of land were permanently protected, or ten percent of all land that has ever been conserved in the State. Of the land permanently protected during this time, 12,567 acres of it was agricultural land or nearly a fifth of all agricultural land that has ever been conserved in the State.⁸

There are a number of farmland protection tools and programs available in the Commonwealth.

Agricultural Preservation Restriction (APR) Program

About 71,000 acres are permanently protected by Statefunded APRs. Created by the Massachusetts Legislature in 1979, the APR program was the first program of its kind in the nation and has been a model for other states. The Program is designed to preserve and protect agricultural land, particularly with productive soil, from being developed, with an eye toward maintaining the value of land in the program at a level that can be supported by what can be produced on it.

³ Mass Audubon. (2014). *Losing Ground: Planning for Resilience*. Accessed October 2015 from <http://goo.gl/leuv6J>.

⁴ Mass Audubon. (2014). *Losing Ground: Planning for Resilience*. Accessed October 2015 from <http://goo.gl/leuv6J>.

⁵ US EPA. (n.d.) *Climate Change: Impacts: Climate Impacts in the Northeast*. Accessed October 2015 from <http://goo.gl/DuAkQi>.

⁶ US EPA. (n.d.) *Climate Change: Impacts: Climate Impacts in the Northeast*. Accessed October 2015 from <http://goo.gl/DuAkQi>.

⁷ US EPA. (n.d.) *Climate Change: Impacts: Climate Impacts in the Northeast*. Accessed October 2015 from <http://goo.gl/DuAkQi>.

⁸ Mass Audubon. (2014). *Losing Ground: Planning for Resilience*. Accessed October 2015 from <http://goo.gl/leuv6J>.

The APR Program is voluntary and pays farmland owners the difference between the "fair market value" and the "agricultural value" of their farmland in exchange for a permanent deed restriction which precludes any use of the property that will have a negative impact on its agricultural viability. The program supports farming in the State by keeping farms in active use. APRs are often an important tool for farmers to use to transfer their farms to their children since reducing the value of land to its agricultural value greatly reduces inheritance taxes. At the same time, concerns have been raised about APR and other similar programs stripping equity from farms, leaving farmers with little to borrow against as they need funds for operating costs and infrastructure improvements.

Land Trusts

Land trusts have been vital to protecting farmland across our State. Land trusts are typically nonprofit organizations that assist farmers and other landowners in protecting their land, often by holding the deed restriction to parcels of land and by overseeing stewardship of land under restrictions. There are approximately 135 land trusts in Massachusetts. According to MassGIS data, land trusts own approximately 123,250 acres in fee and an additional 87,000 acres in Conservation Restrictions and APRs.

Conservation Restrictions (CRs)

A Conservation Restriction (CR) provides another way to protect land from development in perpetuity, through the sale of development or usage rights to a third party with agreed-upon terms. Landowners can opt to prevent any improvements at all on their land, or can use CRs to prevent development on the land while allowing other uses, such as growing crops, pasturing livestock, maple sugaring, and timber harvesting. The uses agreed upon by the land owner and the holder of the CR, typically a land trust, are contained in the deed to the land and are passed from one owner to the next.

Executive Order 193 (EO 193): Preservation of State-Owned Agricultural Land

Issued in 1991, Executive Order 193 complements the APR program as a protective tool through which State agencies are directed to avoid and lessen the conversion of farmland. EO 193 seeks to reduce the extent to which State activities contribute to the conversion of agricultural land. State funds and Federal grants administered by the State cannot be used to encourage the conversion of agricultural land to other uses when feasible alternatives are available. State agencies controlling State-owned land suitable for agriculture are required to coordinate agricultural land management policy with EOEEA. MDAR negotiates agreements for mitigation of farmland loss.⁹

Community Preservation Act (CPA)

Under MGL Chapter 44B, the Community Preservation Act (CPA) is a Massachusetts State law passed in 2000. Communities can adopt the CPA and create a local dedicated fund for the preservation of open space and historic resources, as well as the development of affordable housing and the purchase and development of outdoor recreational facilities.

Funds are raised locally through a surcharge on local property tax bills of up to three percent. Local adoption of CPA by a community triggers annual distributions from the State's Community Preservation Trust Fund, a statewide fund held by the Massachusetts DOR. Revenues from these two sources combine

⁹ American Farmland Trust. (2002). *Mitigation of Farmland Loss*. Retrieved October 2015, from <http://goo.gl/6W2sTM>.

to form a town's Community Preservation Fund. To date over 40 percent of the Commonwealth's municipalities have adopted CPA. Funds from CPA could become a powerful tool to help preserve farmland in towns across the State.

Transfer of Development Rights (TDRs)

TDRs is a regulatory strategy that relies upon private market forces to help achieve smart growth. The two objectives that are achieved via TDRs, according to EOEEA, are open space protection and infill of existing population centers. Through a TDR, open space and natural resources, including farmland, are permanently protected via the transfer of some or all of the development to more suitable locations. The suitable locations, such as city and town centers, "become more vibrant and successful as the development potential from the protected resource areas is transferred to them." Essentially, development rights are transferred from a sending district to a receiving district to help achieve both open space and economic goals statewide. While allowed in some municipalities, TDRs are not widely used in the Commonwealth.

Farm Viability Enhancement Program (FVEP)

This program offers farmers (except those enrolled in MDAR's APR Program, who have access to a complementary program solely available to farms in that Program) environmental, technical, and business planning assistance to expand, upgrade, and modernize their existing operations. Capital for the implementation of the improvements recommended in the viability plan is available in exchange for an agricultural covenant on the farm property for a fixed term of five or ten years.¹⁰

Farm Transition Planning

It's not uncommon for farms in Massachusetts to be passed down through several generations. Farming is a way of life and farm families often keep their land in farming, ensuring future generations have access to land and a livelihood. But increasingly, children raised in farm families are choosing to leave the farm and pursue other livelihoods. In the case where a farm is passed from one generation to the next, sometimes complicated tax and estate questions can get deferred. But in the case where exiting farmers do not have an estate plan or an identified successor, understanding options and legal implications of selling the land and business can be challenging.

Farm transition planning is critical to helping farmers keep their land in farming. There are organizations that help farm families find innovative solutions to keep their farmland active, while addressing a number of legal, financial, and business issues. Some land trusts also have the skills to provide similar assistance to farmers. A relatively new free service to farm and other food system businesses is Conservation Law Foundation's Legal Services Food Hub. The program matches food system businesses that meet an income cap with pro bono legal services. The Legal Services Food Hub launched in Massachusetts in 2014, with an initial focus on cases involving transactional issues, such as land acquisition/transfer, estate issues, taxes, contracts, and incorporation, among other.

¹⁰ MA EOEEA. (2015). *Farm Viability Enhancement Program*. Webpage accessed October 2015 from <http://www.http://goo.gl/oVf56e>

Farmland Linking

With the high demand for farmland and relatively little idle farmland to satisfy demand, some prospective and existing farmers are turning to farmland linking services to find land that suits their needs. While some land trusts and real estate agents have been serving this need informally, land linking services have formalized the process with online databases and other tools to list available land and to locate potential land. New England Small Farm Institute hosts New England Landlink, an online program to help farmers and landholders locate and transfer farms in New England. New Entry Sustainable Farming Project also offers an online matching service. Land for Good provides both farmers and land holders assistance with the successful transfer of land to preserve active agriculture.

Demand for Farmland

The demand for farmland is somewhat difficult to quantify. A survey conducted in Franklin County and subsequently in Worcester County has obtained data to support the assertion that the demand for farmland outpaces the supply. The 2014 Franklin County Farm and Food System farmer survey of 134 farmers found that 39 of them were looking for a total of 47 parcels of land to farm, categorized by land type and size. The actual demand for farmland is likely much higher, since people looking for land to begin new farming ventures were not counted in this survey. The most sought-after farmland was cropland, followed by pasture, hay, sugarcorn, wood lots, and orchards. In contrast, only four farmers indicated they might have idle farmland they would be willing to lease. Preliminary findings of a similar farmer survey conducted by the Central Massachusetts Regional Planning Commission showed that of the 123 farmers who responded, 31 of them identified a total of 45 needs for additional farmland.

People are being creative in order to find land. Prospective and existing farmers are looking to sources such as private non-farming land owners and State and municipal land as potential strategies for locating land, as described below.

Private Land

There are initiatives in Massachusetts to identify good open land owned by non-farming private land owners and to approach land owners to determine their level of interest in leasing to a farmer. American Farmland Trust and Land for Good have partnered on an initiative to do this across New England and New York. The project will include a detailed landowner survey, with the twin purpose of identifying landowners who are interested in making their land available for farming, and testing landowner attitudes about constraints to doing so. There are likely opportunities to identify land owned by private entities and to broker relationships between willing owners and farmers.

State and Municipal Land

There are 589,785 acres of permanently protected State-owned land, of which 15,029 acres are open land or farmland, based on 2015 MassGIS open space data and 2005 MassGIS land use data, the most current available. Currently only a small percent of this land is being farmed, based on information from MDAR's Bureau of Land Use State-Owned Farmland Licensing Program. There are currently only eight parcels listed with this program, ranging from 7.5 to 205 acres. Farmers who lease land through this program do so under an initial five-year lease with an option to renew for up to ten years. More land could be added to this inventory under MGL Chapter 128, section 7E, which allows for any State agencies and municipalities

owning land to develop contracts with MDAR's Bureau of Land Use which in turn facilitates leasing arrangements with farmers.

In addition to State-owned land, there is land owned by towns and cities across the State which could be made available to farmers via lease agreements.

Article 97: This amendment to the Massachusetts Constitution provides that "the people shall have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment." "Lands and easements taken or acquired for such purposes shall not be used for other purposes or otherwise disposed of except by laws enacted by a two thirds vote" These public lands include both state-owned lands and municipal lands acquired for conservation or recreation purposes.

Land and Urban Agriculture

Urban food growing can provide benefits to cities, such as cleaned up land, business development, and access to fresh food for low income community members. But in urban areas, affordable and available land for farming is scarce. Even in cities with vacant lots, challenges to farmers and community gardens accessing land include lack of ability and willingness of city officials to craft land lease or license agreements, contamination of land and associated costs for clean up, and regulations and ordinances that prohibit or over-regulate farming activities in cities.

In spite of the challenges of finding land for urban food production as well as the challenges of towns having a wide range of different zoning and regulations related to agriculture, urban farms, and community gardens are being established all over the State. In the Boston metro area for example, Boston, Brookline, Cambridge, and Somerville are home to over 200 community gardens and urban agriculture facilities. These facilities cover nearly 50 acres in total, and provide opportunities for community members and urban farmers to grow food and work the land.¹¹

There are 26 designated Gateway Cities in the State, which have seen manufacturing and other jobs disappear and have been slow to draw investments in new businesses and jobs.¹² These cities may be good locations for siting new urban agriculture, especially on vacant land which may be quite affordable to buy or lease, and are eligible for economic assistance and targeted funding opportunities.

Workforce

Workforce challenges related to land include the high cost and availability of land which inhibits farm growth, new businesses development, and associated jobs. The biggest area of need in the land segment of the food system is for technical assistance providers in the areas of water quality and management, land access, and land use, including conservation stewards. A focused effort to increase access to land and to keep farmland in farming would potentially increase the services that land trusts offer. This would likely expand expertise needed by staff.

¹¹ USDA Census of Agriculture, USDA AMS, Farmland Information Center, City of Boston. (2012, 2013, 2014). *Production: Agricultural Land..* Accessed June 2015 from <http://goo.gl/kaDj1j>.

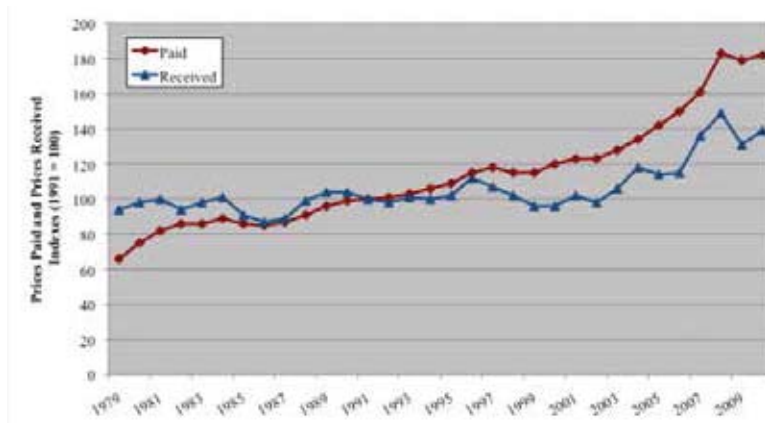
¹² MA EOHED. (2014). *Gateway Cities and Program Information*. Website accessed October 2015 from <http://goo.gl/uW77hh>.

Existing Conditions: INPUTS

Land-based food production requires some basic inputs: energy, water, soil, equipment, animal feed, and seeds. This section provides an overview of supply and demand for these items in Massachusetts.

Summary Cost of Inputs

Figure EC.9: Prices Received vs. Prices Paid for Farm Products and Farm Inputs, 2002-2012



Although the prices received by farmers for all farm products increased by close to 50% between 1979 and 2010, the prices paid by farmers for inputs rose by nearly 300%.

Source: UMass Amherst and USDA Census of Agriculture 2012

Energy

Food production requires energy, and energy costs in the Commonwealth are some of the highest in the nation. At the other end of the food chain, food waste has the potential to generate renewable energy, and there are already great examples of waste-to-energy production in the State. Renewable energy also offers the potential for an additional source of income and a way to reduce costs for farmers. This section explores the role of energy in farming and food production in Massachusetts.

Farming, Food Production, and the Cost of Energy

Use of energy in farming includes direct and indirect energy. Direct energy use includes electricity, fossil fuels, and renewable fuels for farm activities. Indirect energy use includes fuel to manufacture inputs such as fertilizers and pesticides. Petroleum-based fuel is the primary fuel used for both livestock and crop operations. It is used for crop tilling, harvesting, and other operations that require heavy machinery. Irrigation can also demand lots of energy, with electrical or fossil-fuel driven pumps used to transfer water from groundwater sources or from rivers or ponds.

In food production, energy is used to run processing facilities for washing, blanching, cooking, and flash freezing. After food is processed, it is held in cold storage or in non-temperature controlled storage facilities, both requiring energy. In the distribution system, energy is used to transport food and to power end use storage or preparation, such as in school kitchens, restaurants, grocery stores, and residences.

Energy costs directly impact the cost of food. The cost of electricity in New England is higher than any other area of the contiguous U.S, according to the U.S. Energy Information Administration. In 2014 the average price for electricity was 15.45 cents per kilowatt hour (KWH) in New England, while elsewhere in the country it ranged from 8.66 to 13.42 cents per KWH. The average price in Massachusetts over the last four years was 14.43 cents, slightly under the average 14.60 cents per KWH New England wide.¹

Higher energy costs make it more expensive for farmers and other food system businesses in Massachusetts to buy power, resulting in a narrower margin for goods sold and less money in farmers’ and food system business owners’ pockets, higher food prices, and more challenges when competing with foods produced elsewhere.

In a snapshot of gasoline prices surveyed by the U.S. Energy Information Administration in April 2015, New England’s gasoline prices were third-highest in the nation. Diesel fuel prices in New England over the last ten years were on average about five percent higher than those nationally.

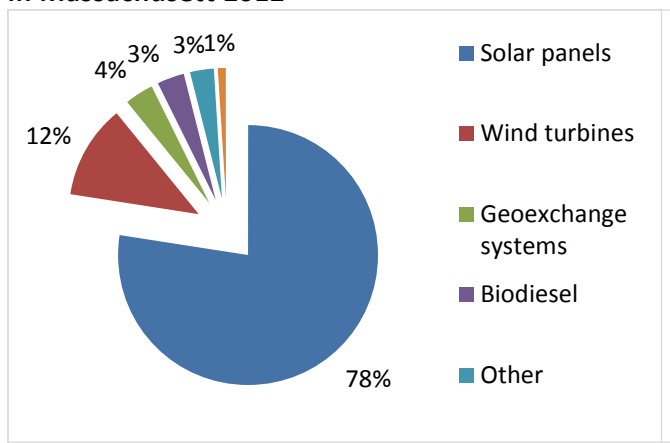
On average in 2012, over nine percent of Massachusetts farmers’ production expenses are energy related, including the costs for gasoline, fuels, oils, and utilities.²

Transportation of food accounts for nearly 11 percent of greenhouse gasses emitted in the food supply chain.³

On-Farm Energy Production

A key strategy for farms to be more profitable – and more resilient in the face of climate change and volatile energy prices – is to reduce the costs of fuel and electricity through on-site renewable energy generation. Upfront investment in infrastructure can be costly, but pays off over the long term.

Figure EC.10: On-Farm Renewable Energy Sources in Massachusetts 2012



Solar panels are by far the most prevalent renewable energy technology on farms, making up 78% of the projects installed.

On-farm energy projects between 2009 and 2011 provided an average annual savings per farm of \$8,487 in energy efficiency in the state.

[\(http://massfarmenergy.com/get-started/technical-resources/\)](http://massfarmenergy.com/get-started/technical-resources/)

Source: USDA Census of Agriculture - Table 52. Energy: 2012 http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Massachusetts/st25_1_051_052.pdf.

¹ U.S. Energy Information Administration. (2015). *Electric Power Monthly*, Table 5.6.A. Website accessed August 2015 from <http://goo.gl/1xrHDv/>.

² USDA. (2012). *Census of Agriculture, Massachusetts*, Table 4. Accessed April 2015 from <http://goo.gl/Hpi9Yb>.

³ Weber, Christopher L. and H. Scott Matthews. (2008). *Food-Miles and the Relative Climate Impacts of Food Choices in the United States*. Environ. Sci. Technol. 2008, 42, 3508-3513, Accessed on April 2015 from <http://goo.gl/Ai6rI9>.

MDAR's Farm Energy Program (MFEP) provides direct technical assistance through energy audits, renewable energy assessments, and incentives for implementation of audit recommendations with assistance from the CET.

Other renewable energy and energy efficiency programs targeted to farmers include MDAR's Agricultural Energy Grant Program, USDA's Rural Energy for America (REAP), and EQIP, administered by the USDA-NRCS. Commercial programs run by the Massachusetts CEC, Massachusetts DER, Mass Save®, and through the utilities also are available to farms and food system businesses.

Renewable energy can provide benefits to farms and to the environment including lowering operating costs and increasing profits over time, as well as lowering carbon emissions. The types of renewable energy used by farms vary, depending upon sites, needs, and goals. Technology available to maple sugaring operations includes heat recovery and steam-enhanced pre-heater units, reverse osmosis systems, and high-efficiency maple syrup evaporators. Technology for dairy operations, orchards, and vegetable farms includes high-efficiency refrigeration systems and energy-efficient ventilation.

Waste-to-Energy

Food waste to energy conversion uses microorganisms to break down food waste and other organic materials, such as manure, in the absence of oxygen. The byproducts of this process are biogas and solids. The biogas is a mixture of methane and carbon dioxide which can be used to produce heat, electricity, or fuels for vehicles. Food waste-to-energy technology can be used by food manufacturers and distributors, as well as farmers and any other operations with food and other organic waste.

According to Massachusetts CEC, the benefits of organics-to-energy systems, which are usually sited on farms, food processing plants, or wastewater treatment facilities include:

- diversion of organic waste from landfills or incinerators;
- generation of renewable energy;
- reducing dependence on other fuels; and
- manufacturing of materials that improve soil health or productivity.

Anaerobic digesters, which convert organic waste into fuel that can be used for generating electricity, are located at some Massachusetts wastewater treatment facilities. Like other industrial uses, there are a number of barriers to building new anaerobic digester facilities including financing, an uncertain market for high quality feedstock and for digestate (what's left over after the digestion process), and potential conflicts with neighbors. The greatest impediment is the uncertainty around the availability of high quality feedstock. In order to justify the expense of designing, permitting, building, and operating a facility, there must be a high quality, guaranteed waste stream. According to MassDEP, the majority of higher quality industrial, commercial, and institutional organic waste is already being diverted.⁴The 2014 Commercial Organic Material Waste Ban, described in this section, has the potential to spur further innovation and increased conversion of organic waste to energy.

⁴ Neale, Zoe. (2014). *Assessing Organics Processing Capacity*. BioCycle, October 2014. Webpage accessed November 2015 from <http://goo.gl/yYUQu5>.

Barriers to Renewable Energy Production in the Food System

There are a number of barriers to siting renewable energy projects on farms and throughout the food system, including regulatory limitations, insufficient technical assistance and programs targeted to these sectors, and financing. Access to three-phase power in rural locations, prohibitive interconnection costs to link to the grid, and net-metering caps all limit the potential for continued expansion of renewable energy. Three phase power is needed for larger energy projects, but is frequently not available in rural locations. The costs to upgrade to three phase is often prohibitive. Even for smaller projects, costly upgrades to the distribution and transmission can make a project unfeasible. There can be the problem of “last one in pays” where once additional capacity is allocated, the next project is responsible for paying for the entire upgrade costs necessary to expand capacity. Finally, net-metering helps make solar energy systems feasible, but one utility in the State has already reached its net-metering cap and others are nearing their caps. This prevents new projects from coming online until either the caps are lifted or another policy solution is implemented.

Other barriers include upfront costs, uncertain incentives, and the time it takes to research, apply, and implement a project. Many of the programs require the proponent to pay for investments upfront and reimburse a portion of the project cost later, which may not work for some that would otherwise be interested. Rebates and incentives vary by utility and over time. For example, the federal business investment tax credit that provides a 30 percent credit for renewable energy systems is scheduled to fall to ten percent in 2016. Finally, most farmers don’t have the time to become experts in renewable energy programs and must rely on programs like MFEP to provide the expertise needed to navigate the array of programs, rebates, and technologies.

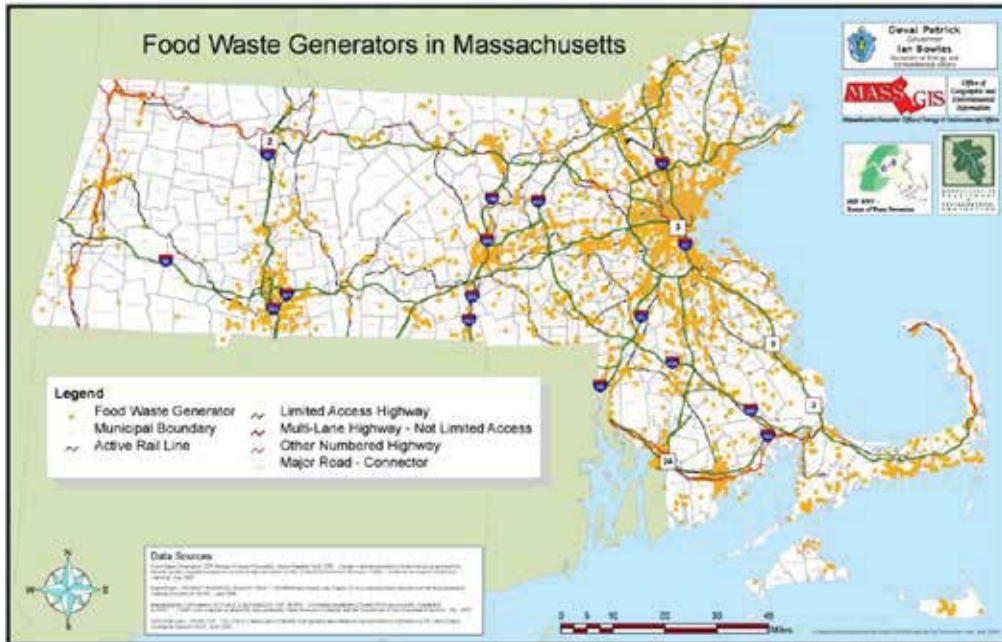
Siting renewable energy projects on prime farmland can bring conflict between the goals of expanding local energy production and farmland preservation. On-farm energy projects fall under the agricultural zoning exemption in MGL Chapter 40A, Section 3. Municipalities, however, interpret the exemption differently leading to inconsistent rules between towns. For lands under an APR, MDAR has a policy of allowing renewable energy facilities if 51 percent of the energy produced powers operations on the farm itself.

Other parts of the food system also are implementing renewable energy and energy efficiency projects to lower costs and emissions. Refrigeration and transportation are two significant energy users. There are a number of commercial programs that support investments in these sectors.

Waste

Waste Data

Map EC.1: Major Food Waste Generators in Massachusetts



Major food waste generators contribute nearly 950,000 tons of food waste per year.

Source: Massachusetts Department of Environmental Protection 2011 Study.

Table EC.3: Summary Commercial/Institutional Food Waste Generation Data

Generator Sector	# Listed in Database	% of Total Listed Generators	Average Food Waste Generation/Location (tons/year)	Estimated Total Generation (tons/year)	% of Total Generation
Food and Beverage Manufacturers/Processors*	836	12.2%	656	548,416	57.9%
Restaurants	3,833	55.9%	43	164,819	17.4%
Supermarkets and Grocery Stores	714	10.4%	146	104,244	11.0%
Wholesale Distributors*	500	7.3%	147	73,500	7.8%
Healthcare Facilities	672	9.8%	44	29,568	3.1%
Colleges/Universities	92	1.3%	209	19,228	2.0%
Resorts and Conference Facilities	181	2.6%	32	5,792	0.6%
Correctional Facilities	14	0.2%	123	1,722	0.2%
Independent Schools	19	0.3%	33	627	0.1%
	6,861	100.0%		947,916	100%

Food and beverage processors are the largest commercial/institutional food waste generators, generating nearly 58% of waste.

Source: Massachusetts Department of Environmental Protection 2011 Study. The original source for data in this spreadsheet is a 2002 study for MassDEP by Draper/Lennon, Inc. titled *Identification, Characterization, and Mapping of Food Waste and Food Waste Generators in Massachusetts*. The data was updated in summer 2011 by the U.S. Environmental Protection Agency Region 1 office.

*Data not available for specific facilities, data point is sector wide estimate from 2002 report, "Identification, Characterization, and Mapping of Food Waste and Food Waste Generators in Massachusetts".

Waste Generation

Food waste and other organic materials, such as processing plant waste, make up approximately 25 percent of all waste disposal in Massachusetts, or over 900,000 tons per year⁵. Sources of food waste generation include industrial facilities such as food processors and manufacturers; other commercial facilities such as supermarkets, restaurants, and colleges; and residents. Food disposed of in the solid waste stream ends up being burned in large-scale waste incinerators which emit pollutants, or buried in landfills which emit greenhouse gases.

There are a number of reasons for this large amount of waste. On farms, low market prices, pest infestations, and labor shortages can contribute to produce going unharvested. At the retail level, overly large portion sizes, expired sell-by dates, and damaged or imperfect goods contribute to unsold food. At home, impulse purchases, poor planning, and cooking too much all contribute to waste. For the average U.S. household of four, food waste amounts to an estimated \$1,350 to \$2,274 in annual losses.⁶ A recent report found that nearly 40 percent of food in the U.S. goes uneaten and that reducing food losses by 15 percent would enable more than 25 million Americans access to food.⁷

A 2011 U.S. EPA study commissioned by MassDEP identified major generators of food waste in Massachusetts, concentrated in and around population centers, as shown in Map EC.1. With major food waste generators contributing nearly 900,000 tons of food waste per year,⁸ diversion of food waste from the solid waste stream is key to reducing the State's overall solid waste disposal.

Waste Diversion

The EPA and MassDEP estimate that less than ten percent of food waste in Massachusetts is currently diverted from disposal. A portion of this food waste is being diverted through methods other than composting, such as food donation and sending food waste to animal feed operations, industrial uses, and anaerobic digestion facilities. In the Massachusetts 2010-2020 Solid Waste Master Plan, MassDEP set goals of reducing total solid waste disposal by 30 percent and diverting at least 35 percent of source separated organics from disposal by 2020.

General permits are by issued MassDEP for aerobic or anaerobic digestion operations that receive no more than 100 tons per day of organic material from on or off site, based on a 30 day rolling average. Above those limits, digesters require a separate conversion facility permit from MassDEP.

According to MassDEP, there are currently about 30 permitted composting and anaerobic digestion operations accepting food materials in Massachusetts, with a combined permitted capacity to accept nearly 150,000 tons of organic material per year. The recent passage of the Commercial Organic Material Waste Ban in Massachusetts is likely to cause a significant increase in food waste utilization businesses, such as large-scale composting, anaerobic digestion, and animal feed production.

⁵ MA Department of Environmental Protection. (2015). *Fact Sheet: Food Waste Composting*, accessed April 2015 from <http://goo.gl/sgtXFq>.

⁶ Gunders, Dana. (2012). *Wasted: How America is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill*. NRDC Issue Paper, August 2012. Accessed November 2015 from <https://goo.gl/3DIKv2>.

⁷ Gunders, Dana. (2012). *Wasted: How America is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill*. NRDC Issue Paper, August 2012. Accessed November 2015 from <https://goo.gl/3DIKv2>.

⁸ MA Department of Environmental Protection. (2015). *Fact Sheet: Food Waste Composting*. Accessed April 2015 from <http://goo.gl/sgtXFq>.

Food Waste Ban

In October 2014, the Commonwealth took a significant step to reduce food waste in the solid waste stream, with a goal to divert 450,000 tons of food waste each year from landfills and incinerators. The Commercial Organic Material Waste Ban, commonly known as the Food Waste Ban, prohibits businesses and institutions from disposing one ton or more of food waste per via the solid waste stream. MassDEP estimates 1,700 entities may be subject to the ban.

The State has put in place programs and funding to help with the successful implementation of the Food Waste Ban. RecyclingWorks in Massachusetts, funded by MassDEP, is providing no-cost technical assistance to businesses and institutions to establish food waste diversion programs. The Commonwealth has also made \$3 million in low-interest loans for private companies to build anaerobic digestion facilities and \$1 million in grants for anaerobic digestion to public entities through MassDEP's Sustainable Materials Recovery Grant Program.

The Food Waste Ban has the potential to realize significant benefits including increased composting and improved soil fertility, decreased fossil fuel use, and improved air quality through the reduction in the amount of materials being incinerated, and economic and workforce development for the new businesses that will likely spring up to meet the need for food waste handling.



Food Waste Reduction, Recovery, and Rescue

The US EPA's Food Recovery Hierarchy provides guidance on reducing food waste. Reducing surplus food in the first place is the most preferred action in this model, as well as making sure that good and edible food being used to feed people in need.

Businesses and institutions can take steps to reduce food waste from production, processing, and distribution, such as more accurate inventorying and ordering, better training of food processing workers, and improved storage techniques, to name a few.

Even with effective food waste reduction practices, surplus food may still be generated during production, processing, and distribution. In this case, there are often opportunities for the surplus food to be donated or re-purposed. The emergency food system accepts surplus food and food donations of overstocked or items nearing their sell-by dates from food system businesses. These donations serve the double duty of keeping good food from being wasted and keeping people from going hungry.

Despite federal tax breaks and a federal liability protection law, The Bill Emerson Good Samaritan Food Donation Act, significant quantities of safe food are being disposed of rather than donated. Surplus prepared foods are a growing share of redirected foods, but sometimes local boards of health and inadequate training about how to comply with food preparation and storage regulations can be barriers to additional re-use of prepared foods.

Many food pantries and donation distribution organizations have limited refrigeration capacity, which reduces the amount of fresh foods that can be utilized. Sell-by dates are another frequently misunderstood barrier to donation. The Harvard Food Law and Policy Clinic has found that while Massachusetts has one of the strictest labeling laws in the country, sell-by dates set by manufacturers are based on freshness, as opposed to food safety.⁹

While food donated to food banks and pantries is often processed and frequently not highly nutritious, whole, fresh food is also being donated by farmers, grocers, and other organizations. Some farmers have long-standing relationships with their local food pantry or church to donate surplus food. Some farms also have as part of their mission to help provide access to underserved populations.

Groups across the State are also finding ways to rescue fresh, whole surplus food – food that is left in the field or on the tree – from spoilage. With organized volunteer networks, gleaning organizations form relationships with growers and are contacted when there are surplus crops available for harvest. Gleaners mobilize and harvest the crops, which are then typically donated to food pantries.

Compost

Waste, sometimes thought of as the end of the food cycle, can in fact be just the beginning. Food and organic waste can be converted to compost providing nutrients and improved soil quality, which in turn can help sustain farms, food system businesses, and our environment.

Composting is a process that breaks down organic material diverted from the waste stream, such as food scraps, leaves, manure, food processing residuals such as whey, and other materials, into a soil enrichment amendment. Composting is a valuable method to recover nutrients from food scraps and other organic material and recycle them, enriching and cleaning soils, reducing the need for chemical fertilizers, and reducing pollution by diverting waste from landfills and incinerators.

Composting can have a positive effect on farm viability, through improved soil fertility and as an additional source of income, and decreasing the need for water and chemical fertilizers. More community-wide composting can also mean increased jobs and more household composting can mean more productive home vegetable gardens.

Composting of agricultural wastes generated on a farm is a common agricultural activity. When farms compost waste generated from sources off the farm, they are engaged in a solid waste management activity and may be subject to regulatory control. Agricultural composting on a farm is considered to be exempt from MassDEP general permit of composting permit requirements, provided that the owner and operator comply with the MDAR's compost program guidelines. MDAR registers agricultural compost operations annually and provides education and technical assistance to operators.

As of November 2014, MassDEP listed 49 facilities in Massachusetts accepting 15 to 30 tons per day of diverted food materials. Farm-based composters receiving less than 105 tons per week are exempt from MassDEP permitting requirements and are only required to register with MDAR.

⁹ Broad Leib, Emily, et. al. (2013). *The Dating Game: How Confusing Food Date Labels Lead to Food Waste in America*. NRDC Report, September 2013. Accessed April 2015 from <http://goo.gl/6INUP4>.

Municipalities are implementing composting programs as well. As of 2014, three communities, Hamilton, Wenham, and Manchester-by-the-Sea, have full curbside composting. Three other communities, Ipswich, Salem, and Cambridge, have pilot programs, which may require residents to pay for the pickup service or only involve a certain area of a city.¹⁰

Wastewater

In addition to food waste, there are other waste streams related to food, including wastewater from sewage treatment plants and from food processing plants. Water can be recycled and reused on site, such as in a processing facility where water used to process food can be captured and reused for a cooling process. Another example of water reuse is the use of gray water, reusable, nonhazardous wastewater that can be reused on site, typically for landscape irrigation.¹¹

Water

The Commonwealth has a relative abundance of surface and ground water, compared with other parts of the country. California has recently been experiencing “the drought of the century,” and there are water shortages around the world.¹² According to the United Nations, water use has grown at more than twice the rate of population increase in the last century.¹³ Although we currently receive sufficient annual precipitation to meet most human and ecosystem needs, at least two river basins are frequently in low-flow conditions, with the Ipswich River notoriously slowing to a trickle in years past. Climate change models are predicting warmer climates for New England, with periods of floods and droughts likely. Another threat to water resources in the State and New England is the potential for it to be tapped by large corporations, intending to extract and sell bottled water.

Water Use in Farming

Water used in agriculture activities account for 80 percent of freshwater consumed in the U.S. and over 90 percent in many western states.¹⁴ In Massachusetts, irrigation of farmland has risen. In 2012, about 24,000 acres of farmland were irrigated, up from about 18,000 in 1974.¹⁵

The quantity of water withdrawn from surface and groundwater sources for agricultural and other uses is regulated by MassDEP under the Water Management Act (WMA), MGL Chapter 21G, which took effect in 1986. The purpose of the WMA is to ensure adequate water supplies for current and future needs. The threshold for registration of water withdrawals is an average use of 100,000 gallons per day for three consecutive months of the year or nine million gallons over a three-month period.¹⁶ When this threshold is reached, a permit is required from MassDEP.

While MassDEP regulates water withdrawals, they do not publish the location or annual withdrawal amounts. However, the United States Geological Survey (USGS) National Water Use Information Program

¹⁰ Sustainable Cities Network (2014). Massachusetts Prepares for Mandatory Composting. Accessed April 2015 from <http://goo.gl/EQphe2>.

¹¹ US Environmental Protection Agency (2015). *Water Recycling and Reuse: The Environmental Benefits*. Accessed April, 2015 from <http://goo.gl/63jDYU>.

¹² State of California. (2015). *State Water Board Adopts 25 Percent Mandatory Water Conservation Regulation*. Accessed May 2015 from <http://goo.gl/vBmXqb>.

¹³ National Geographic (2015). *Freshwater Crisis*. Webpage accessed April 2015 from <http://goo.gl/uNfrR4>.

¹⁴ USDA (2015). *Irrigation & Water Use*. Webpage accessed April 2015 from <http://goo.gl/UuxEUZ>.

¹⁵ UMass Extension. (2012). *Massachusetts Agricultural Census 2012: Land in Farms*. Accessed April 2015 from <http://goo.gl/5QZ0xR>.

¹⁶ MA EOEEA. (2015). *BRP WM 03 – Water Management Withdrawals Permits*. Webpage accessed April 2015 from <http://goo.gl/R7ymgj>.

compiles and publishes the nation's and state-by-state water-use data.¹⁷ The 2010 report estimates that Massachusetts used 139 million gallons of water per day for irrigation, and 1.4 million gallons per day for livestock.¹⁸ Farmers employ many water conservation techniques and best practices, such as using high efficiency irrigation systems and building the organic content of soil that reduces the need for additional irrigation.

Farming in urban settings brings with it its own set of challenges, such as limited access to water sources. While water in more rural settings is relatively abundant, water access in urban areas is often limited to municipal sources. Urban agriculture projects are sometimes required to shoulder unaffordable connection costs to link to municipal system.

Water Use and Food Processing

Food processing is another sector of the food system that uses substantial amounts of water. Using USGS's median value of 469 gallons of water used per employee per day for food processing facilities in the United States and methodology from the Vermont Farm to Plate Plan, a total water usage per day can be estimated. Massachusetts has 27,485 food processing workers. Multiplying this number by the USGS median value of 469 gallons of water per day, food processing facilities in Massachusetts use nearly 13 million gallons of water used per day. Opportunities exist for food processors to conserve water through recycling or grey water systems.

Water Quality and Non-Point Source Pollution

In many cases farms in rural settings help to reduce stormwater runoff with vegetated buffers, wetlands, and other open spaces, providing a sponge to absorb runoff from farm fields to rivers and lakes. But agriculture and other food-sector activities can also diminish water quality if operations are not in compliance with applicable laws and regulations. Though it has not been fully analyzed or quantified in Massachusetts, agricultural runoff can be a major contributor to water pollution. Technical assistance and grant programs are attempting to reduce this type of pollution. One of the largest USDA grants of 2015 includes \$10 million to be used along the Connecticut River Valley to address agricultural runoff and other water pollution causes.

Farming and the Wetlands Protection Act

Because of the important ecological services and habitat that wetlands provide, they are protected by the Massachusetts Wetlands Protection Act [WPA (MGL Ch. 131 Section 40)] and its companion regulations (310 CMR 10.00). MassDEP and municipal conservation commissions are charged with enforcing the WPA. In addition, about one-third of municipalities have local wetland protection bylaws that provide additional protections and requirements beyond those in the statewide law. The WPA and local bylaws regulate the activity that is allowed in the defined wetland jurisdictional areas.

Certain activities are exempt from the WPA, including agricultural activities. The WPA specifies the sort of agricultural activities that are exempt – activities must be for “...the normal maintenance or improvement

¹⁷ United States Geological Survey. (2015). *USGS Water Use Data for Massachusetts*. Webpage Accessed April 2015 from <http://goo.gl/x1rEkn>.

¹⁸ Maupin, Molley A, et. al. (2014). *Estimating Use of Water in the United States in 2010*. USGS Circular 1405. Accessed April 2015 from <http://goo.gl/6OfnF4>.

of land in agricultural or aquacultural use” (310 CMR 10.04). Expanding agricultural uses into areas not presently farmed are not covered by the exemption, even in the case where agriculture had historically occurred, but had been abandoned for more than five years. Conflicts have arisen between farmers and local conservation commissions over interpretations of what constitutes a normal agricultural activity with regard to wetlands regulations.

Other Inputs

Soil

Soil is one of the Commonwealth’s greatest assets in terms of food production. As described earlier in the Land section, the State has some of the best agricultural soils in the world. Soils are mapped in the State using soils surveys from USDA-NRCS. Prime Farmland is comprised of three important farmland categories that are best suited for agriculture. Prime Farmland is determined based upon physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. In general, prime farmland soils have adequate and dependable precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no surface stones. They are permeable to water and air. Prime farmland soils are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

According to MassGIS data, there are 1,338,907 acres of prime farmland, land most suitable for agricultural production or soils of statewide importance, important for the production of food, feed, fiber, forage, and oil seed crops.¹⁹ Of the 1,338,907 acres, 168,216 acres are in farming (cropland, pasture or orchard), 627,873 are covered in forest, and 287,367 are residential²⁰. Given the number of acres of land in forest on prime farmland or soils of statewide importance, there are likely opportunities to clear forest adjacent to existing farms as to create more farmland. A challenge to this strategy is that the woodlots on farms are often a source of fuel for wood heat or income from timber harvest for lumber or firewood.

Soil Fertility and Amendments

Healthy soil is critical to good crop yields. Soil fertility can be achieved using compost as discussed earlier in this section. Along with organic farming practices and the use of soil amendments including manure, farmers also use fertilizers and soil conditioners. In Massachusetts, 3.5 percent of farm input costs were spent on fertilizers and other synthetic soil amendments in 2012. In comparison, only 3.2 percent was spent in 2007.²¹ The USDA Census of Agriculture 2012 indicates that farms in the Commonwealth used manure as a fertilizer on about 24,400 acres, down from 32,200 acres in 2007, and commercial fertilizer, lime, and soil conditioners on approximately 86,000 acres in 2012, down from 98,000 acres in 2007.²²

According to Vermont Farm to Plate, inorganic fertilizer use in the U.S. has increased at the same time that cropland in use has decreased. The implementation of the Food Waste Ban may have the positive effect of

¹⁹ USDA Natural Resources Conservation Service. (2012). *MassGIS Data - NRCS SSURGO-Certified Soils*. Webpage accessed November 2015 from <http://goo.gl/RFPzVy>.

²⁰ MassGIS. (2005). *MassGIS Data - Land Use (2005)*. Accessed November 2015 from <http://goo.gl/qXrYZ5>.

²¹ USDA. (2012). *Census of Agriculture, Massachusetts, Table 4*. Accessed April 2015 from <http://goo.gl/eODZf1>.

²² USDA. (2012). *Census of Agriculture, Massachusetts, Table 49*. Accessed April 2015 from <http://goo.gl/xPTCTy>.

making more compost available to farms and at a price that may encourage farmers to reduce chemical fertilizers. Soil amendments can also be obtained from seafood and aquaculture waste.

Erosion from wind, rain, and flooding can negatively impact soil fertility and cause the loss of topsoil, decreasing soil health. Soil fertility can also be negatively impacted by contamination, particularly in urban settings where vehicle exhaust and emissions from manufacturing have been absorbed by the soil over the course of decades.

Pollinators and Our Food System

Bees and other insects play a critical role in pollinating crops and much of the food system depends on their contributions. From an economic and environmental perspective, maintaining healthy pollinator populations is crucial. According to USDA-NRCS, the over 3,500 species of native bees (often called pollen bees) help increase crop yields and may serve as important insurance when cultivated European honey bees are not available. Without pollinators, many of the foods we are used to enjoying would vanish (onions, beets, broccoli, peppers, carrots, strawberries, and apples, to name a few).

Honey bees, however, have experienced a variety of threats including Colony Collapse Disorder – with some hives experiencing up to 90 percent losses. Loss of habitat, pathogens, parasites, and pesticides may all be playing a role contributing to Colony Collapse Disorder. The decline of pollinators has been studied with increased intensity in recent years, with scientists looking at the relationship between pollinator health and variables such as the increased use of herbicides and the decline of plants that support pollinators. There is a debate about the link between the decline of honey bees and other pollinators to the chemicals contained in many common herbicides. A number of federal, State, and private research projects are underway to better understand the causes of Colony Collapse Disorder, but certain actions can be taken now to support healthy populations of pollinators.

Common practices farmers use to help protect pollinator populations²³ include:

- ✓ planting hedgerows/windrows of pollinator plants such as milkweed, coneflower and others.
- ✓ properly applying chemicals; and
- ✓ using flowering cover crops to support bees.

Animal Feed

Massachusetts does not produce much animal feed, given the large amount of acreage needed to grow it. Because farmers don't produce much of their own animal feed, they are at the whim of the broader market as far as prices are concerned. In some cases, the fluctuating costs of animal feed had led farms to transition to grass-based livestock.

In 2012, farmers in Massachusetts purchased \$50,732,000 in animal feed. This amount increased from 2007, when \$45,134,000 was purchased, but the percent of total farm expenses made up by animal feed decreased slightly, from 9.8 percent in 2007 to 9.4 percent in 2012.²⁴

²³ Vaughan, Mace, et.al. (2015). *Farming for Bees: Guidelines for Providing Native Bee Habitat on Farms*. Accessed April 2015 from <http://goo.gl/sh2Wzo>.

²⁴ USDA. (2012). *Census of Agriculture, Massachusetts, Table 4*. Accessed April 2015 from <http://goo.gl/eODZf1>.

Seeds

Seeds are a vital input, along with sun, water, and soil, for growing food. The world has seen increasing corporate ownership of seeds, with a few big companies owning a larger and larger share of our seeds – many of them genetically engineered, particularly those for commodity crops. This trend has driven the price up for farmers. For example, since the USDA's National Agricultural Statistics Service (NASS) began collecting information on prices for biotechnology-derived corn seeds in 2001, seed expenses have risen 67 percent.

Going hand-in-hand with this trend, the tradition of seed-saving declined in the 20th century. In recent years though, there has been a resurgence of seed saving and seed libraries, as people try to regain control of seeds and food. There are several seed libraries in the State and informal networks of seed savers and seed swaps.

According to the USDA Census of Agriculture 2012, seeds and plants bought by farmers in the Massachusetts were valued at \$39,460,000, which was 7.3 percent of their total expenses.

Farm Implement Sales and Repair

Like many other industries, there has been significant consolidation of farm implement sales and repair services. Where rural towns used to have their own equipment dealers and repair people, very few remain, leaving farmers to develop these skills on their own or rely on mechanics who may not have experience with specialized farm equipment.

Workforce

Workforce challenges related to inputs include:

- The State's recently implemented Food Waste Ban brings with it potential for increased businesses and jobs, but the market for anaerobic digestion byproducts is immature, constraining new business and workforce development.
- Energy price spikes can cause fluctuations in food system businesses and employment.

The biggest area of need in the inputs segment of the food system is for technical assistance providers in the areas of food waste management (particularly generation) and energy efficiency/renewable energy.

Potential for job growth in the inputs area of the food system is good. Food waste management and anaerobic digester technology hold some potential for agribusiness development and job growth. This is likely a longer term expansion, but there may be technical assistance work developing in the shorter term. On-farm renewable energy installation and maintenance work may also increase, as more farmers recognize renewable energy as a path to lower inputs cost and a potential additional income stream.

Technical assistance with regulatory compliance is critical. Current staffing levels for these kinds of services at an array of federal, State, and nonprofit agencies have been identified as insufficient and additional personnel are needed.

Existing Conditions: FARMING

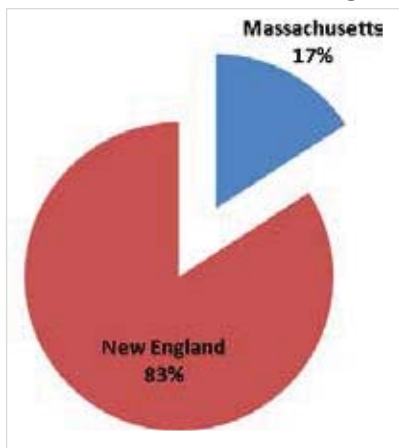
Increasing food production in the Commonwealth is one of the explicit purposes of this planning project. As such, farms, land, and farm workers are of particular importance. While much of our food production occurs in rural landscapes, food growing in our urban areas is an increasingly vital part of our food economy. For the purposes of this plan, all agriculture, regardless of where it happens, is classified as farming. Urban agriculture, including farming and community gardens, is a particularly important vehicle for getting fresh produce to people with limited access, and is an essential element for training some of the next generation of farmers and food entrepreneurs.

Farming Data and Trends

This section examines the economic impact of farming, educational and technical assistance needed by farmers, and the regulatory and financial support necessary for thriving farm businesses.

Economic Data

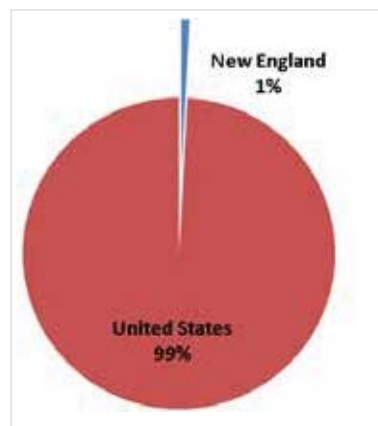
Figure EC.11: Agricultural Production Value in New England



Source: Massachusetts Department of Agricultural Resources.

Agricultural goods from Massachusetts make up 17% of New England's agricultural production.

Figure EC.12: Agricultural Production Value in the United States



Source: Massachusetts Department of Agricultural Resources.

Agricultural goods from Massachusetts make up only 1% of the nation's agricultural production.

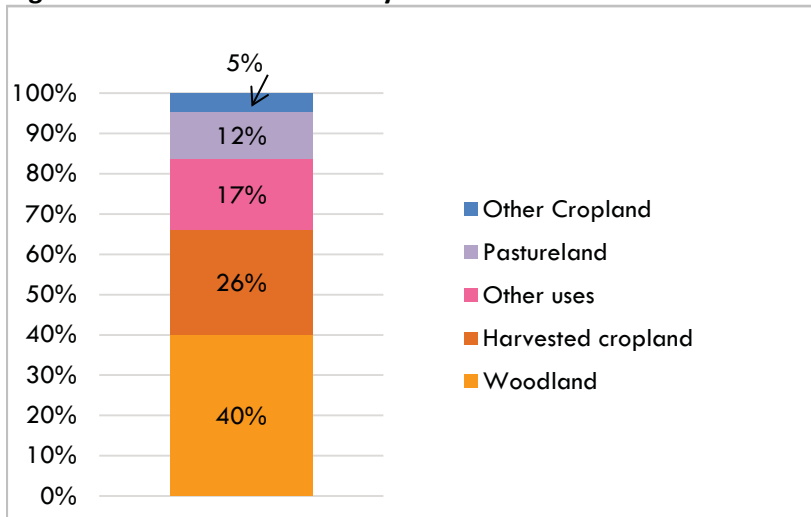
Table EC.4: Massachusetts Economic Impacts of Agriculture

SECTOR	DIRECT SALES \$ million	ECONOMIC IMPACT \$ million
AGRICULTURAL PRODUCTION		
Vegetable and melon farming	77.3	122.9
Fruit farming (includes cranberries)	132.7	213.1
Greenhouse, nursery and floriculture production	164.9	255.2
Tobacco farming	21.9	39.0
Cattle ranching and farming	10.6	13.9
Dairy cattle and milk production	43.4	55.5
Poultry and egg production	10.5	14.2
Other livestock	47.2	62.6
Other crop farming	54.2	89.2
Support activities for agriculture	51.9	100.1
Subtotal	614.6	965.7

Greenhouse, nursery and floriculture production generates the largest direct sales of the agricultural sectors - about \$165M in 2014.

Source: Northeast Economic Engine: Agriculture, Forest Products and Commercial Fishing, Farm Credit East, 2015.

Figure EC.13: Land in Farms by Use 2012



Woodland makes up 40% of all land in farms and harvested cropland makes up 26%.

Source: USDA Census of Agriculture, 2012, Table 37. Specified Crops by Acres Harvested.

Table EC.5: Land in Farms by Commodity Type 2002-2012

Commodity	Acres	Percent of Total	Farms
Hay	116,980	22.3%	1097
Fruit, tree nuts and berries	80,568	15.4%	779
Dairy cattle and milk production	50,367	9.6%	147
Vegetable and melon	42,248	8.1%	923
Other crop	42,024	8.0%	394
Horse and other equine production	40,968	7.8%	1183
Beef cattle ranching and farming	37,967	7.3%	628
Greenhouse, nursery, floriculture	34,886	6.7%	968
Sheep and goat farming	24,278	4.6%	365
Other animal production	17,988	3.4%	440
Poultry and egg production	15,851	3.0%	380
Oilseed and grain farming	7,375	1.4%	41
Hog and pig farming	7,128	1.4%	135
Animal aquaculture	1,809	0.3%	175
Tobacco farming	1,672	0.3%	11
Apiculture	1,508	0.3%	89
Total	523,517	100%	7755

Source: UMass Amherst, Massachusetts Agricultural Census 2012.

Excluding woodland, hay uses about 22% of farmland and fruit, tree nuts and berries us about 15%.

Census of Agriculture Definitions:

Harvested Cropland: includes land from which crops were harvested and hay was cut, short-rotation woody crops, Christmas trees, and land in orchards, groves, vineyards, berries, nurseries, and greenhouses.

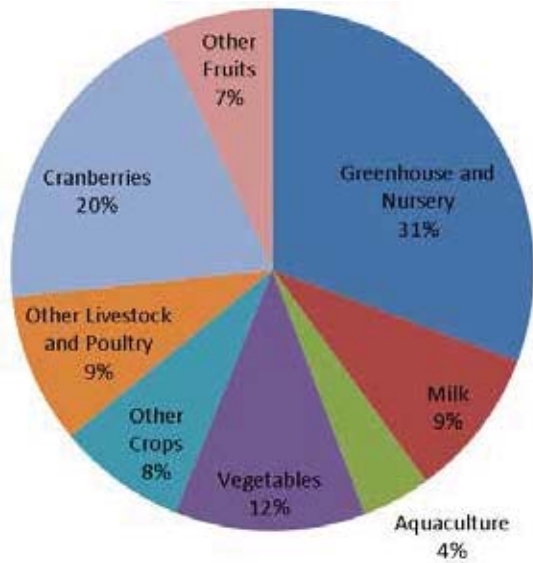
Other Cropland: This includes all cropland other than harvested cropland or other pasture and grazing land that could have been used for crops without additional improvements. It includes cropland idle, used for cover crops or soil improvement, cropland which all crops failed or were abandoned, and cropland in cultivated summer fallow.

Other Uses: Not defined

Pastureland: Grazable land

Woodland: natural or planted woodlots or timber tracts, cutover and deforested land with young growth which has or will have value for wood products and woodland pastured.

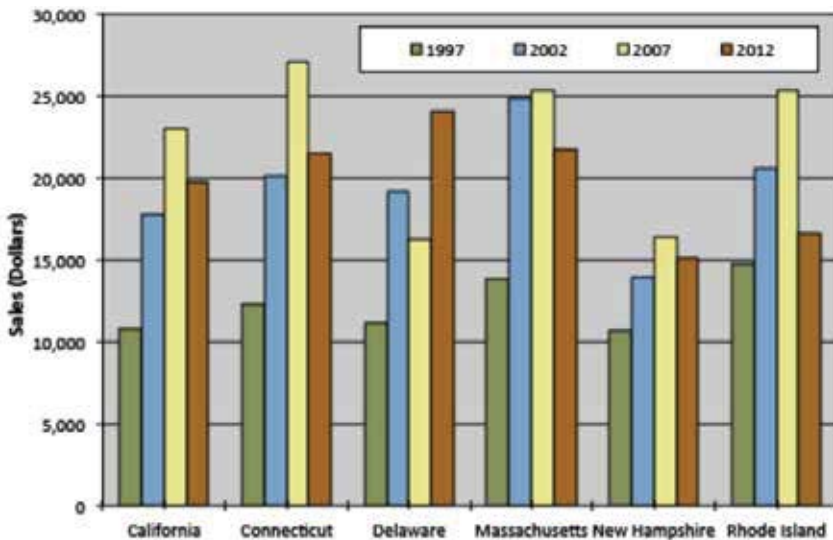
Figure EC.14: Massachusetts Agricultural Output 2012



In terms of dollars per commodity, green house and nursery comprise 31% while cranberries comprise 20%.

Source: MDAR and New England Agricultural Statistics 2012

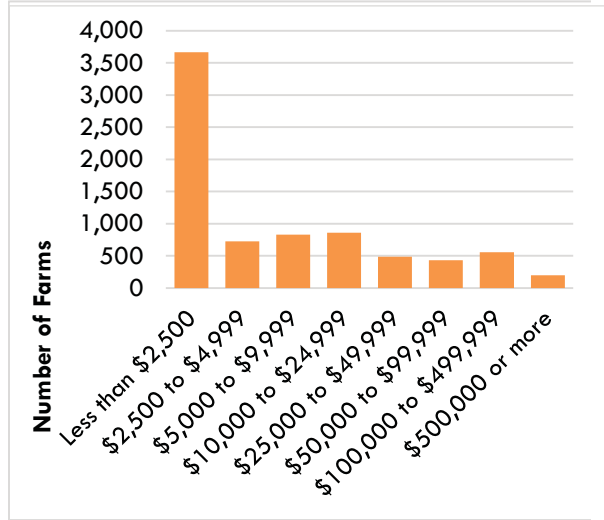
Figure EC.15: Average per Farm Agricultural Sales Direct to Consumers 1997 - 2012



Massachusetts was 3rd in the nation in the average per-farm value of agricultural products sold directly to consumers - nearly \$22,000

Source: Center for Agriculture, Food and the Environment UMass Amherst, USDA Census of Agriculture.

Figure EC.16: Farms by Value of Sales in 2012



About two thirds of Massachusetts farms gross less than \$10,000 in market value from their products

Source: USDA Census of Agriculture 2012, Table 1. Historical Highlights.

Table EC.6: Percent Change in Gross Market Value of Sales for Farms 2002-2012

Gross Market Value	2002	2012	# change	% change
Less than \$2,500	2,592	3,663	1,071	41%
\$2,500-\$4,999	647	727	80	12%
\$5,000 - \$9,999	623	828	205	33%
\$10,000 - \$24,999	715	861	146	20%
\$25,000 - \$49,999	422	486	64	15%
\$50,000 - \$99,999	385	432	47	12%
\$100,000 - \$499,999	556	558	2	0%
\$500,000 or more	135	200	65	48%
Total # of farms	6,075	7,755	1,680	28%

Source: USDA Census of Agriculture 2012.

Two thirds of Massachusetts farms gross less than \$10,000 in market value from their products. On the other end of the spectrum, there are 200 farms with \$500,000 sales and above, representing 3% of all farms in the state but 61% of all gross sales.

Economic Impact of Farming

There was over \$614 million in sales related to agricultural production with an economic impact of over \$965 million in Massachusetts in 2014 (Figure EC.4). Subtracting out tobacco and greenhouse sales, agricultural sales in the State were over \$427 million, with an economic impact of \$671 million. See Table EC.4 for more information.

Massachusetts is a national leader in direct to consumer sales. Massachusetts was fifth in the nation for total direct to consumer sales¹ and third in the nation for the average per-farm agricultural products sold

¹ USDA. (2012). *Census of Agriculture: Farmers Marketing*. Accessed November 2015 from <http://goo.gl/6flMM2>.

directly to consumers. Despite the State's high standing, 2012 direct sales were actually down 14 percent compared to 2007.²

According to USDA, costs related to food production include marketing, processing, wholesaling, distribution, and retailing, and account for more than 80 cents of every food dollar spent in the United States. After these costs, farmers receive a little less than 11 cents on the dollar that consumers spend on food.

Number of Farms

Across the United States, the acreage of farmland decreased one percent and the number of farms decreased four percent between 2007 and 2012. Massachusetts, however, was one of only ten states during that time that saw an increase in both land in farms and number of farms by about one percent each. There were 7,755 farms in the State in 2012, up just under one percent from 7,691 in 2007, and up almost 28 percent from 2002, when there were 6,075 farms in the State. The acres of land in farms in the State was 523,517 in 2012, up from 517,879 in 2007.³

Farms by Agricultural Use

Farms are defined by a variety of agricultural uses, including cropland, woodland, pastureland, and other uses. Woodland makes up the largest percent of the total land in farms. It is important to note that these numbers for agricultural production don't translate equally into those for food production, since so much of the State's agricultural output is in the form of forest and nursery products. Even the harvested cropland category represents more than just food, including items such as hay and Christmas trees. Even in the narrow context of a food plan, though, it is worth noting these broader numbers, as many farmers rely on these kinds of agriculture to support their farms' food production and keep their operations viable.

It is important to acknowledge in talking about food agriculture that many of the issues raised in this plan – land and the environment, in particular, as well as regulatory considerations – are also critical concerns for non-food agricultural sectors, such as forestry and nurseries, as well as the equine industry.

Farms by Product Types and Agricultural Output

Diversity is a common characteristic of Massachusetts farms. Many farmers who produce vegetables, for instance, to also tap their sugarbush for maple syrup, cut trees for firewood, or raise bees for honey. Anecdotal evidence points to a shift in the products produced as farmers age or as certain types of farms go out of business. For examples, some dairy farms sell their herds but stay in farming by transitioning to growing hay.

The largest segment of agricultural output based on dollars per commodity in the State in 2012 was greenhouse and nursery, making up 31 percent of the output, this according to MDAR and NASS 2012. Cranberries was next largest at 20 percent, following by vegetables at 12 percent. The other 37 percent of the agricultural output included livestock and poultry, milk, other crops, other fruits, and aquaculture.

² Center for Agriculture, Food and the Environment UMass Amherst. (n.d.). *Massachusetts Agricultural Census 2012*. Webpage accessed November 2015 from <https://goo.gl/DMgMpo>.

³ USDA. (2012). *2012 Census of Agriculture: Massachusetts State and County Data*. Accessed November 2015 from <http://goo.gl/oLV9u9>.

Cranberries

Until 1995, Massachusetts ranked number one in the nation for cranberry production. Wisconsin has since replaced the State as top producer with Massachusetts now ranking second. Our State has about 400 cranberry growers and the total annual market value is nearly \$100 million. The cranberry market has been experiencing increased volatility of late, as more international production and stagnant demand is driving the value of cranberries down. The average cost of cranberry production is about \$30 per barrel but prices have plummeted to as low as \$6 per barrel.⁴

Dairy

Nine percent of the State's agricultural output is made up of dairy, for a total market value of over \$44 million. According to the 2012 USDA Census of Agriculture, there were 155 dairy farms across the State, down from 902 in 1978. The majority of the dairy farms are members of cooperatives, and 15 of the farms produce, process, and market their own pasteurized milk, according to MDAR, while more than 25 sell unpasteurized milk directly to consumers.

The average herd size at Massachusetts dairies is 87 cows, but most dairies in the State have fewer. There has been a rise in recent years of small dairies, particularly those making value-added products such as yogurt and cheese, and those selling unpasteurized milk directly to consumers. The 2008 Dairy Farm Preservation Act brought about the Massachusetts Dairy Promotion Board to help market Massachusetts dairy products, and a number of financial supports for dairy farmers, such as the Dairy Farm Income Tax Credit, which supports farmers when the pay price for milk falls below the production costs. Since the instability of the federally-set prices for milk has a greater effect on smaller dairies, such as all of those in Massachusetts, this Act has proven critical to slow the loss of dairies in the State. Since implementation of Dairy Farm Preservation Act, the number of dairy farms has held steady.

Produce

According to MDAR, the produce sector has an annual market value of \$96 million with nearly 1,600 producers. Of these producers, 40 percent grow vegetables and 60 percent grow fruit.

Livestock and Poultry

Livestock and poultry raised in Massachusetts have an annual market value of \$48 million, according to MDAR. This sector is growing by value, output, number of producers, and variety of products. Growth in the sector can be attributed to the increase in demand for local meats. Massachusetts growers have access to the Boston market and niche markets across the State, in which consumers are able to pay for local meat products. Continued growth in this market will likely necessitate the development of more meat and poultry slaughter and specialty processing options for growers.

⁴ Cape Cod Cranberry Growers' Association. (n.d.) *Cranberry Statistics*. Accessed November 2015 from <http://goo.gl/gdumrK> and USDA NASS. (2015). *Quick Stats*. Accessed November 2015 from <http://goo.gl/jl2C2d>.

Maple

Massachusetts ranks 9th in the nation for maple production, averaging around 50,000 gallons a year and at least \$3 million in sales per year, according to NASS. There are more than 300 maple producers, utilizing less than one percent of trees available for tapping⁵.

Other crops

Massachusetts farmers raise a range of other crops, including honey, grains, herbs, and others. While these sectors are growing, they have not reached the scale where reliable data is available.

Farm Size by Acreage

Massachusetts is a State of small farms, with the most prevalent farm size from ten to 49 acres. The next most prevalent farm size is one to nine acres, and a few farms over 180 acres. See Figure Figure EC.8.

Between 2002 and 2012 the average farm size dropped from 85 acres to 67.⁶ This is, in part, due to development pressures that are causing more and more fragmentation of large agricultural land holdings.

Farms by Value of Sales

Two thirds of Massachusetts farms gross less than \$10,000 in market value from their products. On the other end of the spectrum, there are 206 farms with \$500,000 sales and above, representing three percent of all farms in the State but 61 percent of all gross sales. See Figure EC.16: Farms by Gross Market Value of Sales in 2012 .

Farming Practices

Massachusetts farms employ a wide range of management practices, adapting their techniques to best suit their crops, the soils available to them, the changing climate, and the demands of a shifting market. A growing number use IPM practices, and many also certify their farms as organic under the USDA National Organic Program. This program allows organic farms to label their products, indicating that they have been produced through approved methods and without synthetic fertilizers, sewage sludge, irradiation, or genetic engineering.⁷

Many farmers rely on technologies like high tunnels and greenhouses to mitigate increasing variability in weather and to extend the State's short growing season. The significant growth in direct to consumer sales has meant farmers need to communicate with their customers about their choices in management practices, and this level of transparency has helped educate consumers and strengthen the local farm economy.

Urban agriculture has its own particular farming practices influenced by smaller growing spaces, micro-climates, soil contamination, and other factors. Vertical growing, intensive growing techniques, rooftop and container gardening, raised beds, and rainwater harvesting are among the farming practices employed by urban farmers.

⁵ Farrell, Michael. (2013). *The Sugarmaker's Companion; An Integrated Approach to Producing Syrup from Maple, Birch, and Walnut Trees*. White River Junction, VT, Chelsea Green.

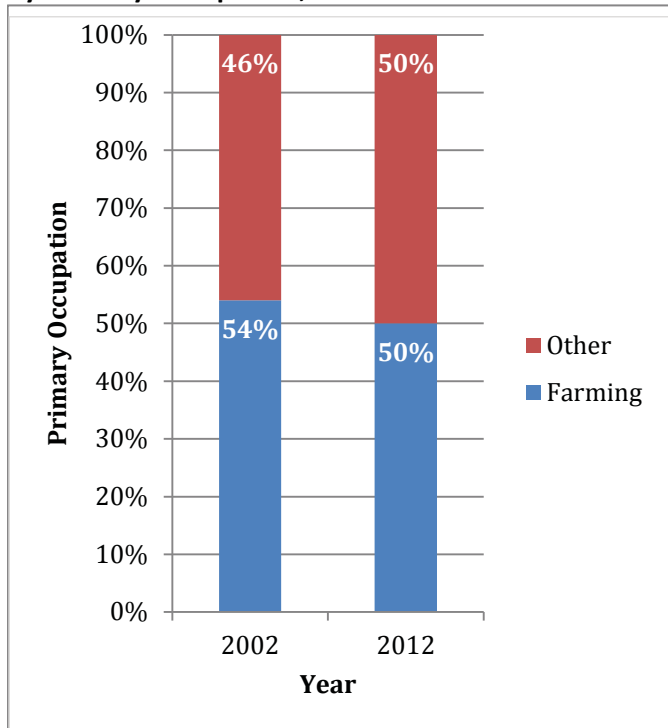
⁶ Center for Agriculture, Food and the Environment UMass Amherst. (2012). *Massachusetts Agricultural Census 2012; Lands in Farms*. Accessed November 2015 from <https://goo.gl/Bek510>.

⁷ USDA. (2015). *National Organic Program*. Webpage accessed October 2015 from <http://goo.gl/YB8QIE>.

Food produced in community gardens and backyard gardens is vital to the individuals and organizations who grow it, but putting a number to how much food is produced in Massachusetts in this way is challenging. According to Somerville’s *The ABCs of Urban Gardening*, a typical four foot by eight foot raised bed can yield 75 to 100 pounds of crops annually. More study is needed to understand the impact of community and backyard gardens on our food production in the State and to determine the needs of such gardeners related to technical assistance and funding.

Farmer Demographics

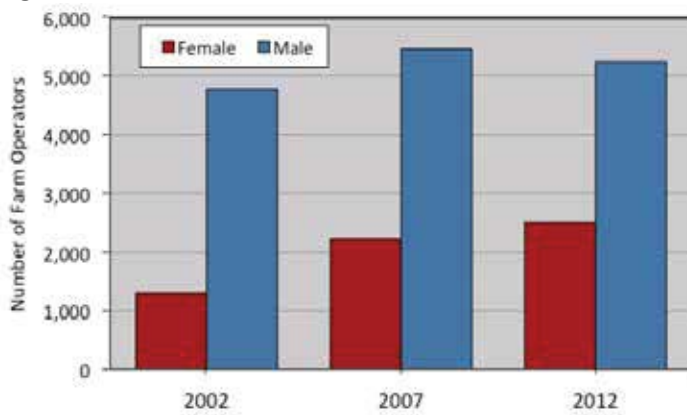
Figure EC.17: Percent Massachusetts Farm Operators by Primary Occupation, 2002 to 2012



Between 2002 and 2012, the number of farm operators who have primary occupations other than farming has increased to one half of all farmers.

Source: USDA Census of Agriculture 2012.

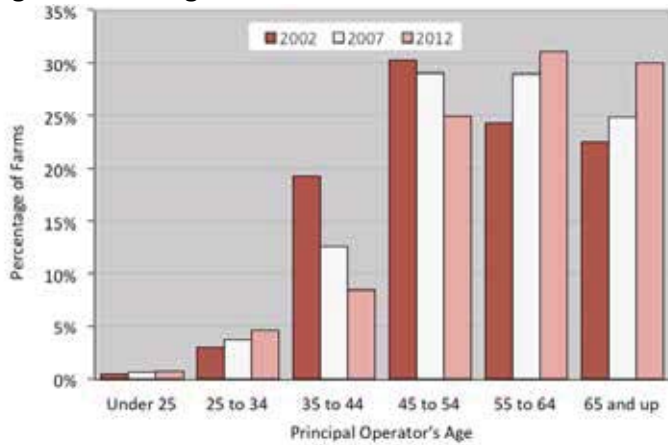
Figure EC.18: Gender of Farmers in the State 2002-2012



Women farmers in the state make up 32% of all farmers, while nationally they comprise only 14%.

Source: UMass Amherst and USDA Census of Agriculture.

Figure EC.19: Age of Farmer 2002-2012



30% of farmers are 65 years or older. Less than 5% are under 34 years old.

Source: UMass Amherst and USDA Census of Agriculture.

Farm Labor

Hiring and keeping farm laborers can be a daunting task for farmers. Many of Massachusetts farms rely at least partially upon family members, but larger operations need to hire other workers. Workers hired through the Federal H2A program provide much needed seasonal labor for many Massachusetts farms. Understanding and navigating federal labor regulations related to farm workers, is a challenge for many Massachusetts farm operators. According to the 2012 Census of Agriculture data, there were 15,649 farm workers in the State in 2012, of which about 40 percent worked more than 150 days per year. In 2012, there were 812 migrant workers on 132 farms in the State. Migrant farm workers are defined as farm workers whose employment requires travel that prevents the worker from returning to his or her permanent place of residence the same day. There were also 9,760 unpaid farm workers in the State in 2012, defined by USDA as “agricultural workers not on the payroll who performed activities or work on a farm”.⁸ According to U.S. Department of Labor data for Massachusetts, in 2012, there were 402 H-2A workers doing agricultural work.⁹ A H-2A visa allows a entry into the U.S. for temporary or seasonal agricultural work.

Farm Labor Wages

As shown in Figure EC.7, the average weekly wages for crop production are some of the lowest of all food system workers. Farm workers in crop production, a typically seasonal job, averaged \$551 per week. This number, derived from a 52-week average, factors in non-growing season weeks when farm workers would presumably not make any money. Farm workers employed in animal production fared much better, making an average of \$1,169 per week. About half of all farmers as well as many farm family members have full-time jobs off the farm. See Figure EC.18. For many farmers, this arrangement is necessary to be able to make enough to keep farming and to have consistent wages and affordable access to benefits.

Workforce Findings for Farming

Massachusetts farms face several labor challenges, including the seasonal nature of farming jobs, the limited pool of farm workers, which requires some farms to hire workers through the Federal H2A

⁸ USDA. (2014). *2012 Census of Agriculture, Massachusetts State and County Data, tables 7 and 64*. Accessed October 2015 from <http://goo.gl/xl2dmi>.

⁹ U.S. Department of Labor. (2012). *State Employment-Based Immigration Profiles: Massachusetts*, retrieved October 9, 2015 from <http://goo.gl/7baX7c>.

program, outmoded or confusing labor regulations and the multiple skills and abilities needed to do many of the jobs on a farm. An assessment of opportunities in the farming sector identified external factors such as increased demand and increased processing infrastructure as being key to more job opportunities.

By far the largest potential for new business development or expansion in the land-based food production part of Massachusetts' food system, as well as job creation, will come with increased demand for Massachusetts-grown and -produced products. Further development of season extension infrastructure and expertise also holds promise for both new business growth and job creation, as does the development of new food production business models, including those that incorporate light processing and value-added production.

Increased access to essential farm business infrastructure, like additional slaughterhouse and meat cutting services or additional dairy processing, will allow for expansion of agricultural businesses and related jobs.

Farms and Regulations

Regulations, while necessary, are often costly barriers to farmers being able to increase their production, develop new products, protect their land, and manage other elements of their business. For farmers of all types, regulations related to labor, local boards of health, and meat processing are some of the most vexing.

Labor regulations

The three primary labor regulations that cause challenges to farmers are the Fair Labor Standards Act of 1938 (FLSA), which establishes minimum wages and overtime pay, the Migrant and Seasonal Agricultural Worker Protection Act, which safeguards the migrant and seasonal agricultural workers and the H2A Temporary Agricultural Workers program, which provides for bringing immigrant agricultural labor to the US. All are federal regulations, and so somewhat outside of the scope of this planning process. The challenges they pose, however, are critical enough to merit mention.

FSLA has not kept pace with the changing face of farming, including even the basic definition of what a farm is. This Act fails to take into account many of the issues most important to small and mid-sized diversified operations that dominate Massachusetts' agricultural industry, in particular those of aggregation, intern labor, record keeping requirements and overtime exemptions. Particularly in these areas, the challenges of the regulations are compounded by a lack of understanding of the regulations.

Internships (sometimes inaccurately called apprenticeships) on Massachusetts farms have sometimes been seen as a way to provide interested workers with agricultural experience. The US Department of Labor has a narrow definition of allowable unpaid interns at for-profit enterprises.¹⁰ Because of this, so-called internships on farms, whether unpaid, or paid at a rate lower than minimum wage, are in violation of federal labor laws. This is something that isn't always well understood by some farmers. There is a formal category of apprenticeships, and regulations at both the federal and State level, and a registration process for them. Because of this, apprenticeships are not a good option for agricultural operations.

¹⁰ U.S. Department of Labor. (April 2010). *Fact Sheet #71: Internship Programs Under The Fair Labor Standards Act*, retrieved October 9, 2015 from <http://goo.gl/r1ruHY>.

The federal H2A program allows farmers to employ foreign workers for seasonal labor. In order to participate, farmers must demonstrate a shortage of U.S. workers and that their wages and working conditions meet certain minimum requirements.¹¹ Under the H2A program, farmers must pay transportation and housing costs for H2A workers, but since the workers may only work on one farm for the whole time they're in the U.S., the program is not useful for farms that have just a short period during which they need help because the costs of transportation are so high. Also, H2A workers are not allowed to be in the U.S. for a full year at a time, which makes the program useless to farmers who need labor year round, such as dairy farmers.

While Massachusetts has adopted some labor regulations with agricultural issues in mind, there remain many challenges. The minimum wage for agriculture, for instance, applies to field workers, but not for workers at farm stands. Rules around the use of interns and apprentices are confusing and inconsistently enforced.

Livestock Processing

Livestock processing regulations and siting of facilities are a top challenge. Slaughter regulations for red meat and poultry are a complex mix of federal and State requirements. Both federal and State oversight is based on relatively old regulations, which did not anticipate things like direct sales, farmers markets, consumer interest in local meat, and other changes in the market. Considerable policy has arisen from agency interpretation of regulations, much of which is unwritten and difficult to find or follow.

Zoning

Land use and zoning regulations can be a particular challenge for farmers. Zoning is a primary barrier to farming in populous areas. Farming may not be an allowable use in urban settings and, in some cases, is explicitly excluded. Ordinances that prohibit raising chickens and bees, and prohibit food growing in "front yards," are examples of regulatory hindrances to food production.

Local Regulations

Under Massachusetts General Laws, State and local regulations and community direction, local boards of are responsible for disease prevention and control, health and environmental protection, and promoting a healthy community. In many cases this means writing and enforcing regulations related to agriculture.

Boards of health are the only governing bodies in our State that have the authority to create and enforce rules with no oversight from another body or process. Their rules can exceed, but not conflict with, State law. For example, some local boards of health require farmers sampling products at farmers markets to have ServeSafe certification and some don't allow residential kitchens for food processing, even though the State allows it. Some boards of health ban the keeping of pigs.¹² As a result, a farm's economic viability can be threatened based on what town they are located in or are trying to sell products in. Compliance is particularly difficult for farms that do business in multiple towns. Local BOH regulations can sometimes be based on a board of health member's particular concern, or a lack of understanding of a situation. In some

¹¹ U.S. Department of Homeland Security. (2015) *H-2A Temporary Agricultural Workers*, retrieved October 9, 2015 from <http://goo.gl/rBHTJj>.

¹² Massachusetts Association of Health Boards. (1997). *Guide Book For Massachusetts Boards of Health, Chapter 20, Nuisances and Noisome Trades*, retrieved October 9, 2015 from <http://goo.gl/X1LmDY>.

cases a board’s lack of capacity to properly address a concern leads to simply banning a practice. There are no requirements under that members of local BOHs have any specific training, education or certifications.

In some rare cases State laws pre-empt local authority to create rules – boards of health can’t regulate pesticide use, for example – but support for home rule limits the number of situations where this is the case. Some boards of health have their own health agents for enforcement, and some are part of regional agencies that provide this service. Some boards of health are elected, and others are appointed.

Relatively recent laws allow towns to establish agricultural commissions, which serve to advocate for farms’ interests. These bodies have not been vested with any authority, however, or any oversight responsibilities.

Right-to-Farm Related Laws

Statutes and laws that pertain to agriculture include Chapter 111 related to public health and Chapter 243 related to private nuisances. Elements of Chapter 111 provide a protection for farming operations “conducting generally accepted farming activities from being deemed a nuisance by the board of health.” Section 1 of the Chapter (Definitions) contains a definition of “Farming” or “Agriculture,” Section 125A contains the nuisance exemption language, and Section 143 removes piggeries from the exemption in Section 125A.

Chapter 243 provides limitations to the actions that may be taken against farming operations for private nuisances, protecting farms from nuisance claims that result from “ordinary aspects” of said farming operations. Despite these regulations, there have been instances across the State of housing springing up adjacent to active farms, only to have new residents complain about odors and other “inconveniences” of living next to a farm. To protect against this situation, many towns have adopted Right-to-Farm bylaws.

As of the end of 2014, 139 communities across the Commonwealth had adopted local Right-to-Farm bylaws, intended to reiterate the town’s commitment to protecting the rights to farm accorded to all citizens under the State laws cited above. While local ordinances can’t grant rights not granted by the State laws, according to EOEEA “this bylaw encourages the pursuit of agriculture, promotes agriculture-based economic opportunities, and protects farmlands within a town by allowing agricultural uses and related activities to function with minimal conflict with abutters and town agencies.” Any municipality may develop and pass a right to farm bylaw.

Education, Training, and Technical Assistance

Table EC.7: Change in UMass Extension Employees, 1988-2015

Year	University FTEs	County FTEs	Total FTEs
FY88	349.76	31.6	381.36
FY99	122.48	15.75	138.23
FY15	108.97	20.97	124.94

The number of UMass Extension employees has dropped by about two thirds between 1988 and 2015.

Source: UMass Amherst Center for Agriculture, Food and the Environment.

UMass Extension

The UMass Extension Service has been a vital resource for farmers since its founding in 1914, and had county-funded offices in each county until the 1980s. Extension agents were available for on-farm visits to provide assistance on a wide range of topics, and were a key element in the food system in our State, particularly farming and food production.

With the dissolution of county government, resources available to UMass Extension have declined and UMass has had to look elsewhere for funding. As a result, Extension priorities are often dependent upon funding availability, rather than on the needs of the Massachusetts food system and farmers. This has left many gaps between what farmers need, and what UMass Extension can provide.¹³

Some of the technical assistance gaps identified include objective information and assistance with regulations, technology, food safety, pollinators, large-scale composting, maple sugaring, and consumer education. Additionally, home gardening was once a priority for Extension but was dropped due to budget cuts. Home gardening offers significant opportunities to increase people's consumption of fresh fruits and vegetables and to be more connected to food and the environment.

As UMass Extension's capacity has decreased, an extensive network of efforts to provide education and technical assistance to farms has developed. Nonprofit organizations, such as NOFA/Mass, and efforts based at other educational institutions, such as the Tufts-based New Entry Sustainable Farming Project offer workshops for farmers around particular management practices. A number of buy local organizations have stepped up to help farms with developing effective marketing and sales practices. Farm Credit East is one of a number of fee-for-service providers that can help farms with business planning and management. And membership-based trade associations for a number of agricultural sectors have helped those farmers progress. But these groups tend to set their own agendas independent of each other, and the aggregate of their work still fails to measure up to the services UMass Extension provided in its prime. As a result, there are still significant gaps in educational and technical services available to farmers.

MDAR and Technical Assistance

MDAR's Division of Agricultural Conservation and Technical Assistance (DACTA) offers technical assistance for farmers, including assistance with aquaculture, concentrated animal feeding operations and energy efficiency, conservation, and renewables.

MDAR also runs the APR and the State-Owned Farmland Licensing Program. They offer outreach and education via their Agricultural BMPs, Agricultural Business Training Program and their On-Farm Strategies to Protect Water Quality Program.

MDAR launched the Urban Agriculture Program in the fall of 2013, one of the nation's first statewide programs to support and promote commercial urban farming enterprises. Funding through the program targets infrastructure needs, innovative food production, zoning ordinances, technical assistance, land acquisition, and youth leadership development.

¹³ Wang, Sun Ling. (2014). *Cooperative Extension System: Trends and Economic Impacts on U.S. Agriculture*. Choices: the Magazine of Food, Farm, and Resource Issues. Accessed October 2015 from <http://goo.gl/x1Z7RQ>.

Farms and Financing

Farmers – both urban and rural – rely on multiple sources of flexible financing from institutions and organizations that understand the challenges and particularities of agriculture and food production. Traditional lending institutions are often poorly educated on food and farming, limiting farmers’ access to financing. Alternative sources for farm and food business financing, such as community-supported flexible financing and technical assistance programs, are on the rise in the State.

While some business support services do exist for farm development, on topics ranging from business planning to product development and marketing, there are not enough of these services, particularly from public agencies, to meet the needs of farmers and food business innovators.

Existing Conditions: FISHING

Massachusetts' history, economy, and identity have long been closely tied to seafood. With 1,500 miles of ocean coastline, Massachusetts has plentiful access to the sea for near shore seafood harvesting, including fishing, clamming, and lobstering, as well as fishing in national waters in the Gulf of Maine and George's Bank. The following Fishing section summarizes findings and provides analysis of baseline data and information about the Massachusetts seafood industry. The section presents data both on commercial fishing and aquaculture activity.

Commercial Fishing Overview

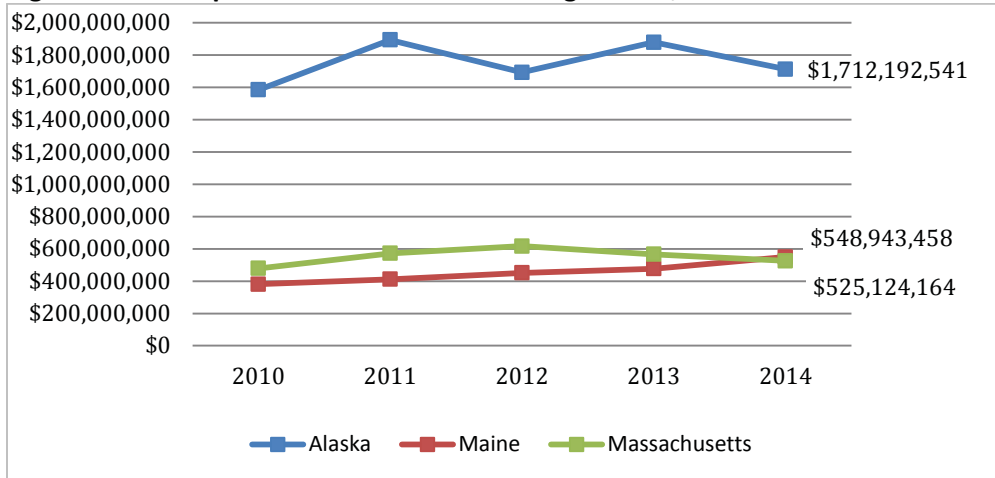
Map EC.2: Seafood Landings Value of Massachusetts Largest Ports



New Bedford is the leading seaport nationally in terms of the dollar value of seafood landed.

**Boston Landings data shown for 2013, all other ports show 2014 data.
Source: NOAA NMFS, Commercial Fisheries Statistics, 2014 data shown for Gloucester, New Bedford, Provincetown-Chatham; 2013 data shown for Boston.*

Figure EC.20: Top States for Seafood Landings Value, 2010-2014



Massachusetts is among the top three states nationally for the value of its seafood landings.

Source: NOAA National Marine Fishing Service (2014). Landings Query Results, 2010-2014. <https://goo.gl/Gkyo4F>.

Table EC.8: Economic Impacts of the Massachusetts Seafood Industry

	Jobs	Sales	Income	Value-Added
Total Impacts	100,108	\$7,706,079,000	\$2,021,479,000	\$3,073,305,000
Commercial Harvesters	13,524	\$1,027,556,000	\$330,189,000	\$482,560,000
Seafood Processors and Dealers	7,573	\$970,561,000	\$370,036,000	\$481,111,000
Importers	14,588	\$4,012,727,000	\$643,116,000	\$1,223,255,000
Seafood Wholesalers & Distributors	3,150	\$491,710,000	\$160,683,000	\$218,022,000
Retail	61,273	\$1,203,526,000	\$517,456,000	\$668,358,000

Over 100,000 people are employed in seafood industry-related jobs in Massachusetts.

Source: Fisheries Economics of the U.S. 2013, New England Region, Regional Summary <https://goo.gl/H8bkzd>.

Commercial Fishing Economy

Impact of Massachusetts Seafood Landings

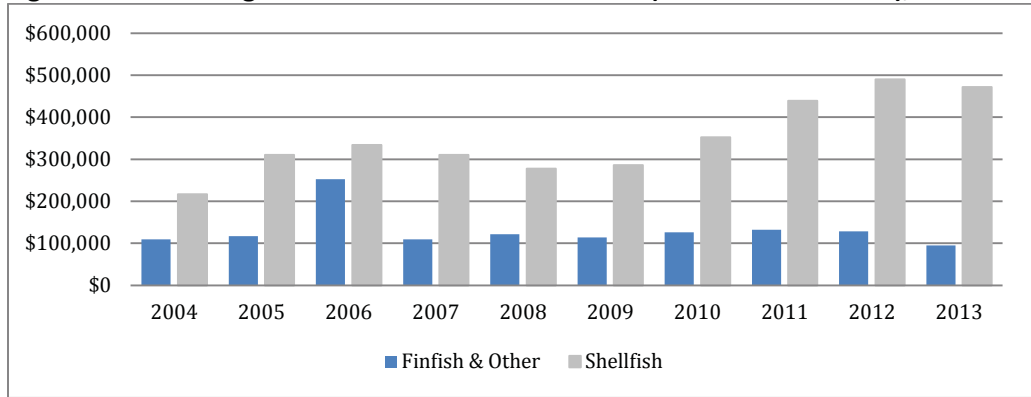
Massachusetts has a history of leadership in the commercial fishing industry, both nationally and in New England. The National Marine Fisheries Service collects and disseminates a range of data on fishing industry, and is the source for the data presented in this section. In 2014 it was the third strongest state for the value of seafood landed on its ports with a value of over \$525 million, following Maine (\$548 million) and Alaska (\$1.7 billion).¹ Generally, the State has maintained either a second or third position nationally, often trading places with Maine. Most of the landings value was from shellfish landings which comprised over \$472 million in 2013; in the same year the value of finfish and other fish contributed nearly \$95 million. Sea scallops and American lobster have consistently generated the most landings revenue in the past decade.² Nationally, New Bedford was the leading port with the value of seafood landed at \$379- and \$329-million in 2013 and 2014, respectively, landing mostly sea scallops.³

¹ NOAA National Marine Fishing Service (2013). [Landings Query Results, 2010-2014](https://goo.gl/Gkyo4F). Accessed November 2015 from <https://goo.gl/Gkyo4F>.

² NOAA National Marine Fishing Service (2013). *Fisheries Economics of the U.S. 2013, New England Region* <https://goo.gl/hcrvxx>.

³ NOAA National Marine Fishing Service (2013). *Fisheries Economics of the U.S. 2013, New England Region* <https://goo.gl/hcrvxx>.

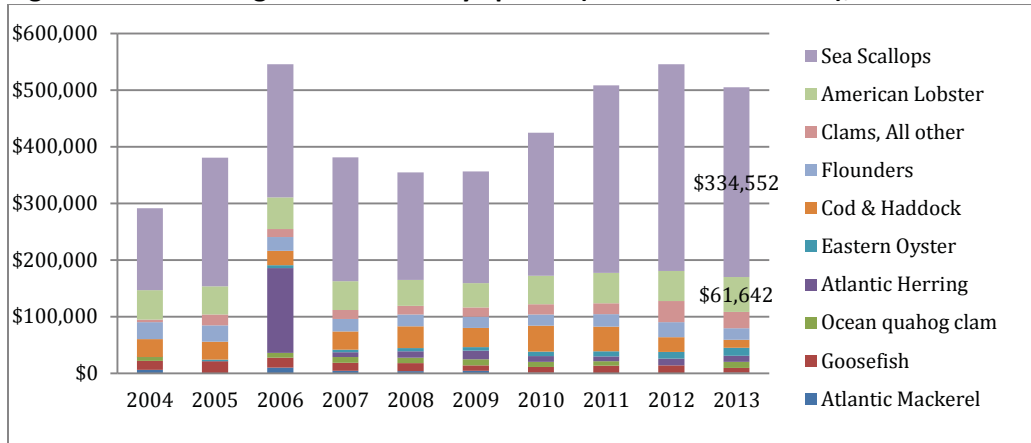
Figure EC.21: Landings Revenue of Finfish and Shellfish (thousands of dollars), 2004-2013



Most of the seafood landings value in the state is from shellfish landings, which were five times that of fin fish landings in 2013.

Source: NOAA Fisheries (2013). *Fisheries Economics of the U.S. 2013, New England Region* <https://goo.gl/hcrvxx>.

Figure EC.22: Landings Revenue of Key Species (thousands of dollars), 2004-2013



Sea scallops generate the most landings revenue by far of seafood in the State.

Source: NOAA Fisheries (2013). *Fisheries Economics of the U.S. 2013, New England Region* <https://goo.gl/hcrvxx>.

Economic Activity in the Seafood Supply Chain

Commercial fishing in Massachusetts drives economic activity in the broader seafood supply chain. At each step of the seafood supply chain commercial harvesters, seafood processors, importers, wholesalers, distributors, and retailers contribute to industry sales, employment, income, and value-added impacts in the economy.⁴ In New England in 2013, Massachusetts generated the largest total impacts across all of these impact categories.⁵

Sales

In 2013, the total sales impact of the commercial fishing industry in Massachusetts was \$7.7 billion, with over half of this impact generated by sales related to imported fish (\$4 billion).⁶

⁴ Fisheries Economics of the U.S. (2013). *New England Region, Regional Summary* <https://goo.gl/H8bkzd>.
⁵ Fisheries Economics of the U.S. (2013). *New England Region, Regional Summary* <https://goo.gl/H8bkzd>.
⁶ Fisheries Economics of the U.S. (2013). *New England Region, Regional Summary* <https://goo.gl/H8bkzd>.

Jobs and Income

In 2013, the Massachusetts seafood industry, including activity related to seafood imports, employed 100,108 people, nearly twice as many seafood workers as those employed in all other coastal New England states. Without import-related jobs, the State still employed 64,279 people in the seafood industry. Both with and without import related jobs, the retail sector employed more than half of the total seafood industry workforce in the State. With imports, seafood industry income totaled over \$2 billion. Removing import-related employment, the income totaled nearly \$900 million.⁷

Calculated separately from commercial fishing, *recreational* fishing employment is also strong. This employment sector, which includes charter boats, deep-sea fishing excursions, employed 6,923 people in 2013. In all categories, Massachusetts recreational fishing has the greatest impacts of all coastal New England states.⁸

Table EC.9: Job and Income Impacts in the Seafood Industry

	With Imports		Without Imports	
	Jobs	Income	Jobs	Income
Total Impacts	100,108	\$2,021,479,000	64,279	\$874,479,000
Commercial Harvesters	13,524	\$330,189,000	13,524	\$330,189,000
Seafood Processors & Dealers	7,573	\$370,036,000	1,833	\$89,051,000
Importers	14,588	\$643,116,000	0	\$0
Seafood Wholesalers and Distributors	3,150	\$160,683,000	1,160	\$59,167,000
Retail	61,273	\$517,456,000	47,761	\$396,072,000

The seafood industry generates over 64,000 jobs, not including seafood that is imported into the state.

Source: Fisheries Economics of the U.S. 2013, New England Region, Regional Summary <https://goo.gl/H8bkzd>.

Value-Added Impacts

Value-added calculations estimate the economic impact of an industry on the economy. The estimate is derived from a range of data, isolates the economic activity of a specific industry, and removes economic activity from other industries. Massachusetts value-added impacts were greater than all other coastal New England states both when including impacts from imports and without, amounting to \$3.1 billion and \$1.2 billion, respectively.

Seafood Processing, Wholesaling, Retailing

Table EC.10: Seafood Processing and Wholesaling plants and jobs, 2013

	Processing		Wholesale		TOTALS	
	Plants	Jobs	Plants	Jobs	Plants	Jobs
Maine	38	741	170	1,287	208	2,028
New Hampshire	10	241	10	111	20	352
Massachusetts	51	2,193	158	2,158	209	4,351
Rhode Island	10	nd	37	nd	47	(3)
Connecticut	4	75	15	186	19	261
Total	113	3,250	390	3,742	503	6,992

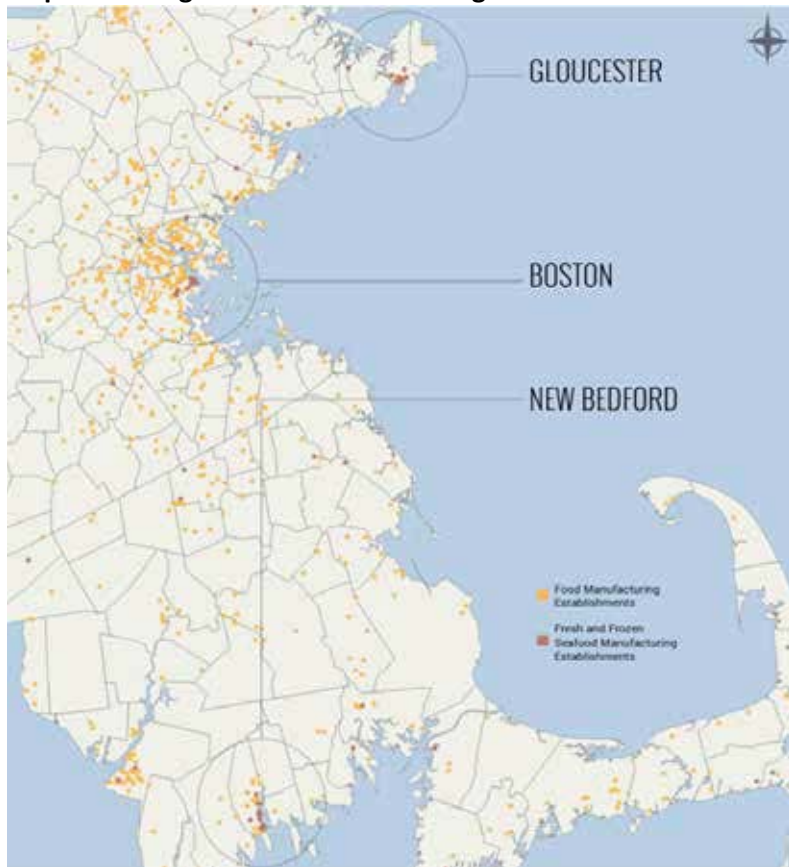
NOAA National Marine Fishing Service (2014). Fisheries of the United States, 2014. Accessed November 2015 from <http://goo.gl/QrM7dl>. Note: Numbers in parenthesis are suppressed to due to confidentially reporting requirements

Massachusetts has over 40% of the seafood processing and wholesale plants and over 60% of the related jobs in New England.

⁷ MA Department of Fish & Game. (2013). Massachusetts Division of Marine Fisheries 2013 Annual Report. Accessed November 2015 <http://goo.gl/ydE7RB>

⁸ NROC. (rev. 2013). Overview of the aquaculture sector in New England. Accessed November 2015 from <http://goo.gl/0EenSF>.

Map EC.3: Largest Seafood Processing Clusters



The state's largest clusters of seafood processing businesses are located in Gloucester, Boston and New Bedford.

Source: InfoGroup Business Data, North American Industrial Classification System (NAICS)

Massachusetts is by far the leading New England state for seafood processing. The largest clusters of seafood processing businesses are in Gloucester, Boston, and New Bedford. In 2013 Massachusetts had a total of 209 processing and wholesaling plants, employing 4,351 people.

In 2013, 1,756 businesses were registered with the Massachusetts DMF as seafood dealers involved in wholesale or retail of seafood. Of these, 26 percent were categorized as primary buyers, purchasing marine species directly from fishermen.⁹

⁹ UMass Dartmouth Center for Marketing Research. (2015). *Massachusetts Shellfish Aquaculture Economic Impact Study*. Accessed November 2015 from <http://goo.gl/g9yzvd>.

Aquaculture

Aquaculture is the farming of finfish and shellfish. In the case of marine aquaculture, this means managing a portion of a body of saltwater – natural or controlled-environment – to enhance production by intervening in propagation, feeding, protection from predators, and other factors. Land-based freshwater aquaculture operations use similar practices to raise finfish in controlled-environment tanks.

Marine Aquaculture

In Massachusetts, marine aquaculture operations – all operations in natural bodies of water as well as several land-based saltwater shrimp farms – are managed by the Division of Marine Fisheries, and the sites are licensed by the local municipalities. In 2013, 349 marine aquaculture license holders held 378 licenses totaling 1,030 acres.¹⁰

Shellfish aquaculture in the State has demonstrated significant growth, from an approximately \$3.5 million harvest in 2004, to more than \$25 million in 2013. Shellfish farmers were responsible for approximately 769 direct jobs in 2013, paying \$11.9 million in wages. They also generated an additional 140 jobs through indirect and induced activity.¹¹

Marine aquaculture faces significant challenges, including waste and discharge issues, limited available space, variation in New England weather, water quality issues relating to placement of facilities and facility operations, and competition with wild harvesters.¹² Local municipalities control the estuaries and submerged lands, leaving farmers to navigate town politics and the lack of security that comes with farming on leased land. Finally, as with most agriculture, margins are very low, particularly the high costs of feed and other inputs needed, and the need to keep prices low to compete with imported shellfish from larger producers.

Freshwater Aquaculture

Land-based freshwater aquaculture is overseen by the Division of Fisheries and Wildlife. In 2013 there were 22 land-based finfish aquaculture operations, some raising fish for food, and some for stocking and for biomedical research. These operations employed 112 people and paid \$4.7 million in wages, and raised food and stocking fish with a value of \$6.5 million.¹³

Challenges for land-based aquaculture include the cost of land and inputs – particularly energy and feed – as well as resource issues concerning water uptake and discharge. There is a need for education to develop a market for land-raised fish, informing consumers that tilapia, trout, and other species are raised here in Massachusetts and available for purchase and consumption.

¹⁰ UMass Amherst Donahue Institute. (2006). *Report I: An Assessment of the Coastal and Marine Economies of Massachusetts*. Accessed November 2015 from <http://goo.gl/enVRQw>.

¹¹ MA EOLWD. (2015). *Employment and Wages (ES-202), NAICS Code 1125, Animal Aquaculture*. Accessed November 2015 from <http://goo.gl/1GAatW>

¹² NOAA Greater Atlantic Region. (2015). *Greater Atlantic Region 2015 Saltonstall-Kennedy Recommended Projects*. Webpage accessed November 2015 from <http://goo.gl/ciCK21>.

¹³ US Environmental Protection Agency. (2014). *Reducing Wasted Food & Packaging: A Guide for Food Services and Restaurants*. Accessed October 2015 from <http://goo.gl/PwaHWf>.

Fishing Issues and Opportunities

The Globalized Seafood System

Despite this robust seafood industry, the seafood economy is largely driven by the export-import markets. It is now estimated that about 80 percent of fish landed in New Bedford, for example, is shipped overseas, and conversely, 90 percent of seafood consumed in the State, particularly shrimp and salmon, is imported and is often frozen. Fish is also imported whole or in blocks, processed in plants in New Bedford and, to a lesser degree, in Gloucester and Boston to, in turn, be shipped out of State.

At the same time, consumer tastes have narrowed to fewer and fewer species, such as cod and haddock, and familiarity and use of whiting, mackerel, and other species has declined. In order to provide a steady supply of fish to restaurants, supermarkets, and institutional buyers, local fresh fish has been blended with imported stocks. For example, cod is often imported from Iceland and Canada.

Federal catch limits reduce local fishermen's ability to adapt to the demands of local markets, and are driving significant consolidation in the market. At the same time, there has been a dramatic reduction in support for of research and development in the harvesting marketing and processing sectors.

Ecosystem Costs and Benefits

Fishing fewer species and increasing discards of unwanted, low-value fish are impacting the ocean ecosystem. Other ecosystem threats, such as from climate change, pollution, real estate development, invasive species, have caused deterioration to essential fish habitat and other parts of the coastal/ocean system. On the positive side, shellfish aquaculture has a pronounced beneficial effect on estuarine water quality, and more could be done to promote it's benefits.

Seafood and Food Safety

According to NOAA Fish Watch, up to 90 percent of seafood consumed in the United States is imported, and about half is wild-caught. A significant portion of the seafood imported by the United States is caught by American fishermen, exported overseas for processing, and then reimported to the United States.

Recalls of imported fish raise the public's awareness and concern about our seafood supply. Recalls have been required in response to such issues as foodborne illness outbreaks and inadequate processing, a reminder that as we continue to rely upon a global system for our seafood – as well as other food – we remain dependent upon other countries to enforce adequate food safety and processing standards.

Fishing Research

Funded at \$65 million annually in the 1980s, the Saltonstall-Kennedy federal grant program has since been at times completely defunded or seen dramatic reductions. This program provides important funding for research that supports fishing community viability and job opportunities. In 2015 the Great Atlantic distributions are estimated at \$8.8 million for 33 projects.¹⁴

¹⁴ USDA. (2012) *Know Your Farmer, Know Your Food Compass: Local Food Infrastructure*. Accessed October 2015 from <http://goo.gl/5lUJOi>.

Two research laboratories, one managed by the National Marine Fisheries Service, the other by the University of Massachusetts Food Sciences Department both closed in the mid 1900's. The Large Pelagic Research Center in Gloucester is still in operation, though its research focuses on tuna and swordfish, species for which there are already strong markets. Previously it also included research and design for high-value fish products, such as omega-3 oil and fish waste fertilizer.

Local Fishing Economy

Consolidation of fleets and processors, including shipment of locally landed seafood out of state and overseas, has stripped coastal ports of income, jobs, and taxes – including support services of engine and boat repair, ice, fuel, and other items – and has deprived the local ports of a strong economic multiplier from the high-wage fisheries. Many ports are left with low-wage, seasonal work in tourism and real estate development. Dockage and processing plant capacity have also been displaced by recreational boating and real estate development more generally in coastal waterfronts.

In response to these challenges, parts of a local seafood value chain have been developed in the last few years in Massachusetts. Community supported fisheries (CSF) projects have been organized, the largest of which is Cape Ann Fresh Catch out of Gloucester, while several smaller CSFs have also been organized on Cape Cod and the South Shore. Some local fishermen also participate in broader buy local groups. There are also traditional CSAs in other parts of the State partnering with CSFs to provide consumers not near the coast with fresh seafood.

There has been increased outreach on the part of the fishing industry to increase public awareness of the threats to local fishermen and to educate consumers about how to cook under-utilized species. Local seafood distributors are increasing distribution to high-end restaurants in Boston and elsewhere, including as far afield as Vermont.

Workforce Findings for Fishing

Workforce challenges for fisheries include:

- a predicted labor shortage as current fishermen retire;
- the grueling physical work of fishing, as well as the seasonal nature of fisheries work;
- a need for increased small business acumen to develop fishing operations;
- the current price and market constraints and the need to increase demand for underutilized seafood species; and
- the Federal regulations that constrain species caught, days fished, and where fishing can be done

An assessment of opportunities in the fishing industry acknowledges that the current domestic value chain in Massachusetts fishing is fragmented and disjointed. Opportunity is seen for both business development and job creation, but the Massachusetts-based fishing industry is using a business model that has been subject to extraordinary pressures and contraction, including cheap imports and waterfront real estate development, among others.

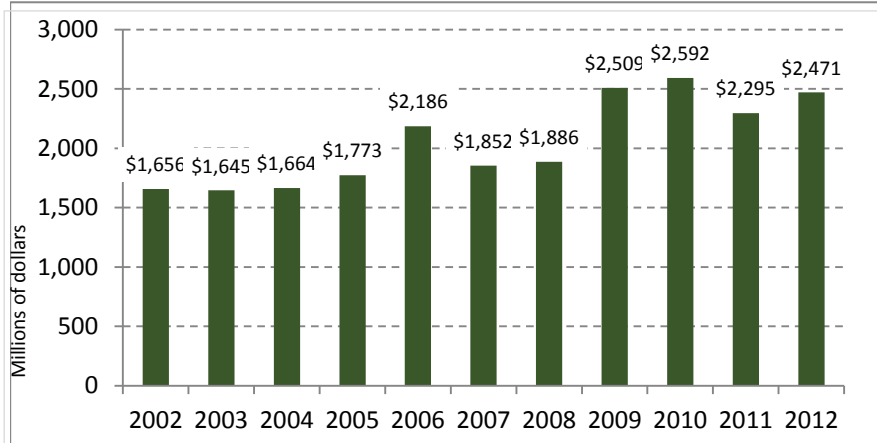
Existing Conditions: PROCESSING

Introduction

Increased production, sales, and consumption of Massachusetts-grown foods relies upon enough of the right kinds of processing facilities – from food processing incubators for startup food businesses to manufacturing facilities for higher volume food production. A well-prepared workforce, adequate infrastructure, and ecologically sustainable food processing practices are also necessary for successful expansion of our food processing capabilities. This section provides data and analysis on the food manufacturing sector in Massachusetts. Note that the terms manufacturing and processing are used interchangeably in this report. Food products processed in Massachusetts do not necessarily use raw products grown in Massachusetts.

Food Processing Data

Figure EC.23: Food Manufacturing Revenue in Massachusetts 2002 to 2012



Revenue generated by food manufacturing in the state grew 12% between 2002 and 2012.

Source: NAICS 311 and 312 Bureau of Economic Analysis and InfoUSA 2011.

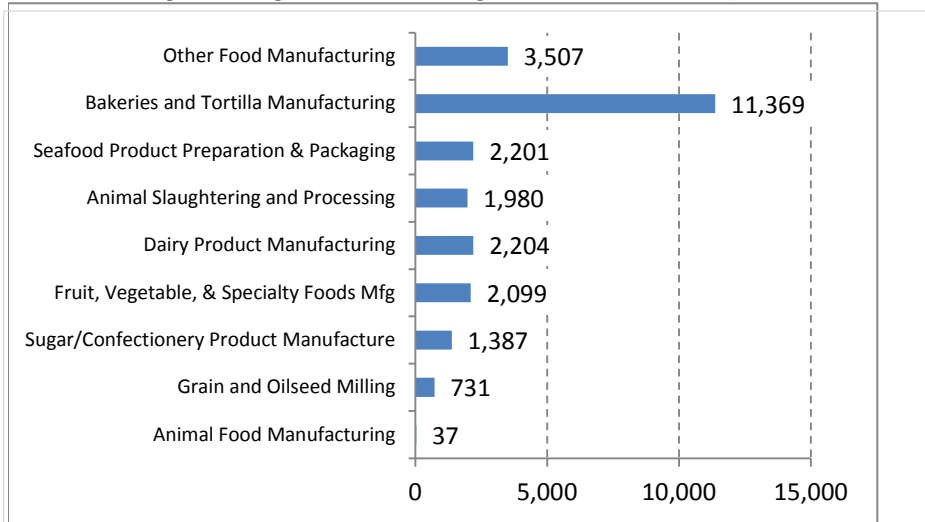
Food Processing Businesses

Food processing businesses, which include food and beverage manufacturing, contribute about 13 percent to the food system contributions to the economy (see Massachusetts Gross State Product). The sector generates roughly \$2.5 billion dollars of the total \$19.3 billion generated in the food system overall. In 2012, the food processing sector was comprised of 1,479 businesses, or 3.6 percent of food-related businesses. While the number of these businesses has fluctuated slightly from 2002-2012, it has experienced a 12 percent growth in establishments in this ten year period. As the economy has rebounded from the economic recession, starting in 2010, the number of food processing businesses have increased incrementally and steadily.

Leading food processing sectors in Massachusetts in terms of number of businesses are bakeries and seafood manufacturing. These segments are also important job providers, as shown in Figure EC.24.

Food Processing Worker Data

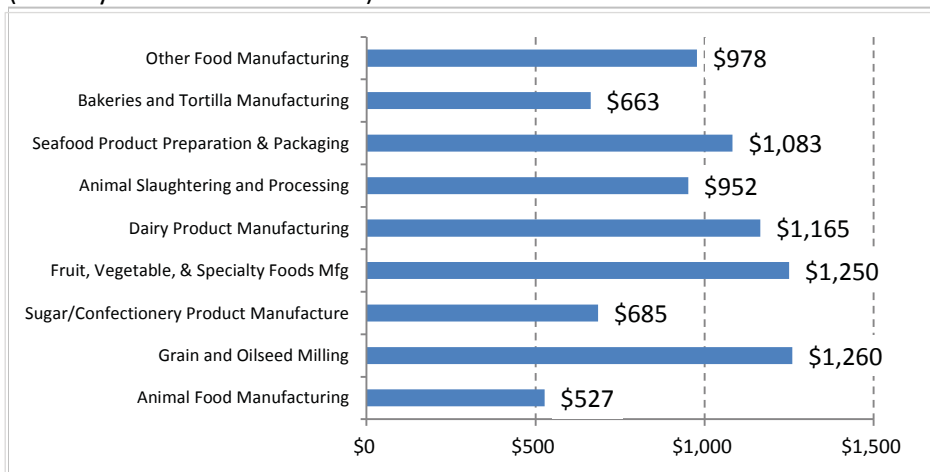
Figure EC.24: Massachusetts Food Manufacturing Employment 2013
(not including beverage, tobacco or agricultural chemicals)



Bakeries and tortilla manufacturing employ over three times as many workers as any other food manufacturing category in the state.

Source: Massachusetts DET ES-202 < http://lmi2.detma.org/lmi/lmi_es_a > Primary NAICS 311 Industries

Figure EC.25: Massachusetts Food Manufacturing Average Weekly Wages 2013
 (Primary NAICS 311 Industries)



Food processing workers' average weekly wages were \$1,121 in 2012.

Source: Massachusetts DET ES-202 < http://lmi2.detma.org/lmi/lmi_es_a >

Food Processing Workforce

According to 2012 data, Massachusetts food processing sector employed 27,485 people, about seven percent of the food system workforce. These jobs were held in businesses that range from small on-farm value-added operations to internationally known brands, like Kayem Foods, Inc. that makes the famous Fenway Franks. Wages in this sector amounted to nearly \$1.4 billion, with average weekly wages of \$1,121. Notably, in Massachusetts nearly 75 percent of jobs in food processing are full-time, a higher percentage than even statewide full-time employment averages. In the period 2002-2012 the food processing sector gained more than 1,500 jobs, increasing about six percent. Following the increase in number of food processing businesses after the economic recession, most of these jobs were added between 2010 and 2012.

The largest number of food processing jobs is in the baking industry, with more than five times the number of jobs as the second leading processing sector, seafood product preparation. Bakery jobs range from those in large-scale industrial bakeries that sell wholesale to grocery stores, to tortilla processing and small corner pastry shops.

Within the broader manufacturing industry, which in addition to food includes computer, machinery, furniture, transportation equipment, and other manufacturing professions, the number of jobs declined 43 percent in the period from 2002-2012. Food manufacturing jobs during this period remained resilient, however, and, as previously noted, the sector saw a six percent increase in jobs. This sector makes up about ten percent of all jobs in the manufacturing industry.

Workforce Challenges for Processing

The seasonality of Massachusetts-grown food means that food processing jobs that use Massachusetts-grown food are seasonal, making them less desirable positions than year-round work. But a growing number of food processing entities, including shared-use kitchens that are focused on building processing capacity through new business development, strengthening of infrastructure, and workforce education and training, hold the promise of business and job creation. There is significant potential for increased Massachusetts food processing business development and expansion, as well as job creation and growth. There is also the potential for a shared labor pool which could create year-round, full-time employment for food manufacturing workers.

Food Processing and Sustainability

Food processing and distribution industries can have significant impacts on the environment through the use of water, raw materials, fuel, electricity, and its contribution to post-consumer food and packaging waste. Aside from energy used for cooking at home, food processing consumes more energy than any other part of the food supply chain. Water is an essential for several parts of food processing, and a significant quantity of water is used as a primary ingredient, for washing and cleaning, running equipment, and for sanitizing. Food waste and packaging containers account for nearly 45 percent of materials discarded in landfills in the United States.¹

Energy-efficient technologies and practices, food waste reduction and composting, improved packaging, and more streamlining in transportation are all components of efforts to make food processing and distribution in Massachusetts more sustainable.

Food Processing and Infrastructure

The cost of starting a new food processing business can be a real barrier. Food processing equipment can be highly specialized and scaled to certain amounts of production and expensive. According to the USDA, much of our existing food infrastructure doesn't work well for local and regional producers. It is often too

¹ Code of Massachusetts Regulations, 105 CMR 590.000: State Sanitary Code Chapter X – Minimum Sanitation Standards for Food Establishments. Accessed October 2015 from <http://goo.gl/WVW3bC>.

large to accept smaller amounts of product and to process in small batches, maintaining the products origin.²

Commercial Kitchens

Shared-use commercial kitchens are an important segment of the food manufacturing economy, as the popularity and market share of prepared foods continues to grow in response to consumer demand for convenience. For this report, commercial kitchens are understood to be kitchens that are licensed by local boards of health for food preparation by people or businesses that own, rent or lease the facility.

Definitive data on the total numbers and locations of commercial kitchens is lacking. In addition to larger food processing and business incubation facilities, there are numerous commercial kitchens in places like church basements and senior centers. Often these types of kitchens might be available to rent but without a formal leasing program in place. For some building managers, leasing their commercial kitchen to other users is perceived as too onerous or poses liability issues. Others, however, rely upon the rental of their kitchen and other facilities as a regular income stream.

Food entrepreneurs may also choose to begin their business in their home kitchens, and by doing so reduce their startup costs. Massachusetts cottage laws (105 CMR 590) specify that non-potentially hazardous foods – such as baked goods, some snacks, and jams or jellies – can be made in permitted residential kitchens. These food products can be retailed directly to in-state markets, including farmers markets and restaurants^{3 4 5}. Wholesale of foods made in residential kitchens is not permitted. Home kitchens can play an important role in providing a step up for farmers or food entrepreneurs who want to try their hand at processing without the more serious commitment utilizing other facilities might require.

Food Processing and Regulations

As with all other food system sectors, regulations often pose challenges for food processors, particularly small businesses. There are regulations for handling, preparing, packaging, storing, and selling food – all of which are designed to protect food safety. Federal and State agencies as well as local boards of health all have a hand in defining and enforcing various regulations. Often the complex and difficult to navigate regulations discourage entrepreneurs from developing new products and cost existing food processing businesses time and money to understand and comply with the regulations.

The primary regulations for food processors concern food safety. Food safety is achieved through the handling, preparation, and storage of food in ways to prevent food borne illness. Food laws and regulations help ensure food is safe from production to consumption.

Food Safety Regulations and Programs

Good Agricultural Practices and Good Handling Practices

GAP and GHP are programs administered by USDA. The programs were begun in 1998 in response to food safety concerns, and offer guidance for the fresh fruit and vegetable industry to reduce the contamination

² Harvard Food Law and Policy Clinic. (2013). *Cottage Food Laws in the United States*, Accessed October 2015 from <http://goo.gl/NkdY4U>.

³ *Forrager Cottage Food Community* (2012). Massachusetts. Accessed October 2015 from <http://goo.gl/X6YPBg>.

⁴ FDA. (2015). *Current Good Manufacturing Practices*. Accessed October 2015 from <http://goo.gl/Ec7Nf5>.

⁵ MA EOHHS. (2015). *Massachusetts Retail Food Regulations Fact Sheet*. Accessed October 2015 from <http://goo.gl/ua3gTO>.

of fresh produce. Shortly thereafter, many wholesale produce companies began to seek assurances that fresh produce suppliers were following GAP. In January 2002, the USDA implemented the USDA GAP & GHP audit verification program.

The annual audit program is provided to assess a company's efforts to avoid the contamination of fresh fruits and vegetables by microbial contamination. UMass Extension offers trainings in GAP to help growers develop and implement farm food safety plans, and to prepare them for USDA GAP certification. MDAR provides USDA Fresh Produce audits.

Good Manufacturing Practices Regulations

Good Manufacturing Practice Regulations (GMP), promulgated by the USDA, require food producers to proactively ensure food safety and quality. The regulations encompass kitchen and equipment safety and cleanliness, food production processes, and recordkeeping.⁶ Massachusetts' Food Code (part of 105 CMR 590.000) further defines sanitation requirements food establishments for the State, and in addition to reiterating the federal GMP, lays out requirements for residential kitchens, mobile food units, and details on administration, licensing and enforcement.⁷

Food Safety Modernization Act (FSMA)

FSMA is a federal food safety law that grants the FDA broad new power to enforce food safety standards on farms. It will impact produce growers, farms that aggregate product with other farms and farms that even minimally process what they produce across the country, although most Massachusetts farms will be exempt from FSMA because they are well below the financial threshold. They will, however, still find themselves having to comply if they want to sell to stores, because many stores are expected to require FSMA from their vendors.

The two sets of rules that are relevant to human food are the Produce Safety Rule and the Preventive Controls Rule. The Produce Safety Rule is intended to reduce the food safety risks in raw produce. The Preventive Controls rule is intended to reduce risks in food processing.

These rules have unintended consequences for our New England farms, according to New England Farmers' Union (NEFU). As currently written, NEFU says the rules will:

- Suppress local food: the proposed rules unfairly burden local and regional food innovations and limit opportunities for family farmers to launch and grow their businesses.
- Undermine conservation efforts: the proposed rules make it harder for farmers to use soil and water conservation plans that enhance soil health, water quality, and wildlife habitat.
- Raise costs: the proposed rules impose major expenses on small farms and food businesses and lack fairness, clarity, and consistency.

⁶ Community Involved in Sustaining Agriculture. (2015). *Local Food Calculator*. Accessed October 2015 from <http://goo.gl/L5o8OK>.

⁷ USDA. (2014). *Massachusetts Agriculture Defies National Trends*. Accessed October 2015 from <http://goo.gl/u3jzI0>.

Existing Conditions: DISTRIBUTION & MARKETING

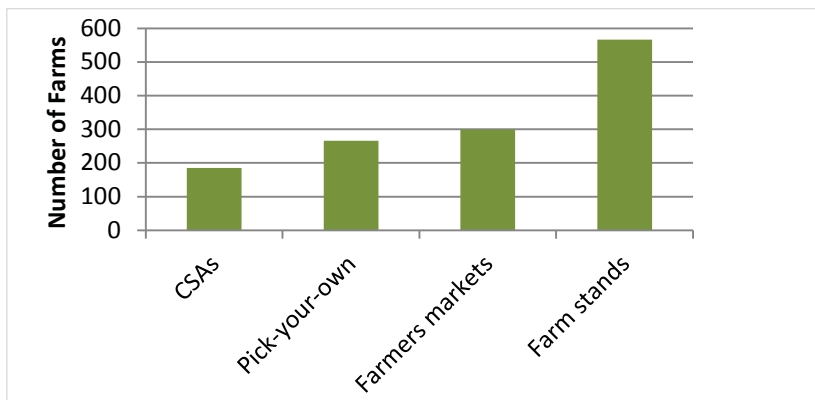
Food is circulated and delivered throughout the Commonwealth through a variety of methods. Some is through a complex network of companies and individuals, including large-scale distributors, working with institutions, supermarkets, and convenience store chains to deliver fresh and processed foods from around the globe. Some has a much shorter chain, such as farmers at farmers markets selling vegetables, fruits, and eggs, harvested that same morning. Restaurants are another aspect of the distribution network, with chefs interacting directly with farmers as well as with the larger supply network.

It can be difficult for local growers and food producers to break into the more established distribution system. In some cases, distributors and store owners don't want the extra work of dealing with smaller growers. In other cases, schools and institutions may have certain food handling or packaging policies in place that make it difficult for them to work with small- and mid-sized growers that follow protocols appropriate for their size operations. Chefs may need more training to take advantage of seasonal produce, as well as information on the best ways to source it.

There are also significant opportunities within the distribution system for delivering more fresh, local, healthy food to individuals. Institutions are getting the message that people want more locally grown and sourced food. Parents of school children are beginning to make the connection between health and fresh local food. There is more discussion about farmers needing to have fair and predictable contracts with institutions and supermarkets, and the technical support they need to innovate and expand their markets. And supermarkets are adding more local, in-season produce to their shelves. There are many opportunities for more large-scale sourcing of locally-produced food by distributors, supermarkets, schools, and institutions.

Distribution Data

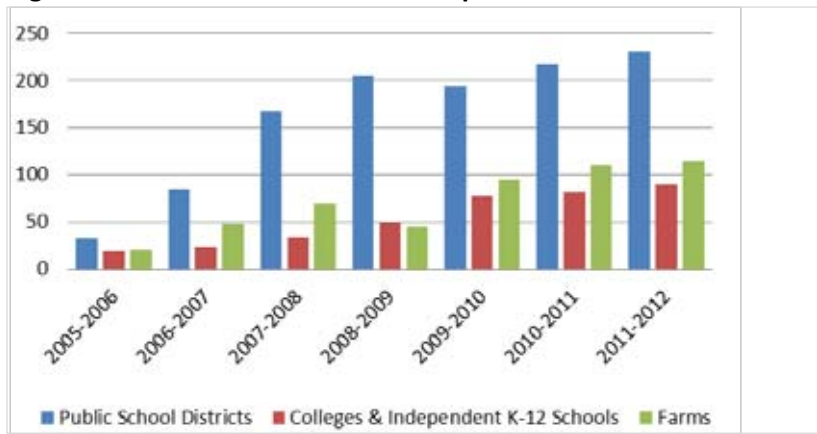
Figure EC.26: Number of Direct to Consumer Sales Methods



There are about 566 farm stands in the state, the most common direct to consumer sales method used by farmers.

Source: EOLWD ES-202, Census Nonemployer Statistics, USDA Census of Agriculture

Figure EC.27: Farm to School Participation



There were seven times as many public school districts sourcing some of their food locally in 2012 than in 2005

Source: *Mass Farm to School*

Consumer Demand

For 2013, the USDA estimated per capita food sales for the U.S. to be \$2,271 for foods to be prepared and eaten at home, and \$2,233 for foods to be eaten away from the home. With a population of approximately 6.7 million, that amounts to nearly \$30.2 billion in food sales per year in the State of Massachusetts.

Direct to Consumer Sales by Farmers

As stated previously, Massachusetts ranks third in the nation for the average per-farm agricultural products sold directly to consumers. In addition, Worcester and Middlesex counties are in the top ten counties nationwide for total value of direct market sales. These direct sales include those to retail outlets and via CSAs.

These sales are critical to sustainability for farmers, because the farmer is able to eliminate costly intermediaries, such as distributors and retailers, and capture more of the revenue for their own businesses. While they need to remain cognizant of the broader market, farmers are also able to set prices that reflect the cost of production, a key to ongoing viability.

Direct to consumer sales are also important to the broader economy of the State, with a ripple effect that goes far beyond the farms that produce the food. According to CISA, “If every household in Massachusetts spent \$20 more on local food per month (and \$20 less on non-local food), \$234,768,540 more local income would be generated per year and 3,876 local jobs would be created in the State.”

Consumer Supported Agriculture (CSA)

According to 2012 USDA Census of Agriculture data, Massachusetts ranked number one in the nation for the percent of farms with CSAs. Nearly six percent of farms – or 465 – in our State market products through CSAs, up from three percent in 2007. Massachusetts ranks sixth nationally for number of farms operating CSAs, and four Massachusetts counties rank in the top ten nationwide for number of CSAs (Middlesex, Hampshire, Worcester, and Franklin).¹

¹ MA EOWLD. (2015). *Employment and Wages (ES-202)*. Accessed November 2015 from <http://goo.gl/1GAatW>.

Farmers Markets

MDAR classifies farmers markets as either three-season or winter. As of June, 2015, there were 253 three-season and 46 winter markets according to MassGIS. Winter farmers markets are growing in popularity in the Commonwealth, as more season-extending techniques have pushed the envelope of seasonality and consumers are seeking fresh produce year-round. In addition to winter storage crops, apples and frozen meats, it is not unusual to find salad greens and herbs available throughout winter at farmers markets. There has also been growth in the number of mobile farmers markets in the State, many of them specifically serving low income and seniors in isolated housing developments. In an effort to make fresh local food more accessible, more Massachusetts farmers and farmers markets accept Electronic Benefit Transfer (EBT) for SNAP. In 2014, 180 farmers and farmers markets accepted SNAP, up from just 24 in 2008. In 2014 that arrangement allowed SNAP recipients to purchase \$366,000 worth of produce from farmers markets, up from just \$7,333 in 2008.²

Farmers markets are a relatively low-overhead way through which farmers can reach numerous customers in a short amount of time, with the marketing and logistics handled by market managers. In recent years, as the number of farmers markets have increased, some have raised concerns that the market is saturated and that there are now too many markets. But others, especially those in low-income and urban communities, believe there is still demand and need for more farmers markets.

Other Direct to Consumer Methods

In addition to CSAs and farmers market, farmers sell their products directly to consumers at farm stands, pick-your-own operations and farm stores. According to 2015 MassGIS data, there are 566 farm stands and 266 pick-your-own operations across the State.

Wholesale Food Distributors

Wholesale food distributors in the Commonwealth accounted for approximately four percent of all the food system businesses in 2012, or 1,457 businesses. Wholesalers of grocery and related product decreased by five percent while wholesalers of farm product raw material increased by 76 percent and wholesalers for farm supplies increased by 44 percent.³

The wholesale food trade in the State generated \$22.63 billion in 2013, up from \$16.07 billion in 2002.⁴

Large distributors typically have catalogs and product lists from which their customers order or, in some/many cases, the distributors make the selection of products on behalf of the customer. Convenience stores are a prime example of businesses who allow the distributor to make the selections for them. Supermarkets also source food through distributors. Supermarkets may also have contracts agreements with local farmers to supply specific local produce or food products; generally, these are not contractual relationships. For dairy, supermarkets buy private label milk from bottlers. For branded milk they buy from a cooperative, or from larger distributors.

² US Census Bureau. (2015). *Nonemployer Statistics*. Accessed November 2015 from <https://goo.gl/9bZb7N>.

³ USDA. (2012). *Census of Agriculture, Volume 1, Chapter 1: State Level*. <http://goo.gl/G7moFg>.

⁴ US Department of Commerce, Bureau of Economic Analysis. (2014). *Gross-Domestic-Product-(GDP)-by-Industry Data*. Accessed October 2015 from <http://goo.gl/brHeEX>.

Food Products Exported from Massachusetts

Massachusetts food and agricultural producers export more than \$1.2 billion of products out of the U.S. each year. Fish products are the largest export, with a value of more than \$500 million. Prepared and preserved cranberries are also a significant export, with \$63 million being shipped overseas in 2014.

Table EC.11: International Food and Agricultural Exports from Massachusetts: Selected Categories and Items

	2010	2012	2014
Agricultural & Related Products Total	\$ 1,118,601	\$ 1,214,967	\$ 1,220,576
Fish Products	\$ 453,787	\$ 546,110	\$ 519,160
Processed Fruit	\$ 29,136	\$ 37,644	\$ 68,373
Dairy Products	\$ 66,546	\$ 50,015	\$ 65,503
Prepared Foods	\$ 49,572	\$ 60,150	\$ 46,825
Fruit & Vegetable Juices	\$ 45,174	\$ 50,580	\$ 42,202
Wine & Beer	\$ 4,084	\$ 9,245	\$ 18,252
Fresh Fruit	\$ 21,052	\$ 21,070	\$ 15,336
Beef & Beef Products	\$ 16,505	\$ 16,814	\$ 13,739
Processed Vegetables	\$ 5,751	\$ 5,665	\$ 11,855
Non-Alcoholic Bev. (ex. juices, coffee, tea)	\$ 12,740	\$ 8,640	\$ 11,553
Fresh Vegetables	\$ 2,137	\$ 5,475	\$ 6,057
Cranberry Juice exports from MA		\$ 33,709	\$ 35,796
Cranberries, prepared or preserved		\$ 24,376	\$ 63,527
	(Dollars in thousands)		

Fish products make up a substantial portion of food exported from our state.

Data Source: USDA Foreign Agricultural Service. (2015). Global Agricultural Trade System.

Farm to Institution and Farm to School

Increasing procurement of local food by institutions and schools would help feed demand and would provide more growers with more reliable markets. In 2010, to help boost procurement of local food, the State amended Chapter 7, Section 23B of MGL to require State agencies to prefer foods grown or produced within the State over foods grown or produced outside of the State in their procurement processes. State colleges and universities are not required to follow this procurement law – they only have to make “reasonable efforts” to source food locally. To date, this law has not compelled much change. Many State agencies have not achieved implementation and there is no tracking, reporting or benchmarking process in place. There has also been little education for farmers on Section 23B.

Similarly, the Massachusetts School Nutrition Act requires preferential purchasing, as long as the local option is less than ten percent more expensive than comparable foods sourced elsewhere. Public schools are also allowed to buy directly from farms without a public bid process, as long as the purchase is under \$25,000.

There are existing programs which make help boost local procurement. The first is E.O. 503 Small Business Purchasing Program (SBPP) which requires agencies to award contracts between \$50,000 and \$150,000 to SBPP participants. Although this existing program is a good option for farmers, no farmers are currently participating, probably due to lack of knowledge about the program. There is also the Supplier Diversity Program, which encourages agencies to give preference to bidders who work with minority- and women-owned business enterprises.

Massachusetts Farm to School

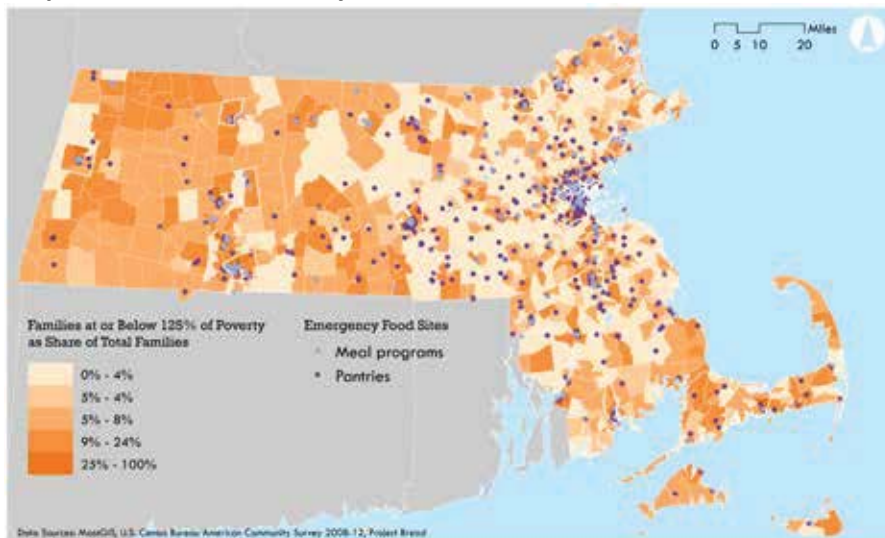
The goal of MA Farm to School is to “facilitate sustainable purchasing relationships between local institutions and local farms, promote local food and agriculture education for students, and support State, regional, and national networking of farm to school practitioners.”

In MA Farm to School’s last survey of their program’s participants, there were 320 public school districts, private schools, and colleges in the Commonwealth preferentially serving local foods, over half of which have received assistance from the MA Farm to School program. About 114 farms sold their products directly to schools across the State through this program. MA Farm to School focuses on facilitating sustainable procurement relationships – local foods arriving regularly at the loading dock of institutions – between farms and schools.

The USDA Farm to School Census estimates that \$8.9 million is being spent by Massachusetts schools on local food, though participation in the survey is optional and the estimate may not reflect all of the revenue being spent. The survey revealed that the average percent of food budgets spent on local food in Massachusetts is 15.91 percent, and Massachusetts ranks 12th in the nation in local food purchases for schools.⁵

Retail Food Distribution

Map EC.4: Ratio of Grocery Store to Convenience Stores TK

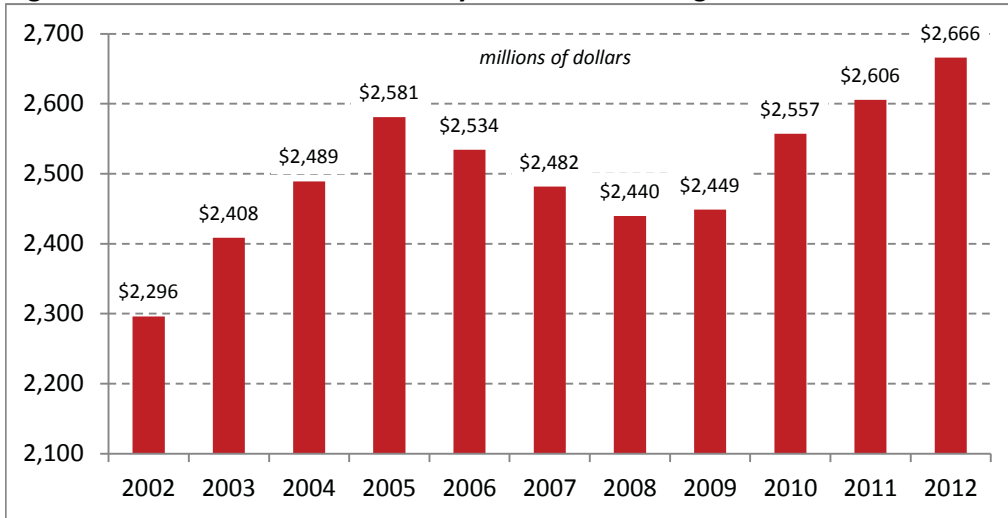


Many of the towns in the State with the most families at or below 125% of poverty have no emergency food sites.

Source: MassGIS, U.S. Census Bureau American Community Survey 2008-12, Project Bread.

⁵ USDA Food and Nutrition Service. (2015). *Farm to School Census Explorer*. Accessed October 2015 at <http://goo.gl/Hof0YW>.

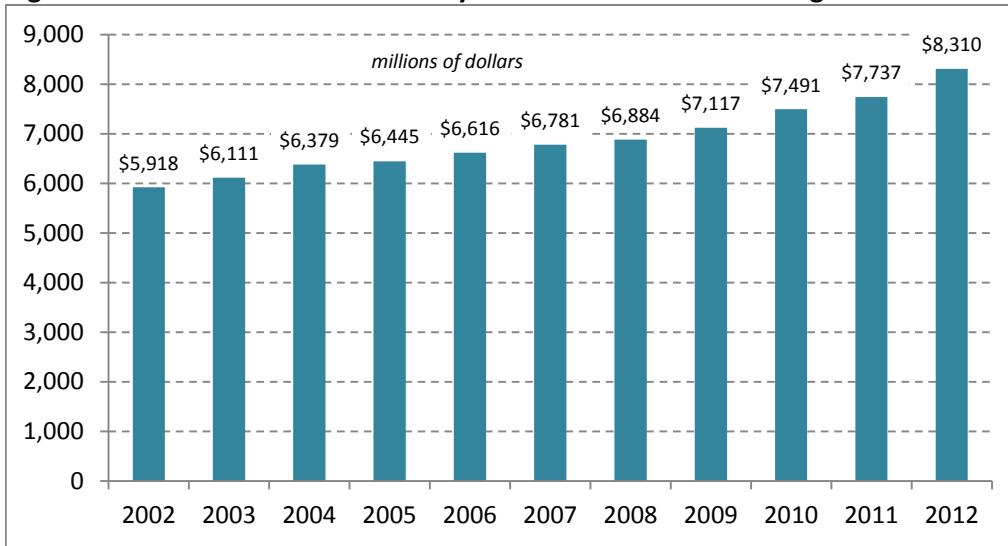
Figure EC.28: Revenue Generated by Food and Beverage Stores



Revenue generated by food and beverage stores increased by 16% from 2002 to 2012.

Source: U.S. Bureau of Economic Analysis and InfoGroup Business Data 2011

Figure EC.29: Revenue Generated by Food Services and Drinking Places



Revenue generated by food services and drinking places rose steadily from 2002 to 2012, increasing by 40% during this time.

Source: U.S. Bureau of Economic Analysis and InfoGroup Business Data 2011

Food and Beverage Stores

Food and beverage stores make up approximately 16 percent of the food system businesses in the State. There were approximately 6,700 food and beverage stores in 2012, up from approximately 6,550 in 2002. The total revenue generated by these stores in the Commonwealth was about \$2.7 billion in 2012, up from about \$2.3 billion in 2002. See Figure EC.1: Change in Number of Food System Businesses 2002 to 2012.

Food Services and Drinking Places

Food services and drinking places (restaurants and bars) overwhelmingly make up the majority of food system businesses in the State, at 14,687, or 42 percent. The number of restaurants and bars increased about ten percent between 2002 and 2012. Revenue generated by food services and drinking places totaled \$8.3 billion in 2012, up from \$5.9 billion in 2002. Unlike other food businesses that experienced fluctuations, this category saw a steady increase of revenue. See Figure EC.1.

Food Distribution and Branding

Though relatively small in land mass, Massachusetts is a State of diverse regional identities, many related to food. The Berkshires, the Pioneer Valley, the Cape and Islands, Boston metro, the North Shore and other regions have their own distinct identity, and many of them have successful buy local organizations that have developed brands and marketing campaigns for their region.

At the statewide level, Massachusetts Grown...and Fresher!TM is a long-standing branding campaign, overseen by MDAR. Commonwealth Quality is a recently established certification that helps identify products that are made using practices that are safe, sustainable, and don't harm the environment following a set of standards developed by the industry and regulators. Savor Massachusetts is another statewide brand that is used to help boost culinary tourism and to highlight the regional specialties unique to our State.

Distribution Workforce

Retail food system workers receive some of the lowest wages of all food system workers. Workers in food services and drinking places have the lowest pay, with a \$354 average weekly wage. Food and beverage store workers have the second lowest average weekly wage, at \$413. Wholesale distribution workers receive better pay than retail, with grocery product merchant wholesalers receiving \$1,184 in average weekly wages and farm product merchant wholesales receiving \$937. See Figure EC.7: Food System Average Weekly Wages 2012. Food system work is often seasonal, part-time, low-wage, and without benefits.

There is potential for growth in distribution-related businesses and jobs. Continued development of the infrastructure to freeze or preserve produce and other Massachusetts food products could create opportunities for business expansion and growth. Expanded aggregation and distribution options for Massachusetts producers also hold strong promise for business expansion and new business development.

Existing Conditions: FASH (Food Access, Security, and Health)

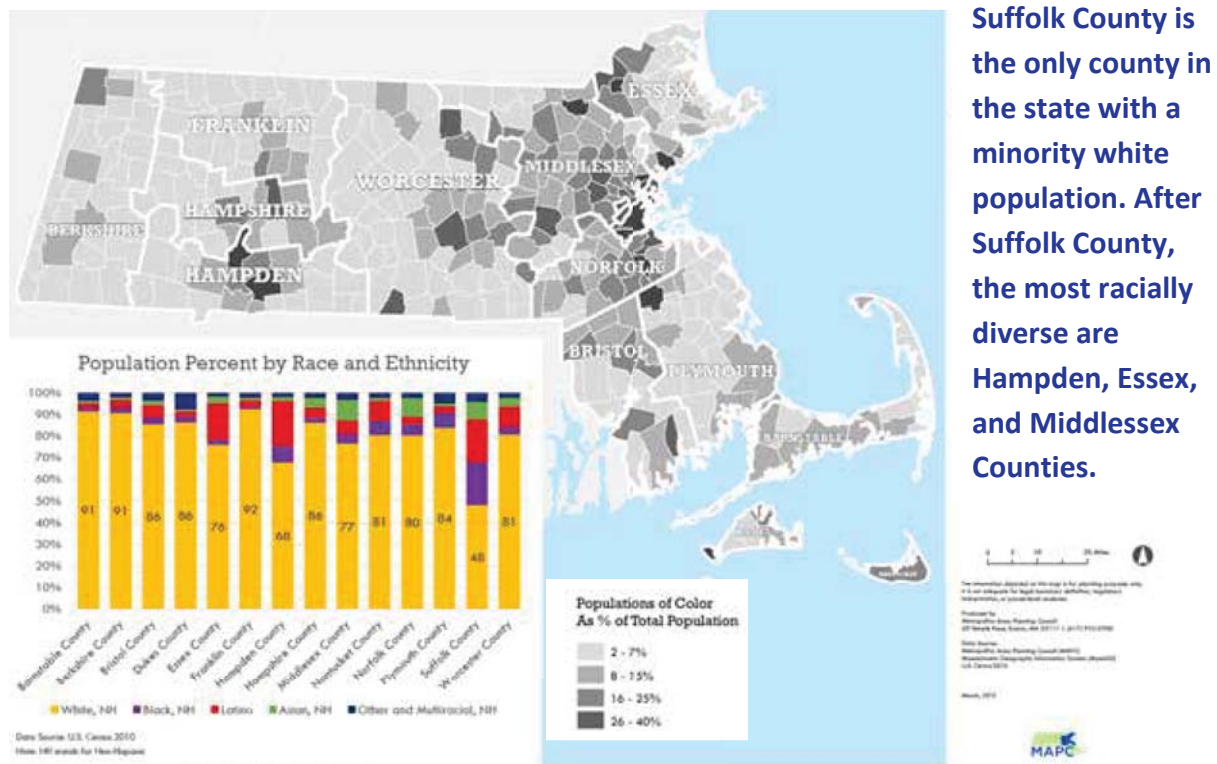
This section presents data and analysis that describe people. Each person may have several different relationships to the Massachusetts food system: as a shopper and consumer; as a parent who prepares meals for their family; as a restaurant or retail grocery worker; as a student who grabs a quick lunch at the school cafeteria; and many more.

This section also provides information that is intended to help improve our understanding of why an increasing number of people in the Commonwealth do not have secure, reliable sources of food, and why in most of our communities there are now epidemic levels of obesity, diabetes, and other chronic diseases that are associated with poor nutrition and a lack of regular access to healthy foods.

Consumers

Consumer Demographics

Map EC.5: Population Percent by Race and Ethnicity



Source: MassGIS, U.S. Census 2010

Table EC.12: Annual % Growth over Previous Year 2010-2014

Geography	Population Estimate (as of July 1)		# Change from April 1, 2010 base to July 1, 2014	% Change from April 1, 2010 base to July 1, 2014
	2010	2014		
Massachusetts	6,564,073	6,745,408	197,591	3.0%
Barnstable County	215,903	214,914	(974)	-0.5%
Berkshire County	131,310	128,715	(2,557)	-1.9%
Dukes County	16,553	17,356	821	5.0%
Essex County	745,478	769,091	25,916	3.5%
Franklin County	71,317	70,862	(510)	-0.7%
Hampden County	464,160	468,161	4,536	1.0%
Hampshire County	159,266	160,939	2,859	1.8%
Middlesex County	1,506,852	1,570,315	67,189	4.5%
Nantucket County	10,154	10,856	684	6.7%
Norfolk County	672,645	692,254	21,511	3.2%
Plymouth County	495,856	507,022	12,107	2.4%
Suffolk County	725,319	767,254	45,167	6.3%
Worcester County	800,184	813,475	14,933	1.9%

While Massachusetts' population increased 3% between 2010 and 2014, Barnstable, Berkshire, and Franklin Counties all experienced modest declines during the same time period.

Source: UMass Donahue Institute Population Estimates Program. Source data: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2014. U.S. Census Bureau Population Division. May 21, 2015

Table EC.13: Projected Population Growth at State and County Levels

AREA	Census 2010	Projection 2015	Projection 2020	Projection 2025	Projection 2030	Projection 2035	Percent Change
Massachusetts	6,547,629	6,792,591	6,950,668	7,105,878	7,231,126	7,319,469	12
Barnstable	215,888	215,073	205,411	198,550	192,894	187,674	-13
Berkshire	131,219	129,450	129,692	129,992	130,446	130,389	-1
Bristol	548,285	557,690	563,618	568,691	572,196	573,960	5
Dukes	16,535	17,291	17,305	17,604	17,972	18,453	12
Essex	743,159	783,531	798,824	813,666	824,650	831,063	12
Franklin	71,372	70,498	70,703	70,832	70,586	69,882	-2
Hampden	463,490	471,163	479,431	487,931	495,749	501,718	8
Hampshire	158,080	158,855	160,077	161,158	161,277	160,451	1
Middlesex	1,503,085	1,577,277	1,611,789	1,645,167	1,673,074	1,694,670	13
Nantucket	10,172	10,667	10,678	10,895	11,371	12,004	18
Norfolk	670,850	705,106	729,296	752,774	771,889	786,274	17
Plymouth	494,919	508,861	519,998	530,225	538,676	544,388	10
Suffolk	722,023	764,433	809,433	853,702	888,796	914,644	27
Worcester	798,552	822,696	844,413	864,691	881,550	893,899	12

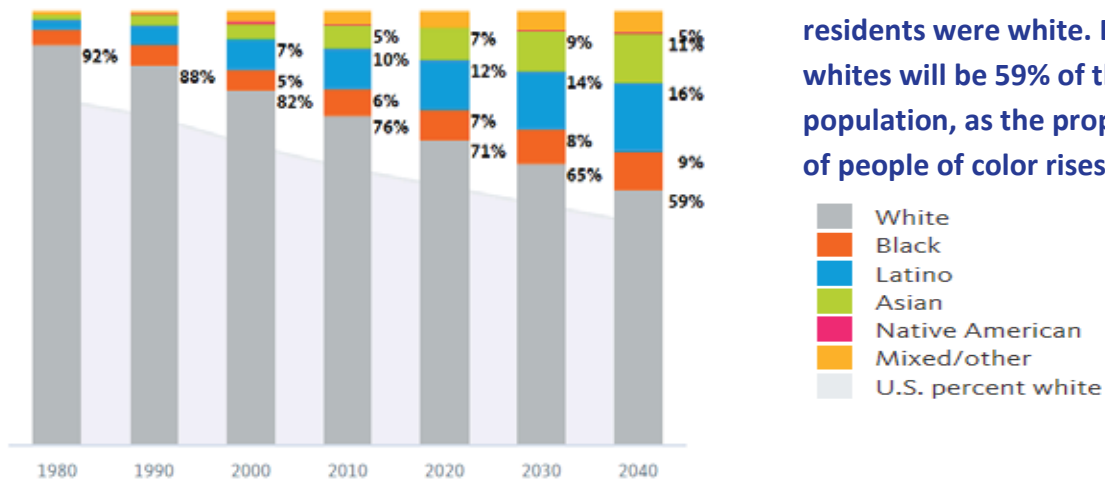
Massachusetts can expect to see a 12% increase in population from 2014 to 2035, but the population of Barnstable County is expected to decline 13% during the same period.

Source: UMass Donahue Institute Vintage 2015 Population Projections. March 2015

Massachusetts was home to 6.7 million people in 2014, up three percent from 2010 and 6.1 percent from 2000. While this represents an increase of nearly half a million new residents in the last 15 years, our population growth is significantly less than the U.S. average of 13 percent since 2000.¹ Yet Massachusetts remains the most populous state in New England, with many large consumer markets located within relatively short distances from farms and farm stands

¹ US Census Bureau. (2010). Decennial Census 2000 and 2010 and American Community Survey, One-year population estimates 2014. Accessed November 2015 from <http://goo.gl/gVqXhr> and <https://goo.gl/crw4pr>.

Figure EC.30: Projected Racial and Ethnic Population Change

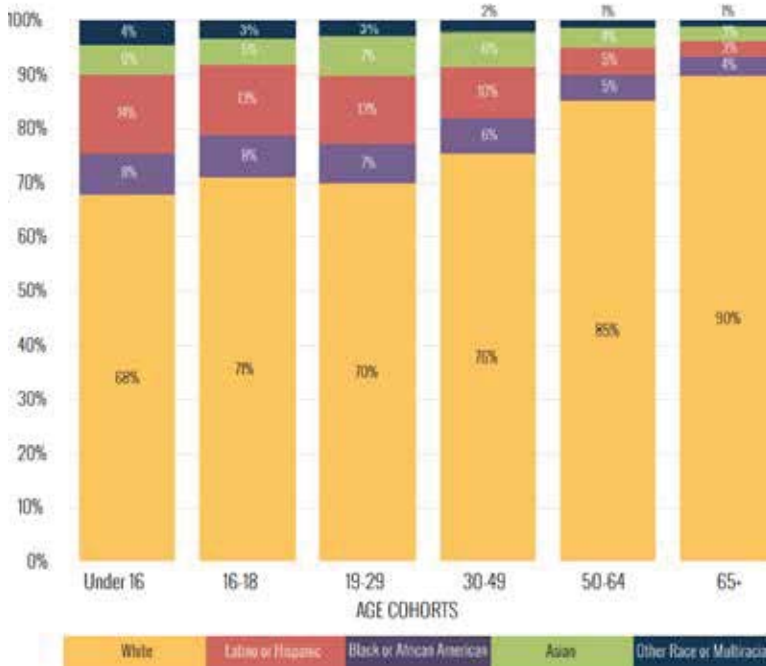


In 1980, 92% of Massachusetts residents were white. By 2040, whites will be 59% of the population, as the proportion of people of color rises to 41%.

- White
- Black
- Latino
- Asian
- Native American
- Mixed/other
- U.S. percent white

Source: UMass Donahue Institute Vintage 2015 Population Projections. March 2015

Figure EC.31: Residents by Age and Race



People under 30 are the most racially diverse age cohort in Massachusetts, while people age 65 and older are 90% white.

Source: American Community Survey Public Use Microdata Sample, 2007-2011

Middlesex County is the most populous of all Massachusetts counties, with over 1.5 million residents, followed by Worcester, Essex, and Suffolk Counties. The most rural counties are the two island counties, Nantucket and Dukes. Franklin County is the most rural non-island county, with just over 71,000 residents.

Massachusetts' total population is estimated to grow from 6.7 million in 2014 to more than 7.5 million in 2035, an increase of about 12 percent that will result in a commensurate increased demand for food.²

The Commonwealth is becoming more diverse. People of color accounted for the majority of the population growth between 2000 and 2010. The total number of white residents decreased over that time, by more than 200,000 people, while the population of color grew by more than 400,000. Statewide, the population of color has increased by six percent, from 18 percent in 2000 to 24 percent in 2010. Urban areas tend to be more diverse than rural.

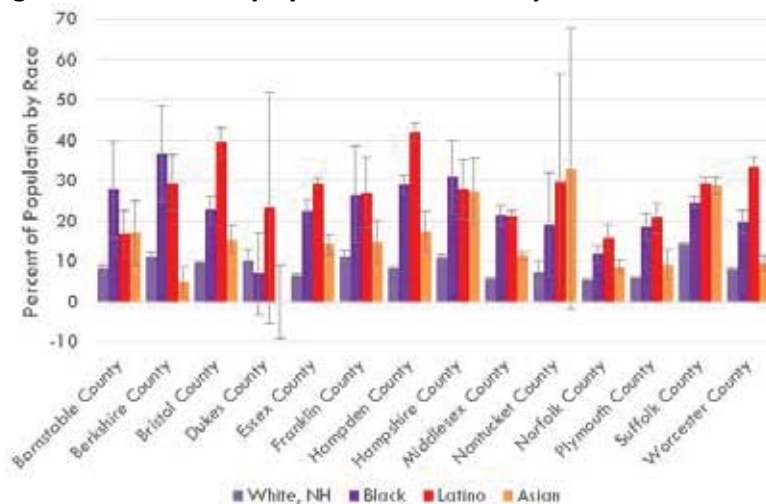
Younger Massachusetts residents are more diverse than older generations. Approximately 30 percent of our residents under 16 years old are non-white. This is a dramatic change from the proportion of people who are age 65 and older, which is approximately ten percent non-white. See figure EC.30.

Hunger and Food Insecurity

More than three-quarters of a million people in Massachusetts or approximately one in every nine residents – 11.9 percent of all residents, and 16.6 percent of our State's children – experienced food insecurity in 2014.³ The USDA defines food insecurity as consistent access to adequate food being limited by a lack of money and other resources at times during the year. Other commonly used terms for food insecurity are “hungry, or at risk of hunger,” and “hungry, or faced the threat of hunger.” Suffolk County has the highest average food insecurity with nearly 16 percent of its population unable to get all the food they need on a regular basis.

Hunger and Food Insecurity Data

Figure EC.32: Poverty by Race and Ethnicity



People of color consistently experience more poverty than whites in Massachusetts.

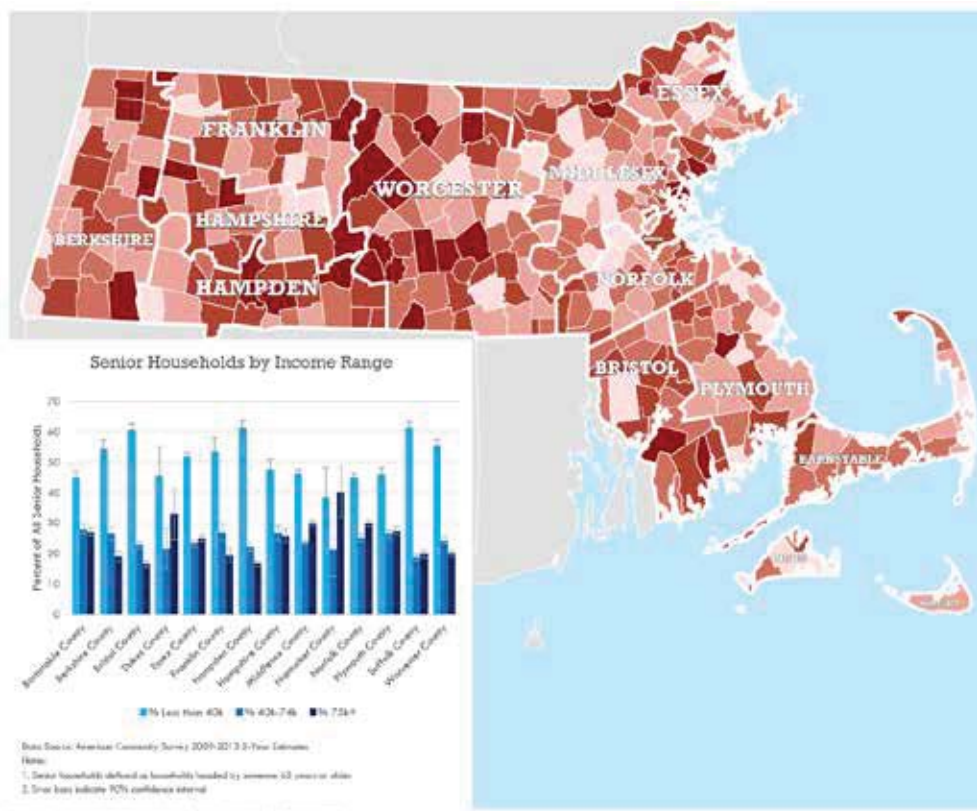
Source: American Community Survey 2009-2013 5-year estimate

Note: Error bars indicate 90% confidence interval

² Renski, Henry. (2015). *Long-term Population Projections for Massachusetts Regions and Municipalities*. UMass Donahue Institute. Accessed March 2015 from <http://goo.gl/0kAYTC>.

³ Gundersen, Craig. et. al. (2015) *Map the Meal Gap 2015: Highlights of Findings for Overall and Child Food Insecurity*. Feeding America. Accessed November 2015 from <http://goo.gl/fM4vFE>.

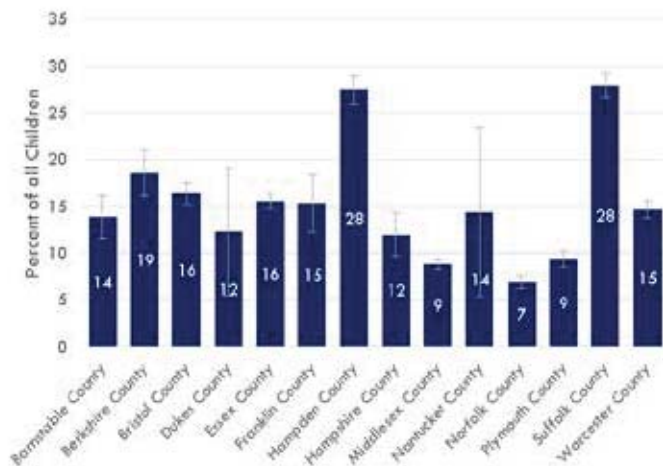
Map EC.6: Elder Populations and Income



Counties with the highest numbers of poor elder populations include Bristol, Hampden, and Suffolk.

Source: American Community Survey 2009-2013 5-year estimate, MassGIS

Figure EC.33: Children in Poverty

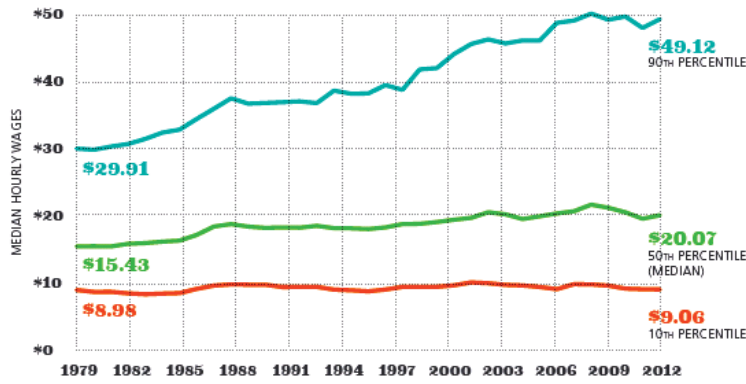


In Hampden and Suffolk Counties, 28% of children live in poverty – significantly more than other counties.

Source: American Community Survey 2009-2013 5-year estimate
Note: Error bars indicate 90% confidence interval

People living in poverty are more likely to be food insecure. In Massachusetts, 11.9 percent of residents are below the federal poverty line (approximately \$20,090 per year for a family of three). But vulnerable Massachusetts residents face higher poverty rates: 16 percent for children, and 26.5 percent for working-age people with disabilities.

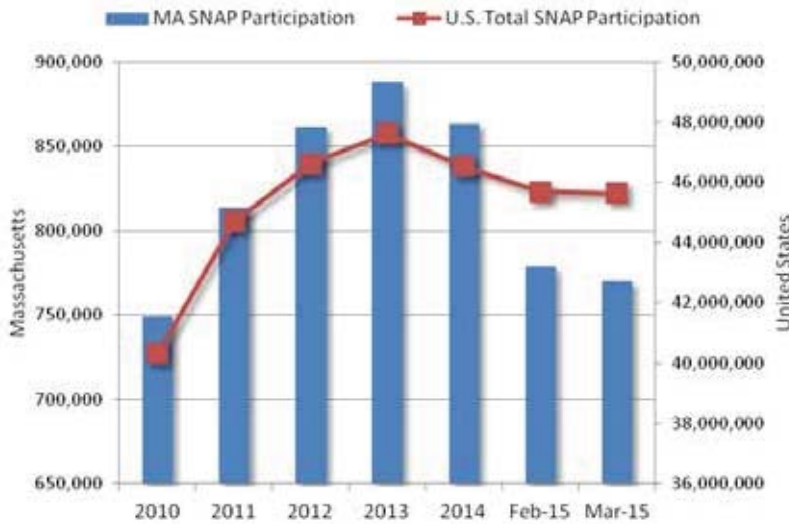
Figure EC.34: Change in Median Hourly Wages



The income gap in Massachusetts continues to widen, as low incomes have remained flat since 1997.

Source: From *Poverty to Opportunity: The Challenge of Building a Great Society*, Nancy Wagman, 2014 www.massbudget.org/report_window.php?loc=From%20Poverty%20to%20Opportunity.htm.

Figure EC.35: SNAP Participation in Massachusetts and the Nation



The number of Massachusetts residents receiving SNAP benefits dropped nearly 11% during the first few months of 2015, compared to just a 1% drop nationally.

Source: From *Poverty to Opportunity: The Challenge of Building a Great Society*, Nancy Wagman, 2014 www.massbudget.org/report_window.php?loc=From%20Poverty%20to%20Opportunity.htm.

Elderly residents are also vulnerable to hunger and food insecurity, and elderly families and individuals with low levels of income have the greatest food security challenges. Map EC.6 shows the proportion of senior-headed households with incomes less than \$40,000 per year. The darkest red indicates the highest proportion of low-income seniors (63 percent to 100 percent). Communities with the highest proportion of vulnerable seniors are distributed across Massachusetts, in both rural and urban areas. In seven counties, more than 50 percent of senior-headed households have incomes of less than \$40,000 per year. As shown in figure EC.32, white people have significantly lower levels of poverty than people of color. Bristol and Hampden Counties have the largest disparity between whites and Latinos, with the difference in poverty levels reaching approximately 30 percent.

Families earning up to 125 percent of the federal poverty threshold (\$20,090 for a family of three in 2015) qualify to receive food assistance benefits such as SNAP or WIC. Undocumented immigrants are not eligible for SNAP but children of undocumented immigrants can get SNAP if they are citizens or legal permanent residents.

Dietary Guidelines

The Dietary Guidelines for Americans are issued and updated every five years by USDA and the Department of Health and Human Services. (An update is due in late 2015.) These guidelines offer medical and nutritional consensus information about appropriate intake of calories, fats, sugar, salt, and other nutrients; how to make informed food choices; and the importance being physically active. All these factors contribute to maintaining a healthy weight, reducing one's risk of chronic disease, and promoting overall personal health.



The Dietary Guidelines for Americans healthy diet is one that:

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products;
- Includes lean meats, poultry, fish, beans, eggs, and nuts; and
- Is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars.

MyPlate helps individuals through the use of a place setting image to understand what proportions of each food group is recommended.

Massachusetts residents on average do not consume the nutritionally recommended amounts of fruits and vegetables, based on the MyPlate guidelines shown above. Only one-quarter of Massachusetts adults eat the recommended five servings of fruits and vegetables per day (2.5 cups of vegetables and two cups of fruit).⁴

Eating enough fruits and vegetables and other healthy food depends greatly on an individual's ability to get to a supermarket. Disparities in food access have significant health implications. For every additional supermarket in a census tract, produce consumption increases 32 percent for African Americans and 11 percent for whites.^{5 6} In 2015, production of vegetables, legumes, and beans increased five percent between 2014 and 2015, but Americans are still only eating 1.6 cups per day on average.⁷

Some of the top impediments to eating fresh food in general include:

- Lack of money.
- Lack full-line supermarkets or other places that carry fresh, local food.
- Lack of transportation to supermarkets or other places that carry fresh, local food.
- Unfamiliar produce that is not culturally familiar.
- Lack of information on how to prepare fresh, local food.

⁴ Centers for Disease Control and Prevention. (2013). *State Indicator Report on Fruits and Vegetables, 2013*. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Accessed November 2015 from <http://goo.gl/COAe2P>.

⁵ The Boston Foundation. (2015). *Healthy People/Healthy Economy*. Accessed November 2015 from <http://goo.gl/iE9MYz>.

⁶ Treuhaft, Sarah and Allison Karpyn. (2010). *The grocery gap: who has access to healthy food and why it matters*. PolicyLink. Accessed November 2015 from <http://goo.gl/nbMJNW>.

⁷ USDA Economic Research Service. (2015). *Vegetables and Pulses Outlook: May 1, 2015*. Webpage accessed November 2015 from <http://goo.gl/W9Dvwf>.

Response to Hunger and Food Insecurity

Emergency Food System

Massachusetts’ network of food banks, pantries, and meal sites is sometimes known as our “Emergency Food System.” However, it is more commonly known simply as “hunger relief.” The four regional food banks are:

- Eastern Massachusetts: Greater Boston Food Bank
- Central Massachusetts: Worcester County Food Bank
- Western Massachusetts: The Food Bank of Western Massachusetts
- Northeastern Massachusetts: Merrimack Valley Food Bank

These nonprofit agencies receive donations and purchases millions of pounds of food annually, which are distributed to more than 700 meal programs and food pantries throughout the State.⁸

Map with food pantry sites and poverty rates is TK.

Pounds of Food Distributed by Hunger Relief Organizations

Approximately 13 percent of Massachusetts residents received emergency food assistance in 2014.⁹ Additionally, 845 emergency food programs across the State were supported with product purchased with MEFAP funds, funded each year in the State’s budget and administered by MDAR and distributed through the four regional food banks. See Table EC.13.

Of the \$14 million in 2014 MEFAP funding, \$780,000 (six percent) was allocated to the Massachusetts Grown Initiative to purchase produce, milk, and eggs produced in the State. This initiative was launched in 1999 as part of MEFAP to give low-income individuals access to fresh produce, while also creating new demand for local farm products.¹⁰

Table EC.14: FY14 MA Regional Food Banks Distribution

Food Bank	Agencies Served	Total Pounds Distributed	MEFAP Pounds Distributed	MEFAP Meals Distributed**
Food Bank of Western Massachusetts	182 (+1%)	8,529,736 (+11.3%)	2,361,661 (+26.0%)	1,968,051
The Greater Boston Food Bank	514 (+.2%)	48,122,795 (+4.4%)	13,391,682 (+13.4%)	11,159,735
Merrimack Valley Food Bank	56 (-2%)	2,801,898 (-5.6%)	1,337,255 (+17.8%)	1,114,379
Worcester County Food Bank	93 (0%)	5,425,015 (+1.3%)	2,216,710 (+23.8%)	1,847,258
Totals	845 (+.38%)	64,879,444 (+4.5%)	19,307,308 (+16.3%)	16,089,423 (+16.3%)

*Table includes overall and MEFAP pounds distributed from July 1, 2013 to June 30, 2014. Numbers in parentheses indicate change over FY2013.
** 1.2 pounds of food provides 1 meal.

Source: MA Emergency Food Assistance Program Fiscal Year 2014

Hunger Assistance Programs

Food assistance programs provide critical support for families and individuals who are food insecure and hungry. SNAP is the cornerstone of the U.S. federal nutrition assistance safety net and the most widely used program in Massachusetts; SNAP benefits are widely used to purchase food at grocery stores, convenience stores, and many farmers markets. WIC is the other major federal food program, and funds

⁸ Project Bread. (2014). <http://goo.gl/FbpbbsE>.

⁹ The Food Bank of Western Massachusetts, The Greater Boston Food Bank, Merrimack Valley Food Bank, Inc., and Worcester County Food Bank. (2014). *Massachusetts Emergency Food Assistance Program (MEFAP) Fiscal Year 2014 Core Food Summary Report July 1, 2013-June 30, 2014*. Accessed November 2015 from <http://goo.gl/x7OiyK>.

¹⁰ The Food Bank of Western Massachusetts, The Greater Boston Food Bank, Merrimack Valley Food Bank, Inc., and Worcester County Food Bank. (2014). *Massachusetts Emergency Food Assistance Program (MEFAP) Fiscal Year 2014 Massachusetts Grown Initiative Summary Report January 1, 2014 – December 31, 2014*. Accessed November 2015 from <http://goo.gl/2rVQrm>.

supplemental foods for low-income pregnant, breastfeeding, and non-breastfeeding women, and to infants and children up to age five at nutritional risk. Together with various other school meal programs and elderly food programs, food assistance programs serve nearly one million Massachusetts residents regularly.

In FY 2014, there were 863,412 people in Massachusetts participating in SNAP, which provided over \$1.27 billion in total benefits, resulting in a monthly average of about \$123 per person.¹¹ In March 2015, WIC had 111,461 Massachusetts participants. Because SNAP and WIC benefits are spent directly at retail food outlets in the State, every \$1 in food assistance generates a total \$1.80 in economic activity. Between 2008 and 2010 the SNAP participation rate among all people who are eligible to receive benefits jumped from 72 percent to 87 percent, largely due to the recession that began in 2008. In early 2015, SNAP participation was near 90 percent, even though the economy has recovered somewhat.

SNAP underutilization is a problem in Massachusetts, as it is throughout the U.S. This is largely because a significant number of people who qualify for SNAP do not apply for them, or fail to use all available benefits. Reasons for underutilization may include the stigma attached to using SNAP, the lack of local SNAP offices and staffing, and an online application system which may not be accessible to all populations.

In addition to SNAP and WIC, the Summer Food Service program (also a federal program) provides meals to low-income children when school is not in session. And the Child and Adult Care Food Program (CACFP) is a USDA program administered by DESE that reimburses participating day care operators for healthy meals and snacks served in child and adult day care facilities.

Healthy food options at food pantries and meals programs are a priority. Unfortunately, because food banks rely heavily on food donations and are put in a position of not being able to say “no” to processed foods, sodas, and candy, some of the food distributed is highly processed and low nutrition foods. The State's food banks make every effort to distribute foods that meet the highest nutritional value. In 2014, for example, the Greater Boston Food Bank showed that 81 percent of its inventory met the highest nutritional standard.¹²

In recent years, there has been more focus on getting more nutritionally healthful food to food banks, such as fresh produce and meats. Feeding America, a hunger advocacy organization comprised of a nationwide network of member food banks, has set a five-year goal to have 75 percent of food bank-distributed food considered as nutritious. But with an increase in fresh produce and frozen foods comes an increase in the need for storage, refrigeration, and freezing infrastructure to accommodate it, as well as increased hours for distribution and staff training to ensure proper handling of perishable items.

According to input from staff of food banks and pantries participating in the food system planning process, food pantries are no longer a short-term emergency resource to temporarily help people through a difficult time. Instead, our “Emergency Food System” is a regular source of food for people with low

¹¹ The Greater Boston Food Bank. (2014). *Fiscal Year 2014 Impact*. Accessed November 2015 from <http://goo.gl/3vOI6U>.

¹² Korman, Phillip and Margaret Christy. (2015). *Food consumers must play role in strengthening viability of community-supported agriculture*. Daily Hampshire Gazette. May 6, 2015. Accessed November 2015 from <http://goo.gl/kzVssC>.

incomes. In addition, food pantries are being asked to do more than just distribute food; they also provide support services, such as education on food preparation and nutrition information.

Other Hunger Relief Strategies

Participants in the food system planning process identified a series of other strategies to address hunger relief needs in Massachusetts. These included addressing structural issues, such as the need for living wage jobs and the prevalence of social and racial injustice. Some communities see a better path to food security via empowerment and education. One such way this is happening is through community gardens, often located in urban setting and a place for people without land to raise their own food. Community gardens sometime have the support of community groups, who teach people how to grow, harvest, and prepare food. Community gardens put power and choice in the hands of people who may have never had the ability to obtain fresh, local food.

Another example of hunger relief outside the traditional food bank model that was identified by planning participants is low-income and elder CSAs. Some farms have begun to finance low-income and elder shares by seeking donations from their existing CSA members and from community organizations. In 2015, CISA reported that 12 CSA farms worked with them to provide 400 farm shares during the summer to low-income elders in Franklin, Hampshire, and Hampden Counties.¹³

Nationwide, there are now 512 farmers markets that now offer SNAP matching incentives – and four out of five markets double SNAP benefits. These programs are designed to serve the twin purposes of increasing the availability of fresh, local food for people who are food insecure, and boosting the sales of Massachusetts-grown and processed foods. Leading private foundations supporting SNAP matching are Wholesome Wave Fair Food Network, Market Umbrella, and Roots of Change. One of the key barriers to even wider adoption of such SNAP programs is a lack of funds for management.

Healthy Incentives Pilot (HIP)

One of the most successful food assistance incentives programs in the U.S. was HIP, an innovative 2012-2014 program of Massachusetts DTA. This program offered SNAP card users reduced pricing on eligible healthy foods included fresh, canned, frozen, and dried fruits and vegetables without added sugars, fats, oils, or salt – and excluded white potatoes and 100 percent fruit juice. A 30 percent incentive was immediately credited back to the shopper's electronic benefit transfer (EBT) card and could be spent on other SNAP-eligible items, even during the same shopping trip.

The program increased purchases of fruits and vegetables by 11 percent for households using SNAP assistance by offering a 30 percent incentive. People in households that participated in HIP ate almost one quarter of a cup (26 percent) more fruits and vegetables per day – and including more dark green, red, and orange vegetables, as well as more melons and dark berries, than non-participants. In addition, most retailers did not find the administration of HIP incentives difficult to implement. More than 90 percent of participating retailers, which included several large grocers, reported no change in check-out times, and only 15 percent said that incentive purchases were hard to process.

¹³ Manon, Miriam, Caroline Harries, and David Treering. (2010). *Food for Every Child: The Need for More Supermarkets in Massachusetts*. Accessed November 2015 from <http://goo.gl/nEGrqB>.

Food Knowledge

Public education is seen as a crucial element to addressing poor diet, nutrition and healthy foods, according to public input during the planning process. Many people have become disconnected from whole food and have no skills or knowledge to prepare home-cooked meals. People also lack the information to understand that cooking from whole foods can be both cheaper and healthier. There is still a demand for processed – or convenience – food for households without the time, resources, or know-how to cook.

There is a need for increased education on food at all levels, including information on nutrition as well as growing, cooking, and preserving food. This education is envisioned as happening at many different levels and in many different settings – in schools, hunger assistance programs, community groups, and healthcare facilities. A greater food knowledge on the part of consumers could lead to more purchasing of local food which could lead to increased farm viability in the State.

UMass Extension is the leading provider of nutrition education in the State. Extension’s SNAP Education and Expanded Food and Nutrition Education Programs (EFNEP) provides practical, skill-based nutrition education to low-income families with young children and to youth up to age 18 from these families. EFNEP programs are based in Amherst, Lawrence, Raynham, Springfield, and Worcester.

Also, innovative privately-funded programs offer models for child and adolescent food and nutrition education. One example is Project Bread’s “Chefs in Head Start” program, based in Lynn, which brings a professional chef to preschool staff each week for trainings in how to prepare healthy, fresh food that children like to eat – and that Head Start programs can afford. The chef also teaches the children nutrition facts about the foods they are eating and includes a monthly workshop for parents on budget-friendly and healthy meals – and sends them home with recipes and fresh food.

Food Access: Transportation and Grocery Stores

Grocery stores are critical sources of healthy food for most consumers, as they are reliable sources of fresh produce and meats. As such, a person’s ability to physically get to the store is essential to their food security – whether it be on foot, by car, via mass transit, or bike. Therefore, people who do not have access to a car or frequent transit are more vulnerable to food insecurity.

According to the Food Trust, a nonprofit organization focused on food access, despite being one of the most affluent states in the nation, Massachusetts has fewer supermarkets per capita than almost any other state. The problem is statewide; when measured against the national rate of per capita supermarkets, Massachusetts has 141 too few.¹⁴ This lack of access to the types of retail grocery outlets that carry a wide selection of fresh produce and meats is especially pronounced in urban areas of the State. For example, Lawrence is a predominantly low-income community with more than 76,000 residents, but has just one full-line supermarket. As a result, many Lawrence residents must rely on neighborhood corner stores and bodegas, very few of which offer fresh, affordable food at prices comparable to a grocery store. Health outcomes are telling: as of 2009, 46 percent of Lawrence's children were overweight or obese, the highest rate in the Commonwealth. This is consistent with a significant body of research

¹⁴ The Food Trust. (2010) *Food for Every Child*. <http://goo.gl/YOY3Yd>.

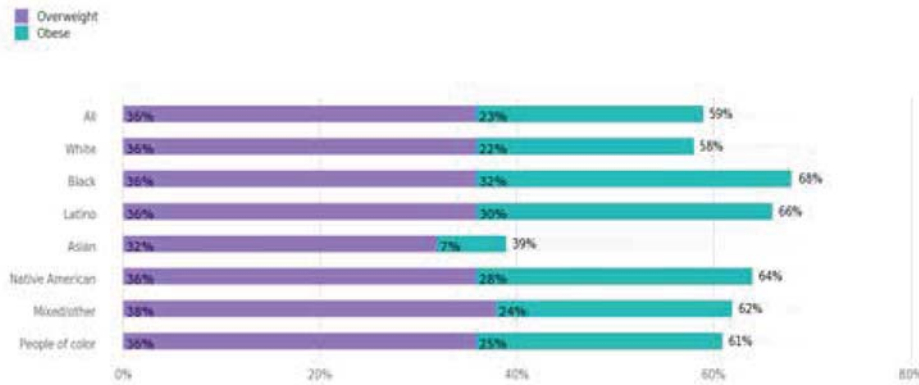
showing that convenient access to grocery stores is linked with lower rates of obesity, diabetes, and other diet-related diseases.

Communities with similar fresh food access issues include Brockton, Springfield, Fitchburg, Lowell, and several neighborhoods of Boston. In Lowell, the Food Security Commission found that 50 percent of food stores surveyed offered three or fewer fruit options and 60 percent of stores distributed three or fewer vegetable varieties, while more than a third of all stores surveyed did not sell any produce items at all.¹⁵

Food and Public Health

Public Health Data

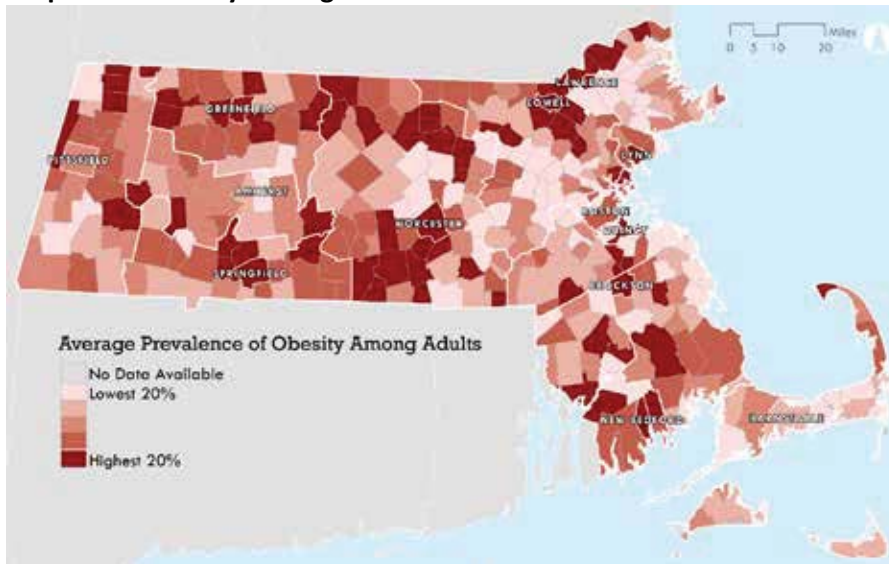
Figure EC.36: Overweight and Obese Rates by Race and Ethnicity



Overweight and obesity rates vary by race and ethnicity, with black people experiencing 40% higher obesity rates than the population as a whole.

Source: PolicyLink/PERE National Equity Atlas, www.nationalequityatlas.org

Map EC.7: Obesity among Adults in the State

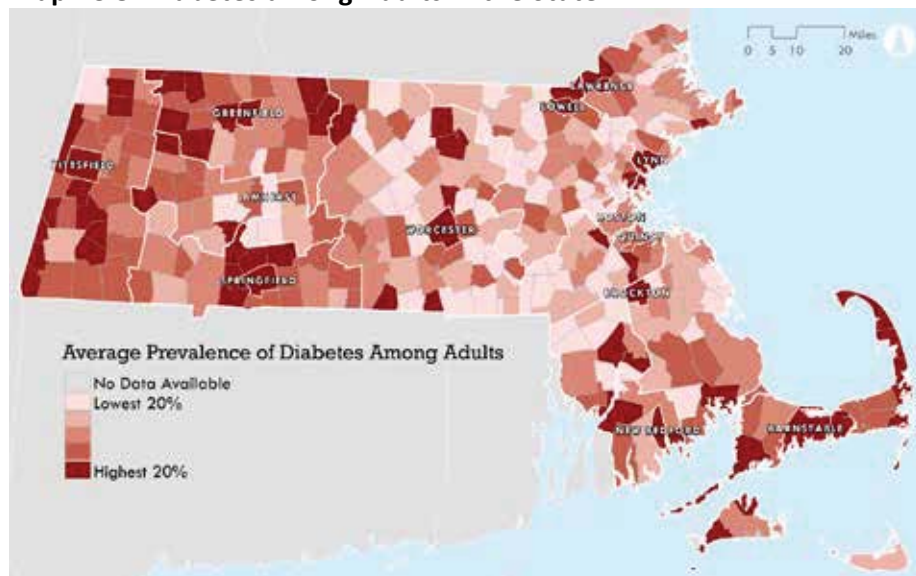


Although Massachusetts was third lowest nationally for obesity in 2013, over 36% of the state’s adults are overweight and 23% are obese.

Source: Massachusetts Department of Public Health Prevention and Wellness Trust Fund Behavioral Risk Factor Surveillance System, 3-year average 2008-2010

¹⁵ Cook, J. T., D.A. Frank, et. al, “Food insecurity is associated with adverse health outcomes among human infants and toddlers,” *The Journal of Nutrition*, 134(6), 1432-1438. 2004.

Map EC.8: Diabetes among Adults in the State



Diabetes has increased 28% in the last ten year in Massachusetts' residents.

Source: Massachusetts Department of Public Health Prevention and Wellness Trust Fund Behavioral Risk Factor Surveillance System, 3-year average 2008-2010

There is a direct connection between diet and health. Children who don't have enough food to eat have two times the chance of poor or fair health compared to those who do.¹⁶ Poor diet leads to a variety of health issues, including obesity, high blood pressure, diabetes, and depression.

According to the report, *Healthy People / Healthy Economy; An Initiative to Make Massachusetts the National Leader in Health and Wellness*, for many decades the State's population overall has ranked high on most measures of health compared with other states, likely due to factors such as income, educational attainment, and access to healthcare.¹⁷

Obesity is an epidemic in the United States and can lead to chronic preventable diseases such as heart disease and diabetes, and other potentially fatal conditions such as cancer.¹⁸ Though Massachusetts has a relatively low rate of obesity, ranking third lowest of the 50 states in 2013, 36 percent of Massachusetts' adults are overweight and 23 percent are obese.^{19 20} By 2007, Massachusetts and the other 49 states were nearly 30 years into an unprecedented rise in the rates of unhealthy weight gain. Residents of every income, educational attainment level, and racial-ethnic group suffered increasing rates of both overweight (defined by the U.S. Centers for Disease Control and Prevention as a Body Mass Index between 25 and 29.9) and obesity (a Body Mass Index over 30).²¹

Although as a whole, the State's population has ranked high on most measures of health, not every Massachusetts resident enjoys the same level of good health. African American residents as a group were substantially less healthy, by many measures, than the broader population. The growing Hispanic

¹⁶ The Boston Foundation. (2015). *Healthy People/Healthy Economy*. Accessed November 2015 from <http://goo.gl/iE9MYz>.

¹⁷ CDC. (2014). *Adult Overweight and Obesity*. Centers for Disease Control and Prevention. Accessed April 2015 from <http://goo.gl/Q7HDPPr>.

¹⁸ CDC. (2014). *Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory*, BRFSS, 2014. Accessed November 2015 from <http://goo.gl/OMQax6>.

¹⁹ MA DPH, (2013). *A Profile of Health Among Massachusetts Adults, 2013*. Accessed November 2015 from <http://goo.gl/HL2w8I>.

²⁰ CDC. (2015). *How do I interpret Body Mass Index Information?*. Accessed November 2015 from <http://goo.gl/LXb5bA>.

²¹ CDC. (2015). *How do I interpret Body Mass Index Information?*. Accessed November 2015 from <http://goo.gl/LXb5bA>.

population suffered similar disparities in health status.²² In Massachusetts in 2011, African American adults were 40 percent more likely to be obese, and Latino adults were 30 percent more likely to be obese than White adults.²³

During the past ten years, the number of adults in Massachusetts with diabetes has increased 28 percent. There are different rates of these conditions among communities across the State, and there are some clear disparities in health outcomes by race and ethnicity. Diabetes rates for people of color are much higher than the overall population. As of 2009, the Massachusetts Department of Human Services recorded the following diabetes rates: African American, 12.8 percent; Hispanic, 14.2 percent; and Asian, 16.0 percent. In comparison, the diabetes rate for Whites was 6.5 percent. Diabetes and obesity are associated with elevated rates of lost productivity and disability.²⁴ In 2007, people with diabetes lost 15 million days of work due to diabetes, costing the US economy approximately 2.6 billion dollars.²⁵

Hypertension, which is also linked to obesity, now affects 29 percent, or 1.2 million residents. The rate of obesity-related cancers in Massachusetts residents was approximately two percent, on track to double in the next 20 years. In addition, multiple studies from the CDC have found that people who eat less fruits and vegetables have higher rates of coronary heart disease.

Highly-processed and sugar-filled foods contribute to obesity. As of 2005, added sugars and sweeteners totaled 142 pounds per person annually, up 19 percent since 1970.²⁶ Numerous studies now demonstrate that as the amounts of added sugars have increased in processed foods in the U.S., so have the rates of obesity and being overweight.

According to *Healthy People / Healthy Economy; An Initiative to Make Massachusetts the National Leader in Health and Wellness* as diabetes rates have risen, there have been greater demands on the Massachusetts health-care system. The health risks posed by overweight, obesity, and diabetes “threatened to exacerbate a vicious cycle in which rising health-care spending diminished the Commonwealth’s ability to invest in other areas that were crucial determinants of its residents’ health.”²⁷

In fact, between 2001 and 2015, spending by the State on health care has grown by nearly 100 percent while almost all other areas that are crucial determinants of residents’ health decreased, with the exception of modest increases in transportation, housing (including emergency assistance), and primary and secondary education. Overall, the State spending is still out of balance with direct spending on health care greatly exceeding investment in programs that support fundamental determinants of health.²⁸

Traditionally our healthcare system has not overtly made the connections between nutrition and health. Screening for nutrition issues and providing information about nutrition are not necessarily a standard

²² MA EOHHS. (n.d.). *Mass In Motion, Obesity Statistics*. Accessed November 2015 from <http://goo.gl/s13AGZ>.

²³ Thompson, David, et al. (1998). Estimated economic costs of obesity to US business. *American Journal of Health Promotion*, 12(2), 120-127.

²⁴ American Diabetes Association. (2008). Economic Costs of Diabetes in the U.S. in 2007. *Diabetes Care*.31(6), 596–615.

²⁵ Hurt, Ryan, et al. (2010). The Obesity Epidemic: Challenges, Health Initiatives, and Implications for Gastroenterologists. *Gastroenterology & Hepatology*, 6(12), 780.

²⁶ The Boston Foundation. (2015). *Healthy People/Healthy Economy*. Accessed November 2015 from <http://goo.gl/iE9MYz>.

²⁷ The Boston Foundation. (2015). *Healthy People/Healthy Economy*. Accessed November 2015 from <http://goo.gl/iE9MYz>.

practice of our healthcare system. As we move forward, healthcare, health insurers, and hospitals could be a critical piece of the nutrition and health equation as champions for good nutrition and good health.

Some doctors' offices and walk-in clinics now offer food security screenings for at-risk individuals and families. These screenings include questions like: "Have you or any member of your family skipped a meal because there was not enough money for food?" A growing number of hospitals also offer these screenings, including Massachusetts General Hospital and Boston Medical Center. Nutritional counseling and take-home information are often included.

A 2015 report by Healthcare Without Harm, an international coalition of hospitals and health care systems, medical professionals, community groups, and others, focuses on food and healthcare in our State.

Utilization of Community Benefits to Improve Healthy Food Access in Massachusetts identifies the way in which hospitals use their community benefit resources to address food access and the community food environment as a means to improve community health. Community benefit programs were selected as the focal point for their study because they are a critical point of interaction between hospitals and their communities.

Workforce Findings for Food Access, Security, and Health

The Workforce Report identified several workforce challenges that present significant difficulties to food access, security, and health. These include:

- The inadequate integration of health and nutrition information, including how to access healthy, fresh, local food, into the work of a diverse set of professionals including health care workers.
- The limitations that low-wage work puts on purchasing ability for many Massachusetts residents, inhibiting their ability to purchase healthy, fresh, and local food.

The Massachusetts Department of Transitional Assistance and Massachusetts Department of Public Health have prioritized food security, access, and health. Getting adequate nutrition, access and food preparation information out to clients, through multiple venues will be a big project. It may not create new jobs, but it will require existing staff at these agencies, as well as food security, public education, and healthcare professionals to expand their knowledge and information.

Appendix A

Workforce Development, Education, Training, and Employment Analysis

The Massachusetts food system is made up of a network of businesses and organizations and spans multiple industries. What follows is a preliminary analysis of the education, training and employment needs associated with growing the Massachusetts food system. Key findings from this report have been incorporated across the food system sector goals and in a workforce development focused goal in an earlier section of this Plan.

This report identifies in detail critical workforce development related issues that employers and workers face, including information on jobs that are hard to fill. It includes a preliminary inventory of the education, training and employment resources currently available to food system workers and businesses. And, this report offers a scan of occupations in the Massachusetts food system and provides some information about the ways in which these occupations are changing, particularly as the work deviates from more traditional understandings of it. This analysis provides information to support the Massachusetts workforce development system's alignment of resources with changing food system business and worker needs.

This analysis has three parts. Part one, **Food System Education and Training Needs in Massachusetts**, provides a preliminary assessment of education and training needed and missing, as well as a scan of resources available, as they relate to the work in the Massachusetts food system and to the Plan's goals.

Part two, **Inventory of Massachusetts Workforce Development Resources**, presents an initial analysis of workforce education, training, and employment resources. This analysis builds from an inventory compiled in the fall of 2014. Education and training resources are defined as: "Multiple types of educational and instructional programming that provide information and skills geared for specific food system occupations, as well as areas relevant to work currently done in or anticipated to be needed in the food system." The full inventory follows, in Appendix B, and is intended to provide a basis for subsequent analysis.

Part three, **Understanding Food System Work in Massachusetts**, is an examination of occupations that make up the food system, including value chain occupations and occupations that, while not directly connected with food system work, have the potential to positively affect the food system. It identifies critical challenges facing employers, workers and education and training providers as related to strengthening the Massachusetts food system. This section also identifies areas of potential job growth and business development.

Part One

Food System Education and Training Needs in Massachusetts

Information gathered to date shows a diversity of education and training needs and resources for food system workers that are not always well-connected to employers and food business enterprise needs and to other education and training.

More analysis is needed, but based on what has been learned so far the emergent picture is one of a need for a comprehensive look at food work, rather than an industry or sector view. Distribution, for example, is more than food warehousing and logistics (although it certainly includes those essential elements). From a food system perspective, it also includes emergency food programming. For some new farmers, production extends beyond cultivation to include mobile markets and the development of other businesses, both to sustain their operation and, in some instances, because farm work as they see it is about more than production.

In addition, there are real and significant labor challenges – farms needing to rely on migrant worker programs, and food system work that doesn't pay living wages are two challenges that have been raised often. These are the types of challenges that require innovative business models, staffing alternatives, work role redefinition, and other ideas, not only by businesses and workers, but also by education, training and workforce development providers.

Education and Training Needs

The education and training needs identified in the planning process fall into six categories:

1. Technical assistance, particularly technical expertise and business planning and development expertise offered through a consultant with a nonprofit, for-profit or UMass Extension. This technical assistance is meant to meet the needs of current food system workers, particularly farmers and food producers as well as those new to farming, including farmers in urban settings.
2. Public and consumer education about local food, health and nutrition and food systems in general, as well as food production and its value to Massachusetts; food safety; and eating and preparing healthy foods. This education is aimed both generally at Massachusetts citizens, and specifically at targeted populations within Massachusetts, e.g. chefs to encourage local food usage, classes on nutrition and food access for ESOL learners, etc.
3. Professional development, particularly specific additional training needed by existing professionals (whether paid or volunteer) to do their current work more effectively, including for members of municipal boards of health, regulators, realtors, financiers, etc. Professional development differs from technical assistance in that it is referring to information and training about food systems and local food issues for professionals whose main work is not in food specifically.
4. General education for youth in elementary and secondary programming, similar to public and consumer education, including education about food systems in general, food production and its value to Massachusetts, food safety, and eating and preparing healthy foods. Notably, some feedback

pointed to restoration of home economics to cover home-based food production, cooking and food preservation, budgeting and food shopping. This general education would be primarily through public school curriculum, but could also include other means of reaching Massachusetts youth.

5. Skill training for workers in specific occupational and industry areas including agricultural production, fishing, harvesting, processing, food manufacturing, retail and culinary, and compost and anaerobic digestion.
6. A network or hub as a means to educate across the parts of the food system, primarily through technical assistance, networking and shared resources. The purpose is to strengthen inter-connection between the parts of the food system bringing together food producers, restaurateur, aspiring farmers, health and nutrition professionals, and policy makers. This hub would promote cross-pollination of skills, spread information and spark innovation.

In addition to education and training needs, information gathered pointed to two important and needed workforce development approaches:

- development and articulation of career pathways; and
- programming to support the development of food system entrepreneurs.

Development and articulation of career pathways was repeatedly identified as a very high need in food production and fisheries and in food processing. This is not a new concept for workforce development. However, the food system career pathway articulation and development that is being asked for stretches the concept as it is often understood. There is real interest in developing and articulating career pathways that expressly have the potential to support workers to move more fluidly across industries and sectors. For example, to create pathways that allow someone to engage in culinary training at the high school and community college level and then understand not only that are they on a path to pursue food service work at multiple levels and in different settings, but they are also on a path to food science work, an area in which Massachusetts needs more workers.

Interestingly, pathways seem to be happening somewhat organically in food system programs that exist in a number of colleges across the state. These programs are doing hands-on agricultural training and finding that their graduates are taking that experience and parlaying it into food system jobs of all kinds: sustainability positions in food service operations or colleges, food activism in communities, community garden development. What is needed from workforce development, in partnership with food system employers and workers, is systematic attention to food system occupations, regardless of the industry or sector, to understand the knowledge and skill overlaps that occupations in an integrated food system require.

The second important and needed workforce development approach pointed to concerned programming to support development of food system entrepreneurs. Information gathered clearly indicates that increasing local food production and consumption in Massachusetts will require innovation of all kinds. Food production, processing and distribution especially need entrepreneurial approaches to be fostered, encouraged and supported. One way this can be begun is to include entrepreneurship as one of the possibilities for youth who are interested in food systems careers. One strategy would be the inclusion of

food business entrepreneurship in existing entrepreneurship training offered at both the high school and college levels.

Related to the need for food system career pathways and food system entrepreneur development programming, is a clear desire to build out job pipelines. This speaks less to career pathways and more to the need for connections between training programs of all kinds and employers.

Specific information about education and training needs in each of the five categories follows. Included as well is a preliminary scan of the Massachusetts education and training resources that might be currently or potentially able to meet these needs.

Technical Assistance

The food system sectors of production (including fisheries), processing, distribution, inputs and land all have a clear need for increased availability of and access to technical assistance. Two broad areas of expertise needed were identified. The first around method and techniques, inclusive of:

- integrated whole farm management, including pest, nutrient, and water management
- growing techniques, including intensive growing techniques
- use of technology in production
- season extension
- post-harvest processing, including value-added
- effective food product development
- technology-focused distribution models
- water use and waste water management
- land use strategies
- regulatory compliance
- integration of alternative energy strategies in food production

The second is expertise focused on business development, particularly in food production, processing, and distribution, inclusive of:

- business planning
- managing and spurring business growth
- human resource management
- marketing
- financing for start-up and expansion
- basic business practices (e.g. record keeping, bookkeeping, taxes)

There is also a need for targeted technical assistance for consumers, particularly focused on food preparation and food safety.

Technical assistance is currently primarily available from four distinct kinds of entities: nonprofit organizations, for-profit businesses, the Massachusetts Department of Agricultural Resources and UMass

Extension. There was no consensus on whether one kind of entity was more effective than another. Instead, there was recognition that each kind of entity has been providing technical assistance, often to different populations, although sometimes overlapping, and that each entity has differing focus areas and depths of expertise. There was clarity and emphasis on the point that more technical assistance needed to be available, and to some extent where that assistance resided was less important so long as it was high quality and addressed the needs of the food system. There was a clear sense that technical assistance needed to be brought up to date.

Three things were noted about how to improve technical assistance more generally:

- Ensure that technical assistance is culturally informed and culturally appropriate for the target population.
- Technical assistance should be science-based.
- Technical assistance should be available in multiple languages.

And, while there was interest in developing alternative delivery methods for technical assistance, including online offerings, there was a clear and strong indication that technical assistance advisors in the field, or the kitchen, were essential to increasing safe food production.

Existing resources currently or potentially able to meet these technical assistance needs include:

- Massachusetts Department of Agricultural Resources programming;
- UMass Extension;
- nonprofits, such as the Massachusetts Chapter of the Northeast Organic Farming Association (NOFA/Mass); and
- programming offered through buy local organizations.

Public and Consumer Education

In many ways, public and consumer education was seen as one of the pivotal means to increase demand for Massachusetts grown and produced products. Cited across the working groups and throughout public input was a need to increase consumer knowledge about healthy, fresh, local food. The impetus behind this identified need varied from group to group but indicates a consistent need to increase food and food system education in Massachusetts. Food system understanding in Massachusetts needs to have a much broader reach and be more extensive.

This kind of education was envisioned as widespread, purposeful, targeted information dissemination about the value of local food in terms of health, food security and the well-being of Massachusetts businesses, workers and the overall economy. Education could be envisioned to bring attention to unappreciated fish species, to make the economic case for local food, to provide strategies for eating with the seasons, etc. Producers (land and fisheries), processors, distributors and food security and health sectors all identified public and consumer education as essential to build market share for locally grown and produced food and to increase health in communities across the Commonwealth.

There was strong agreement that more public and consumer education was needed. Buy local organizations were one of the types of entities pointed to in terms of the work they are already doing to build consumer understanding of locally grown and produced food. Massachusetts Department of Agricultural Resources was seen as another source of public messaging. There was also acknowledgement of a layering of organizations across the state with regional messaging impact. These include community farms, well-known CSA operations and farmers markets, and nonprofit organizations, as well as producer associations. These organizations also spread a similar message about the value of local food. Coordination across these entities and across the state was seen as valuable to amplifying the message, while perhaps tricky. It was clear that there are important sub messages that will need to be targeted to specific populations. Examples of these sub messages include: accessing and preparing healthy food for those for whom that access has been constrained; and sourcing and using local rather than globally sourced foods in restaurant fare for culinary professionals.

Existing resources currently or potentially able to meet these needs:

- Massachusetts Department of Agricultural Resources
- buy local organizations
- producer alliances
- community farms
- University of Massachusetts
- nonprofits

Professional Development

Effective functioning of the Massachusetts food system depends on guidance from experts outside of the food system, including bankers, realtors, boards of health, land use planners, teachers, case workers, community health educators and other health professionals, as well as emergency food providers, cafeteria workers, chefs, food service managers, land trust staff and volunteers, etc.

It was broadly acknowledged that these professionals (whether paid or not) needed increased access to training on topics related to the continued strengthening of the Massachusetts food system. There was also clear indication that in some cases training curriculum did not exist to address professional development needs or that these kinds of professional development resources were not easy to access. Specifically, there was strong indication that members of municipal boards of health need further training in the realities of food production and processing, and the regulatory framework within which production and processing take place. Similarly, planning and zoning committee members and land use planners could benefit from training in food-system focused land use and the variety of programs that can be used to support agricultural land use. Additionally, bankers and real estate agents were seen as potentially benefitting from training and information in food business development (production, processing and distribution). Professional development for teachers and others who work with students could focus on ways to teach about producing and preserving food at home, healthy eating, and food system, farming and agribusiness careers. Health workers of all kinds could benefit from information and resources on how to direct their clients to healthy food.

Existing resources currently or potentially able to meet these needs:

- trade and professional associations, like Massachusetts Restaurant Association
- Buy local organizations
- Massachusetts Department of Agricultural Resources
- Massachusetts Citizen Planner Training Collaborative
- Association of Agricultural Commissions
- Massachusetts Public Health Association

General Education for Youth in Elementary and Secondary Programming

Another essential form of education that was pointed to by both food production (including fisheries) informants and food access, health and security informants was the inclusion of food system, food production, food preservation, and health and nutrition in elementary and secondary curricula. One example of how this might be accomplished was through a re-invigoration of home economic curricula. Another possible way to accomplish this would be to incorporate this information into the MCAS tests.

In addition, food system career information was seen as essential to include in youth education and other workforce development programming. This could include food system work broadly writ and comprising food production, food manufacturing, food service and culinary, including food science, health and nutrition, resource management, and the range of crop production, and, as noted above, food system entrepreneurship. It was felt that this kind of career information that arcs across multiple industries was vital to develop a competent, qualified food system workforce for the coming years in the Commonwealth who would be capable of continuing to innovate and strengthen the food system. For example, it was felt that providing up-to-date information on working in fishing today and in the future, including harvesting, processing, and things like product development would help to build interest in this kind of work in an industry that faces labor shortages as the current workforce ages out of the work.

Existing resources currently or potentially able to meet these needs:

- agricultural, vocational and comprehensive high schools
- Massachusetts Agriculture in the Classroom
- Massachusetts Farm to School
- UMass Extension 4H Youth Development Program
- nonprofits, like community farms and community based organizations like Gardening the Community

Skill Training for Workers

One aspect of the Massachusetts Local Food Action Plan is to understand the job creation potential that the Massachusetts food system holds, particularly as it becomes more robust, and then to provide strategies for capitalizing on that potential with a ready, trained and qualified workforce. The jobs created

will, of course, range in experience and credentialing needed. Focus of the information gathered was on workers, particularly entry-level workers, but also including others.

Production

Feedback about skills training for workers in production, including farming in all kinds of settings across the state, was unequivocal about the importance of extended, comprehensive hands on, in-situ training.

Development of apprenticeship programs was highlighted as a means to train new farmers. Additionally, training in the following areas was seen as vital:

- crop planning, planting, cultivation and harvesting
- integrated pest management
- equipment operation and maintenance
- small business operation
- market development and marketing
- relevant regulations and compliance and reporting

Existing resources to meet these needs include:

- vocational and agricultural high school programs (It should be noted that Central Massachusetts lacks adequate access to this kind of programming but that transportation reimbursement for central Mass students to attend Norfolk Aggie would address this.)
- higher education certification and degree programs
- non-profit and community based organizations like community farms and NOFA, for example
- alliances like CRAFT (Collaborative Alliance for Farmer Training)
- UMass Extension

Fisheries (note: the following information does not include aquaculture)

Feedback about skills training for workers in the fisheries value chain (inclusive both of harvest and processing) identified the following as important to be covered in training for workers:

- harvesting skills, including specie identification, regulatory and reporting requirements, navigation and boat operation, equipment operation and repair
- occupational safety, including safe equipment operation, as well as wellness-focused safety and health instruction (e.g. skin cancer prevention)
- instruction in the fisheries value chain to provide a context for all jobs in fisheries
- processing, including knife skills, as well as processing machine use
- product development, recipe development
- business development, management and marketing

Existing resources currently or potentially able to meet these needs:

- Bristol Community College's At-Sea-Monitor certificate program.
- Gloucester Fishermen's Wives Association
- Massachusetts Fishermen's Partnership

- Northwest Atlantic Marine Alliance

Historically, farming and fishing training was accomplished through apprenticeships and mentoring. There are currently limited formal apprenticeships in farming and fishing, and there are challenges for businesses that would like to offer apprenticeships, as well as internships, such as regulations around housing, job descriptions and pay. Clear information for employers on how to offer apprenticeships is needed. Informal mentoring happens in both forms of production. Increasing apprenticeships, internships and mentoring would be embraced by the employers.

Food manufacturing

Feedback about skills training for workers in food manufacturing identified the following as important to have covered in training for workers:

- food safety
- machine operation
- basic food preparation techniques to provide skills for batch cooking procedures

Basic culinary instruction could serve as a springboard into food manufacturing, as well as providing a base from which to advance in the industry, or in other parts of the food system, with increased experience and on-the-job training.

Existing resources currently or potentially able to meet these needs:

- vocational, agricultural and comprehensive high schools
- higher education certificate and degree programs
- nonprofits like the Franklin County Community Development Corporation

Distribution

Feedback about skills training for workers in food distribution varied according to the part of the distribution system: restaurant and institutional food service, retail food sales, wholesale distribution. For workers in large-scale retail or wholesale distribution operations training was largely accomplished through on-the-job training, particularly for entry-level workers. It was recognized that additional training, as well as experience and necessary credentials, could enable a worker to advance within a specific company or to advance more broadly within the industry through lateral moves or moves to positions of increased responsibility in other organizations.

Culinary training for entry level work in food service of all sizes was seen as useful but not necessarily required. It was heard from industry professionals that entry-level culinary work, whether as a dishwasher, a busboy, a server, or a kitchen position at a fast-food restaurant, is available with little work experience. And with a good attitude and hard work, advancement is possible. Culinary training, of the sort that vocational technical high schools, community-based training organizations and community colleges offer was seen as potentially offering higher level jobs and wages. It was clear that attitude (showing up on time, being positive, taking initiative as appropriate, working hard, and taking direction well) was most important, followed by quick and thorough learning on the job. Culinary work is often very hierarchical, so it is often very evident how advancement, with or without training, can proceed.

Entry level work in retail food service and small scale retail food sales was seen as requiring no specific training. These small employers usually prefer to train new staff. Experience and attitude are often considered more valuable than training.

It is worth calling out HVAC training specifically. Refrigeration is critical infrastructure for distribution and processing, fisheries, and to a more limited degree, for agricultural production. Massachusetts has HVAC training at the high school and community college levels.

Existing resources currently or potentially able to meet these needs in the food service and sales part of distribution include:

- vocational, agricultural and comprehensive high schools
- nonprofits and community based organizations

Existing resources currently or potentially able to meet these needs in the wholesale/warehouse part of distribution include:

- higher education certificate and degree programming

Inputs and Land

Feedback about skills training for workers in inputs, particularly the areas of composting and anaerobic digestion included specific instruction in the technology, as well as instruction in the larger industry and the relation of nutrient management, composting, and anaerobic digestion to production and food service. Workers in land-related occupations such as land stewards need technical skills including navigational skills, GIS mapping, surveying, botanical inventorying, and plant species identification. Those working in more executive level positions, such as land matching professionals land trust managers and staff might need grant-writing skills, communication skills and training in estate planning land-related law and regulations. Other inputs-related careers could require training or education in the sciences, including water quality and soil nutrient management.

Existing resources currently or potentially able to meet these needs:

- Massachusetts Department of Agricultural Resources
- UMass Extension

Food Access, Security, and Health

In the areas of food security and health, new worker training isn't as relevant. Local food knowledge for many of the jobs whose responsibilities include increasing food access, security, and health, needs to be added to other training. For example, training for community health workers would need to include a unit on local food and health and nutrition as part of a more comprehensive approach to health education.

Existing resources currently or potentially able to meet these needs:

- Farm to School Initiative
- Project Bread
- Local Food Policy Councils

Worker and Employer Concerns that Affect Education, Training, Labor and Workforce Development

In gathering information about education, training and workforce development, a number of issues that affect education and training and workforce development were identified. There are, as mentioned earlier, critical workforce and employer concerns that affect food production in Massachusetts currently. They include:

- **The challenges of regulatory compliance** in several areas:
 - Current Department of Labor regulations define work for farm workers in ways that do not match well with current farm business models. The consequences of these outmoded definitions frustrate employers, dampen profits and limit food production and distribution.
 - Many of the current agricultural production workers are migrant laborers. There are regulatory requirements (housing, transportation, wages, payment, health and safety) that employers face. Compliance is complex and more clear information is needed. There are also concerns that these workers are unclear of their rights, or unwilling to exercise their rights. Support of their rights is considered a priority by many talked with.
 - The regulations around apprenticeships and internships (including insurance and housing) are confusing. More information and education is needed to make it easier and simpler to have interns in food system operations.
- **The need for workers to earn living wages.** Many food system jobs don't pay a living wage, particularly at the entry level. And much of the work is seasonal or part-time. Attracting talented workers at these wages (and without benefits) is very difficult. And, because of the seasonal nature of the work, turnover can be high, which negatively affects staffing costs for businesses. Development of the Massachusetts food system needs to address this issue, particularly because poverty is one of the leading causes of poor health and nutrition.
- **Diverse business and staffing models.** The food system has businesses that use traditional models of employment. These can present significant challenges to both employers and workers. For example, farms currently depend on seasonal labor, which means that they rehire, and often re-train annually. Food service and food manufacturing also often employ part-time workers. Innovation is needed in these employment models to create full-time, full-year work for workers and to ensure a reliable staffing. It is important to spur further development of placement agencies (currently used for cranberry work, for example), and staffing entities like Many Hands Farm Corps in the Pioneer Valley, which supplies weeding crews to local farms as part of its agricultural training program. And, to the extent possible, these new models should address current constraints of federal Department of Labor regulations. Use of temporary staffing agencies, however, is not without issues. Temporary agencies shift the hiring responsibility from the farmer or food producer; this can simplify things for the employer. Concerns voiced were around whether this was the best method to build a competent workforce and whether this offered good employment to workers. One strategy to build competent workforce is to develop a shared staff pool for food

processing that would train workers to be able to shift processing work as the produce and seasons shifted. Also pointed to were cooperative business models, including worker-owned cooperative businesses as well as member-owned cooperative businesses. These were cited as business models that were addressing concerns about wage, benefit and consistent and regular hours. More integration of the lessons learned from these businesses was seen as important as Massachusetts strengthens its food system.

- **The need to train managers.** It was noted that food system employment, particularly entry-level jobs, is often part-time, low-wage and that managers and supervisors of these positions needed training to support the development of the workers in these positions. It was also pointed out that an effort to build food system employment should connect low-skill workers with jobs. These individuals often need mentoring from their supervisors and others in the business and food system. It isn't sufficient to provide limited workforce-readiness training, but will require training for supervisors and managers and strong support systems within workforce, education and training programs.
- **The challenges and needs of volunteer labor.** Currently there are places within the food system that rely on volunteer labor, including emergency food distribution and gleaning, for example. This labor is critical. The individuals doing the work need consideration in terms of education and training, as well as recognition, whether in the form of wages and benefits or some other compensation. The food system, as it develops, needs to develop best practices for volunteer labor that ensures safety, competence and fairness.
- **The need to balance cultivating a future food system workforce through youth training, with supporting working adults to advance in food system careers or switch to work in food businesses.** Education and training resources should be tuned to both current and future industry needs.
- **The need for robust workforce education, training, certification opportunities for workers within the food system.** Massachusetts workers of all kinds will benefit from continued support for and development of a high-performing workforce development system. Food system development particularly pivots on two points: increased health for Massachusetts citizens and economic development through food business development. This intersection requires that job development and workforce development focus on creating good jobs in food businesses that support workers to eat nutritious, and local, food.

Part Two

Food System Education and Training Resources

Introduction to Food System Education and Training Resources Inventory

An understanding of the types and capacity of workforce education and training resources that are available in the Commonwealth is essential to the development of a Massachusetts food system plan.

This section presents an initial inventory of workforce education and training resources that is intended to provide a basis for subsequent analysis. This inventory was compiled in the fall of 2014 and is included in its entirety in Appendix B. Education and training resources are defined as: “Multiple types of educational and instructional programming that provide information and skills geared for specific food system occupations, as well as areas relevant to work currently done in or anticipated to be needed in the food system.”

Food System Education and Training Resources Inventory Method

The inventory includes programming provided by or through:

- Public education entities, including K-12, vocational technical high schools, and public higher education
- State government departments and programs
- Nonprofit, community and regional organizations
- Professional and industry associations
- Community and therapeutic farms

This inventory is a tool by which to evaluate and analyze education and training offerings for the purpose of assessing the match of these resources with the needs of businesses for trained, qualified workers. This tool will support key food system and workforce development professionals to conduct further analysis and develop a greater understanding of the programs, institutions and organizations, particularly with respect to the following criteria:

1. Is the program known to the industry?
2. Is the program currently used as a pipeline for employees, or as a venue for recruiting?
3. Is there sufficient capacity (size, focus, geographic location) to meet increased demand for workers to staff anticipated expansion of the MA food system?

Massachusetts has a diversity of workforce education and training providers across a range of industries, including food-related occupations. This is a strength of the state’s workforce development services, as it provides greater diversity in programming to increase match with participant needs (geographic, learning style, resources, etc.). However, not all programs are equal. This inventory does not assign a value to the listed programming, in part because such valuation is determined by participant and employer. In addition, the kind of education needed to engage elementary school students with local food differs significantly from the training needed to be a food scientist and the kind of information about pest management

needed by a vegetable grower. This inventory reflects this range of education and training in recognition that at the very least, Massachusetts, as it strengthens its food security, improves citizen health, and grows the food economy, needs to do at least three things:

1. Provide broad education about healthy food
2. Ensure excellent training for future workers
3. Meet the industry needs for incumbent workers' continuing skill development

The inventory categorizes the education and training resources in the following ways:

- ***The Workforce Investment Board (WIB) region*** within which the program is based in (or if it is available statewide). Because of the role WIBs and the affiliated One Stop Career Centers play in connecting employers with workers, assessing regional training needs and linking education resources, understanding the location in terms of WIB regions allows for the state's workforce development infrastructure to more easily respond to Plan recommendations and action steps.
- ***The population the programming primarily targets.*** Given the breadth of the definition used to develop this inventory, knowing the primary target audience is important. The differences between educational programming that serves to build general awareness and occupational skill training geared for college students are important to note.
- ***The part of the food system that the programming is relevant to*** (e.g. production, processing, distribution, food service, input, waste and nutrient management, health, nutrition and equity) based on the foci of the working groups.
- ***Whether the program offers a credential either a degree or certificate.*** Not all occupations require this kind of credential. This information will be important to review with employers during the planning process.
- ***Whether the program offers financial aid.*** Within the public higher education system, there is financial aid available for students meeting financial requirements. The inventory also notes certain scholarships that are available, including through nonprofit organizations.
- ***If the program offers hands-on learning, internships or apprenticeship opportunities.*** This is particularly relevant for education and training in the area of agricultural production and food service.
- ***If the program is focused on providing professional development for professionals working in the food system.*** These kinds of professional development offerings are available through the higher education system, by professional and nonprofit organizations, and are aimed at maintaining and improving the skills of incumbent workers. Some of these offerings fall into the category of networking.
- ***Whether there is a focus on regulatory training, business development/technical assistance, land access/conservation, local food procurement, or food waste management.*** The inventory calls out these areas because data gathered for the plan to-date indicates that the changing regulatory landscape will require additional education and training for workers (e.g. Food Safety Modernization Act), that business development may play a role in strengthening and developing

the MA food system, and that the expanded commercial waste ban creates needs for further training.

In addition, this inventory allows for a larger contextual view of the Commonwealth's food system education and training resources. This is helpful for understanding the mix of education and training available, including identifying:

- Areas where additional topical and occupational training is needed to develop or enhance career pathways, better meet employer needs and respond to industry expansion and changes.
- Leverage points for targeted action to shape needed changes, implement strategic policy enhancements or revisions and key system information dissemination.
- Links between policy and action recommendations and education and training provision and content.
- Other areas as indicated by the plan's policy and action recommendations.

This inventory should be viewed as the first round of accumulating and categorizing this information. At this stage of the inventory process, some kinds of education and training are not included, but should be considered for addition. For example, the education and training done through the Tufts University Friedman School of Nutrition Science and Policy is not included, except through their involvement with and support of the New Entry Sustainable Farming program. More details on the relevant programming offered through Massachusetts' rich network of private higher education institutions may be a further refinement of this inventory. Also, more information about national and regional programming could be added; sources could include groups like the American Commodity Distribution Association, New England Farmers Union and the Northeast Dairy Producers Alliance. These organizations provide programming that appears to respond to some of the unmet needs with relevant industry focus.

Food System Education and Training Resources Inventory Findings

This section presents information on existing food system education and training resources in Massachusetts, as well as the availability of those resources to target populations, offerings of credentialed institutions and availability of financial aid.

Total Food System Education and Training Resources

There are 556 education and training resources identified thus far offering a variety of food system education, information and training in the areas of production, processing, distribution, food service, food inputs and health nutrition access. See Table A.1. Nearly half of all resources provided education and training for production or farm inputs (260 and 218 programs, or 47 percent and 39 percent, respectively), with a lower number of resources in processing, food service and health nutrition access (24-26 percent). The fewest educational and training opportunities were in food distribution (15 percent). Educational and training resources were identified in all WIB regions, however, the number and range of services varied

widely. For example, when looking at all WIB areas, the Metro South/West sub-area had the largest number of resources (65) followed by Franklin/Hampshire (64) and Hampden (55). Interestingly, Metro South/West had a far higher number and percentage of resources related to health nutrition access, whereas Hampden had a higher percentage of distribution resources, and Franklin/Hampshire had more offerings related to inputs. Areas with the fewest resources were Metro North and South Shore (both 11), Merrimack Valley (13) and Bristol (14).

Additionally, there is substantial data on hands-on resources (244 total which include education, information and training ranging from, for example, instruction on how to start a home garden, to vocational high school culinary instruction), professional development (156 resources, including, for example, professional conferences, specific pest management techniques and curriculum resources for teaching about food and nutrition) and, regulatory training (88 resources, focusing largely on safe food handling). Given the changing regulatory landscape, there may be need for greater program development that prepares both new and incumbent workers for new and revised regulations. Additionally, there were education and training resources focused on business development (45 resources), land access/conservation (28 resources) and food waste management (23 resources).

Table A.1: Total Education and Training Resources

AREA	Agricultural production	Food processing	Food distribution	Food service	Farm inputs	Health/nutrition access	TOTAL RESOURCES
BERKSHIRE	4	5	0	3	2	6	15
BOSTON	9	3	2	5	12	10	26
BRISTOL	7	8	2	6	1	1	14
BROCKTON	2	4	2	4	8	3	15
CAPE AND ISLANDS	21	10	6	5	11	8	33
CENTRAL MASS	13	13	8	8	10	9	28
FRANKLIN/HAMPSHIRE	33	9	6	6	29	14	64
GREATER LOWELL	11	8	6	7	10	5	22
GREATER NEW BEDFORD	8	5	7	2	11	2	18
HAMPDEN	23	18	12	16	19	15	55
MERRIMACK VALLEY	5	4	2	5	5	6	13
METRO NORTH	7	6	3	6	3	5	11
METRO SOUTH/WEST	34	14	8	23	23	26	65
NORTH CENTRAL MASS	3	4	1	3	11	1	16
NORTH SHORE	9	6	1	5	6	3	23
SOUTH SHORE	5	7	1	7	2	2	11
STATEWIDE	66	10	18	29	55	28	127
	260	134	85	140	218	144	556
	47%	24%	15%	25%	39%	26%	

Source: MWA Food System Education and Training Resources Inventory

Resources by Target Populations

Of the 556 resources, approximately one-third target college populations, one-quarter professionals, and one-quarter youth. There are far fewer programs targeting adults, kids and other special populations, or the general population (15 percent combined). In general, programs targeting youth were provided through vocational high schools and nonprofits.

- College: 178 (32%)
- Youth: 47 (26%)
- Professionals: 143 (26%)
- General: 58 (10%)
- Adults: 13 (2%)
- Kids: 9 (2%)
- Special/other: 8 (1%)

Credentialed Resources

There are 310 educational and training resources that offer credentials with the credentials ranging from certification to high school diplomas to higher education certificates and degrees (Table A.2). Populations targeted by these programs:

- Adults: 3
- College-age: 169 (available to adults through community colleges, state universities and extension resources)
- Professional: 20 (through UMass Extension, MDAR, nonprofits, professional organizations and public universities)
- Youth: 118 (through vocational high schools and 1 nonprofit)

Table A.2: Credentialed Resources by Target Population

ADULTS	3
<i>Non Profit</i>	3
COLLEGE	169
<i>Community College</i>	96
<i>University</i>	72
<i>Extension</i>	1
PROFESSIONAL	20
<i>Extension</i>	4
<i>MDAR</i>	1
<i>Non Profit</i>	2
<i>Prof. Organization</i>	4
<i>University</i>	9
YOUTH	118
<i>Non Profit</i>	1
<i>Vocational High School</i>	117
TOTAL	310

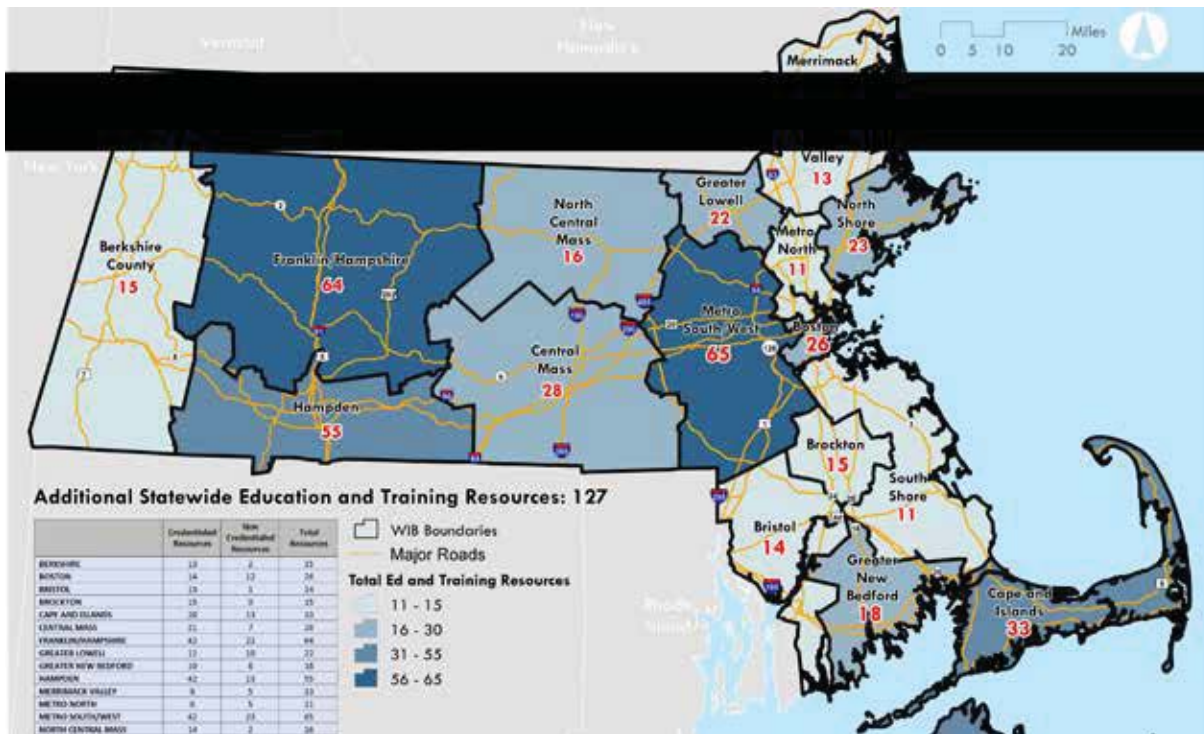
Source: MWA Food System Education and Training Resources Inventory

Table A.3: Credentialed Resources by Workforce Investment Board (WIB) Region And Type

	Community College	University	Extension	MDAR	Non Profit	VHS	PO	TOTAL
BERKSHIRE	6	2	0	0	0	5	0	13
BOSTON	5	6	0	0	1	2	0	14
BRISTOL	4	0	0	0	0	9	0	13
BROCKTON	2	8	0	0	0	5	0	15
CAPE AND ISLANDS	12	0	0	0	0	8	0	20
CENTRAL MASS	6	5	0	0	0	10	0	21
FRANKLIN/HAMPSHIRE	13	19	2	0	1	7	0	42
GREATER LOWELL	0	5	0	0	0	7	0	12
GREATER NEW BEDFORD	0	7	0	0	0	3	0	10
HAMPDEN	23	2	0	0	1	16	0	42
MERRIMACK VALLEY	3	0	0	0	0	5	0	8
METRO NORTH	0	0	0	0	0	6	0	6
METRO SOUTH/WEST	9	15	1	0	0	17	0	42
NORTH CENTRAL MASS	5	6	0	0	0	3	0	14
NORTH SHORE	8	4	0	0	0	7	0	19
SOUTH SHORE	0	0	0	0	0	8	0	8
STATEWIDE	0	1	2	1	3		4	11
TOTALS	96	80	5	1	6	118	4	310
PERCENT OF TOTAL	31%	26%	2%	0%	2%	38%	1%	100%

Source: MWA Food System Education and Training Resources Inventory

Map A.1: Education and Training Resources by Workforce Investment Board (WIB)



Source: MWA Food System Education and Training Resources Inventory

Credentialed vocational and training resources are found in all WIB regions, primarily through community college and state universities, plus vocational high schools. The highest concentrations are available in Franklin/Hampshire, Hampden and Metro South/West (each with 42), with the majority targeted to

college populations (Table A.3). Resources targeted to youth are more widely available in Central Mass, Hampden and Metro South/West. Map A.1 shows the prevalence of these resources by WIB region.

Financial Aid

Financial aid was available for just over 180 resources throughout Massachusetts (Table A.4). In general, aid was provided for higher education based resources (excluding Vocational High Schools). This included every resource targeting college populations, either at community colleges or through universities. Among the many nonprofit resources, only two provided financial assistance and five professional organizations provided some financial assistance (including through offering scholarships). Extension resources through UMass did not provide financial assistance, nor did programs through MDAR, however, most of these programs are without cost. More research is required to identify the kinds of financial supports needed by trainees and professionals to gain relevant and hone relevant skills.

Hands-On Education and Training Resources

Who has access to training, and who has access to credentials? Much of the work in food system occupations can be learned, and is perhaps best taught, through hands-on learning. Of the resources identified, 244 provide some form of hands on education and training opportunities (Table A.5). The vast majority of these resources target youth through vocational high schools (145 resources) in all WIB sub-regions.

Credentialed Resources by Target Population

While hands on is critical for much agricultural production training, The UMass Extension and the Massachusetts Department of Agricultural Resources provide diverse and varied education and training resources. Given the changes in production, does the variety of formats (newsletters, best practices publications, technical assistance, and other outreach) constitute the best mix to disseminate the information to this incumbent workforce? Additionally, does the information from these sources reach the workers who are best positioned to benefit from it?

Education and Training Resources By Food System Sector and Identified Needs

The initial Education and Training Inventory (*Appendix B*) identifies 559 education and training resources. Initial analysis

Table A.4: Financial Aid Availability

Type of Organization or Program	Offer Financial Aid
Community College	96
University Programs	80
Non Profit	2
Prof. Organizations	5
TOTAL	183

Source: MWA Food System Education and Training Resources Inventory

Table A.5: Credentialed Resources by Target Population

HANDS-ON RESOURCES	TOTAL
Adult	8
College	31
General	33
Kids	6
Professionals	15
Special	5
Youth	145
TOTAL	243

Source: MWA Food System Education and Training Resources Inventory

completed in several key food system areas and relating to key food system issues provides a starting point for further analysis. Identification of these resources is only the first step in ensuring that Massachusetts has sufficient and appropriately focused education, training and employment resources sufficient to strengthen the food system.

Food Production

Within Massachusetts there are agricultural production education and training opportunities, some of which are provide hands-on training (Table A.6). This kind of training is more difficult to provide than in food service jobs, and requires a significantly different infrastructure commitment for education and training providers. Is this an area for further investment? What kinds of investment would best meet any additional needs? Agricultural training aimed at youth skews to urban settings and there appears to be a very limited amount of rural agricultural training. Does the time-tested programming available for youth through 4H and Future Farmers of America need to be supplemented for rural youth?

Processing and Food Service

Massachusetts has significant culinary training through the K-12 and higher education systems (Table A.7). Is this training appropriate to workforce development in food manufacturing? In manufacturing training, Massachusetts has, in the past decade, expanded its offerings, particularly through an emphasis on advanced manufacturing. Is there value in bringing together culinary training and manufacturing training in order to support potential expansion in commercial food manufacturing? Culinary training has some cross-over applicability in food manufacturing, but so does automation and non-food manufacturing techniques and processes.

There are currently 23 food waste management education and training resources throughout the state. Only three of the resources are credentialed through nonprofits and UMass Extension. Additional training resources may be needed as the expanded commercial food waste ban takes effect.

Table A.6: Agriculture training programs by WIB

WIB	Number of Programs
BERKSHIRE	3
BOSTON	9
BRISTOL	8
BROCKTON	2
CAPE AND ISLANDS	23
CENTRAL MASS	12
FRANKLIN/HAMPSHIRE	32
GREATER LOWELL	11
GREATER NEW BEDFORD	8
HAMPDEN	23
MERRIMACK VALLEY	5
METRO NORTH	7
METRO SOUTH/WEST	32
NORTH CENTRAL MASS	3
NORTH SHORE	9
SOUTH SHORE	4
STATEWIDE	67

Source: MWA Food System Education and Training Resources Inventory

Table A.7: Food processing and food service training by population

	Processing	Food Service
Adults	6	1
College	14	12
General	7	4
Kids	1	
Professionals	26	37
Youth	81	85

Source: MWA Food System Education and Training Resources Inventory

Distribution

Throughout the state there are a total of 85 identified workforce education and training resources related to distribution. This is fewer than all other types of food system-related workforce training resources. This information begs the question whether or not there are a sufficient number of training programs to support scaling up food distribution in Massachusetts. To answer this question, it will be necessary to look more closely at the education and training programs offered to evaluate the quality and capacity of the training programs to meet the potentially changing distribution and supply chain development needs of the State's food system.

Looking more closely at the location and concentration of these resources, Hampden County has the most (12) distribution resources of any WIB region in Massachusetts (Table A.8). The statewide education and training map on this topic (Map A.2) shows this WIB has a concentration of wholesale and retail distribution businesses, as well as important distribution infrastructure; interstate routes I-90, and I-91 intersect in this region. Following closely behind, the Central Massachusetts, and Metro South/West WIBs each have 8 workforce training resources related to distribution; similar to Hampden County, these WIBs also have a clustering of industry-related businesses, located near major highway routes.

Where further investigation will be important is in the Boston and Metro North WIBs where there are high concentrations of distribution-related businesses, but few distribution-related training resources (two and three, respectively). Berkshire County does not have any distribution-related training resources, but it also has relatively few distribution-related businesses, most of which are not close to the WIBs major interstate, I-90. Even so, it would be worthwhile to evaluate if Berkshire County has sufficient and properly located distribution-related workforce training resources.

Map A.2: DISTRIBUTION Education and Training Resources by Workforce Investment Board (WIB)

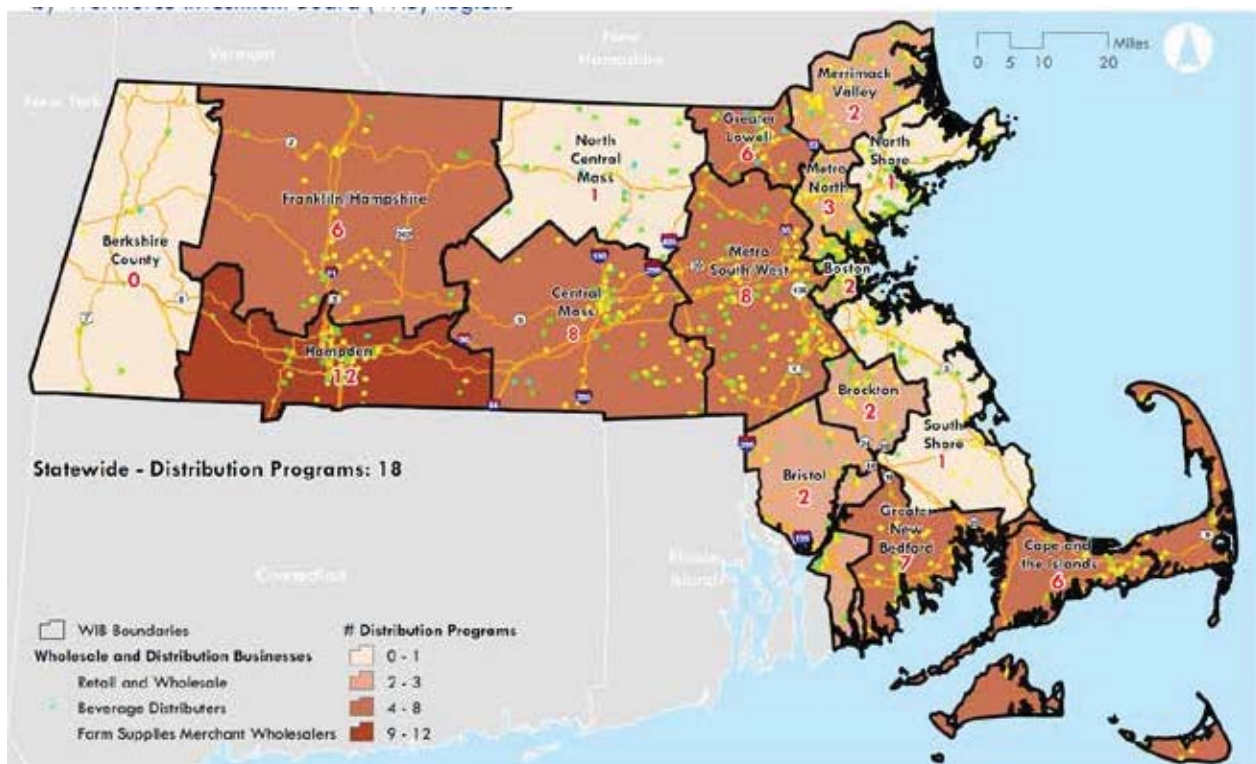


Table A.8: Distribution Resources by WIB

WIB REGION	Number
BERKSHIRE	0
BOSTON	2
BRISTOL	2
BROCKTON	2
CAPE AND ISLANDS	6
CENTRAL MASS	8
FRANKLIN/HAMPSHIRE	6
GREATER LOWELL	6
GREATER NEW BEDFORD	7
HAMPDEN	12
MERRIMACK VALLEY	2
METRO NORTH	3
METRO SOUTH/WEST	8
NORTH CENTRAL MASS	1
NORTH SHORE	1
SOUTH SHORE	1
STATEWIDE	18
TOTALS	85

Source: MWA Food System Education and Training Resources Inventory

Table A.9: HVAC Resources by WIB Region

	TOTAL
BERKSHIRE	0
BOSTON	0
BRISTOL	2
BROCKTON	2
CAPE AND ISLANDS	1
CENTRAL MASS	3
FRANKLIN/HAMPSHIRE	2
GREATER LOWELL	2
GREATER NEW BEDFORD	1
HAMPDEN	2
MERRIMACK VALLEY	2
METRO NORTH	2
METRO SOUTH/WEST	7
NORTH CENTRAL MASS	1
NORTH SHORE	0
SOUTH SHORE	1
STATEWIDE	0
TOTALS	28

Source: MWA Food System Education and Training Resources Inventory

Supply Chain Management

There are two community college programs that focus specifically on supply chain management, yet, it is consistently noted by agricultural and food system experts, that any expansion of local food production and supply will require innovations and effective management of the supply chain. Are there other programs that need to be developed, or is there information and educational approaches about distribution that need to be part of agricultural production training?

HVAC (Heating, Ventilating, and Air Conditioning)

Storing, processing, distributing and serving and selling food requires chillers, coolers and other HVAC equipment. This equipment needs to be professionally installed, reliably maintained, and promptly repaired.

All but four of the 16 WIB regions MA have some kind of HVAC education and training (Table A.9). Is this sufficient, and are there ways that this training can include some focus on the food system businesses that require reliable HVAC equipment and services?

Inputs

The Commonwealth has a good geographic spread of environmental science, basic biology programs, as well as other more general programming, offered through the community college system and state university system. This may provide good general entry points for work that involves the environmental and ecological aspects of a strong food system within the Commonwealth. More details are needed to better understand the kinds of information and skills needed to train food system workers and how those intersect with existing science curricula at all levels.

Health, Access and Nutrition

Does Massachusetts food system education, at all levels and in all areas, include sufficient emphasis on the need for and means to ensure access to good healthy food for all MA citizens? As Massachusetts further examines the challenges and opportunities for expansion of agricultural production, and the increase in local food distribution within the state, it is vital to understand the resources that will keep the skills of the incumbent workforce at the highest levels needed. In this area, the review of the inventory indicates that MA has food service and nutrition education and training resources for incumbent workers through the John Stalker Institute, based at Framingham State University, as well as through the MA Food Safety Education Partnership (Table A.10). Is this sufficient capacity, particularly if priorities include expansion of the role of food service professionals to prepare and serve local food within public education settings?

Table A.10: Health access and nutrition programs by provider type and WIB

	Community College	UMass Extension	Therapeutic Farm	Buy Local Organization	Nonprofit	Professional Organization	University	MDAR
BERKSHIRE	4	1	1					
BOSTON	3			1	5	1		
BRISTOL	1							
BROCKTON	1						2	
CAPE AND ISLANDS	3	1		4				
CENTRAL MASS	3	1		1	2		2	
FRANKLIN/HAMPSHIRE	4	2	2	3			3	
GREATER LOWELL					3		2	
GREATER NEW BEDFORD				2				
HAMPDEN	6			3	5	1		
MERRIMACK VALLEY	1		1		4			
METRO NORTH					5			
METRO SOUTH/WEST	2	3			7		13	
NORTH CENTRAL MASS	1							
NORTH SHORE	2				1			
SOUTH SHORE		1		1				
STATEWIDE		4			18	3		3

Source: MWA Food System Education and Training Resources Inventory

Part Three

Understanding Food System Work in Massachusetts

What follows is an occupational analysis of the Massachusetts food system work based primarily on data and information from the Massachusetts Local Food Action Plan working groups as well as information from key informants throughout the food system. This information is geared primarily for workforce development, education and training providers. It offers a thumbnail sketch of occupations, growth potential and potential changes to occupational definitions. It is informed by occupational classifications and data including:

- **Industry Categories,** The New England states have agreed to consider jobs and related data using the same industry categories as a means to track food system business and job growth across New England. These categories largely align with the working group areas as follows:
 - Food Production - working group areas include: farming, urban agriculture, fisheries.
 - Distribution and Retail outlets – working group area: wholesale and retail distribution
 - Manufacturing – working group area: processing
 - Farm inputs: - working group areas: inputs (water, energy and waste) and land
 - In addition, the planning process had a working group focusing on food security, access and health. An occupational analysis of this area is also included.
- **Standard Occupational Classification (SOC code).** This is a federal system used to classify workers in occupational codes for data collection and analysis purposes. It is included here because it is one of the ways workforce development, education and training professionals understand the work tasks, education, training and credential requirements of occupations. The SOC system is continually collecting data and revising occupations. In the following occupational analysis, SOC codes are included for most of the food system occupations identified. In some instances, only related occupations are cited because there is no matching SOC code. In other instances, there is no SOC code cited because there is no reasonable match.
- **Green Economy Occupations.** The National Center for O*NET Development (Occupational Information Network) has identified green increased demand occupations, green enhanced skills occupations, and green new and emerging occupations. This coding refers to the ways green economy activities and technologies affect occupations and work and worker requirements. It is included in the food system occupational analysis because it informs education, training and career services. Massachusetts has had significant success developing its clean energy economy workforce. Food system development could benefit from the nuanced understanding that this coding offers. The three categories are defined as:
 - Green Increased Demand Occupations. The impact of green economy activities and technologies results in an increase in the employment demand for an existing occupation. However, this impact does not entail significant changes in the work and worker

requirements of the occupation. The work context may change, but the tasks themselves do not.

- Green Enhanced Skills Occupations. The impact of green economy activities and technologies results in a significant change to the work and worker requirements of an existing O*NET-SOC occupation. This impact may or may not result in an increase in employment demand for the occupation. The essential purposes of the occupation remain the same, but tasks, skills, knowledge, and external elements, such as credentials, have been altered.
- Green New and Emerging Occupations. The impact of green economy activities and technologies is sufficient to create the need for unique work and worker requirements, which results in the generation of a new occupation relative to the O*NET taxonomy. This new occupation could be entirely novel or “born” from an existing occupation.¹
- **Forecasted growth of an occupation in Massachusetts.** CareerOneStop sponsored by the U.S. Department of Labor, Employment and Training Administration provides occupational trend data. This data is collected by each state through the Occupational Employment Statistics survey, conducted by the Bureau of Labor Statistics at the U.S. Department of Labor. Occupation trends data are updated in two year cycles. This information is included in the below occupational analysis for the use of workforce, education and training professionals, particularly because it is important to understand projected growth when developing programming and advising job seekers. Using the Explore Career function on the CareerOneStop website (<http://www.careeronestop.org/ExploreCareers/explore-careers.aspx>) will provide much more detail on forecasted growth.
- **Bright outlook nationally.** O*NET codes occupations as bright outlook. These are occupations expected to grow rapidly in the next several years, will have large numbers of job openings, or are new and emerging occupations. This information is national in scope. It is included for the use of workforce, education and training professionals as they develop programming and advise job seekers. Every Bright Outlook occupation matches at least one of the following criteria:
 - Projected to grow much faster than average (employment increase of 22 percent or more) over the period 2012-2022.
 - Projected to have 100,000 or more job openings nationally over the period 2012-2022.
 - New & emerging occupation in a high growth industry.

¹ Erich C. Dierdorff, et al. “Greening of the World of Work: Revisiting Occupational Consequences.” Prepared for U.S. Department of Labor Employment and Training Administration Office of Workforce Investment Division of Workforce System Support Washington, DC. Submitted by The National Center for O*NET Development. December 9, 2011. <http://www.onetcenter.org/reports/Green2.html>

Food System Work in Food Production

Hard to fill positions / workers needed

- Skilled, experienced, reliable farm labor is needed. These positions are currently difficult to fill without reliance on migrant workers.
- Fish processing (considered in this section, rather than in the manufacturing section) is also seen as an occupation that will need workers. This need will only be realized, however, with strengthening and expansion of the Massachusetts-based fishing industry.

Areas of potential / current growth, including business development and job creation

- Expansion of food production businesses and job creation will be driven by increased demand for local food, including produce and fruit, meat, fish and poultry and value-added products.
- Increased production is intimately linked with increased processing at multiple levels. In order to meet growing demand spurred by consumer education, Massachusetts will need to strengthen its processing capacity in all categories of food.

Food production in Massachusetts is accomplished through a variety of business models: large production farms, CSA-focused farms, dairy operations, the Gloucester and New Bedford fishing fleets and within urban and suburban settings and community gardens, to name a few. The occupations that contribute to food production directly within farming and urban agricultural occupations are detailed in the table below, and those related to fisheries are in a subsequent table.

Land-based Agriculture

Land-based Agricultural Production Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on planning process findings</i>
Farmer <ul style="list-style-type: none"> • green enhanced skills occupation • no data available for MA growth • bright outlook nationally 	11-9013.02 - Farm and Ranch Managers 11-9013.00 - Farmers, Ranchers, and Other Agricultural Managers	The term farmer is often used to denote farm owner, although not always. There is a hierarchy of farm labor that varies based on the size of the operation. Larger, or diversified operations, may have two or more layers of management, and even different areas of work. These might include more than one field crew, each with its own crew lead, or a packing shed crew that is separate from field crews.
Farm worker / field worker <ul style="list-style-type: none"> • bright outlook nationally 	45-2092.02 - Farmworkers and Laborers, Crop	There are at least three broad categories of farm workers/field workers on Massachusetts farms: migrant workers, friends and family, and, those with aspirations to run their own operations. These categories can and do overlap.
Farm crew lead <ul style="list-style-type: none"> • green increased demand occupation growth forecast in MA 	45-1011.07 - First-Line Supervisors of Agricultural Crop and Horticultural Workers	This position may or may not be part of a farm's staffing make-up depending on size.

Land-based Agricultural Production Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on planning process findings</i>
Farm manager / supervisor <ul style="list-style-type: none"> • green enhanced skills occupation • bright outlook nationally • no data available for MA growth 	11-9013.02 - Farm and Ranch Managers 11-9013.00 - Farmers, Ranchers, and Other Agricultural Managers	Oversees farm operations, on small farms may be the owner/operator. Responsibilities include planning, purchasing, supervision, business management.
Herd manager <ul style="list-style-type: none"> • growth forecast in MA 	45-1011.08 - First-Line Supervisors of Animal Husbandry and Animal Care Workers	There is growing interest in locally sourced meat.
Packer, processor, back room staff <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	53-7064.00 - Packers and Packagers, Hand	As with other farm operations, these positions might be part of a field worker's responsibilities, depending on the size and nature of the operation. Current Department of Labor regulations requirements about who handles what product also affect staff responsibilities. On some farms, workers also do light processing like, washing, cutting, peeling.
Driver <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	53-3031.00 - Driver/Sales Workers 53-3033.00 - Light Truck or Delivery Services Drivers	The transportation of product to market outlets is critical to farm operations. Drivers often have other responsibilities.
Bookkeeper <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	43-3031.00 - Bookkeeping, Accounting, and Auditing Clerks	Farms are businesses with the same needs for business skills as other businesses. This position may or may not be a staff position.
Sales person <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	41-2031.00 - Retail Salespersons	Sales work on some farms is part of the responsibility of the farm owner or farm manager, sometimes farm workers. Most farms do not have separate sales staff. Sales work can include on-farm sales, farm stands, CSA pick-ups and farmers' market staffing
CSA manager	There is no specific code for CSA manager. 11-2022.00 - Sales Managers shares similar skills and knowledge.	This position, as with sales, can be part of the responsibility of the farm owner or farm manager.
Trainer / educator / community outreach staff / volunteer coordinator	No applicable SOC code	Some farm business models include these kinds of positions. On other farms, these responsibilities are part of a farmer or farmworker's responsibilities.
Farm design and construction <ul style="list-style-type: none"> • green increased demand occupation • no data available for MA growth 	25-9021.00 - Farm and Home Management Advisors	Urban agricultural operations, particularly those run by nonprofit organizations, may have workers whose responsibilities include design of growing areas like raised beds, greenhouses and hoop houses, irrigation systems

Land-based Agricultural Production Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on planning process findings</i>
Winter maintenance staff <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	37-3011.00 - Landscaping and Groundskeeping Workers	Urban farms and gardens might be able to share these staff.

The following value chain occupations provide services or supplies that are critical to farming:

- equipment repair, maintenance and sales
- seed, start/transplant supplier (e.g. greenhouse operator and staff)
- large animal vet and associated animal care providers (e.g. farriers, animal transport vehicle sales and service)
- food inspector and other regulators (labor, occupational safety, etc.)
- technical assistance provider in the areas of: agricultural techniques, small business, regulatory compliance, including OSHA, worker safety training; currently these positions are found either at a higher education institution (e.g. UMass Extension) or through a nonprofit organization (e.g. a buy local) or a for-profit enterprise.
- small business support professionals (bookkeeping, business planning, product development, marketing, etc.)
- feed and grain supplier which largely comprise retail occupations
- purchasers (wholesale, retail, distributors), including farmers market market managers and emergency food distribution staff
- real estate agent/farm land real estate specialist with a specific understanding of Article 89 and other farmland issues
- insurance broker
- beekeepers
- farm labor contractors; temporary workers can be the mainstay of some operations, including, for example, cranberry operations

Additionally, there are some value chain-related occupations that support specific kinds of agricultural operations, such as urban, community-based, nonprofit and cooperative approaches. These might include operations that merge skill training with food production. These variations require different or additional services, including:

- legal counsel, focusing on land purchase, preservation, tenancy and liability.
- soil, water tester/remediation in urban settings due to the increased likelihood of soil contamination from other land uses
- rooftop beekeepers and designers/installers of rooftop gardens
- fundraising professional. If the food production organization is a nonprofit, fundraising services are important and can include grant writing as well as donor cultivation services

- agricultural technical assistance providers and consultants with a specific orientation to different kinds of operations
- security systems specialist

The following categories of workers are not directly connected to food production but have the potential, in their support of food production, to amplify and increase food production, food production profitability and food production business success and expansion. They include:

- municipal officials
- municipal boards of health
- utility providers, particularly as affects infrastructure (lines and poles) and regulators, as relates to connecting renewable energy to the grid
- energy efficiency and renewable energy technicians
- seed and grain grower
- researchers (including in the areas of product development, agricultural techniques and other relevant areas)
- regional and municipal economic development officials

Key Land-Based Food Production Workforce Challenges and Potential Massachusetts Responses

There are several workforce challenges that present significant difficulties to Massachusetts land-based food production operations.

Workforce Challenge

- Availability of workers / seasonal nature of the work.

Potential Responses

- Work with legislators to revise federal immigration policies
- Build a steady supply of agricultural trainees, including those from urban agricultural settings and training programs.
- Create formal apprenticeship programs.
- Articulate and communicate the nature of the agricultural work.
- Support agricultural trainees to have access to farming opportunities, of their own and as workers on others' farms, through program connections, network opportunities and information.

Farmers express concern about having access to an adequate labor supply. While historically, Massachusetts farms were staffed by Massachusetts workers, this has changed over time and this labor supply has diminished significantly. The seasonal nature of the work, and perhaps the nature of the work itself – strenuous, outdoor work in all weather – are seen by potential workers as undesirable work, or work with insufficient pay. To address this labor shortage, many Massachusetts farms rely on migrant labor, including those who come to the U.S. via the federal H2A program, to staff their operations. This program requires a good deal of paperwork and regulations, and farmers report frustration in dealing with

it. Those farms that don't use H2A labor also have staffing concerns focusing on high staff turnover, as well as potential worker perceptions about the work.

Reform to federal immigration policies, particularly those that relate to agricultural workers, would be key to addressing Massachusetts farm staffing issues. In addition, building out a pipeline between graduates of Massachusetts' growing number of agricultural and food system training programs might provide some additional workers. One critical issue to this approach is the noted skills and knowledge gap between these program participants and the migrant farmworkers whose home country agricultural experience, and years of work on Massachusetts farms makes them substantially more skilled than most. Massachusetts skill training for agricultural workers must include a meaningful and significant focus on hands-on skill development and experience. Additionally, program participants coming out of agricultural and food systems training programs, particularly those based in urban settings, need assistance and support to connect to rural farm operations and land.

Workforce Challenge

- Mismatch of current labor regulations with evolving farm and agricultural business models.

Potential Responses

- Update federal Department of Labor regulations.
- Provide accurate information on current labor regulations to farm operators.
- Support development and implementation of good staffing and payroll systems.
- Development of wholesale market opportunities for local products to increase scale of production while lowering retail prices to increase market share.

Federal Department of Labor regulations provide an over-time exemption for certain agricultural workers, but diversified operations may include aggregation, light processing and other non-exempt activities. These regulations and definitions of agricultural workers need to be updated to reflect the realities of changing farm businesses. In the interim, Massachusetts farmers need accurate information about worker regulations that affect their operation in relation to existing staffing regulations. And some of them need additional training and support for business management, particularly in terms of human resource tracking systems and payroll.

Workforce Challenge

- Price/market constraints that local and seasonal producers face.

Potential Responses

- Increase consumer demand through consumer education
- Support development of variety of farm business models that enable profitable business expansion and development.

The profit margin in food production is slender due to the function of the global marketplace, the unpredictability of weather and pests, and the constraints of product requirements especially freshness, time to market, and quality and appearance.

Increased consumer demand for local products can help to build market share. Profitable farm business models that address seasonality of production in Massachusetts, target viable market and consumer demands, are needed. Massachusetts has been a leader in developing the community supported agriculture (CSA) model, it needs to continue innovation in farm business models.

Workforce Challenge

- The entrepreneurial nature of farming demands that farmers have multiple skills and abilities.

Potential Responses

- Provide education and training on business planning and start-up, expansion, financing, regulatory compliance, staffing and human resource management, product development, branding, marketing.
- Bring start-up expertise from other industries to farming by diversifying training for farmers and new entry farmers and by encouraging “career shifters” to enter agriculture.

Many farms are small entrepreneurial enterprises run by committed individuals who shoulder the lion’s share of work across a wide spectrum of occupational tasks. Similar to other kinds of small businesses, farm operations require that the owner/manager has a broad spectrum of skills to succeed. Adequate training and technical assistance is needed, and needs to be tailored to the unique business models that comprise Massachusetts farming.

In recent years Massachusetts has supported energy efficiency and renewable energy start-up development, and has also developed its IT and healthcare sectors in part through support of entrepreneurs. Similar support should be brought to food production entrepreneurs. A first step should be a review of the kinds of assistance that have specifically supported entrepreneurs in these other fields and their possible applicability to food production operations.

Outlook and Opportunities for Business Development and Job Growth / Creation in Land-based Food Production

By far the largest potential for new business development or expansion in the land-based food production part of Massachusetts’ food system, as well as job creation, will come with increased demand for Massachusetts-grown and -produced products from both retail and wholesale sectors. This can come with increased consumer education about local food, its health and nutritional values and its value to the Massachusetts economy as well as increased intermediary education for wholesale and institutional purchasers. One key component to expansion in food production will be increases in cost efficiencies and scale.

Further development of season extension infrastructure and expertise also holds promise for both new business growth and job creation. This can come with increased availability of financing and must be paired with increased expertise developed through technical assistance and training.

The development of new and hybrid food production business models also holds promise for job creation. Support is needed to research and test these models.

Increased access to essential farm business infrastructure, like additional slaughterhouse and meat cutting services or additional dairy processing, may allow for expansion of agricultural businesses. This can come with identification of specific infrastructure needs, increased availability of financing, and increased regulatory clarity.

Development of viable business models for controlled environment and intensive production opportunities, particularly in urban settings, also holds potential for job creation.

Fisheries

Fisheries Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Harvesting work: Fishers and related fishing workers, inclusive of captain, deckhand <ul style="list-style-type: none"> no data for MA growth 	45-3011.00 - Fishers and Related Fishing Workers	Fishing in Massachusetts has experienced a significant decline. This has changed the make-up of a boat's crew from distinct jobs (captain, cook, deckhand) to jacks-of-all-trades and reducing crew sizes, in most cases, by half.
Processing work: growth in MA <ul style="list-style-type: none"> growth forecast in MA 	51-3022.00 - Meat, Poultry, and Fish Cutters and Trimmers (occupation is inclusive of more than fish processing)	While some of this work is done by machinery, hand and knife skills are still considered essential.
Forklift operators <ul style="list-style-type: none"> green increased demand occupation bright outlook nationally growth forecast in MA 	53-7051.00 - Industrial Truck and Tractor Operators	
Packer, processor, back room staff <ul style="list-style-type: none"> growth forecast in MA bright outlook nationally 	53-7064.00 - Packers and Packers, Hand	
Shippers and Receivers <ul style="list-style-type: none"> green enhanced skills occupation growth forecast in MA 	43-5071.00 - Shipping, Receiving, and Traffic Clerks	
Cold storage supervisor <ul style="list-style-type: none"> green enhanced skills occupation growth forecast in MA 	11-3071.02 - Storage and Distribution Managers	Cold storage is essential to fishing and fish processing. Increasing local fish and fish products in Massachusetts will require cold storage facilities.

Bookkeeper <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	43-3031.00 - Bookkeeping, Accounting, and Auditing Clerks	
Retail sales person <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	41-2031.00 - Retail Salespersons	
Wholesale sales person <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	41-4012.00 - Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	

There are fishing value chain-related occupations, including:

- equipment repair, maintenance and supplier and manufacturer
- ice supplier
- fuel supplier
- fish markets and other retail operations, including grocery stores and restaurants, selling fish and fish products
- large food service and institutional operations
- wholesale purchasers
- local fish CSAs
- technical assistance providers (small business, harvesting and processing, new product development, etc.)

The fisheries analysis used a value chain approach, so included in the above two categories of occupations are the processing and packaging occupations. The following categories of workers have an important role to play in creating and supporting fishing:

- regional and municipal economic development officials
- members of municipal boards of health
- municipal and regional planners and zoning officials
- industry regulators
- industry professional associations
- researchers studying fish, fishing and aquaculture.

Key Fisheries Production Workforce Challenges and Potential Massachusetts Responses

Workforce Challenge

- Predicted labor shortage and the physical aspects of this work, as well as the seasonality of it.

Potential Responses

- Engage with young people to inform them about the industry and possible career pathways and opportunities.

Current fishing enterprises are operating with a significantly reduced crew – often half the number of individuals needed to ideally operate the fishing boat and harvest operations. These individuals are aging. The future workforce will need to include young people and they will need to be introduced to fishing – inclusive of harvest and processing - as a viable occupation. This should happen through elementary and secondary and higher education programming and instruction about the industry, skills needed and opportunities for entrepreneurial activities. It must provide a realistic picture of fishing industry, and its future.

Workforce Challenge

- Current fishing operations need increased small business acumen to develop their businesses.

Potential Responses

- Provide training for current and future fishermen in business planning, business growth, customer and market identification, financing and related topics.

The fishing industry has dramatically changed over the past 30 years. Current fishermen are significantly constrained by regulations that limit the effectiveness of their business model. New models of how to do business, how to build market share, etc. are needed. Both current fishermen and future ones will need training to strengthen existing businesses and provide a road map for possible future business niches. Training needs to be accessible and relevant to the fishing industry – and can draw on models from Maine, for example – and needs to include the following topics:

- business planning and expansion
- market identification and marketing
- customer relations
- financing
- branding
- product development

Workforce Challenge

- Price/ market constraints.
- Increasing consumer demand for unappreciated species.

Potential Responses

- More processing plants need to be built, in tandem with increase in fish capture/sales.
- More food science capacity for product development.

The Massachusetts fishing industry overwhelmingly serves an international market. Price and market constraints, including a short list of desirable species, leave little room for profit or for innovation. The

Massachusetts fishing industry needs to strengthen its Massachusetts-based value chain and move toward being a mature industry.

As with Massachusetts grown and produced land-based food products, Massachusetts has an opportunity to grow consumer demand for species currently not considered marketable, also known as underappreciated species, including redfish and others. Consumer demand can be grown through consumer education, marketing, targeted marketing with large food service vendors, as well as chefs and existing processing operations.

In order to accomplish expansion of the domestic fish value chain and market, more processing facilities need to be brought online, including identification of the species to be processed and their processing needs.

Workforce Challenge

- Federal regulations.

Potential Responses

- Continue to advocate for federal regulations that support local fishermen and the fish species.

Federal regulations constrain species that can be caught, days that can be fished, where fishing can be done. These regulations require permitting and regulatory compliance, including paperwork and inspections. These are onerous for small fishing operations. Massachusetts needs to continue advocacy for regulations that support the Massachusetts fishing industry and fish species health.

Outlook and Opportunities for Business Development and Job Growth / Creation in Fisheries

The current domestic value chain in Massachusetts fishing is fragmented and disjointed. Opportunity is seen for both business development and job creation, but it is recognized that the Massachusetts-based fishing industry is in its infancy and using a business model that has been subject to extraordinary pressures and contraction, including cheap imports, waterfront real estate development and harvest pre-treatment requirements, changes in customer tastes, among others. In order for the possible business development and job creation to occur, a concentrated effort to revitalize the Massachusetts fishing industry is needed. It would have to include, at the very least the below – both of which have the potential to grow businesses and create jobs, but over a longer-term timeline.

- Increasing consumer demand for unappreciated species through consumer education, targeted marketing and product development, particularly of underappreciated species.
- Development of more processing plants which need to be built in tandem with increase in fish capture, sales of underappreciated species and new product development. These processing plants need to be built as an interconnected aspect of the value chain, rather than as a disconnected player in an anonymous value chain, as they are now. Fishermen and chefs and food service managers need to be part of the product development that occurs at the processing stage. This

connection between value chain players is seen as the most direct and best possible approach to revitalizing the Massachusetts fishing industry.

Food System Work in Distribution and Retail Outlets

Hard to fill positions / workers needed

- Food service, particularly entry-level positions experience high turnover.
- These low-wage, often part-time positions, can be openings into career pathways.

Areas of potential / current growth, including business development and job creation

- Continued development of the infrastructure for post-harvest processing (canning, freezing, drying) as well as creation of value-added products will create opportunities for business expansion and growth.
- Further development of aggregation, and refinement of distribution options for Massachusetts producers also holds strong promise for business expansion and new business development.
- Increased production and food preservation on a commercial scale will require expanded food storage capacity in the state, particularly cold storage.

Distribution Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Distribution operations Massachusetts has a sophisticated and complex food distribution system that includes warehousing, cold storage, wholesale distribution, as well as emergency food distribution through food pantries and food banks.		
Purchaser / purchasing manager <ul style="list-style-type: none"> • Green increased demand occupation • Growth forecast in MA 	13-1021.00 - Buyers and Purchasing Agents, Farm Products 11-3061.00 - Purchasing Managers	While the job tasks won't change with increased local products, what will change is the number of sources that could be engaged with to secure local food products
Logistics manager <ul style="list-style-type: none"> • Green new and emerging occupation • growth forecast in MA • bright outlook nationally 	11-3071.03 - Logistics Managers	Distribution businesses that rely heavily on IT technology for sales and fulfillment will require IT expertise of staff, including the logistics manager.
Warehouse manager <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA 	11-3071.02 - Storage and Distribution Managers	Increased cold storage infrastructure would result in an uptick in warehouse work.
Cold storage supervisor <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA 	11-3071.02 - Storage and Distribution Managers	It is anticipated that freezing local produce will increase, and that that will signal an increase in the need for cold storage.

Distribution Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Warehouse worker <ul style="list-style-type: none"> • green increased demand occupation • growth forecast in MA • bright outlook nationally 	53-7062.00 - Laborers and Freight, Stock, and Material Movers, Hand 43-5081.03 - Stock Clerks- Stockroom, Warehouse, or Storage Yard	Given the seasonality of food production in Massachusetts, ways to preserve and store food so that local food is available year round would result in more warehouse work. Additionally, expansion of Massachusetts food manufacturing sector will also result in more warehouse worker positions.
Shipping, receiving <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA • bright outlook nationally 	43-5071.00 - Shipping, Receiving, and Traffic Clerks	
Forklift operator <ul style="list-style-type: none"> • green increased demand occupation • growth forecast in Ma • bright outlook nationally 	53-7051.00 - Industrial Truck and Tractor Operators	Further expansion of food manufacturing and food storage due to increases in food production and preservation will result in more warehouse jobs.
Produce managers <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	41-1011.00 - First-Line Supervisors of Retail Sales Workers	
Stockers	43-5081.01 - Stock Clerks, Sales Floor	
Shipping, receiving <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA • bright outlook nationally 	43-5071.00 - Shipping, Receiving, and Traffic Clerks	
Deli managers <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	41-1011.00 - First-Line Supervisors of Retail Sales Workers	
Deli workers <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	35-3021.00 - Combined Food Preparation and Serving Workers, Including Fast Food	
Bakers / Bakery workers <ul style="list-style-type: none"> • growth forecast in MA 	51-3011.00 - Bakers	
Meat cutters		

Distribution Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
<p>Small retail outlets, including convenience stores and bodegas</p> <p>Massachusetts received a federal grant in 2015 to increase fresh and healthy food at convenience stores. While this won't increase positions, it could signal a small change in responsibilities for workers and managers in these stores, including sourcing products differently.</p>		
Manager / purchaser / receiver <ul style="list-style-type: none"> • green enhanced skills occupation • MA growth forecast • bright outlook nationally 	13-1022.00 - Wholesale and Retail Buyers, Except Farm Products 11-1021.00 - General and Operations Managers	Sourcing local food can be a challenge, and may require some technical assistance or other kinds of guidance, especially for smaller retail outlets. Store equipment can be a limiting factor for the kinds of fresh fruit, vegetables and other products.
Clerk	41-2011.00 - Cashiers	
Ready-to-eat food preparers <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	35-3021.00 - Combined Food Preparation and Serving Workers, Including Fast Food	Ready-to-eat is a growing segment of food sales.
<p>Small restaurants</p> <p>Culinary and food service work has a well-articulated training and career pathway. Increasingly, local food is being used to build a market niche for small restaurants.</p>		
Back of the house: Chef / purchaser Line cook / sous chef Prep cook / salad maker Pastry chef / dessert Dishwasher	Diverse SOC codes	Back of the house positions are part of a well-articulated training and career pathway. And, in food service, it is possible, through on-the-job training and the accumulation of experience, to advance from dishwasher to chef. Training in culinary skills is also valued.
Front of the house: Cashier Server Host / hostess Busboy	Diverse SOC codes	
<p>Large-scale food service</p> <p>Culinary and food service work has a well-articulated training and career pathway. The development of mechanisms to encourage and facilitate local food sourcing by institutions is increasing, particularly in public school and hospital settings. Massachusetts Farm to School Initiative is one example.</p>		
Culinary jobs: Chef Sous chef / line cook Prep cook / salad maker Pastry chef / dessert maker Dishwasher	Diverse SOC codes	Menu planning around seasonal foods is an area that some culinary positions may need additional training.
Food service jobs: Food service manager / purchaser Dietitian Cafeteria worker / dining room staff	Diverse SOC codes	Menu planning with local foods and sourcing those products is an important aspect to upgrading the skills of these positions.

The value chain occupations for distribution include the following occupational areas. The work of these occupations has the potential to increase local food distribution:

- farmer
- farmers market managers
- wholesale distributors, buyers and purchasing agents
- food service directors
- chefs and restaurant owners

And the work of the following occupations has the potential to positively support increased local food distribution:

- municipal boards of health
- regional and municipal planners
- regional and municipal economic development

Key Distribution Workforce Challenges and Potential Massachusetts Responses

Workforce Challenge

- Massachusetts producers face a complex food distribution system. Food businesses unable to connect their products to appropriate markets suffer.

Potential Responses

- Provide technical assistance.
- Support matching and brokering services and programs.
- Encourage growth of intermediary businesses including wholesalers who source products locally.

Food distribution in Massachusetts is complex and includes a great variety of distribution patterns and options, ranging from small farmstands to Chelsea Market, the largest food distribution hub in the Commonwealth. Massachusetts producers unable to connect their products to appropriate markets suffer. There is a need for technical assistance to help businesses develop marketable products, connect to markets and capitalize on the diversity in the distribution system. There are matching/brokering services (Massachusetts Farm to School, Lettuce be Local, for example) that help producers to match their product to the optimum market. Increasing the capacity and scope of these programs will help to ensure continued health and potential business and job growth.

Workforce Challenge

- Food system work is often seasonal, part-time, low-wage, unbenefited work.

Potential Responses

Build strong Massachusetts food system businesses through:

- Technical assistance to support business planning, health, and expansion.

- Development of infrastructure for producing and marketing post-harvest (canned, frozen, dehydrated) products as well as creation of value-added products Massachusetts produce and processed products.
- Support of the development of Massachusetts meat and value-added producers.
- New food system business development through prototyping and innovation.

Food system work is often seasonal, part-time, low-wage, unbenefited work. It spans multiple industries and sectors. Jobs often have both limited and unclear opportunities for advancement and increased wages. Addressing this reality is a challenge. And there are potential responses that can help to build good jobs with advancement possibilities and living wages.

Providing food businesses of all kinds with technical assistance to support business planning, business health, and expansion helps to ensure strong food system businesses. Technical assistance in areas like marketing, business management, product and market development are important. Finally, making technical assistance accessible by offering it at times and in languages that allow for participation of diverse business owners and managers is critical as well.

Development of infrastructure for producing and marketing post-harvest (canned, frozen, dehydrated) products as well as creation of value-added products Massachusetts produce and processed products will build a segment of Massachusetts food system that will provide market outlets for produce and products that are currently constrained by seasonal production.

The development of Massachusetts meat and value-added producers will also increase food system businesses in Massachusetts. This is a longer-term approach to business development and job growth but there is consumer interest in local meat, and value-added products of all kinds.

Finally, some innovations and new food system business development may be best supported through public private collaboration. This will allow prototyping and testing of new business models, processes and products.

Workforce Challenge

- Strengthening and further articulation of the Massachusetts food system requires food product and food system understanding across multiple industries and occupations.

Potential Responses

- Train across industries and sectors that intersect with food.
- Recognize the importance of customer service and customer education in food system jobs.
- Public education and social marketing.

There has been a shift in where people get food. Rather than preparing food at home from raw ingredients, more people are purchasing ready-to-eat food through grocery and drug stores and big boxes, as well as prepared food at restaurants. This is a significant shift and creates a need to train about food and local food in occupations and industries that previously had less connection to food, like teachers or case workers.

Strengthening the Massachusetts food system will include increasing production, sales and consumption of Massachusetts grown and produced food. One key element in building demand for this is educating customers about the value of local food. This requires additional training for staff in positions to sell or influence the purchase of local food.

Outlook and Opportunities for Business Development and Job Growth / Creation in Massachusetts Food Distribution

Continued development of the infrastructure for post-harvest processing (canning, freezing, drying) as well as creation of value-added products will create opportunities for business expansion and growth. There is strong interest in prioritizing this development because it addresses the current seasonal limitations that Massachusetts producers face. It is a medium-term strategy that is already underway at facilities like the Western Massachusetts Food Processing Center which is working in partnership with UMass Amherst.

Further development of aggregation, and refinement of distribution options for Massachusetts producers, also holds strong promise for business expansion and new business development. This is a strategy that builds on current work being done by Massachusetts Farm to School which helps to match producers with school food operations. It is also anticipated to build on the results of pilot aggregation and distribution models being tested in other parts of the country. And, of particular interest in Massachusetts are models that use technology to streamline ordering, as well as market matching and brokering-based models.

It is also anticipated that increased production and food preservation on a commercial scale will require expanded food storage capacity in the state, particularly cold storage to complement the anticipated increase in frozen products.

Food System Work in Manufacturing

Hard to fill positions / workers needed

- The seasonality of Massachusetts produce and fruit creates seasonal employment in food processing.

Areas of potential / current growth, including business development and job creation

- Massachusetts can entertain significant growth in food processing/manufacturing.
- Massachusetts has the opportunity to develop food manufacturing equipment businesses.

The work in food manufacturing that relies on agricultural products produced in Massachusetts is very similar to the work in non-local food manufacturing, with the only significant differences coming from the seasonality of Massachusetts production, the challenges to source at necessary volumes and the price, margin and scale issues that face many small businesses. While none of these factors significantly change the work of any of the below occupations, they can make specific local food knowledge more desirable in candidates for these positions.

Manufacturing Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Food business entrepreneurs <ul style="list-style-type: none"> • Green enhanced skills occupation • Growth forecast in MA • Bright outlook nationally 	There is no Bureau of Labor Statistics code for entrepreneur; closest is 11-1021.00 - General and Operations Managers	There is a lot of interest in food business entrepreneurship and very little skill in creating successful businesses. The current training programs offered do not sufficiently prepare entrepreneurs to enter the market with all of the skills and training necessary.
Kitchen manager <ul style="list-style-type: none"> • green enhanced skills occupation • Growth forecast in MA • Bright outlook nationally 	11-1021.00 - General and Operations Managers 11-3051.00 - Industrial Production Managers 11-9051.00 - Food Service Managers 35-1011.00 - Chefs and Head Cooks	Responsibilities depend on the size of the operation and the type of food production, whether it is a shared use facility, or co-packing operation. Has important food safety responsibilities, including compliance with food code, HACCP plan development and training. May have recipe development responsibilities as well.
Food preparation, cooking and packing staff <ul style="list-style-type: none"> • growth forecast in MA 	51-3092.00 - Food Batchmakers 51-3093.00 - Food Cooking Machine Operators and Tenders 51-9111.00 - Packaging and Filling Machine Operators and Tenders	While the occupational codes that best match this work are listed to the left, 35-2021.00 - Food Preparation Workers also works. While complete culinary training isn't necessary for these positions, which most closely align with manufacturing, rather than cooking, culinary training can be an entry point for this work.
Marketing and business development trainers / consultants <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA 	11-2021.00 - Marketing Managers 11-2011.00 - Advertising and Promotions Managers	This work likely would occur through the services of a consultant, rather than having someone on staff. Or may be skills the entrepreneur has.
Food scientist <ul style="list-style-type: none"> • growth forecast in MA 	19-1012.00 - Food Scientists and Technologists	Basic culinary training (e.g. through a community college program) could be the first step of education on a career pathway to food scientist. Micro-biology education is important.
Process authority <ul style="list-style-type: none"> • growth forecast in MA 	19-1012.00 - Food Scientists and Technologists	Reviews recipes and determines food safety considerations: processing (thermal, dehydration, canning), and packaging. Micro-biology education is important. As above, basic culinary training could be a stepping stone for this occupation.
Product testers (lab workers) <ul style="list-style-type: none"> • growth forecast in MA 	19-4011.02 - Food Science Technician	Similarly, basic culinary training could be a stepping stone for this occupation.
Prototype/product (recipe) developer	No applicable SOC code	Depending on size of food manufacturing operation, this could be combined with kitchen manager, product tester, food scientist, process authority responsibilities.
Supply chain procurement <ul style="list-style-type: none"> • green new and emerging occupation • growth forecast in MA • bright outlook nationally 	11-9199.04 - Supply Chain Managers 11-3061.00 - Purchasing Managers	There is an opportunity here for innovative thinking, particularly in linking farms with manufacturing, as well as in technology development. Technology development, in Massachusetts could help to meet smaller-scale food manufacturing/processing needs.

Equipment maintenance workers <ul style="list-style-type: none"> • growth forecast in MA 	51-3093.00 - Food Cooking Machine Operators and Tenders	This position, particularly in small operations, might be part of the food production staff's responsibilities. HVAC skills and credentials are valuable.
Warehouse manager <ul style="list-style-type: none"> • green enhanced skills occupation • growth forecast in MA 	11-3071.02 - Storage and Distribution Managers	Responsibilities may be combined with other jobs
Warehouse worker <ul style="list-style-type: none"> • green increased demand occupation • growth forecast in MA • bright outlook nationally 	53-7062.00 - Laborers and Freight, Stock, and Material Movers, Hand 43-5081.03 - Stock Clerks- Stockroom, Warehouse, or Storage Yard	Responsibilities may be combined with other jobs
Forklift operators <ul style="list-style-type: none"> • green increased demand occupation • growth forecast in MA • bright outlook nationally 	53-7051.00 - Industrial Truck and Tractor Operators	Responsibilities may be combined with other jobs

The value chain occupations for food manufacturing include the following occupational areas:

- health and safety trainer
- cooking equipment supplier, maintainer, manufacturer, salesperson / customer service staff
- ingredient suppliers
- purchasers (wholesale and retail venues, and distributors)
- small business support staff (insurance, bookkeeping, staffing, marketing)
- co-packing enterprises - a co-packer, or contract manufacturer, can manufacture and package food products for growers and entrepreneurs under contract with the hiring company as though the products were manufactured directly by the hiring company; these enterprises would have the same occupations as those listed above
- aggregator – facilitates distribution by aggregating products; allows smaller producers to combine to meet larger orders
- food waste management operations, including transport and technical assistance

The following categories of workers have an important role to play in creating and supporting food manufacturing:

- local financial partners
- municipal board of health / health inspector
- USDA regulator / inspector
- municipal officials: planning / zoning, economic development
- food science extension, tech and other farm and food business related innovation
- regional and municipal economic development officials

Key Manufacturing Workforce Challenges and Potential Massachusetts Responses

Workforce Challenge

- Seasonality of Massachusetts grown food means that food processing/manufacturing jobs are seasonal jobs.

Potential Responses

- Develop a shared labor pool that enables full time, benefitted employment in the food system by creating work that spans across seasons of produce and fruit.
- Train food processing workers across multiple products.
- Develop food products that can be produced year round and encourage season extension in farming.

Massachusetts locally grown and produced food is largely seasonal, with the exception of dairy and meat and specialty products like granola and miso. Staffing produce and fruit food processing reflects the seasonality of the produce/fruit, with work happening intensely during and shortly after harvest, and then tapering off. For workers, this means part-time work, and for businesses it can create high staff turnover.

A shared labor pool with training to support movement of staff between processing facilities and products according to product seasonality could increase the span of work across the year to the benefit of workers. It can also address the turnover, to the benefit of employers.

Additionally, training workers to process multiple products across the year can increase the full-time jobs in food manufacturing. It also increases the value of staff in the marketplace.

Development of products that are able to be produced year-round (e.g. granola and miso), increases also has the potential to increase full-time jobs and to create additional product offerings for small food manufacturers.

Workforce Challenge

- Finding suitable market outlets for products can be challenging for new food product businesses.

Potential Responses

- Provide technical assistance and information to food manufacturing businesses to support effective distribution of their products.

Food product start-ups and small businesses often have difficulty finding suitable markets for their products. Some of this is due to the complexity of the distribution system, some of this is due to time constraints, and some of this is due to limited skills and knowledge about marketing and product distribution.

Increasing market share of Massachusetts food products can increase business success. Accomplishing this requires technical assistance to food product business in marketing, and distribution. This technical assistance could include brokering services that work with producers to market their products to and build relationships with specific customers and target markets. It could also help producers to match their production to appropriately scaled distributors. Additionally, educating co-packers on aggregation so that

smaller producers are able to combine to meet larger demand than they could meet on their own, can also help increase market share for Massachusetts products.

Workforce Challenge

- Insufficient services and resources for ramping up food product development

Potential Responses

- Infrastructure and expertise is needed

Recipe development and testing are critical to food product business success. Massachusetts currently has limited food science services that support nascent food product businesses. Increasing this expertise, and these services, can help build successful businesses.

Workforce Challenges

- Massachusetts food manufacturing industry needs infrastructure strengthening.

Potential Responses

- Development of Massachusetts-based food processing equipment manufacturing.

Equipment available for food manufacturing is sized for larger operations than most Massachusetts food manufacturing, particularly food manufacturing that focuses on local food processing and product development. There is a need for equipment that can meet this need.

Outlook and Opportunities for Business Development and Job Growth in Food Manufacturing

Input to the food plan indicates significant interest in the potential for increased Massachusetts food manufacturing business development, expansion and job creation and growth.

One of the solutions to the seasonality of Massachusetts grown food is the use of food processing to capture nutrients and taste in season and preserve them for the non-growing seasons. Massachusetts has an enthusiastic cohort of food manufacturing entities, including shared-use kitchens, that are focused on building processing capacity, though development of new businesses, through strengthening infrastructure and through education and training for a workforce. All of these hold the promise of business and job creation. Some of this is being accomplished now and more is anticipated in the short-term.

Commercial kitchen facilities, or shared-use processing centers, serve as food manufacturing incubators. There are these facilities spread across the state. These are currently spawning new food businesses, and new food business models, including specialty food processing businesses. There is strong interest in supporting food entrepreneurs to develop food manufacturing businesses.

Research into the utility of a shared labor pool and, if warranted, the development of these, would create year-round, full-time employment for food manufacturing workers. There may also be overlap with some positions in food service, at restaurants and at food stores with ready-to-eat offerings.

Food System Work in Farm Inputs

Hard to fill positions / workers needed

- The biggest area of need in the inputs and land parts of the food system is for technical assistance providers in the areas of food waste management (particularly for waste generators), energy efficiency/renewable energy, water quality, farm nutrient management, land access and land use, including conservation stewards.

Areas of potential / current growth, including business development and job creation

- The expansion of the food waste ban holds promise to grow both compost and anaerobic digestion operations.
- Further development of on-farm energy efficiency and renewable energy holds promise to continue the growth of the Massachusetts clean energy sector.

Farm Inputs Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Inputs-food waste		
Compost operator / heavy equipment operator	There is no Bureau of Labor Statistics code for compost operator. 53-1021.01 - Recycling Coordinators gives a sense of some skills and duties. As does 47-2073.00 - Operating Engineers and Other Construction Equipment Operators	The model in use in Massachusetts right now is largely a smaller-scale compost operation run by an owner/operator doing much of the work. As the market grows, and as the effects of the revised food waste ban are assessed, there is anticipation that these kinds of operations will grow. There is a clear need for consultants and technical assistance providers to help to create new compost operations.
Truck driver • Green enhanced skills occupation • Growth forecast in MA • Bright outlook nationally	53-3032.00 - Heavy and Tractor-Trailer Truck Drivers	These jobs are often at waste hauling firms.
Mechanic • Green enhanced skills occupation • Growth forecast in MA	49-3031.00 - Bus and Truck Mechanics and Diesel Engine Specialists	Could be mechanical services are outsourced.
Salesperson, Customer Service staff person, Bookkeeper	Diverse SOC codes	As with other businesses, these occupations are important. They could be combined with other owner/operator responsibilities, or outsourced.
Food service waste management advisor / trainer	There is no Bureau of Labor Statistics for this occupation. 13-1199.05 - Sustainability Specialists and 53-1021.01 - Recycling Coordinators provides some insight into skills and knowledge needed.	This could be part of a non-staff position providing technical assistance with waste management set-up and staff training, or part of a sustainability officer position.

Farm Inputs Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Anaerobic digestion operator	There is no Bureau of Labor Statistics code for Anaerobic digestion operator. 51-8099.03 - Biomass Plant Technicians 11-3051.04 - Biomass Power Plant Managers provide a sense of the skills and duties.	This work is currently most often added to the work of a farm employee.
Inputs - energy		
Technical assistance consultant		The Massachusetts Clean Energy economy has some capacity for on-farm technical assistance. Incentives exist as well. The complexity of regulations and incentives make the services of this kind of consultant critical to the success of the installation.
Inputs - water		
Water quality tester , technical assistance consultant <ul style="list-style-type: none"> Green new and emerging, enhanced skills occupation Growth forecast in Ma Bright outlook nationally 	11-9121.02 - Water Resource Specialists 19-1031.01 - Soil and Water Conservationists 19-4099.02 - Precision Agriculture Technicians	Water quality and nutrient management have been identified as critical issues for agricultural production.
Land-related		
Conservation stewards <ul style="list-style-type: none"> Green new and emerging and increased demand occupations Growth forecast in MA Bright outlook nationally 	19-1031.01 - Soil and Water Conservationists 45-4011.00 - Forest and Conservation Workers	These positions were noted as being important and not nearly as prevalent as they were needed. It was also noted that perhaps funding for them was insufficient. Land trusts sometimes employ dedicated conservation stewards to conduct assessments of land owner's compliance with conservation restrictions.
Land / farmer matchmakers (perhaps an emerging job)	There is no Bureau of Labor Statistics code for this. Certainly 41-9021.00 - Real Estate Brokers provides some information about the skills and knowledge needed.	This position does not exist yet, although the work is done by professionals in real estate, land use and planning, and land trusts. This work would not only include a comprehensive understanding of farmland real estate laws and programs, but also an ability to make connections between individuals for either rent or purchase of land. It could include working with municipal and state-owned land. And, would likely include helping parties to craft agreements that favor both entities.

Inputs value chain-related occupations:

- waste / recycling collection services, including food waste collection services
- anaerobic digestion installer, maintainer, supplier, manufacturer
- utility operators
- HVAC technicians, installers, suppliers and manufacturers
- energy efficiency / renewable energy technicians, installers, system designers, manufacturers

- wetlands consultants

The following categories of workers have an important role to play in creating and supporting development of compost operations, use of water and energy for agriculture.

- municipal officials: planning/zoning, conservation, agricultural commission
- land trust organization staff
- municipal (or private) water treatment staff
- utility operators

Land value chain-related occupations:

- land surveyor
- beginning farmer / farmer trainers and consultants (land agreements/contracts, business start-up, etc.)
- land trust organization staff doing relationship building, fund raising, facilitation, public outreach
- loan and financing professionals
- legal counsel, including real estate and trust attorneys doing land transition planning with an understanding of land transactions, deeds, conservation restrictions (CR) as well as estate planning
- foresters, wetlands scientists,
- GIS and data specialists
- land use planner with knowledge of zoning, bylaws and other activities related to land and development

The following categories of workers have an important role to play in creating and supporting land access:

- municipal officials: agricultural commission, planning / zoning
- regional and municipal economic development officials

Key Farm Inputs and Land Workforce Challenges and Potential Massachusetts Responses

Workforce Challenge

- The market for digestate, the material remaining after anaerobic digestion, is immature, the material is not fully classified and therefore doesn't have a clear market

Potential Responses

- With clarity about the market and market potential for compost and energy produced through anaerobic digestion, food waste processing facilities and value chain businesses can develop

The development of anaerobic digestion in Massachusetts is at an early stage and regulations are either incomplete or unclear. It will be important – if new businesses are to get established – to seek greater clarity around regulatory requirements for anaerobic digestion. Further, it will be important to seek funding for start-up costs and technical assistance to site and operation anaerobic digestion operations and associated other businesses, such as transport.

Workforce Challenge

- Vulnerability of food system enterprises to energy price spikes.

Potential Responses

- Increase energy efficiency and renewable energy sources for food system businesses.
- Increase funding and technical support for installing renewable energy on farms and other food system businesses.
- Provide energy efficiency and renewable energy expertise through technical assistance to food system enterprises and funding for infrastructure (PV panels or whatever the technology is).

Massachusetts food production and processing enterprises are energy intensive, and Massachusetts is at the end of the pipeline, with little current capacity to produce much fossil fuel-based energy. Energy is a significant cost in many production and processing operations; high costs, or the potential for price spikes, can constrain business growth. Supporting farm and food system businesses to be more energy efficient provides cost-savings to the business allowing for the potential of business growth.

Increasing both energy efficiency, either through retro-fit or by design in new construction, helps to insulate food enterprises from price spikes. On-farm and other renewable energy installations also provide protection from price spikes. Both of these have the potential to spur value chain work.

Finally, farm and food system businesses need technical assistance to capture additional savings through energy efficiency and renewable energy installation. Regulations and incentive programs are complex and farm and food business owners and operators need assistance to take advantage of incentive programs.

Workforce Challenge

- Access to land for new farmers continues to be a challenge.

Potential Responses

- Connect older farmers to new/young farmers looking for land.
- Provide information and technical assistance to new farmers around conservation and farm land programs available in Massachusetts.
- Provide information and technical assistance to relevant municipal and regional staff.

Access to land in Massachusetts for new farmers remains one of the biggest challenges to increasing agricultural production. In addition, information about conservation programs that might support or facilitate land access isn't always known by new farmers. There are formal and informal matching services that help to make connections between land owners and farmers. Further development of these services is an important strategy to increase access to land and development of farming enterprises.

Additionally, technical assistance to new farmers that helps them to take advantage of conservation and farm land programming can also increase access to land. And, technical assistance to municipal staff to develop agreements to lease surplus /underutilized municipal land to farmers can also increase access to land.

Workforce Challenge

- Increased enforcement of MS4 stormwater regulations and their effect on agricultural businesses

Potential Responses

- Increase available training on MS4 regulations
- Support further education about nutrient management and water quality

Nutrient management is a critical aspect of food production. The emphasis on meeting stormwater regulations makes regulatory training and education essential.

Outlook and Opportunities for Business Development and Job Growth / Creation in Farm Inputs and Land

Food waste management and anaerobic digester development are showing strong potential for further business development and job growth.

On-farm renewable energy production can help with farm viability and reduce dependence on fossil fuels and associated costs/fluctuations. This could potentially allow for business expansion. It might also increase clean energy installation and maintenance work.

A focused effort to increase access to land and to keep farmland in farming would potentially increase the services that land trusts offer. This would likely expand expertise needed by staff.

Technical assistance with regulatory compliance is critical and it is felt that current staffing levels for these kinds of services are far too low. Additional personnel would be needed at the consulting entity, whether it would be at a nonprofit, for-profit or part of a higher education institution's offerings is unclear.

Food System Work in Food Security, Access and Health

Areas of potential / current growth, including business development and job creation

- The Department of Transitional Assistance and the Department of Public Health have prioritized food security, access and health. Getting the nutrition, access and food preparation information out to clients, through multiple venues will be a big project. It may not create new jobs, but it will require existing staff at these agencies, as well as food security, public education, and healthcare professionals to expand their knowledge and information.
- Massachusetts has passed legislation to create the Massachusetts Food Trust Program which would provide loans, grants and technical assistance to support new and expanded healthy food retailers and local food enterprises in low and moderate income communities. This could include supermarkets, corner stores, farmers markets, mobile markets, community kitchens, food truck commissaries, indoor and outdoor greenhouses and food distribution hubs.

Food security, access and health doesn't neatly match with industry codes, however, in Massachusetts there continues to be great activity in this arena. In the beginning of April, the Massachusetts Department of Transitional Assistance proposal to expand the Healthy Incentives Program to provide a dollar-for-dollar

match for each SNAP dollar spent on targeted fruits and vegetables purchased at farmers’ markets, farm stands, mobile markets, and CSAs statewide was funded by a \$3,401,384 grant from the United States Department of Agriculture, National Institute of Food and Agriculture. The focus of this grant award is an example of the kind of work that falls within this aspect of the Massachusetts food system. The following are occupations whose day-to-day work could have a direct effect on food access, security, and health as it relates to consumption of healthy, fresh and local food.

Food Access, Security, and Health – Related Occupations		
<i>Occupational title</i>	<i>SOC code most applicable</i>	<i>Dynamics and information affecting occupation, including changes to the nature of the work based on data developed during the planning process.</i>
Public benefit system case workers <ul style="list-style-type: none"> • Growth forecast in MA • Bright outlook nationally 	21-1021.00 - Child, Family, and School Social Workers	The Massachusetts Department of Transitional Assistance, and the Department of Public Health both provide training for caseworkers and other staff about food and nutrition. This training is both internally provided.
Nutrition educators (within healthcare, education and food security organizations) <ul style="list-style-type: none"> • growth forecast in MA 	29-2051.00 - Dietetic Technicians And 29-1031.00 - Dietitians and Nutritionists	There is consumer nutrition education provided through UMass Extension, Ascentria, Share Our Strength and Kit Clark Senior Services. This is insufficient given the need for nutrition education in the state.
Community health educators <ul style="list-style-type: none"> • growth forecast in MA • bright outlook nationally 	21-1094.00 - Community Health Workers	Community health educators could play an important role in dissemination information on where to purchase healthy, fresh and/or local food, and how to prepare it.
Farmers market managers	There is no Bureau of Labor Statistics code for farmers market manager. 13-1021.00 - Buyers and Purchasing Agents, Farm Products and 11-1021.00 - General and Operations Managers provide a good sense of the duties and skills for a market manager.	These are largely seasonal positions, although Massachusetts has seen an increase in winter markets. According to the Massachusetts Department of Agricultural Resources: “The primary responsibilities for the Farmers’ Market manager are recruiting farmers, promoting and advertising the market, and managing day-to-day operations including space allocation. Some farmers’ markets are managed and run by an individual in the community. Some are sponsored by community organizations or nonprofits with a hired market manager.” Given the recent USDA grant, farmers markets are one vital element to increase food access across communities and to promote healthy food consumption.
Public school food service directors / food service manager <ul style="list-style-type: none"> • growth forecast in MA 	11-9051.00 - Food Service Managers	Especially as relates to Farm to School and incentives
Emergency food provision staff, both paid and volunteer	There is no Bureau of Labor Statistics code for emergency food provision workers. 11-3071.02 - Storage and Distribution Managers provides a sense of skills and duties as they relate to the position from a food distribution angle.	Fresh, local food donations, as well as produce available through gleaning are increasingly available through emergency food operations.

The following categories of workers have an important role to play in getting information out about the importance of healthy, fresh, local food, access to and preparation and consumption of. There are already

some information campaigns helping to provide this information to the people in these roles. The recent USDA award emphasizes this as an important approach to increased food security, access and health.

- health care workers (physicians, nurses, physician assistants, CNAs, home health aides) need to be educated about healthy, fresh, local food and how to support patients/clients to know what healthy food is, how to obtain, prepare and consume it
- health care food service workers (chefs, dietary aides, kitchen staff) need to be educated about healthy, fresh, local food, how to prepare it particularly within constraints of dietary restrictions.
- public school food service workers (kitchen staff including cashiers, food service directors, food preparers) need to be educated about healthy, fresh, local food, how to prepare it so that it is delicious and how to spur engagement with healthy eating
- public school educators (teachers, aides, administrators), and pre-school caregivers need to be educated about healthy, fresh, local food and the ways it connects to curriculum standards, and need to be trained to teach using healthy food concepts
- staff and managers of agencies providing services to elders
- farmers market managers, managers of community supported agriculture (CSA), mobile market, food pantry managers, meal program managers need to be educated about effective ways to reach populations with limited access to healthy, fresh and local food
- hospital community benefit managers and officers who oversee community benefits for non- profit hospitals
- municipal and regional economic development officials planning staff

Key Food Access, Security, and Health Workforce Challenges and Potential Massachusetts Responses

Workforce Challenge

- Increasing food security and access to healthy nutritious food requires integration of health and nutrition information, including how to access healthy, fresh, local food, into the work of a diverse set of professionals.

Potential Responses

- Develop a coordinated campaign building on earlier programs, existing resources and newly funded programs.
- Provide training to professionals in positions to educate about healthy food choices.

Increasing food security and access to healthy nutritious food requires integration of health and nutrition information, including how to access healthy, fresh, local food, into the work of a diverse set of professionals. Developing a coordinated campaign building on earlier programs, existing resources and newly funded programs will expand the reach of the information. Additionally, examining existing food-related awareness campaigns/efforts and identifying opportunities to co-message in order to reinforce the message and connection.

And, providing professional development and training to professionals in positions to educate about healthy food choices will also expand the reach of nutrition education. This includes, for example, training physicians in the use of food insecurity screening tools and fruit and vegetable prescription programs, training local food aggregators and distributors in how best to work with institutional buyers, training regional planners on the opportunities for pairing transportation planning with increased food access, training case workers and public benefit system managers on how to support increased healthy food access by clients and training emergency food staff on safe food handling for perishable foods.

Workforce Challenge

- Many Massachusetts residents do not get paid a living wage which inhibits their ability to purchase healthy, fresh and/or local food.

Potential Responses

- Support workforce education, training, certification opportunities for all.
- Fund and implement Massachusetts Food Trust.
- Continue to access financing through federal Healthy Food Financing Initiative.

Many Massachusetts residents do not get paid a living wage. This inhibits their ability to purchase healthy, fresh and local food. Food insecurity and limited access to healthy, fresh and local food choices are compounded by poverty. Ensuring that the Commonwealth has a workforce education and training program that provides opportunity to all is a vital component of addressing food insecurity and increasing the health of citizens. Of particular importance are workforce education and training initiatives for workers within the food system, a system notably characterized by part-time, low wage work. Targeting food workers of all kinds is important, spanning occupations including farmworkers, home health aides, school cafeteria workers, food servers, convenience and bodega store clerks and other entry-level food system workers.

The intersection of increased health and business development is being developed nationally as well as in Massachusetts. Models exist that simultaneously prioritize business success and access to healthy food. The new Massachusetts Food Trust (awaiting funding and implementation) and the Healthy Food Financing Initiative provide essential financing for food business development.

Outlook and Opportunities for Business Development and Job Growth / Creation in Food Access, Security, and Health

The most significant opportunity for business development and job growth and creation is through the newly created Massachusetts Food Trust. The availability of financing for food business and organizations will provide much needed support, both financial and technical, to new food system businesses and organizations. It will provide opportunities for food businesses like supermarkets, corner stores, farmers markets, mobile markets, community kitchens, food truck commissaries, indoor and outdoor greenhouses and food distribution hubs.

Next Steps for Occupational Analysis in the Massachusetts Food System

The examination of occupations within the parts of the food system that has been done so far is an important first step. It provides a starting point for further investigation and subsequent analysis. This subsequent investigation and analysis can be informed by the following examples from other efforts to understand industry and occupational changes.

In Massachusetts, for example, the Massachusetts Clean Energy Center commissions a survey to track growth of the Commonwealth's clean energy economy, surveying businesses across the state about their hiring and their thoughts on the sector as a whole. These surveys, done since 2011, provide data and evidence of the economic value of clean energy in Massachusetts. Such data for the Massachusetts food system would be invaluable.

Career pathway articulation and development is an important aspect of workforce development. The articulation and development of health care career pathways have meant that worker needs to understand the value of training and experience and employer needs for ready and qualified workers are better met. Career pathway articulation and development requires engagement of employers, workers and labor to codify the positions, training needed and career pathways possible. The consideration of career pathways in food systems, rather than in just industry or sectors, would represent new territory and a chance for Massachusetts to model innovative workforce development strategies.

Massachusetts has done a remarkable job re-developing its manufacturing sector. Similar attention to food systems in terms of worker education, public awareness and professional development would benefit the Massachusetts food system.

Appendix B

Food System Education and Training Resources Inventory

This inventory of Massachusetts workforce development resources, presents an initial analysis of workforce education, training, and employment resources. This analysis builds from an inventory compiled in the fall of 2014. Education and training resources are defined as: “Multiple types of educational and instructional programming that provide information and skills geared for specific food system occupations, as well as areas relevant to work currently done in or anticipated to be needed in the food system.”

This inventory should be viewed as the first round of accumulating and categorizing this information. At this stage of the inventory process, some kinds of education and training are not included, but should be considered for addition. More details on the relevant programming offered through Massachusetts’ rich network of private higher education institutions may be a further refinement of this inventory, for example. Also, more information about national and regional programming could be added.

Please see Appendix A for analysis of this inventory.

Resources are sorted by Workforce Investment Board Regions.

Towns in Workforce Investment Board Regions

Berkshire: Adams, Alford, Becket, Cheshire, Clarksburg, Dalton, Egremont, Florida, Great Barrington, Hancock, Hinsdale, Lanesborough, Lee, Lenox, Monterey, Mount Washington, New Ashford, New Marlborough, North Adams, Otis, Peru, Pittsfield, Richmond, Sandisfield, Savoy, Sheffield, Stockbridge, Tyringham, Washington, West Stockbridge, Williamstown, Windsor

Boston: City of Boston

Bristol: Attleborough, Berkley, Dighton, Fall River, Mansfield, North Attleborough, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton, Westport

Brockton: Brockton, Abington, Avon, Bridgewater, East Bridgewater, Easton, Hanson, Stoughton, West Bridgewater, Whitman

Cape and Islands: Aquinnah, Barnstable, Bourne, Brewster, Chatham, Chilmark, Dennis, Eastham, Edgartown, Falmouth, Gay Head, Gosnold, Harwich, Mashpee, Nantucket, Oak Bluffs, Orleans, Provincetown, Sandwich, Tisbury, Truro, Wellfleet, West Tisbury, Yarmouth

Central: Auburn, Blackstone, Boylston, Brookfield, Charlton, Douglas, Dudley, East Brookfield, Grafton, Hardwick, Holden, Hopedale, Leicester, Mendon, Milford, Millbury, Millville, New Braintree, North Brookfield, Northborough, Northbridge, Oakham, Oxford, Paxton, Rutland, Shrewsbury, Southbridge,

Spencer, Sturbridge, Sutton, Upton, Uxbridge, Warren, Webster, West Boylston, West Brookfield, Westborough, Worcester

Franklin/Hampshire: Amherst, Ashfield, Athol, Belchertown, Bernardston, Buckland, Charlemont, Chesterfield, Colrain, Conway, Cummington, Deerfield, Easthampton, Erving, Gill, Goshen, Granby, Greenfield, Westhampton, Whately, Williamsburg, Worthington

Greater Lowell: Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, Westford

Greater New Bedford: Acushnet, Dartmouth, Fairhaven, Freetown, Lakeville, Marion, Mattapoisett, New Bedford, Rochester, Wareham

Hampden: Agawam, Blandford, Brimfield, Chester, Chicopee, East, Longmeadow, Granville, Hampden, Holland, Holyoke, Longmeadow, Ludlow, Monson, Montgomery, Palmer, Russell, Southwick, Springfield, Tolland, Wales, West Springfield, Westfield, Wilbraham

Merrimack Valley: Amesbury, Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, West Newbury

Metro North: Arlington, Belmont, Burlington, Cambridge, Chelsea, Everett, Malden, Medford, Melrose, North Reading, Reading, Revere, Somerville, Stoneham, Wakefield, Watertown, Wilmington, Winchester, Winthrop, Woburn

Metro South/West: Acton, Ashland, Bedford, Bellingham, Boxborough, Brookline, Canton, Carlisle, Concord, Dedham, Dover, Foxborough, Framingham, Franklin, Holliston, Hopkinton, Hudson, Lexington, Lincoln, Littleton, Marlborough, Maynard, Medfield, Medway, Millis, Natick, Needham, Newton, Norfolk, Norwood, Plainville, Sharon, Sherborn, Southborough, Stow, Sudbury, Walpole, Waltham, Wayland, Wellesley, Weston, Westwood, Wrentham

North Central: Ashburnham, Ashby, Ayer, Barre, Berlin, Bolton, Clinton, Fitchburg, Gardner, Groton, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, Pepperell, Princeton, Shirley, Sterling, Templeton, Townsend, Westminster, Winchendon

North Shore: Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Lynn, Lynnfield, Manchester-by-the-Sea, Marblehead, Middleton, Nahant, Peabody, Rockport, Salem, Saugus, Swampscott, Topsfield, Wenham

South Shore: Braintree, Carver, Cohasset, Duxbury, Halifax, Hanover, Hingham, Holbrook, Hull, Kingston, Marshfield, Middleborough, Milton, Norwell, Pembroke, Plymouth, Plympton, Quincy, Randolph, Rockland, Scituate, Weymouth

A legend for the abbreviations used in these tables can be found on page 311.

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Manufacturing Technology - Associate Certificate	Berkshire Community College	Pittsfield	Berkshire	college	CC	x	x						x							
Health Science - Associate	Berkshire Community College	Pittsfield	Berkshire	college	CC	x	x						x							
Human Services - Associate	Berkshire Community College	Pittsfield	Berkshire	college	CC	x	x						x							
Human Services - Credit Certificate	Berkshire Community College	Pittsfield	Berkshire	college	CC	x	x						x							
Peace, Justice and Environmental Studies - Associate	Berkshire Community College	Pittsfield	Berkshire	college	CC	x	x						x							
Biology	Mass College of Liberal Arts		Berkshire	college	LNIV	x	x						x							
Environmental Studies	Mass College of Liberal Arts		Berkshire	college	LNIV	x	x						x							
AH Youth Development - Pittsfield Office, UM Extension	Gould Farm	Monterey	Berkshire	special	TF								x							
UM Extension	UM Extension	Pittsfield	Berkshire	youth	EXT	x							x							
Culinary Arts	C. H. McCann Reg. Tech. School (No. Berkshire RVTSD)		Berkshire	youth	VHS		x						x							
Culinary Arts	Fittsfield High School		Berkshire	youth	VHS		x						x							
Culinary Arts	Taconic High School (Pittsfield)		Berkshire	youth	VHS		x						x							
Horticulture	Monument Mountain Regional High School (Berkshire Hills RSD)		Berkshire	youth	VHS		x						x							
Horticulture	Pittsfield High School		Berkshire	youth	VHS		x						x							
Biology - Associate	Bunker Hill Community College	Boston	Boston	college	CC	x							x							
Biology - Associate	Roxbury Community College	Boston	Boston	college	CC	x							x							
Community Health Option - Associate	Bunker Hill Community College	Boston	Boston	college	CC	x							x							
Community Health Option - Credit Certificate	Bunker Hill Community College	Boston	Boston	college	CC	x							x							
Human Services - Credit Certificate	Bunker Hill Community College	Boston	Boston	college	CC	x							x							
Biology BS	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
Environmental Biology - certificate	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
Environmental Science BA	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
Environmental Science BS	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
Clean Energy and Sustainability - graduate certificate	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
Clean Energy and Sustainability - undergraduate certificate	University of Massachusetts - Boston	Boston	Boston	college	LNIV								x							
cooking classes	the Move	Boston	Boston	general	NP								x							
agricultural tours and experiences	the Move	Boston	Boston	general	NP								x							
Garden Education	Boston Natural Areas Network	Boston	Boston	general	NP								x							
Boston Local Food Festival	Sustainable Business Network of Boston	Boston	Boston	general	BL								x							
Information	Green City Growers	Boston	Boston	general	NP								x							
Ontario Bee School	Boston Area Beekeepers Association	Boston	Boston	general	PO								x							
mentoring program	Boston Area Beekeepers Association	Boston	Boston	general	PO								x							
technical assistance	Crop Circle Kitchen	Boston	Boston	professionals	NP								x							
ACF Epicurean Club of Boston	Massachusetts Culinary Association of American Culinary Federation	Boston	Boston	professionals	PO								x							
Culinary Arts Education program	New England Center for Arts and Technology	Cambridge	Boston	youth	NP								x							

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credentialed offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Urban Farming Training Program	Urban Farming Institute	Boston	Boston	youth	NP	x					x	x	x							
Internships	ReVision Urban Farm	Boston	Boston	youth	NP	x					x	x	x	x						
Youth Conservation Corps	Boston Natural Areas Network	Boston	Boston	youth	NP	x					x	x	x	x						
Culinary Arts	Madison Park Technical Voc. High School (Boston)		Boston	youth	VHS		x		x				x	x						
Hospitality Management	Madison Park Technical Voc. High School (Boston)		Boston	youth	VHS				x				x	x						
Appiled Manufacturing - Credit Certificate	Bristol Community College	Fall River	Bristol	college	CC	x	x					x	x							
Automation Technology - Associate	Bristol Community College	Fall River	Bristol	college	CC	x	x					x	x							
At-Sea Monitor Certificate	Bristol Community College	Fall River	Bristol	college	CC	x	x						x							
Environmental Technology - Associate	Bristol Community College	Fall River	Bristol	college	CC	x														
Health Science - Associate	Bristol Community College	Fall River	Bristol	college	CC	x														
scholarships	Massachusetts Farm Bureau Federation		Bristol	college	PO	x														
Agricultural Mechanics	Bristol County Agricultural School		Bristol	youth	VHS								x	x						
Animal Science	Bristol County Agricultural School		Bristol	youth	VHS								x	x						
Culinary Arts	Attleboro High School		Bristol	youth	VHS								x	x						
Culinary Arts	BMC Durfee High School (Fall River)		Bristol	youth	VHS								x	x						
Culinary Arts	Bristol - Plymouth Reg. Tech. School		Bristol	youth	VHS								x	x						
Culinary Arts	Diman Reg. Voc. Tech. School (Greater Fall River RVTSD)		Bristol	youth	VHS								x	x						
Heating, Ventilation, Air Conditioning, Refrigeration	Bristol - Plymouth Reg. Tech. School		Bristol	youth	VHS								x	x						
Heating, Ventilation, Air Conditioning, Refrigeration	Diman Reg. Voc. Tech. School (Greater Fall River RVTSD)		Bristol	youth	VHS								x	x						
Horticulture	Bristol County Agricultural School		Bristol	youth	VHS								x	x						
Human Services - Associate	Massasoit Community College	Brockton	Brockton	college	CC	x														
Science - Associate	Massasoit Community College	Brockton	Brockton	college	CC	x														
Biology BS	Bridgewater State University		Brockton	college	UNIV	x														
Biology BA	Bridgewater State University		Brockton	college	UNIV	x														
Earth Sciences BS	Bridgewater State University		Brockton	college	UNIV	x														
Earth Sciences BA	Bridgewater State University		Brockton	college	UNIV	x														
Geography BS	Bridgewater State University		Brockton	college	UNIV	x														
Geography BA	Bridgewater State University		Brockton	college	UNIV	x														
Health Promotion MED	Bridgewater State University		Brockton	college	UNIV	x														
Health, Health/Family and Consumer Sciences Prek-12, Initial Licensure (Postbaccalaureate Licensure Program)	Bridgewater State University		Brockton	college	UNIV	x														
Culinary Arts	Southeastern Reg. Voc. Tech. School		Brockton	youth	VHS								x	x						
Culinary Arts	Southeastern Reg. Voc. Tech. School (postsecondary)		Brockton	youth	VHS								x	x						
Environmental Science and Technology	Southeastern Regional Vocational Technical High School		Brockton	youth	VHS								x	x						
Heating, Ventilation, Air Conditioning, Refrigeration	Southeastern Reg. Voc. Tech. School		Brockton	youth	VHS								x	x						

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Heating, Ventilation, Air Conditioning, Refrigeration	Southeastern Reg. Voc. Tech. School (postsecondary)	West Barnstable	Brockton	youth	VHS		x	x	x				x							
Horticulture - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Horticulture Technician - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC		x						x							
Environmental Studies - Associate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Environmental Technology - Associate Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Geographic Information Systems - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Health Education - Associate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Health Science - Associate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Human Services - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Landscape Construction - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Landscape Maintenance - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Wastewater Management - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
Water Supply - Credit Certificate	Cape Cod Community College	West Barnstable	Cape and Islands	college	CC								x							
scholarships	Massachusetts Farm Bureau Federation		Cape and Islands	college	PO		x													
Marine Engineering BS	Mass Maritime Academy		Cape and Islands	college	UNIV								x							
Marine Safety and Environmental Protection BS	Mass Maritime Academy		Cape and Islands	college	UNIV								x							
Marine Transportation BS	Mass Maritime Academy		Cape and Islands	college	UNIV								x							
Local Learning Initiative	Sustainable CAPE (Center for Agricultural Preservation and Education)		Cape and Islands	general	BL					x										x
Truro Educational Farmer's Market	Sustainable CAPE (Center for Agricultural Preservation and Education)		Cape and Islands	general	BL															x
Truro Children's Community Garden	Sustainable CAPE (Center for Agricultural Preservation and Education)		Cape and Islands	kids	BL															x
Island Grown Poultry Program	Island Grown - Martha's Vineyard		Cape and Islands	professionals	BL															x
Island Grown Bees	Island Grown - Martha's Vineyard		Cape and Islands	professionals	BL															x
Community Farm Institute	Sustainable Nantucket		Cape and Islands	professionals	BL															x
curriculum toolkit	Island Grown - Martha's Vineyard		Cape and Islands	professionals	BL															x
SEMAC - Southeastern Mass Aquaculture Center	Cape Cod Cooperative Extension		Cape and Islands	professionals	EXT															x
networking and events	Cape Cod Commercial Fishermen's Alliance		Cape and Islands	professionals	NP															x
4H Youth Development - Barnstable Office, UM Extension	UM Extension	Barnstable	Cape and Islands	youth	EXT															x
Island grown apprentice program	Island Grown - Martha's Vineyard		Cape and Islands	youth	BL															x
Youth Council	Sustainable Nantucket		Cape and Islands	youth	BL															x
Culinary Arts	Cape Cod Reg. Tech. School		Cape and Islands	youth	VHS															x

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted Population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credentialed offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Culinary Arts	Martha's Vineyard Regional High School		Cape and Islands	youth	VHS		x		x			x	x							
Culinary Arts	Upper Cape Cod Reg. Tech. School		Cape and Islands	youth	VHS		x		x			x	x							
Environmental Science and Technology	Upper Cape Cod Regional Technical High School		Cape and Islands	youth	VHS					x										
Heating, Ventilation, Air Conditioning, Refrigeration	Cape Cod Reg. Tech. School		Cape and Islands	youth	VHS		x		x			x	x							
Horticulture	Cape Cod Reg. Tech. School		Cape and Islands	youth	VHS		x					x	x							
Horticulture	Upper Cape Cod Reg. Tech. School		Cape and Islands	youth	VHS		x					x	x							
Horticulture	Martha's Vineyard Regional High School		Cape and Islands	youth	VHS		x					x	x							
HVAC Technology - Credit Certificate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x	x		x			x	x							
Manufacturing Technology - Associate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x		x					x							
Manufacturing Technology - Credit Certificate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x		x					x							
Community Health Option - Associate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x							x							
Health Science - Associate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x							x							
Human Services - Associate	Quinsigamond Community College	Worcester	Central Mass	college	CC	x							x							
Biology BS	Worcester State University	Worcester	Central Mass	college	UNIV	x							x							
Geography BS	Worcester State University	Worcester	Central Mass	college	UNIV	x							x							
Health Education BS	Worcester State University	Worcester	Central Mass	college	UNIV	x							x							
Natural Science BS	Worcester State University	Worcester	Central Mass	college	UNIV	x							x							
Public Health BS	Worcester State University	Worcester	Central Mass	college	UNIV	x							x							
community farm programming - North Grafton location	Community Harvest Project	North Grafton	Central Mass	general	CF		x						x							
New Lands Farmer Collective - Worcester networking	Accentria Care Alliance (formerly Lutheran Social Services)	Worcester	Central Mass	professionals	NP			x					x							
technical assistance	Central Mass Grow		Central Mass	professionals	BL			x					x							
4H Youth Development - Worcester Office, LIM Extension	Central Mass Grow		Central Mass	professionals	BL			x					x							
Youth Grow Farms	LIM Extension	Worcester	Central Mass	youth	EXT		x						x							
Animal Science	Regional Environmental Council	Worcester	Central Mass	youth	NP		x						x							
Culinary Arts	Urban Farmers Agricultural Academy	Spencer	Central Mass	youth	NP		x						x							
Culinary Arts	Worcester Technical High School		Central Mass	youth	VHS		x						x							
Culinary Arts	Bay Path Reg. Voc. Tech. School (So. Worcester County RVTSD)		Central Mass	youth	VHS								x							
Culinary Arts	Blackstone Valley Reg. Voc. Tech. School		Central Mass	youth	VHS								x							
Culinary Arts	Worcester Technical High School		Central Mass	youth	VHS								x							
Environmental Science and Technology	Worcester Technical High School		Central Mass	youth	VHS								x							
Heating, Ventilation, Air Conditioning, Refrigeration	Bay Path Reg. Voc. Tech. School (So. Worcester County RVTSD)		Central Mass	youth	VHS								x							
Heating, Ventilation, Air Conditioning, Refrigeration	Blackstone Valley Reg. Voc. Tech. School		Central Mass	youth	VHS								x							
Heating, Ventilation, Air Conditioning, Refrigeration	Worcester Technical High School		Central Mass	youth	VHS								x							
Heating, Ventilation, Air Conditioning, Refrigeration	Blackstone Valley Reg. Voc. Tech. School		Central Mass	youth	VHS								x							
Heating, Ventilation, Air Conditioning, Refrigeration	Worcester Technical High School		Central Mass	youth	VHS								x							

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Horticulture	Worcester Technical High School		Central Mass	youth	VHS															
Hospitality Management	Worcester Technical High School		Central Mass	youth	VHS															
Hadley Equine and Livestock Research and Education Center - UIM Extension	UM Extension		Franklin / Hampshire	professionals	EXT															
Mass Agricultural Experiment Station - UIM Extension	UM Extension	Amherst	Franklin / Hampshire	professionals	EXT															
Water Resources Research Center - UIM Extension	UM Extension	Amherst	Franklin / Hampshire	professionals	EXT															
technical assistance - Food Processing Center	Franklin County Community Development Center	Amherst	Franklin / Hampshire	professionals	NP															
Horticulture	Franklin County Reg., Tech School		Franklin / Hampshire	youth	VHS															
Learn to Farm program	The Farm School	Athol	Franklin / Hampshire	adults	NP															
Food Science - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Agricultural Learning Center - UIM Extension	UM Extension	Amherst	Franklin / Hampshire	college	EXT															
Hadley Equine and Livestock Research and Education Center - UIM Extension	UM Extension	Hadley	Franklin / Hampshire	college	EXT															
Internships / workshops - Hampshire College Farm Center	Hampshire College	Amherst	Franklin / Hampshire	college	NP															
Environmental Science - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Environmental Science - Credit Certificate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Greenfield Community College	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Environmental Studies - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Environmental Studies - Credit Certificate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Farm and Food Systems - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Farm and Food Systems - Credit Certificate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Health Science - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Human Services - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Human Services - Credit Certificate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Peace, Justice and Environmental Studies - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Renewable Energy / Energy Efficiency - Associate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Renewable Energy / Energy Efficiency - Credit Certificate	Greenfield Community College	Greenfield	Franklin / Hampshire	college	CC															
Earth Systems BS	University of Massachusetts - Amherst		Franklin / Hampshire	college	UNIV															
Environmental Design BS	University of Massachusetts - Amherst		Franklin / Hampshire	college	UNIV															
Environmental Science BS	University of Massachusetts - Amherst		Franklin / Hampshire	college	UNIV															
Food Science BS	University of Massachusetts - Amherst		Franklin / Hampshire	college	UNIV															

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Geography BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x				x			x							
Geography BA	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x					x									
Environmental Geography BA	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x					x									
Hospitality Tourism Management BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x			x											
Natural Resources Conservation BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x					x									
Nutrition BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x						x								
Plant, Soil and Insect Sciences BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
Public Health Sciences Program BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
Resource Economics	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x					x									
Sustainable Food and Farming BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
Sustainable Horticulture BS	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
UVM sustainability Studies	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x					x									
Agriculture and Community Forest Management - Associate	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
Sustainable Food and Farming Associate	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
Sustainable Horticulture Associate	University of Massachusetts - Amherst		Franklin/Hampshire	college	UNV	x														
community farm programming	Grow Food Northampton	Grow	Franklin/Hampshire	general	CF						x									
community farm programming	Homesite Community Farm	Amherst	Franklin/Hampshire	general	CF						x									
community farm programming	Just Roots Farm	Greenfield	Franklin/Hampshire	general	CF						x									
community farm programming	North Amherst Community Farm	North	Franklin/Hampshire	general	CF						x									
DIY resources	CSA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	general	BL						x									x
local food calculator	CSA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	general	BL															x
recipes and cooking tips	CSA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	general	BL						x									x
Chicken Coop School	The Farm School	Anthol	Franklin/Hampshire	kids	NP						x									
Agronomy and Vegetable Farm - UM Extension	UM Extension	South Deerfield	Franklin/Hampshire	professionals	EXT						x									
Cold Spring Orchard - UM Extension	UM Extension	Belchertown	Franklin/Hampshire	professionals	EXT						x									
workshops	CSA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	professionals	BL						x									x
technical assistance	CSA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	professionals	BL						x									x

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tip sheets and resources	CISA - Community Involved in Sustaining Agriculture		Franklin/Hampshire	professionals	BL		x	x	x		x				x		x			x
Technical Information, Resources, Tools and Data - Berkshire-Pioneer RC&D Area, Inc.	Natural Resources Conservation Service	Greenfield	Franklin/Hampshire	professionals	USDA		x			x						x	x			
Prospect Meadow Farm	Homestead Community Farm	Hudley	Franklin/Hampshire	special	TF		x				x									
4H Youth Development - Amherst Office, UMI Extension	Service Net	Hatfield	Franklin/Hampshire	special	TF		x													
	UMI Extension	Amherst	Franklin/Hampshire	youth	EXT		x				x									
Agricultural Mechanics	Smith Vocational & Agricultural School		Franklin/Hampshire	youth	VHS		x							x						
Animal Science	Smith Vocational & Agricultural School		Franklin/Hampshire	youth	VHS		x							x						
Culinary Arts	Franklin County Reg. Tech. School		Franklin/Hampshire	youth	VHS		x		x					x						
	Smith Vocational & Agricultural School		Franklin/Hampshire	youth	VHS			x		x										
Horiculture	Smith Vocational & Agricultural School		Franklin/Hampshire	youth	VHS									x						
Aquaculture - Agriculture and Landscape Program	University of Massachusetts - Amherst		Franklin/Hampshire	youth	VHS									x						
	University of Massachusetts - Amherst		Franklin/Hampshire	youth	UNIV									x						
Livestock and Poultry Field Schools	New Entry Sustainable Farming Project	Lowell	Greater Lowell	adults	NP		x				x				x	x				
Explore Farming!	New Entry Sustainable Farming Project	Lowell	Greater Lowell	adults	NP															
Farm Business Planning Class	New Entry Sustainable Farming Project	Lowell	Greater Lowell	adults	NP												x			x
Biology B/M	University of Massachusetts - Lowell		Greater Lowell	college	UNIV					x										
Environmental, Earth, & Atmospheric Science	University of Massachusetts - Lowell		Greater Lowell	college	UNIV						x									
Environmental Health	University of Massachusetts - Lowell		Greater Lowell	college	UNIV					x										
Nutritional Science	University of Massachusetts - Lowell		Greater Lowell	college	UNIV						x									
Public Health BS	University of Massachusetts - Lowell		Greater Lowell	college	UNIV						x									
Gardener Training Program	Mill City Grows	Lowell	Greater Lowell	general	NP		x			x										
Build-a-garden	Mill City Grows	Lowell	Greater Lowell	general	NP		x			x										
Garden Coordinator Institute	Mill City Grows	Lowell	Greater Lowell	general	NP		x			x					x					
Incubator Farm Program	New Entry Sustainable Farming Project	Lowell	Greater Lowell	professionals	NP		x		x	x					x	x				x
World Peas Food Hub	New Entry Sustainable Farming Project	Lowell	Greater Lowell	professionals	NP				x											
Beginning Farmer Network Program, Massachusetts	New Entry Sustainable Farming Project	Lowell	Greater Lowell	professionals	NP															
	New Entry Sustainable Farming Project	Lowell	Greater Lowell	professionals	NP		x		x	x										
information and resources	New Entry Sustainable Farming Project	Lowell	Greater Lowell	professionals	NP		x													
Culinary Arts	Greater Lowell Reg. Tech. School		Greater Lowell	youth	VHS															
Culinary Arts	Nashoba Valley Reg. Tech. School		Greater Lowell	youth	VHS															
Culinary Arts	Shawshem Valley Reg. Tech. School		Greater Lowell	youth	VHS															
Heating, Ventilation, Air Conditioning, Refrigeration	Greater Lowell Reg. Tech. School		Greater Lowell	youth	VHS		x		x	x										

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Heating, Ventilation, Air Conditioning, Refrigeration	Shawshen Valley Reg. Tech. School		Greater Lowell	Youth	VHS		x	x	x	x	x	x	x							
Hospitality Management	Greater Lowell Reg. Tech. School		Greater Lowell	Youth	VHS		x	x	x	x	x	x	x							
Hospitality Management	Nashoba Valley Reg. Tech. School		Greater Lowell	Youth	VHS															
Environmental Policy certificate	University of Massachusetts - Dartmouth	online	Greater New Bedford	college	UNIV	x					x									
Biology	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x					x									
Supply Chain Management	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x		x												
Sustainability	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x					x									
Environmental Policy - certificate	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x					x									
Supply Chain Management and Information Systems - certificate	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x			x											
Marine Biology	University of Massachusetts - Dartmouth		Greater New Bedford	college	UNIV	x					x									
community farm programming	Halfand Farm	North Dartmouth	Greater New Bedford	general	CF	x					x									
community farm programming	Sharing the Harvest Community Farm (Southeast YMCA)	South Dartmouth	Greater New Bedford	general	CF						x									
Local Food 101	SEMAP - Southeastern Mass Agricultural Partnership		Greater New Bedford	general	BL						x									
Cranberry Station - UM Extension	UM Extension	East Warham	Greater New Bedford	professionals	EXT	x					x									
conference	SEMAP - Southeastern Mass Agricultural Partnership		Greater New Bedford	professionals	BL	x					x									
grower education workshop series	SEMAP - Southeastern Mass Agricultural Partnership		Greater New Bedford	professionals	BL	x					x									
networking	SEMAP - Southeastern Mass Agricultural Partnership		Greater New Bedford	professionals	BL	x					x									
Culinary Arts	Greater New Bedford Reg. Voc. Tech. School		Greater New Bedford	youth	VHS						x									
Environmental Science and Technology	Greater New Bedford Regional Vocational Technical High School		Greater New Bedford	youth	VHS						x									
Heating, Ventilation, Air Conditioning, Refrigeration	Greater New Bedford Reg. Voc. Tech. School		Greater New Bedford	youth	VHS						x									
Diesel Technology	School		Greater New Bedford	youth	VHS						x									
Biology BS	Westfield State University		Greater New Bedford	college	UNIV	x					x									
foodWorks@Kate's Kitchen	Providence Ministries	Holyoke	Hampden	adults	NP						x									
HMAC Technology - Credit Certificate	Springfield Technical Community College	Springfield	Hampden	college	CC	x					x									
Pre-Food Science Technology - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x					x									
Pre-Veterinary and Animal Science - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x					x									
Pre-Veterinary and Animal Science - Associate	Springfield Technical Community College	Springfield	Hampden	college	CC	x					x									
Veterinary and Animal Science - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x					x									

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Biology - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x				x			x							
Biology - Associate	Springfield Technical Community College	Springfield	Hampden	college	CC	x								x						
Clean Water Technology - Credit Certificate	Springfield Technical Community College	Springfield	Hampden	college	CC	x														
Environmental Science - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Environmental Science Field Technician - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Geographic Information Systems - Credit Certificate	Springfield Technical Community College	Springfield	Hampden	college	CC	x														
Health and Fitness Management - Credit Certificate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Health and Fitness Specialist - Credit Certificate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Health Education - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Health Science - Associate	Springfield Technical Community College	Springfield	Hampden	college	CC	x														
Landscape Design - Associate	Springfield Technical Community College	Springfield	Hampden	college	CC	x														
Landscape Design - Credit Certificate	Springfield Technical Community College	Springfield	Hampden	college	CC	x														
Natural Resources - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Natural Science - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Nutrition, Holistic - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Pre-Forestry and Environmental - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Science - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Social Equity - Associate	Holyoke Community College	Holyoke	Hampden	college	CC	x														
Environmental Science BS	Westfield State University	Holyoke	Hampden	college	UNIV	x														
community farm programming	Nuestras Raíces	Holyoke	Hampden	general	NP	x														
DIY resources	CISA - Community Involved in Sustaining Agriculture		Hampden	general	BL	x														
local food calculator	CISA - Community Involved in Sustaining Agriculture		Hampden	general	BL	x														
recipes and cooking tips	CISA - Community Involved in Sustaining Agriculture		Hampden	general	BL	x														
New Land's Farmer Collective - West Springfield	Ascendia Care Alliance (formerly Lutheran Social Services)	West Springfield	Hampden	professionals	NP	x														
workshops	CISA - Community Involved in Sustaining Agriculture		Hampden	professionals	BL	x														
technical assistance	CISA - Community Involved in Sustaining Agriculture		Hampden	professionals	BL	x														
tip-sheets and resources	CISA - Community Involved in Sustaining Agriculture		Hampden	professionals	BL	x														
Pioneer Valley Culinary Associates	Massachusetts Culinary Association of American Culinary Federation	Springfield	Hampden	professionals	PO															
Youth Leadership and Development	Gardening the Community	Springfield	Hampden	youth	NP	x														
Youth Organizing Committee	Nuestras Raíces	Holyoke	Hampden	youth	NP	x														
Farm Apprenticeships	Nuestras Raíces	Holyoke	Hampden	youth	NP	x														

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Schoolyard Gardens	Groundwork Somerville	Somerville	Metro North	general	NP	x					x	x	x							
Classroom to Garden	City Sprouts	Cambridge	Metro North	kids	NP	x					x	x								
Summer Youth Intern Program	City Sprouts	Cambridge	Metro North	youth	NP			x												
Garden Youth Crew	Groundwork Somerville	Somerville	Metro North	youth	NP	x					x	x								
Green Team - youth program	Groundwork Somerville	Somerville	Metro North	youth	NP	x					x	x								
Culinary Arts	Cambridge Rindge & Latin		Metro North	youth	VHS		x				x	x								
Culinary Arts	Medford Vocational High School		Metro North	youth	VHS		x				x	x								
Culinary Arts	Northeast Metro. Reg. Voc. School		Metro North	youth	VHS		x				x	x								
Culinary Arts	Somerville High School		Metro North	youth	VHS		x				x	x								
Heating, Ventilation, Air Conditioning, Refrigeration	Medford Vocational High School		Metro North	youth	VHS		x				x	x								
Heating, Ventilation, Air Conditioning, Refrigeration	Northeast Metro. Reg. Voc. School		Metro North	youth	VHS		x				x	x								
Food and Nutrition MS	Framingham State University		Metro South / West	college	UNV	x														
Heating, Ventilation, Air Conditioning, Refrigeration	Framingham State University		Metro South / West	college	UNV						x	x								
Hospitality Management	Trif - County Reg. Voc. Tech. School		Metro South / West	youth	VHS		x				x	x								
Geography BA	Minuteman Reg. High School		Metro South / West	youth	VHS						x	x								
Environmental Science BS	Framingham State University		Metro South / West	college	UNV	x														
Food and Nutrition BS	Framingham State University		Metro South / West	college	UNV						x	x								
Food Science BS	Framingham State University		Metro South / West	college	UNV						x	x								
community farm programming	Brookwood Community Farm	Clinton	Metro South / West	general	CF	x					x	x								
community farm programming	Cozman Community Farms	Lincoln	Metro South / West	general	CF						x	x								
community farm programming	Gaining Ground	Concord	Metro South / West	general	CF						x	x								
community farm programming	Lexington Community Farm	Lexington	Metro South / West	general	CF						x	x								
community farm programming	Littleton Community Farm	Littleton	Metro South / West	general	CF						x	x								
community farm programming	Medway Community Farm	Medway	Metro South / West	general	CF						x	x								
community farm programming	Natick Community Organic Farm	Natick	Metro South / West	general	CF						x	x								
community farm programming	Needham Community Farm	Needham	Metro South / West	general	CF						x	x								
community farm programming	Newton Community Farm	Newton	Metro South / West	general	CF						x	x								
community farm programming	Walham Fields Community Farm	Walham	Metro South / West	general	CF						x	x								
Build-a-garden	The Food Project	Lincoln	Metro South / West	general	NP	x					x	x								
Grow Well, Eat Well, Be Well workshops pre-k and toddler programs	The Food Project	Lincoln	Metro South / West	general	NP						x	x								
summer camp	Land's Sake	Weston	Metro South / West	kids	NP						x	x								
afterschool	Land's Sake	Weston	Metro South / West	kids	NP						x	x								
UM Extension	UM Extension	Walham	Metro South / West	professionals	EXT						x	x								
The Food Project toolbox	The Food Project	Lincoln	Metro South / West	professionals	NP						x	x								
Workshops to Go - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x					x	x								
Food Allergies Training - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV						x	x								
Nutrition Fundamentals - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV						x	x								
Certificate of Excellence in School Nutrition Program - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x					x	x								

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Management Institute - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x				x			x			x				
resources, recipes - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x				x			x			x				
Massachusetts Nutrition Evaluation Tool for Schools - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x										x				
Massachusetts Menu Planning Project - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x										x				
JSI Recipe Analysis Tool - John Stalker Institute	Framingham State University		Metro South / West	professionals	UNV	x										x				
Sage G-rossing Foundation, Inc	Framingham State University		Metro South / West	professionals	UNV	x										x				
Youth programs	The Food Project	Concord	Metro South / West	special	TF		x													
Food Corps	The Food Project	Lincoln	Metro South / West	youth	NP		x													
Youth Led Food Systems and Food Justice Workshops	The Food Project	Lincoln	Metro South / West	youth	NP		x													
Horticulture	Joseph P. Keefe Reg. Tech School (So. Middlesex RVTS)	Lincoln	Metro South / West	youth	NP															
Powisset Farm - cooking classes	Trustees of Reservations	Dover	Metro South / West	youth	VHS															
Diesel Technology - Associate	Massasoit Community College	Canton	Metro South / West	general	NP															
HVAC Technology - Associate	Massasoit Community College	Canton	Metro South / West	college	CC		x													
HVAC Technology - Credit Certificate	Mass Bay Community College	Wellesley Hills	Metro South / West	college	CC		x													
HVAC Technology - Credit Certificate	Massasoit Community College	Canton	Metro South / West	college	CC		x													
Environmental Science - Associate	Mass Bay Community College	Wellesley Hills	Metro South / West	college	CC		x													
Human Services - Associate	Mass Bay Community College	Wellesley Hills	Metro South / West	college	CC		x													
Human Services - Associate	Middlesex Community College	Bedford	Metro South / West	college	CC		x													
Life Sciences - Associate	Middlesex Community College	Bedford	Metro South / West	college	CC		x													
Nutrition Education - graduate certificate	Framingham State University	online	Metro South / West	college	UNV	x														
4H Youth Development - Walpole Office, UM Extension	UM Extension	Walpole	Metro South / West	youth	EXT															
4H Youth Development - Waltham Office, UM Extension	UM Extension	Waltham	Metro South / West	youth	EXT															
Agricultural Mechanics	Norfolk County Agricultural School	Waltham	Metro South / West	youth	VHS		x													
Animal Science	Norfolk County Agricultural School		Metro South / West	youth	VHS		x													
Culinary Arts	Assabet Valley Reg. Voc. Tech. School		Metro South / West	youth	VHS															
Culinary Arts	Blue Hills Reg. Tech. School		Metro South / West	youth	VHS															
Culinary Arts	Joseph P. Keefe Reg. Tech. School (So. Middlesex RVTS)		Metro South / West	youth	VHS															
Culinary Arts	Minuteman Reg. High School		Metro South / West	youth	VHS															
Culinary Arts	Newton North High School		Metro South / West	youth	VHS															
Culinary Arts	Tri-County Reg. Voc. Tech. School		Metro South / West	youth	VHS															
Environmental Science and Technology	Minuteman Regional High School		Metro South / West	youth	VHS															
Heating, Ventilation, Air Conditioning, Refrigeration	Minuteman Reg. High School		Metro South / West	youth	VHS															
Horticulture	Norfolk County Agricultural School		Metro South / West	youth	VHS															

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credentialed offered	Internship / apprenticeship	Professional development	Offers regulatory training / business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Horticulture	Minuteman Reg. High School		Metro South/West	youth	VHS	x					x		x						
Heating, Ventilation, Air Conditioning, Refrigeration	Assabet Valley Reg. Voc. Tech. School		Metro South/West	youth	VHS	x		x	x										
Heating, Ventilation, Air Conditioning, Refrigeration	Blue Hills Reg. Tech. School		Metro South/West	youth	VHS	x		x	x										
Biology BA	Fitchburg State University		North Central	college	UNIV					x									
Biology BS	Fitchburg State University		North Central	college	UNIV	x													
Earth Systems Science BA	Fitchburg State University		North Central	college	UNIV	x													
Earth Systems Science BS	Fitchburg State University		North Central	college	UNIV	x													
Geographic Science and Technology BA	Fitchburg State University		North Central	college	UNIV	x													
Geographic Science and Technology BS	Fitchburg State University		North Central	college	UNIV	x													
refugee immigrant farmer training	Flats Mentor Farm / World Farmers	Lancaster	North Central Mass	adults	NP	x									x	x			
Energy Management - Associate	Mount Wachusett Community College	Gardner	North Central Mass	college	CC	x													
Energy Management - Credit Certificate	Mount Wachusett Community College	Gardner	North Central Mass	college	CC	x													
Manufacturing Technology - Associate	Mount Wachusett Community College	Gardner	North Central Mass	college	CC	x		x											
Human Services - Associate	Mount Wachusett Community College	Gardner	North Central Mass	college	CC	x													
Natural Resources - Associate	Mount Wachusett Community College	Gardner	North Central Mass	college	CC	x													
community farm programming - Harvard location	Community Harvest Project	Harvard	North Central Mass	general	CF	x													
Culinary Arts	Leominster Vocational Technical Education		North Central Mass	youth	VHS														
Heating, Ventilation, Air Conditioning, Refrigeration	Montachusett Reg. Voc. Tech. School		North Central Mass	youth	VHS														
Animal Care - Associate	Leominster Center Technical Education		North Central Mass	youth	VHS														
Animal Care - Credit Certificate	North Shore Community College	Danvers	North Shore	college	CC	x													
Food Science - Associate	North Shore Community College	Danvers	North Shore	college	CC	x													
Manufacturing Technology - Credit Certificate	North Shore Community College	Danvers	North Shore	college	CC	x													
Veterinary and Animal Science - Associate	North Shore Community College	Danvers	North Shore	college	CC	x													
Environmental Studies - Associate	North Shore Community College	Danvers	North Shore	college	CC	x													
Health Science - Associate	North Shore Community College	Danvers	North Shore	college	CC	x													
Nutrition, Holistic - Associate	North Shore Community College	Danvers	North Shore	college	CC	x													
Biology	Salem State University		North Shore	college	UNIV	x													
Geography	Salem State University		North Shore	college	UNIV	x													
Geo-information Science MS	Salem State University		North Shore	college	UNIV	x													
scholarships	Massachusetts Farm Bureau Federation		North Shore	college	PO	x													
Appelton Farm - educational programming tips and information	Trustees of Reservations Northeast Harvest	Ipswich	North Shore	general	NP	x													
			North Shore	general	BL														

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Northeast Harvest Agricultural Conference	Northeast Harvest		North Shore	professionals	BL															
Animal Science	Essex Agricultural & Technical School		North Shore	youth	VHS															
Culinary Arts	Lynn Vocational Technical Institute		North Shore	youth	VHS															
Culinary Arts	North Shore Reg. Tech. School		North Shore	youth	VHS															
Culinary Arts	Peabody High School		North Shore	youth	VHS															
Culinary Arts	Salem High School		North Shore	youth	VHS															
Environmental Science and Technology	Essex Agricultural & Technical School		North Shore	youth	VHS															
Horticulture	Essex Agricultural and Technical School		North Shore	youth	VHS															
Northeastern Massachusetts Aquaculture Center	Salem State University		North Shore	general	UNIV															
community farm programming	Norwell Farms	Norwell	South Shore	general	CF															
educational programming	Trustees of Reservations	Hingham	South Shore	general	NP															
4H Youth Development - Plymouth Office, UM Extension	UM Extension	Plymouth	South Shore	youth	EXT															
Culinary Arts	Old Colony Reg. Voc. Tech. School		South Shore	youth	VHS															
Culinary Arts	Plymouth South High School		South Shore	youth	VHS															
Culinary Arts	Quincy High School		South Shore	youth	VHS															
Culinary Arts	Silver Lake Regional High School		South Shore	youth	VHS															
Culinary Arts	South Shore Reg. Voc. Tech. School		South Shore	youth	VHS															
Culinary Arts	Weymouth High School		South Shore	youth	VHS															
Heating, Ventilation, Air Conditioning, Refrigeration	South Shore Reg. Voc. Tech. School		South Shore	youth	VHS															
Horticulture	Silver Lake Regional High School		South Shore	youth	VHS															
CRAFT: Collaborative Regional Alliance for Farmer Training		western mass		adults	APP															
Eastern Mass CRAFT: Collaborative Regional Alliance for Farmer Training		eastern mass		adults	APP															
North East Workerson Organic Farms	New England Small Farm Institute	statewide		adults	NP															
NOFA MA Beginning Farmer Program	Northeast Organic Farming Association (NOFA)	statewide		adults	NP															
NOFA Mass Apprenticeship Directory	Northeast Organic Farming Association (NOFA)	statewide		adults	NP															
Exploring the Small Farm Dream	New England Small Farm Institute	statewide		adults	NP															
Farmer Occupational Profile	New England Small Farm Institute	statewide		adults	NP															
tools and resources	New England Small Farm Institute	statewide		adults	NP															
graduate student awards	Northeast SARE / Massachusetts University of Massachusetts	statewide		college	NP															
GIS - graduate certificate	University of Massachusetts	online		college	UNIV															
Scholarships	Massachusetts Restaurant Association	statewide		college	PO															
scholarships	New England Farmers Union	statewide		college	PO															
internships	New England Farmers Union	statewide		college	PO															
Food Safety, For Consumers - UM Extension	UM Extension	statewide		general	EXT															
Home Lawn and Garden Program - UM Extension	UM Extension	statewide		general	EXT															

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
MA Citizen Planner Training Collaborative UMI Extension	UM Extension	statewide		general	EXT					x			x							
Miss Woods Forest Conservation Program - UMI Extension	UM Extension	statewide		general	EXT															
Massachusetts Introduced Pests Outreach Project - Division of Crop and Pest Services	Mass Department of Agricultural Resources	statewide		general	MDAR	x														
Composting program	Center for Eco Technology	statewide		general	NP															
workshops and conferences	NorthEast Organic Farming Association (NOFA)	statewide		general	NP															
NOFA Mass Organic Food Guide	NorthEast Organic Farming Association (NOFA)	statewide		general	NP															
Rock Dust Primer	Re-Mineralize the Earth	statewide		general	NP															
resources for community advocates	Mass Farm to School	statewide		general	NP															
in formation	Mass Land Trust Coalition	statewide		general	PO															
kids agriculture activities	Mass Aft in the Classroom	statewide		kids	NP															
Harvest of the Month	Mass Farm to School	statewide		kids	NP															
Harvest for Students Week	Mass Farm to School	statewide		kids	NP															
Crops, Dairy, Equine and Livestock Program - UMI Extension	UMI Extension	statewide		professionals	EXT															
Kindergarten Initiative	Mass Farm to School	statewide		professionals	NP															
Beginning Farmers Resources - UMI Extension	UMI Extension	statewide		professionals	EXT															
Best Management Practices - UMI Extension	UMI Extension	statewide		professionals	EXT															
Conservation Assessment and Prioritization System - UMI Extension	UMI Extension	statewide		professionals	EXT															
Expanded Food and Nutrition Education Program - UMI Extension	UMI Extension	statewide		professionals	EXT															
Farm Business Management - UMI Extension	UMI Extension	statewide		professionals	EXT															
Food Safety, for Farmers - UMI Extension	UMI Extension	statewide		professionals	EXT															
Food Safety, for Industry/Manufacturing - UMI Extension	UMI Extension	statewide		professionals	EXT															
Green Directory - UMI Extension	UMI Extension	statewide		professionals	EXT															
Greenhouse Crops and Floriculture Program - UMI Extension	UMI Extension	statewide		professionals	EXT															
Management Guides - UMI Extension	UMI Extension	statewide		professionals	EXT															
Newsletters - UMI Extension	UMI Extension	statewide		professionals	EXT															
Nutrient Best Management Practices - UMI Extension	UMI Extension	statewide		professionals	EXT															
Pest Alerts/Messages - UMI Extension	UMI Extension	statewide		professionals	EXT															
Pesticide Education Training - UMI Extension	UMI Extension	statewide		professionals	EXT															
Plant Problem Diagnostics - UMI Extension	UMI Extension	statewide		professionals	EXT															

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Risk Management / Crop Insurance Education Program - UM Extension	UM Extension	statewide		professionals	EXT						x						x			
Soil and Tissue Testing Laboratory - UM Extension	UM Extension	statewide		professionals	EXT						x						x			
Storm Water Technologies Clearinghouse - UM Extension	UM Extension	statewide		professionals	EXT						x									
Supplemental Nutrition Assistance Education Program - UM Extension	UM Extension	statewide		professionals	EXT							x								
TownBoard - UM Extension	UM Extension	statewide		professionals	EXT						x									
Making It Count documents and videos	Making It Count	statewide		professionals	EXT						x									
Agricultural Business Training Program - Div of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x										x				
Agricultural Best Management Practices - Div of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
Urban Farming Conference	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
On Farm Strategies to Protect Water Quality - Division of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Agricultural Composting Program - Division of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Concentrated Animal Feeding Operations - Division of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Mass Farm Energy Program, best practices - Division of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
Agricultural Preservation Restriction Program - Division of Agricultural Conservation and Technical Assistance	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Farmer's Market Program - Division of Agricultural Markets	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Farmer's Market Nutrition Program Certification for Farmers and Market Managers - Division of Agricultural Markets	Mass Department of Agricultural Resources	statewide		professionals	MDAR															
Culinary Tourism - Division of Agricultural Markets	Mass Department of Agricultural Resources	statewide		professionals	MDAR															

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Massachusetts Agricultural Fairs Program - Division of Agricultural Markets	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x					x									
Animal Imports and Livestock Markets - Division of Animal Health	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
Milk Marketing Services - Division of Animal Health	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
Poultry Program - Division of Animal Health	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x														
Pesticide Applicator Continuing Education Division of Crop Pest Services	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x					x									
Good Agricultural Practices (GAP) & Good Handling Practices (GHP) Audit Program - Division of Crop and Pest Services	Mass Department of Agricultural Resources	statewide		professionals	MDAR	x					x									
Farm Mentor resources	New England Small Farm Institute	statewide		professionals	NP	x														
tutorials, information and research reports	American Farmland Trust (AFT)	statewide		professionals	NP	x					x									
webinars, information	Carrot Project	statewide		professionals	NP	x					x									
Green Farming - energy efficiency on farms	Center for Eco Technology	statewide		professionals	NP						x									
Green Farming - food waste management and composting programs	Center for Eco Technology	statewide		professionals	NP						x									
NOVA Mass Organic Certification Education	Northeast Organic Farming Association (NOFA)	statewide		professionals	NP	x					x									
educator resources	Mass Ag in the Classroom	statewide		professionals	NP	x					x									
school garden resources	Mass Ag in the Classroom	statewide		professionals	NP	x					x									
conferences and workshops	Mass Ag in the Classroom	statewide		professionals	NP	x					x									
Technical Assistance	Mass Farm to School	statewide		professionals	NP						x									
resources for farmers	Mass Farm to School	statewide		professionals	NP						x									
resources for school food service directors	Mass Farm to School	statewide		professionals	NP						x									
Legal Services Food Hub	Conservation Law Foundation	statewide		professionals	NP	x														
Conservation Advocacy and Representation Services Program	LCA Trust	statewide		professionals	NP						x									
Grocery Stewardship Certification	Manomet Center for Conservation Science	statewide		professionals	NP															
Dairy Agriculture Sustainability	Manomet Center for Conservation Science	statewide		professionals	NP	x														
resources and tools - farmers market managers	Federation of Mass Farmers Markets	statewide		professionals	NP						x									
resources and tools - farmers market farmers	Federation of Mass Farmers Markets	statewide		professionals	NP															
resources and tools - farmers market host communities	Federation of Mass Farmers Markets	statewide		professionals	NP															
model documents and publications	Equity Trust	statewide		professionals	NP	x					x									
technical assistance	Equity Trust	statewide		professionals	NP	x					x									

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Information and resources	Neighboring Food Co-op Association	statewide		professionals	NP															
School Meals Cookbook	Project Bread	statewide		professionals	NP															
Chefs in Headstart	Mass Association of Agricultural Commissions	statewide		professionals	NP															
Information	New England Vegetable and Berry Growers	statewide		professionals	NP															
networking and conference	Massachusetts Food Association	statewide		professionals	NP															
conference	American Commodity Distribution Association	statewide		professionals	PO															
national conference	Massachusetts Dietetic Association	statewide		professionals	PO															
meetings and events	Massachusetts Environmental Health Association	statewide		professionals	PO															
Food Allergy Training	Massachusetts Environmental Health Association	statewide		professionals	PO															
self study guides for registered sanitarian	Massachusetts Environmental Health Association	statewide		professionals	PO															
Information and resources	Massachusetts Farm Bureau Federation	statewide		professionals	PO															
Food Safety for Food Workers - mini lessons	Massachusetts Partnership for Food Safety Education	statewide		professionals	PO															
Massachusetts Food Equipment and Safety Training	Massachusetts Partnership for Food Safety Education	statewide		professionals	PO															
"Clean" lessons, posters and teaching tips	Massachusetts Partnership for Food Safety Education	statewide		professionals	PO															
"Separate" lessons, posters and teaching tips	Massachusetts Partnership for Food Safety Education	statewide		professionals	PO															
"Cook and Chill" lessons, posters and teaching tips	Massachusetts Partnership for Food Safety Education	statewide		professionals	PO															
Seminars and workshops	Massachusetts Restaurant Association	statewide		professionals	PO															
Alcohol Server Training	Massachusetts Restaurant Association	statewide		professionals	PO															
Food Protection Sanitation Training	Massachusetts Restaurant Association	statewide		professionals	PO															
Online Food Handler's Course	Massachusetts Restaurant Association	statewide		professionals	PO															
Pro Start @ School-to-Career annual convention	Massachusetts Restaurant Association	statewide		professionals	PO															
network	National Young Farmers Coalition: Massachusetts	statewide		professionals	PO															
ongoing cooperative education	New England Farmers Union	statewide		professionals	PO															
farmer leadership programming	New England Farmers Union	statewide		professionals	PO															
lesson plans	New England Farmers Union	statewide		professionals	PO															
networking and events	Northeast Dairy Producers Alliance	statewide		professionals	PO															
resources	School Nutrition Association of Massachusetts	statewide		professionals	PO															
conferences	School Nutrition Association of Massachusetts	statewide		professionals	PO															

Program	Organization	Location (town, statewide or online)	Workforce Investment Board Region	Targeted population	Type	Financial aid	Production	Processing	Distribution	Food service	Inputs	Health, nutrition, access	Hands-on training	Credential offered	Internship / apprenticeship	Professional development	Offers regulatory training	Offers business development / business technical	Offers land access / land conservation assistance	Offers guidance on local food procurement
Fundamentals for Conservation Commissioners - Certificate Training Program	Mass Association of Conservation Commissions	statewide		professionals	PO					x					x					
Technical assistance and information Programs	Firm Service Agency	statewide		professionals	USDA	x									x					
Technical Assistance - Cooperative Programs	Rural Development - Amherst	statewide		professionals	USDA	x									x					
Technical Information, Resources, Tools and Data - Patriot R&D Council, Inc.	Natural Resources Conservation Service	Westford		professionals	USDA	x				x						x				
information on policies and regulations tools and resources	The Wellness Solution	statewide		professionals	NP				x						x					
Chefs in Schools	The Wellness Solution	statewide		professionals	NP				x						x					
Massachusetts chapter, Future Farmers of America	Project Bread	statewide		professionals	NP				x						x					
	Future Farmers of America	statewide		youth	NP	x				x		x								
	Real Food Campaign	statewide			NP				x		x									
	Red Tomato	statewide			NP				x		x									
resources and tools	Lincoln Institute of Land Policy	statewide			NP				x		x									

Legend

- Type
- UNIV public university
- APP apprenticeship
- VHS vocational high school
- CC community college
- EXT UMass Extension
- BL Buy Local organization
- MDAR MA Department of Agricultural Resources
- USDA United States Department of Agriculture
- CF community farm
- TF therapeutic farm
- PO professional organizations
- NP non profit

- Production all kinds of food production: land-based, greenhouse, fisheries and aquaculture
- Processing turning raw ingredients into food products
- Distribution movement of food from place of production/processing to place of sales (incl. retail, institutional and restaurant)
- Food Service culinary and hospitality in retail, institutional and restaurant settings
- Inputs land, water, nutrients, energy; the inputs necessary for production
- Health, Nutrition and Access addressing food insecurity and improving access to healthy, fresh, local food

Appendix C

Methodology for Assembling Food System Establishments, Employment, and Gross State Product



Methodology for Assembling Food System Establishments and Employment

Goal 17 (www.vtfoodatlas.com/getting-to-2020/17-jobs-and-establishments) of the Farm to Plate Strategic Plan aggregates data from three major sources to measure food system establishments and employment in Vermont. These estimates are considered conservative because they do not account for government agencies, educational institutions, and nonprofit organizations. Note that your state may have additional categories (e.g., related to seafood) that Vermont does not, and you can develop finer gradations by looking for 5-digit NAICS codes.

Here's how we did it.

- ▶ **USDA Census of Agriculture:** The Census of Agriculture comes out every 5 years (e.g., 1997, 2002, 2007, 2012) so this data will always have gaps. We use 2002 data from 2002 through 2006; we use 2007 data from 2007 to 2011; and so on.
- ▶ **U.S. Bureau of Labor Statistics:** The Bureau of Labor Statistics publishes a [Quarterly Census of Employment and Wages](#) that covers 98% of U.S. jobs. You may choose to use the quarterly data but we use the annual figure in our Goal 17 indicator.
- ▶ **U.S. Census Bureau:** The Census Bureau publishes an annual series called [Nonemployer Statistics](#) that provides data for businesses that have no paid employees (i.e., sole proprietors).

You need to look for "covered" employment (i.e., employment covered by unemployment insurance) through the U.S. Bureau of Labor Statistics and "noncovered" or "nonemployer" employment (i.e., establishments that have no paid employees or don't pay unemployment insurance) through the U.S. Census Bureau to provide a realistic picture of establishments and employment in your state. Both data sources come out annually with about a one year time lag.

You can find additional information about the Farm to Plate Initiative, including other goals and indicators, on the Vermont Food System Atlas: www.vtfoodatlas.com.



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Classifications and Sources

	CATEGORY	DESCRIPTION	SOURCE
FOOD PRODUCTION	FARMS	Includes all types of farms.	USDA Census of Agriculture www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1_Chapter_1_State_Level/ . Find your state, then click on Table 1 .
	FARM OPERATORS	A person who operates a farm, either doing the work or making day-to-day decisions about such things as planting, harvesting, feeding, and marketing.	USDA Census of Agriculture www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1_Chapter_1_State_Level/ . Find your state, then click on Table 70 .
	HIRED FARM WORKERS	Total hired farm workers, including paid family members.	USDA Census of Agriculture www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1_Chapter_1_State_Level/ . Find your state, then click on Table 70 .
RETAIL OUTLETS	FOOD AND BEVERAGE STORES	Includes cashiers, butchers, meat cutters, supervisors, stock clerks, order fillers, and food preparation workers at grocery stores, specialty food stores, and beer, wine, and liquor stores.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . Find your state, then search by NAICS code 445 . U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 445 .



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	CATEGORY	DESCRIPTION	SOURCE
RETAIL OUTLETS	FOOD SERVICE AND DRINKING PLACES	Includes cooks, waiters, waitresses, supervisors, and food preparation workers at full service restaurants, limited service eating places (e.g., fast food), special food services (e.g., catering), and drinking places (e.g., bars).	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en Find your state, then search by NAICS code 722 .
			U.S. Census Bureau, www.census.gov/econ/nonemployer/ Find your state, then search by NAICS code 722 .
MANUFACTURING	Food MANUFACTURING	Includes bakers, supervisors, batch-makers, packaging and filling machine operators and tenders, slaughterers and meat packers at all types of food manufacturing facilities.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en NAICS code 311 . U.S. Census Bureau, www.census.gov/econ/nonemployer/ Find your state, then search by NAICS code 311 .
	BEVERAGE AND TOBACCO PRODUCT MANUFACTURING	Includes drivers, supervisors, sales representatives, packaging and filling machine operators and tenders, and others at facilities that manufacture nonalcoholic beverages, alcoholic beverages, and distilled alcoholic beverages.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en NAICS code 312 . U.S. Census Bureau, www.census.gov/econ/nonemployer/ Find your state, then search by NAICS code 312 .



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	CATEGORY	DESCRIPTION	SOURCE
FARM INPUTS	SUPPORT ACTIVITIES FOR CROP PRODUCTION	Includes agricultural equipment operators, graders, sorters, laborers, and supervisors.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 1151. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 1151.
	SUPPORT ACTIVITIES FOR ANIMAL PRODUCTION	Includes agricultural equipment operators, graders, sorters, laborers, and supervisors.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 1152. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 1152.
	SUPPORT ACTIVITIES FOR FORESTRY	Includes equipment operators, graders, sorters, laborers, and supervisors.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 1153. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 1153.
	VETERINARY SERVICES	Includes veterinarians. Note: We have no way to separate out large animal veterinarians compared to domestic animal veterinarians. These values will be overestimated.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 54194. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 54194.



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	CATEGORY	DESCRIPTION	SOURCE
DISTRIBUTION	GROCERY AND RELATED PRODUCT MERCHANT WHOLESALERS	Includes sales representatives, laborers, shipping, receiving, and traffic clerks, truck drivers, and more.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 4244. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 4244.
	FARM PRODUCT RAW MATERIAL MERCHANT WHOLESALERS	Includes sales representatives, laborers, shipping, receiving, and traffic clerks, truck drivers, and more.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 4245. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 4245.
	FARM SUPPLIES MERCHANTS WHOLESALERS	Includes sales representatives, laborers, shipping, receiving, and traffic clerks, truck drivers, and more.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 42491. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 42491.
	REFRIGERATED WAREHOUSING AND STORAGE	Includes truck and tractor operators, laborers, shipping, receiving, and traffic clerks, stock clerks and order fillers, and transportation, storage, and distribution managers.	U.S. Bureau of Labor Statistics, http://data.bls.gov/pdq/query-tool.jsp?survey=en . NAICS code 49312. U.S. Census Bureau, www.census.gov/econ/nonemployer/ . Find your state, then search by NAICS code 49312.



Vermont Sustainable Jobs Fund
Accelerating the Development of Vermont's Green Economy

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Gross State Product, Methodology and Limitations

Food System economic impact on the Gross State Product (GSP) was calculated using Bureau of Economic Analysis (BEA) data by industry, supplemented with data from InfoUSA.

According to BEA's definition of Gross Domestic Product (GDP) by state, or GSP: An industry's GDP by state, or its value added, in practice, is calculated as the sum of incomes earned by labor and capital and the costs incurred in the production of goods and services. That is, it includes the wages and salaries that workers earn, the income earned by individual or joint entrepreneurs as well as by corporations, and business taxes such as sales, property, and Federal excise taxes—that count as a business expense. For more details, see BEA's detailed methodology here: <http://bea.gov/regional/pdf/gsp/GDPState.pdf>

Because industry data from BEA is aggregated to broad industry codes, that in some cases do not distinguish food industries from non-food industries (wholesale and retail are two examples), this analysis uses supplementary business data from InfoUSA to determine the share of industry sales specific to food in broader industry groups. InfoGroup data provides industry category details at the 8-digit NAICS code level, as well as business sales estimates. So, for example, to determine the share wholesale industry sales specific to the food system, InfoGroup data is used to calculate the total sales for wholesale industries related to food, such as Grocery Merchant Wholesalers, Fish and Seafood Merchant Wholesalers, Farm Supplies Merchant Wholesalers, and others (full list below in green), as a share of total sales for all wholesale businesses (NAICS 2-digit category 42). The resulting percentage of sales, which in this example turns out to be 19.2%, is used as a proxy for the food industry's share of GSP from each broader industry. The dollar amount from BEA is multiplied for each industry for each year by this percent, as calculated for each industry. The methodology for this analysis was informed by a Food Systems New England report published by the University of New Hampshire called *Home Grown: The Economic Impact of Local Food Systems in New Hampshire, Current Status and Prospects for Growth* (<http://www.agriculture.nh.gov/publications-forms/documents/home-grown-report.pdf>).

Detailed Industry Codes:

The industry records highlighted in yellow below are, by definition, food system industries, and no share needed to be applied. The industry records highlighted in orange are those for which shares are applied, as calculated by the above methods.

NAICS	Industry	Food System % of Industry
111-112	Farms	100%
113-115	Forestry, fishing, and related activities	100%
311-312	Food and beverage and tobacco products manufacturing	100%
325	Chemical products manufacturing	0.19%
42	Wholesale trade	19.2%
44-45	Retail trade	14.6%
48-49	Transportation and warehousing	0.50%

54,55,56	Professional and business services	1.30%
722	Food services and drinking places	100%
81	Other services, except government	0.02%

The detailed industries, derived from InfoGroup data included in each of these broader industries are listed below, organized by broader food system categories.

These detailed industry codes were used to identify food system share of sales from 2011 InfoGroup data:

WHOLESALE, WAREHOUSING AND STORAGE	NAICS Detail
General Line Grocery Merchant Wholesalers	42441
Packaged Frozen Food Merchant Wholesalers	42442
Dairy Product (except Dried or Canned) Merchant Wholesalers	42443
Poultry and Poultry Product Merchant Wholesalers	42444
Confectionery Merchant Wholesalers	42445
Fish and Seafood Merchant Wholesalers	42446
Meat and Meat Product Merchant Wholesalers	42447
Fresh Fruit and Vegetable Merchant Wholesalers	42448
Other Grocery and Related Products Merchant Wholesalers	42449
Grain and Field Bean Merchant Wholesalers	42451
Livestock Merchant Wholesalers	42452
Other Farm Product Raw Material Merchant Wholesalers	42459
Farm Supplies Merchant Wholesalers	42491
Warehouses - cold storage	49312003
Grain Elevators	49313003
RETAIL	NAICS Detail
Supermarkets and Other Grocery (except Convenience) Stores	44511
Convenience Stores	44512
Meat Markets	44521
Fish and Seafood Markets	44522
Fruit and Vegetable Markets	44523
Baked Goods, Confectionary and Nut, and Other Specialty Food Stores	44529
Beer, Wine, and Liquor Stores	44531
Warehouse Clubs and Supercenters	45291
MANUFACTURING	NAICS Detail
Fertilizers-manufacturers	32531102
Compost (Mfrs)	32531402
Pesticides & Ag Chemicals Nec (Mfrs)	32532009
AG SUPPORT	NAICS Detail
Animal Hospitals	54194002
Veterinarian Emergency Services	54194007
Veterinarian Referral/information Svcs	54194008
Veterinarians	54194009
Farm Equipment-repairing & Parts	81131011
Refrigerating Equip-commercial-service	81131032
Tractor-repairing & Service	81131038

Note on Data Sources

This analysis uses Bureau of Economic Analysis data as the base for estimating the food industry's share of the Gross State Product. BEA publishes industry GSP figures on an annual basis according to their standard methods. While the industry-level detail provided by BEA is the best available data for understanding the economic impact of specific industries in relation to the overall state economy, there are limitations to isolating sub-industry impacts. For example, while this analysis is able to estimate the economic impact of the overall food system, it does not allow for detailed understanding of the seafood industry's economic impact, because seafood-specific sub-sectors are rolled into broader industry groups. There are other sources that do calculate more specific sector impacts. The National Oceanic and Atmospheric Administration (NOAA), for example, publishes economic impact data specific to the seafood industry, including employment impacts, income impacts, sales impacts, and value added impacts. NOAA's value added impacts are most similar to BEA's GDP, however, they are not identical, due to use of different data inputs and methodologies. The figures published by NOAA are useful when examining the seafood sector on its own, and for watching trends in the Massachusetts seafood sector over time and relative to other states. However, when examining the relative economic impact of the overall food system, BEA is the most appropriate source.

Appendix D

Stakeholder Engagement

Introduction

Stakeholder engagement for the Massachusetts Local Food Action Plan was a broad, statewide process that directly involved more than 1,500 people in more than 80 meetings, presentations, and interviews in all regions of the Commonwealth. Another 1,000 or more people were indirectly engaged and received information about the planning process at public events and conferences. Highlights include:

- More than 400 participants at eight public forums in different regions of the state.
- Approximately 270 people who participated in eight statewide issue-specific working groups that met a total 29 times.
- More than 1,000 people indirectly engaged at 16 events held by other organizations at which Food System Plan information tables were set up or other outreach efforts made.
- At least 242 people who are low-income and/or residents of color directly engaged.
- At least 120 people engaged or interviewed who are members of municipal food policy councils, government agencies, farm and food businesses, hunger relief agencies, and other organizations directly involved in the food system.
- 32 Project Advisors who met eight times to provide general oversight and guidance to the plan.
- Seven project status reports to the Massachusetts Food Policy Council (MFPC) and its Advisory Committee.
- Two rounds of comment opportunities on preliminary drafts of the plan.

For information about the nature and content of the comments that were obtained through the stakeholder engagement process, please refer to the Existing Conditions and Goals and Recommendations Chapters.

Regional Public Forums

A series of eight general public forums with total attendance of more than 400 individuals were held in different regions throughout Massachusetts between September 2014 and April 2015.

Date	Region(s)	Location	Host(s)	Event/Venue	Attendees
10/6/14	South Coast/ Cape/Islands	New Bedford	Southeast Mass. Food Security Network	Buttonwood Senior Center	38
10/11/14	Greater Boston	Boston	Northeastern Real Food Challenge	Northeastern University Reggie Lewis Center	94

10/15/14	Central Massachusetts	Worcester	Worcester Food-Active Living Policy Council	Worcester Public Library	20
10/22/14	North Shore/Merrimack Valley	Lawrence	Groundwork Lawrence	Lawrence Senior Center, Mayor's Health Task Force	35
10/24/14	Statewide	Boston	Mass. Dept. of Agriculture	State House	59
2/3/15	Pioneer Valley	Amherst	UMass Real Food Challenge	Umass Amherst Campus Center	110
2/24/15	Berkshires	Pittsfield	Berkshire Grown, Berkshire Regional Planning Com.	Berkshire Athenaeum	26
4/15/15	Pioneer Valley	Holyoke	PV Grows	PV Grows Annual Meeting	25
				TOTAL (REGIONAL EVENTS)	407

Working Groups

Eight working groups, led by volunteer members of the Project Advisor Committee, contributed significantly to the stakeholder engagement process by providing participants with opportunities to focus on topics in which they held expertise. These groups held a total of 29 separate in-person meetings between December 2014 and April 2015, involving approximately 270 people. Each group identified key issues in their respective sectors and drafted findings and recommendations to address them. Invitations to participate in working groups were issued widely to individuals, public agencies, and organizations. All meetings were publicized on the project website and open to the public. In addition, all Project Advisors and members of the MFPC were invited to participate in working group meetings on topics of relevance to their fields.

Following are summaries of the membership and meetings of the eight working groups. The findings and recommendations of these groups are incorporated in the Existing Conditions and Goals and Recommendations chapters of this plan.

Working Group 1 – Farming

Leader: Brad Mitchell, Massachusetts Farm Bureau

Intern: Samantha Kelly, Friedman School of Nutrition Science and Policy, Tufts University

Meetings (6):

- 2/13/15, Marlborough, MA Farm Bureau office
- 3/6/15, Marlborough, MA Farm Bureau office
- 3/20/15, Marlborough, MA Farm Bureau office
- 4/2/15, Marlborough, MA Farm Bureau office
- 4/8/15, Marlborough, MA Farm Bureau office

- 4/9/15, Marlborough, MA Farm Bureau office

Participants (28):

- Tom Akin, Natural Resources Conservation Service
- Mark Amato, Amato Farm
- Katie Campbell Nelson, UMass Extension
- Glenn Card, Beekeeper
- Ben Clark, Clarkdale Fruit Farms
- Chris Clarke, Natural Resources Conservation Service
- Cris Coffin, American Farmland Trust
- Tom Colyer, Massachusetts Federation of Sheep Associations
- Leslie Cox, Trustees of Reservations
- Lisa Damon, Massachusetts Farm to School
- Ed Davidian, Davidian Brothers Farm
- Alex Dowse, Massachusetts Farm Bureau
- Judith Gillan, New England Small Farm Institute
- David Hanson, Massachusetts Association of Dairy Farmers
- Jennifer Hashley, New Entry Sustainable Farming Project
- Mary Jordan, Massachusetts Department of Agricultural Resources
- Phil Korman, Communities Involved in Sustaining Agriculture (CISA)
- Frank Mangan, UMass Extension
- Ken Nicewicz, UMass Extension
- James O'Brien, Topsfield Fair
- Glenn Oliveira, Northeast Organic Farming Association, Massachusetts Chapter
- Lindsay Philips, Tufts University
- Dianna Provencher, Little Bit Farm
- Dave Shepard, Massachusetts Association of Dairy Farmers
- Clarence Snyder, Mary Go Round Farm
- Mo Tougas, Tougas Farm
- Steve Verrill, Verrill Farm
- Brian Wick, Cape Cod Cranberry Growers' Association

Working Group 2 – Urban Agriculture

Leaders: Ruth Goldman, Merck Family Fund; Pat Spence, Urban Farming Institute

Meetings (4):

- 11/20/14, Charlton Public Library
- 2/24/15, Charlton Public Library
- 4/1/15, Charlton Public Library
- 4/8/15, Charlton Public Library

Participants (78):

- Qamaria Amutul-Wadud, Gardening the Community
- Nicki Anderson, Trustees of Reservations/BNAN
- Danielle Andrews, The Food Project
- Rose Arruda, Massachusetts Department of Agricultural Resources
- Jessie Banhazl, Green City Growers
- Amanda Barker, Nuestro Huerto Farm
- Zorraia Barros, UMass Extension-Ethnic Crops
- Jess Bloomer, Groundwork Somerville
- Stacie Brimmage, Regional Environmental Council
- Casey Burns, Regional Environmental Council
- Robyn Burns, The Food Project
- Ashley Carter, New Lands Farm
- Amanda Cather, Waltham Fields Community Farm
- Kim Cherry, Urban Farming Institute
- Derek Christianson, Brix Bounty Farm, Dartmouth
- Anne Cody, Nuestras Raices
- Hannah Converse, New Lands Farm & Nuestro Huerto
- Lindsay Cotter-Hayes, GroundWork Lawrence
- Conrad Crawford, The Trustees of Reservations
- Nataka Crayton, Urban Farming Institute
- Grace Duffy, Regional Environmental Council
- Veronica Eady, Healthy Communities & Environmental Justice, Conservation Law Foundation
- Kevin Essington, Trust for Public Land
- Laura Feddersen, Green City Growers
- Matthew Feinstein, Worcester Roots Project
- Steve Fischer, Regional Environmental Council
- Shani Fletcher, ReVision Urban Farm
- Tamika Francis, Health Resources in Action
- Bruce Fulford, City Soil & Greenhouse
- Andy Goldberg, Grant Writer
- Mary Harman, Boston Food Forest Coalition
- Linton Harrington, SE Trustees of Reservations
- J. Harrison, The Food Project
- Jennifer Hashley, New Entry Farm Sustainable Farming Project
- Ali Ibrahim, Gardening the Community
- Betsy Johnson, Massachusetts Food Policy Alliance, Springfield Food Policy Council
- Xavier Johnson, Urban Farmers Agricultural Academy
- Julius Jones, Worcester Roots Project

- Tristram Keefe, City Growers
- Andrew Kendall, Kendall Foundation
- Hannah Kiefer, The Food Project
- Lena King, The Best Bees Company
- Sutton Kiplinger, The Food Project
- George Lee, Urban Farming Institute
- John Lee, Allandale Farm
- Jess Liborio, The Food Project
- Glynn Lloyd, City Growers
- Christopher Mables, Urban Farming Institute
- Chris Mancini, GroundWork Somerville
- Frank Mangan, UMass Extension Ethnic Crops researcher
- Heather McMann, GroundWork Lawrence
- Edith Murname, City of Boston Office of Food Initiatives
- Kwabena Nkromo, Boston Food & Farm
- Carrie Novak, USDA
- Elizabeth O’Gilvie, Bay State Health
- Roman Pham, The Best Bees Company
- Benneth Phelps, The Carrot Project
- Anne Richmond, Gardening the Community
- Hilde Roque, Nuestras Raices
- Johanna Rosen, Farms for Farmers Program Equity Trust
- Daniel Ross, consultant (formerly Wholesome Wave and Nuestras Raices)
- Jenny Rushlow, Food and Farm Program Conservation Law Foundation
- Catherine Sands, Fertile Ground
- Tom Schmitt, The Best Bees Company
- Liz Sheehan Castro, Worcester Food and Active Living Policy Council
- Sara Shostak, Brandeis University
- Julia Sisson, Mill City Grows
- Lydia Sisson, Mill City Grows C/O YWCA
- Marilyn Ray Smith, Child Support Enforcement Division, MA Department of Revenue (retired)
- Patricia Spence, Urban Farming Institute
- Dorothy Suput, The Carrot Project
- Vidya Tikku, Boston Region Trustees of Reservations/BNAN
- Jason Torres, Italian Home for Children
- Sara Tower, New Lands Farm & Nuestro Huerto
- John Waite, Franklin County Community Development Corporation
- Bobby Walker, Urban Farming Institute
- Noah Wilson-Rich, The Best Bees Company

- Cathy Wirth, The Trustees of Reservations
- Barbara Zheutlin, Berkshire Grown

Working Group 3 – Land

Leader: Cris Coffin, American Farmland Trust

Meetings (3):

- 1/15/15 – Charleton Public Library
- 3/20/15 – Charleton Public Library
- 4/10/15 – Marlborough, Massachusetts Farm Bureau Office

Participants (32):

- Rick Chandler, Massachusetts Department of Agricultural Resources
- Christine Clarke, USDA-NRCS
- Frank DiLuna, Massachusetts Farm Bureau Federation
- Jennifer Dubois, The Trustees of Reservations/Southeast
- Kevin Essington, Trust for Public Land
- Noelle Fogg, New Entry Sustainable Farming Project
- Kurt Gaertner, Massachusetts Executive Office of Energy and Environmental Affairs
- Judy Gillan, New England Small Farm Institute
- Ruth Goldman, Merck Family Foundation
- Sue Guiducci, Westport Agricultural Commission
- Jennifer Hashley, New Entry Sustainable Farming Project
- Barbara Hobson, Massachusetts Department of Agricultural Resources
- Rich Hubbard, Franklin Land Trust
- Jon Jaffe, Farm Credit East
- Vanessa Johnson, Essex County Greenbelt Association
- Gerard Kennedy, Massachusetts Department of Agricultural Resources
- Jeff LaFleur, Massachusetts Association of Conservation Districts
- Bob O'Connor, Massachusetts Executive Office of Energy and Environmental Affairs
- Kathy Orlando, Sheffield Land Trust
- Mike Pineo, Massachusetts Association of Agricultural Commissions
- Jamie Pottern, Mount Grace Land Conservation Trust
- Heidi Ricci, Massachusetts Audubon Society
- Celia Riechel, Massachusetts Executive Office of Energy and Environmental Affairs
- Johanna Rosen, Equity Trust
- Kathy Ruhf, Land for Good
- Jenny Rushlow, Conservation Law Foundation
- Jennifer Ryan, The Trustees of Reservations
- Laura Sapienza-Grabski, Massachusetts Association of Agricultural Commissions

- Warren Shaw, Agricultural Land Preservation Committee
- Joe Schoenfeld, UMass Center for Food and Agriculture
- Trish Settles, Central Massachusetts Regional Planning Commission
- Brian Wick, Cape Cod Cranberry Growers Association

Working Group 4 – Fishing

Leader: Valerie Nelson, Water Alliance

Intern: Shane Solar-Doherty, Friedman School of Nutrition Science and Policy, Tufts University

Meetings (4):

- 3/26/15 – Gloucester
- 3/27/15 – New Bedford
- 4/17/15 – Duxbury
- 4/21/15 – Boston (MAPC Office)

Participants (37):

- Heather Atwood, Gloucester Daily Times
- Jared Auerbach, Red's Best
- Sean Bowen, Massachusetts Department of Agricultural Resources
- Elaine Brewer, Massachusetts Department of Marine Fisheries
- June Cook-Madruga
- Al Cottone, Flu Sabrina Maria (partially illegible)
- Jo Sue Cristaro, Arts Gloucester
- Niaz Dorry, Northwest Atlantic Marine Alliance
- Cathy R. Fang (partially illegible), citizen of Gloucester
- GFWA participant (name illegible)
- John Harar
- Marcia Hart, resident of Manchester-by-the-Sea
- Rich Henry, GWCBC (partially illegible)
- Sarah Kelley, Southeast Massachusetts Food Security Network, Island Foundation
- David Leveille, New England Food Solutions
- Justin Mortenson
- Filippo Mortillaro, Mortillaro Lobster, Inc.
- Laura O'Connor, Massport
- Joseph Orlando, Flu Santo Pio
- Laura Orleans
- Patti Page, citizen of Gloucester
- Steve Parkes, Maritime Gloucester
- Lisa Polren, citizen (partially illegible)
- Stephanie Reusch

- Olivia Rugo, NOAA Fisheries
- Russell Sherman, GCDC/Fluhrdy Jane (partially illegible)
- Duefeleas Soufleffo, MFP, GFWA (partially illegible)
- John Stoddard, Healthcare Without Harm
- Angela Suffield, Gloucester Fishermans Wives Association (GFWA)
- Nancy Sullivan, Cape Ann Nutritional Therapy
- Ben Thompson, UMass Boston
- Jim Turner, Turner Seafoods
- Kathi Turner, Turner Seafoods
- Greg Verjan, Gloucester City Council and Fisheries Commission
- Sue Waffen
- G. Wallace (partially illegible)
- Ed Washburn

Working Group 5 – Processing

Leader: Nico Lustig, Franklin County Community Development Corporation

Intern: Shane Solar-Doherty, Masters Candidate, Friedman School of Nutrition Science and Policy, Tufts University

Meetings (4):

- 2/6/15 – Charleton Public Library
- 3/13/15 – Greenfield, Western Mass Food Processing Center
- 3/27/15 – Boston, Crop Circle Kitchen
- 4/17/15 – Charleton Public Library

Participants (24):

- Gary Barrett, North Shore Alliance for Economic Development
- James Billman, Boston Food and Farm PBC, Inc.
- Jane Bouffard, Cocreation Ventures Stock Pot
- Bill Butcher, Whole Foods Market
- Liz Buxton, Western Massachusetts Food Processing Center
- Joe Czajkowski, Czajkowski Farm
- Angelica Carey, UMass Amherst
- Jessica del Rosario, Massachusetts Convergence Partnership
- Jen Faigel, CommonWealth Kitchen
- Francis Gouillert, The Stock Pot
- Emily Gouillert, The Stock Pot
- Mimi Graney, Relish Management
- Rachel Hackett, Whole Foods Market
- Ian Jakus, Mass Development

- Amanda Kinchla, UMass Amherst, Department of Food Science
- Chris Majweski, Massachusetts Department of Public Health
- Ed Maltby, Adams Farm Slaughter House LLC
- Brian Monteverd, Food Hub Coordinator, Regional Environmental Council of Worcester
- Will Neely, Enterprise Center at Salem State University
- Shannon Nichols, UMass
- Steve Norwood, Chubby's Sauces
- Bonita Oehlke, Massachusetts Department of Agriculture
- Laura Sapienza-Grabski, Massachusetts Association of Agriculture Commissions
- David Stein, The Stock Pot
- Laurel Valchuis, al Freshco/ CommonWealth Kitchen
- John Waite, Franklin County Community Development Corporation

Working Group 6 – Distribution

Leader: Jeff Cole, Massachusetts Farmers Markets

Intern: Emma Scudder, Tufts University

Meetings (2):

- 2/4/15 – Worcester, Union Station (CMRPC office)
- 3/24/15 – Conference call

Participants:

- Linda Booth Sweeney, The Balaton Group
- Michael Abbate, Common Capital
- Eric Becker, Slow Money Boston co-founder
- Erbin Crowell, Neighboring Food Co-op Association
- Susan Futrell, Red Tomato
- Melissa Hoffman, Wholesome Wave
- Simca Horowitz, Massachusetts Farm to School
- Brian Houghton, Massachusetts Food Association
- Betsy Johnson, Massachusetts Food Policy Alliance, Springfield Food Policy Council
- JD Kemp, Organic Renaissance, FoodEx
- Phil Korman, Community Involved in Sustaining Agriculture
- Kyra Kristof, Provender
- Bob Luz, MA Restaurants Association
- Kathie Mainzer, Bella Luna Restaurant, Boston
- Liz Morningstar, Boston Public Market
- Jeff Rosen, Slow Money and PVGrows loan fund
- Michael Rozyne, Red Tomato
- Paul Silva Valley, Venture Mentors

- Lynn Stromberg, Lettuce Be Local

Working Group 7 – Food Access, Security and Health

Leader: Jessica del Rosario, Massachusetts Convergence Partnership

Intern: Barbara Shepard-Kim, MA Candidate, Urban/Environmental Policy and Planning, Tufts University

Meetings (4):

- 12/15/14—Worcester, Union Station (CMRPC office)
- 3/10/15—Worcester, 427 Main Street (Harvard Pilgrim offices)
- 4/2/15—Shewsbury, University of Massachusetts, 333 South Street
- 4/21/15—Conference call

Participants (36):

- Maura Ackerman, Boston Public Health Commission
- Cynthia Taft Bayerl, RDN, MS, LDN, FAND, MA Department of Public Health
- James Billman, Boston Food & Farm
- Kendra Bird, RD, LDN, The Greater Boston Food Bank
- Liz Sheehan Castro, Worcester Food and Active Living Policy Council
- Amanda Chilson, Northern Berkshire Community Coalition
- Sarah Cluggish, Project Bread
- Judy Fallows, Watertown Public Schools
- Jean G. McMurray, Worcester County Food Bank
- Betsy Johnson, Springfield Food Policy Council
- Barry Keppard, AICP, Metropolitan Area Planning Council
- Morgan Kulchinsky, Be Well Berkshires and Mass in Motion, Berkshire Health Systems
- Betty Maher, Massachusetts Rehabilitation Commission
- Frank Martinez Nocito, Massachusetts Department of Transitional Assistance
- Christina Maxwell, The Food Bank of Western Massachusetts
- Alicia McCabe, Cooking Matters Massachusetts
- Allan B. Motenko, Massachusetts Office on Disability
- Jennifer Obadia, Healthy Food in Health Care Program, Health Care Without Harm
- Elizabeth O’Gilvie, Springfield Pregnant and Parenting Teens, Partners for Healthier Community
- Dawn Olcott, Cambridge Public Health Department and Cambridge Food and Fitness Policy
- Lola Omolodun, Metropolitan Area Planning Council
- Rosa Pina, Groundwork Lawrence
- Andrew Reker, Central Transportation Planning Staff
- Stephanie Reusch, Southeastern Massachusetts Food Security Network, Dartmouth YMCA
- Maddie Ribble, Massachusetts Public Health Association
- Richard Sheward, Children’s HealthWatch
- Joe Shoenfeld, Umass Amherst Center for Agriculture, Food and the Environment

- Valerie Spain, Personal and Environmental Health
- Karen Spiller, KAS Consulting, Massachusetts Contact, Food Solutions New England
- Joan Squeri, Healthy Communities Capital Consulting
- Gabriel Swartz, Abt Associates
- Jean Terranova, Community Servings
- Aliza R. Wasserman MS, MPH, Boston Public Health Commission
- David Webber, Massachusetts Department of Agricultural Resources
- Cathy Wirth, The Trustees of Reservations

Individual interviews by Food Access, Security and Health Working Group leader and staff (9):

- Patricia Baker, Massachusetts Law Reform Institute (food assistance programs)
- Ann Cote, Product Management Director, Connecticut and Boston-Area Food Banks
- Catherine D'Amato, President & CEO of the Greater Boston Food Bank
- Kirby Lecy, Massachusetts Department of Public Health (rural food access)
- Kathleen Millet, Massachusetts Department of Elementary and Secondary Education
- Lauren Palombo, Chief Operating Officer, Lovin' Spoonfuls
- Ellen Parker, Project Bread
- Amy Pessia, Merrimack Valley Food Bank
- Craig Richov, Massachusetts Department of Agricultural Resources (MEFAP)

Working Group 8 – Inputs

Leaders: Lorenzo Macaluso, Center for Eco Technology; Jenny Rushlow, Conservation Law Foundation

Intern: Elena Mihaly, Conservation Law Foundation

Meetings (2):

- 02/23/15, Worcester (CMRPC office)
- 03/11/15, Worcester (CMRPC office)
- 4/1/15, Worcester (CMRPC office)
- 4/8/15, Worcester (CMRPC office)

Participants (16):

- Tom Akin, USDA National Resources Conservation Service
- Amy Barad, Mass Clean Energy Center
- Kathy Baskin, EEA
- Bess Beller-Levesque, Toxics Action Center
- Wayne Castonguay, Ipswich Watershed associations
- Karen Connelly, Massachusetts Association of Lawn Care Professionals
- T. Lindsay D'Anna, Casella Organics
- Adam Dole, New England Small Farm Institute
- Maureen Doyle

- Dominique DuTremble CMRPC
- John Fischer, Mass DEP
- Bruce Fulford, City Soil
- Judith Gillan New England Small Farm Institute
- Lisa Giovannielli, BioHitech
- Scott Graves, Solaya Organics
- Christine Hatch, UMass Extension
- Nancy Hazard, Greening Greenfield
- Lor Holmes, CERO COOP
- Geoff Kuter, Agresource, Inc.
- Emily Broad Lieb, Food law and Policy Clinic, Harvard Law School
- Jen McDonnell, Casella Organics
- Bill Obear, Bear Path Farm
- Patrick O'Toole
- Lauren Palumbo, Lovin' Spoonfuls
- Sasha Purpura, Food for Free Committee, Inc.
- Heidi Ricci, Massachusetts Audubon Society
- Sue Scheufele, UMass Extension
- Clarence Snyder, MGR Farm
- Brian Wick, Cape Cod Cranberry Growers Association
- Gerry Palano, Massachusetts Department of Agricultural Resources
- Abbie Webb, Casella

General Stakeholder Outreach

Project staff attended a variety of events held by other organizations and entities with an interest in the food system. At least 1,000 people were indirectly engaged through these events (attendance was not documented by event organizers). These events were typically information tables or brief presentations included on the agenda of the entity's regular meeting. Staff solicited comments through conversation, surveys, comment cards and other typical outreach methods.

Date	Region(s)	Location	Event/Venue/Person(s)	Attendees
8/16/14	Statewide	Amherst	Northeast Organic Farming Association Summer Conference	~100
10/30/14	North Shore	Salem	Salem State University Geography Dept Colloquium: Food System Planning	35
12/4/14	Hampshire County	Northampton	River Valley Market Coop Annual Meeting	~175

12/4/14	Statewide	Amherst	Massachusetts Farm Bureau Annual Meeting	~100
3/27/15	Western Mass.	Northampton	Community Involved in Sustaining Agriculture (CISA) Annual Meeting, Northampton	~120
3/29/15	Cambridge	Harvard law School	Just Food conference panel presentation	~100
3/31/15	Statewide	State House	“Ag Day” event	~100
4/26/15	Statewide	Conference call	Massachusetts Association of Dairy Farmers	10
6/9/15	Hampden County	Southwick	Hampden County Farm Bureau	7
6/10/15	Statewide	Boston	Massachusetts Farm Bureau Federation Board of Directors	15
6/16/15	Statewide	Boston	Boston Foundation Panel presentation “Healthy People/Healthy Economy”	~100
6/24/15	Franklin County	South Deerfield	Franklin County Farm Bureau	10
9/15/15	Statewide	Boston	Ad-hoc group of land advocates and professionals convened	~30
9/20/15	Boston	Boston	Boston Local Food Festival	~75
9/23/15	Central Mass.	Conference call	Central Massachusetts Grown Board of Directors	10
9/24/15	Statewide	W. Springfield	Massachusetts Board of Food and Agriculture	12

Outreach to Under-represented Stakeholders

Project staff conducted targeted outreach to at least 242 food system stakeholders who are often under-represented in planning processes, including people from low-income communities, communities of color, and those in urban “food desert” areas where healthy, locally-produced food is often out of reach or challenging to produce and sustain. In addition, efforts were made to engage urban gardeners and farmers, small farm owners and operators, recent immigrants, students at middle school, high school, and college levels, farm and restaurant workers and advocates, cafeteria workers and chefs, food chain workers, food policy councils, and community organizers who would have not otherwise been able to participate in other engagement activities of this plan.

Date	Location/Event	Description	Attendees
12/8/2014	Ludlow Adult English Language Learners	Listening Session for Adult recent immigrants from Pakistan, Iraq, Puerto Rico, Brazil, Peru.	20

2/26/2015	Paulo Freire Social Justice Charter High School, Holyoke	Gathered input from students and teacher.	12
3/4/2015	Pioneer Valley Workers Center	Conducted listening session with food chain workers, farm, grocery, restaurant, Bon Appetit/ Hampshire College.	12
3/11/2015	PV Grows Racial Equity in the Food System meeting	Group discussion and breakout groups with local farmers, nonprofits operators, individuals from Holyoke, Springfield, Greenfield, Amherst.	40
3/18/2015	Springfield School Food Committee	Gathered input from youth, food service workers, Mass in Motion staff, Gardening the Community, Sodexo, Middle/high school GTC youth leaders, 2 facilitators, 1 GTC staff, Sodexo Executive Chef and Communications Director.	12
4/9/2015	SEMA Food Security Network	Farmers, food pantries, UMASS Dartmouth, Island Foundation, YMCA, and related organizations	30
2/28/2015	The Food Project	Members of “The Root Crew” – high school students who live in Boston, the North Shore and Lincoln.	18
4/16/2015	Groundwork Somerville	High school students, including 6 from immigrant families.	8
4/19/15	Growing Places	Focus group meeting with 15 families considered low-income and are SNAP users or just above income eligibility threshold.	15
4/30/15	Community Health Needs Assessment (CHNA-9)	Northern Worcester County	8
5/4/2015	New Lands farmers	Meeting with Sara Tower and six refugee farmers.	7
5/19/2015	Immigrants’ Assistance Center, New Bedford	Focus group with Portuguese seniors.	25
6/13/2015	Tropical Foods retail grocery workers	Focus group with Ronn Garry of Tropical Foods and 12 retail store workers.	13
6/18/2015	Massachusetts Department of Public Health	Quarterly Health & Disabilities Program meeting.	15
		TOTAL	235

Individual interviews (7):

- Glynn Lloyd, City Fresh, Urban Farming Institute and Boston Promise Initiative – 3/26/2015
- Jess Bloomer, Groundwork Somerville Green Team – 3/26/2015
- Joana Dos Santos, United Neighbors of Fitchburg – 3/31/2015
- Joanne Foster, Growing Places in Leominster – 3/31/2015
- Deb Habib, Seeds of Solidarity – 4/6/2015
- Nicola Williams, The Williams Agency – 4/9/2015
- Bobby Walker, urban farmer in Boston – 5/7/2015

Engagement and Interviews with Key Stakeholders

Project staff met with groups, organizations, and individuals throughout Massachusetts who expressed interest in the food system. The format of these meetings varied, depending on the venue and occasion, but typically included a brief presentation of the planning process, key findings to date, and a discussion of key topics facilitated by project staff. Comments received through these meetings were entered into the project comment database for analysis along with those obtained at the eight regional events.

Date	Region(s)	Location	Event/Venue/Person(s)	Attendees
2/25/14	Statewide	Holyoke Com. College	U.S. Dept of Labor Workshop: Navigating Federal Farm Labor Laws (sponsored by CISA)	20
11/20/14	Central Mass.	Worcester	Worcester Food and Active Living Policy Council	20
1/13/15	Statewide	Worcester	Massachusetts Farm to School Conference	150
1/17/15	Statewide	Buckland	MA Maple Producers Association Annual Mtg	20
2/6/15	Statewide	Southborough	MA Partnership for Food Safety Education	20
2/23/15	Western Mass.	South Deerfield	Community Involved in Sustaining Agriculture (CISA) staff interview	7
2/25/15	Springfield	Springfield	Springfield Food Policy Council	20
			TOTAL	89

Individual interviews (32):

- Rich Bonnano, Massachusetts Farm Bureau Federation
- Rose Bookbinder, Pioneer Valley Workers Center, Northampton
- Nicole Bourdin, Mass in Motion, Springfield
- Glenroy Buchannan, Farmer, Springfield Growers Cooperative
- Katie Campbell, UMass Extension

- Kathleen Carroll, UMass Extension
- Hai Chan, retail international grocery store owners, Hadley
- Anne Cody, Nuestras Raices, Holyoke
- Shawn Cooney, Corner Stalk
- Lorraine Cordiero, MD, UMass Nutrition professor, Hadley
- Emily Engel, Food Corps, Holyoke
- Hector Figerella, PV Workers Center, Northampton
- Sen. Anne Gobi, co-chair, Joint Committee on Environment, Natural Resources and Agriculture
- Clare Hammonds, Ph.D., UMass Amherst Labor Center
- Julian Hartmann-Russell, Food Corps/Nuestras, Paolo Freire Social Justice High School, Holyoke
- Joe Kriesberg, Massachusetts Association of CDCs
- Rep. Steve Kulik, vice-chair, Committee on Ways and Means
- Jay Lord, Just Food, Greenfield
- Jon Magee, Agrarian Action Coalition, Northampton
- Sarah McKay, Island Grown Initiative
- Synthia Mitchell, Springfield Partners for Healthier Communities, Springfield Food Policy Council
- Peter Murphy, Boston Office of Food Initiatives
- Frank Robinson, Baystate Community Health, Springfield
- Hilda Roque, Nuestras Raices, Holyoke
- Rep. Paul Schmid, co-chair, Joint Committee on Environment, Natural Resources and Agriculture
- Bonnie Smith, DVM, Cross Country Veterinary Service
- Dorothy Suput, The Carrot Project
- Sara Tower, New Lands Farm, Springfield
- Hannah Weinronk, Real Food Challenge, UMASS Amherst
- Elizabeth Wills O’Gilvie, Baystate Community Health, Springfield
- Sharon Wyrrick, Many Forks Farm, Clarksburg MA
- Ray Young Farmer, Next Barn Over, Hadley

Project Advisors and Executive Committee

The Massachusetts Food Policy Council invited a group of 40 individuals to serve as Project Advisors for the duration of the food system planning process. The Project Advisors Committee provided general guidance on all aspects of the statewide planning process, including defining tasks; supporting stakeholder engagement; supporting the activities of the working groups; contributing draft findings and recommendations; and reviewing and prioritizing the goals, recommendations and actions developed through the stakeholder engagement and working group processes.

To provide additional assistance with project management and logistical matters, a subset of Project Advisors served as an Executive Committee.

Following are the 32 people who participated as Project Advisors. Working Group leaders are noted.

(*Indicates Executive Committee member.)

- Marion Browning, Massachusetts Department of Elementary and Secondary Education
- Liz Sheehan Castro, Worcester Food & Active Living Policy Council
- Cris Coffin*, American Farmland Trust, Working Group leader: Land
- Jeff Cole*, Federation of Massachusetts Farmers Markets, Working Group leader: Distribution
- Manny Costa, Costas Fruit and Produce
- Erbin Crowell, Neighboring Food Co-op Association
- Jessica del Rosario*, Massachusetts Convergence Partnership, Working Group leader: Food Access, Hunger, and Public Health
- Frank Di Luna, Massachusetts Farm Bureau Federation
- Christa Drew, Center for Nonviolent Solutions
- Mark Duffy, Great Brook Dairy Farm
- Zach Dyer, Worcester Division of Public Health
- Ruth Goldman*, Merck Family Fund
- Tim Griffin, Tufts Friedman School of Nutrition Science and Policy
- Jennifer Hashley, New Entry Sustainable Farming Project
- Simca Horwitz, Massachusetts Farm to School Project
- Brian Houghton, Massachusetts Food Association
- Betsy Johnson, Massachusetts Food Policy Alliance, Springfield Food Policy Council
- Phil Korman, Community Involved in Sustaining Agriculture
- Nico Lustig*, Western Massachusetts Food Processing Center, Working Group leader: Processing
- Lorenzo Macaluso*, Center for Eco Technology, Working Group Leader: Inputs
- Ed Maltby, Adams Slaughterhouse
- Brad Mitchell*, Massachusetts Farm Bureau Federation, Working Group leader: Farming
- Vivien Morris, Boston Public Health Commission
- Valerie Nelson*, Boston Public Health Commission, Working Group leader: Fishing
- Frank Martinez Nocito, Department of Transitional Assistance
- Elizabeth O'Gilvie, Gardening the Community and Urban Green Pantry
- Ellen Parker, Project Bread
- Maddie Ribble, Massachusetts Public Health Association
- Jennifer Rushlow*, Conservation Law Foundation, Working Group Leader: Inputs
- Jennifer Ryan, The Trustees of Reservations
- Laura Sapienza-Grabski, Massachusetts Association of Agricultural Commissions
- Joe Schoenfeld, UMass Amherst College of Natural Science, UMass Extension
- Suzette Snow-Cobb, Neighboring Food Co-op Association
- Karen Spiller, KAS Consulting
- Shailah Stewart, Massachusetts Department of Elementary and Secondary Education
- James Ward, New England Vegetable and Berry Growers

- Keith Westrich, Massachusetts Department of Elementary and Secondary Education
- Cathy Wirth, The Trustees of Reservations

Project Advisor Meeting Dates and Locations

Date	Meeting #	Location
6/26/14	1	Worcester, College of the Holy Cross
9/10/14	2	Shrewsbury, UMass Collaborative Services Facility, 333 South St
11/5/14	3	Springfield, Eco-Building Bargains Store, 83 Warwick St
1/22/15	4	Charleton, Public Library
3/18/15	5	Worcester, Union Station (CMRPC office)
6/18/15	6	Worcester, Union Station (CMRPC office)
9/9/15	7	Worcester, Union Station (CMRPC office)
11/18/15	8	Worcester, Union Station (CMRPC office)

Executive Committee Meeting Dates and Locations

Date	Meeting #	Location
11/17/14	1	Northampton, Smith College
3/2/15	2	Worcester, Union Station (CMRPC office)
5/27/15	3	Marlborough, Farm Bureau Office
8/11/15	4	Springfield, (PVPC office)
9/29/15	5	Charlton Public Library
10/7/15	6	Conference call
11/6/15	7	Conference call

Massachusetts Food Policy Council and Massachusetts Food Policy Council Advisory Committee

Staff provided written status reports to the MFPC and its advisory committee (submitted to the Commissioner of Agriculture’s office) during the project (April 2014 through December 2015). These included written quarterly progress reports and verbal presentations.

Food System Plan Engagement with Massachusetts Food Policy Council

Date	Location	Topic(s)
4/11/14	Tower Hill Botanical Garden, Boylston	Project start up, consultant roles, engagement of project advisors, communications plan, project budget, reporting procedures.
6/11/14	Cummings School of Veterinary Medicine, Tufts University, North Grafton	Roles of project advisors, working groups, regional engagement. Institutional involvement.

9/5/14	Central Massachusetts Regional Planning Commission office, Worcester	Data analysis, stakeholder engagement summary, identification of working group leaders, appointment of Executive Committee.
12/11/14	Framingham Public Library	Definition of “local” and other key terms. Status of stakeholder engagement. Discussion of “3 Es” of equity, economic and ecological as “lenses” for analysis of all sectors of the food system.
6/1/15	Central Massachusetts Regional Planning Commission office, Worcester	Reports on the development of goals and objectives. Review of workforce report. Discussion about implementation options.
9/8/15	Executive Office of Energy and Environmental Affairs, 100 Cambridge Street, 2 nd floor, Boston	Summary of stakeholder engagement, working group activities, draft recommendations and actions, receive feedback from council members
12/10/15	Holy Cross College, Worcester	Presentation of final plan.

Members of the MFPC:

- Kerry Bowie, designee for Deputy Commissioner Gary Moran, MDEP
- Helen Caulton-Harris, Springfield Board of Health
- Jeff Cole, Executive Director, MA farmers markets
- Manuel Costa, President, Costa Fruit and Produce
- Jana Ferguson, designee for Commissioner of MDPH
- Representative Kimberly Ferguson
- Senator Robert Hedlund
- Amanda Kinchla, M.S., Food Safety Extension Specialist, UMASS Amherst
- Representative Steve Kulik
- John Lebeaux, Commissioner, MDAR, Chair
- John Lee, Allandale Farm
- Frank Martinez Nocito, designee for Commissioner Stacey Monahan, MDTA
- Vivien Morris, MS, RD, MPH, LDN, Boston Public Health Commission
- John Waite, Franklin County Community Development Corporation
- Timothy Wilkerson, designee for Secretary of MEOHED

Administrative Support and Contract Manager for the Massachusetts Food Policy Council:

- Bonita Oehlke, Massachusetts Department of Agricultural Resources

Former members:

- Kathleen C. Millett, Massachusetts Department of Elementary and Secondary Education
- Greg Watson, Massachusetts Commissioner of Agriculture

Members of the MFPC Advisory Committee:

- Shemariah Blum-Evitts, Lutheran Social Services' New Lands Farm Program
- Cris Coffin, American Farmland Trust
- Nancy Cohen, University of Massachusetts
- Christa Drew, Center for Nonviolent Solutions
- Christina Economos, Tufts University
- Phil Korman, Community Involved in Sustaining Agriculture
- Brad Mitchell, Massachusetts Farm Bureau Federation
- Ellen Parker, Project Bread
- John Wang, The Food Project

Draft Plan Review and Comment Solicitation

Drafts of the chapter of the Massachusetts Local Food Action Plan presenting the goals, recommendations, and actions underwent two rounds of review during the planning process.

The first round of review involved the circulation of the draft by email on August 1, 2015 to all people who had participated in the development of the Plan at the events described in this chapter and who provided email contact information to the planning team. A total of 70 individuals and agency representatives returned comments by the requested deadline of August 31, 2015. Each of the comments received were reviewed, addressed, and integrated into the draft of the plan to the greatest degree feasible by members of the planning staff in consultation with members of the Executive Committee with expertise in the respective sector topics.

The revised draft chapters of the Plan were then assembled into a full document that was posted online as PDF files for general public review on October 16, 2015 at www.mafoodplan.org. Written comments on this complete draft were requested by email, website comment interface, and letter. A total of 43 people submitted comments on this full draft prior to the close of the comment period on November 6, 2015. These comments were documented, reviewed, addressed, and integrated to the extent feasible by planning staff in consultation with the Project Advisors committee. Each comment received and the response sent by the planning team is provided in Appendix G.

Appendix E

Literature Bibliography

REPORT	PUB. DATE	AUTHOR
Final Report of the Governor's Commission on Food	1974	Massachusetts Commission on Food
The Massachusetts Farm and Food System	1988	Massachusetts Department of Food and Agriculture
The Northeast Region's Vision for the Future of the Groundfish Fleet	2005	The Fleet Visioning Project
Farms for the Future	2008	American Farmland Trust
Designing a Foodshed Assessment Model	2009	Shemariah Blum-Evitts
Feed Northampton: first steps toward a local food system	2010	Northampton Food Security Group, Conway School of Landscape Design
Food for Every Child	2010	The Food Trust
Increasing Local Milk Processing Capacity: Benefits to Pioneer Valley Consumers and Communities	2011	American Farmland Trust and Community Involved in Sustaining Agriculture
Scaling Up Local Food	2011	Community Involved in Sustaining Agriculture
Guide to Agricultural Composting	2011	Massachusetts Department of Agricultural Resources
Food System Toolkit for Hampden and Hampshire Counties	2011	Pioneer Valley Regional Planning Studio
Food System Planning in Western Mass	2012	Ariana R.G. Thompson; UMass Amherst
Good Laws Good Food: Putting Local Food Policy to Work for our Communities	2012	Harvard Food Law and Policy Clinic
Franklin County Farmland and Foodshed Study	2012	Franklin Regional Council of Governments, Conway School of Landscape Design
The Time is Right to Grow the Urban Food Cluster	2012	International Economic Development Council
Increasing Local Food Procurement by Massachusetts State Colleges and Universities	2012	Law students at Harvard Food Law and Policy Clinic
Stimulating Grocery Development in MA	2012	Massachusetts Grocery Access Task Force
Designing an Inner City Food Cluster Strategy	2012	Northeastern ICIC

REPORT	PUB. DATE	AUTHOR
Building Local Food Connections	2012	Conway School of Landscape Design: Christina Gibson and Jamie Pottern
Census of Agriculture: Massachusetts Highlights	2012	United States Department of Agriculture
State Indicator Report on Fruits and Vegetables	2013	Centers for Disease Control and Prevention
Eat Up and Take Action for Local Food	2013	Community Involved in Sustaining Agriculture
Growing Healthy Economies: Leveraging America's Urban Food Cluster	2013	Council on Metro Economies and the New American City
The 25% Shift	2013	Cutting Edge Capital
Franklin Regional Council of Governments food system presentation: Agriculture and Food Security in the Region	2013	Franklin Regional Council of Governments
Sustainable Franklin County	2013	Franklin Regional Council of Governments
Keep Berkshires Farming: Central Group Action Plan	2013	Glynwood's Keep Farming, Sustainable Berkshires, Berkshire Regional Planning Commission
Keep Berkshires Farming: North Group Action Plan	2013	Glynwood's Keep Farming, Sustainable Berkshires, Berkshire Regional Planning Commission
Keep Berkshires Farming: South Group Action Plan	2013	Glynwood's Keep Farming, Sustainable Berkshires, Berkshire Regional Planning Commission
Massachusetts 2010-2020 Solid Waste Master Plan	2013	MassDEP
The Voice of Agriculture: News and Views	2013	Massachusetts Farm Bureau
Local food, Local Jobs	2013	Massachusetts Workforce Alliance
An Entrepreneur's Guide to Farming in Massachusetts	2013	New Entry Sustainable Farming Project
Fresh Ideas	2013	Project Bread
Urban Farming In Boston	2013	Tufts: Denise Chin, Tida Infahsaeng, Ian Jakus, Valerie Oorthuys
Food Retail Opportunities in Boston's Underserved Areas	2013	Tufts: Heidi Stucker
Confronting Challenges in the Local Meat Industry	2013	UMass Amherst, Community Involved in Sustaining Agriculture

REPORT	PUB. DATE	AUTHOR
Healthy Incentives Pilot (HIP) Interim Report	2013	United States Department of Agriculture
Community Gardens & The Boston Food Environment	2014	An Urban Food Lab Project
Farmers Markets and Health Departments	2014	Community Involved in Sustaining Agriculture
Community Investment in the Local Food System	2014	Community Involved in Sustaining Agriculture
Farm and Food Law: A Guide for Lawyers	2014	Harvard Food Law and Policy Clinic
Franklin County Farm and Food System Project Farmer Survey	2014	Franklin Regional Council of Governments
Anchor Institutions and Food Systems: A Recipe for Economic Growth	2014	Initiative for a Competitive Inner City (ICIC)
Farm to Institution Markets in Massachusetts	2014	Jill Ann Fitzsimmons; UMass Amherst
Healthy Food Financing Bills	2014	Massachusetts Public Health Association
Healthy Food Financing: Good For Jobs, Good for Health	2014	Massachusetts Public Health Association
Minuteman Area Comprehensive Agricultural Planning Program	2014	Metropolitan Area Planning Council
Marine Fisheries/Fish Bill Letter	2014	Niaz Dorry, Fish Locally Collaborative
Pioneer Valley Food Security Plan	2014	Pioneer Valley Planning Commission
Food Waste Diversion Guide for Restaurants	2014	Recycling Works Mass
South Eastern Massachusetts Food System Assessment	2014	Southeastern Massachusetts Food Security Network
Local Food and Agriculture: An Element of Sustainable Berkshires, Long-Range Plan for Berkshire County	2014	Sustainable Berkshires, Berkshire Regional Planning Commission
The Change Agent: How Local Food Systems can Create Jobs	2014	Alex Riskey Schroeder
Food in the City: An Old Way in a New Time	2014	Conway School of Landscape Design: Emily Berg; Abigail Elwood; Marie Macchiarolo
Southeastern Massachusetts Food System Assessment, exec summary	2014	The Southeastern Massachusetts Food Security Network
Food Insecurity in the Clinical Setting: An Exploration of Models in Massachusetts	2014	University of Massachusetts Medical School: Kathryn K.P. Brodowski, M.D.
Food Waste Ban: Update and Recommendations	2014	Tufts: Abraham Faham, Theresa McMenomy, Adrienne Roberts,

REPORT	PUB. DATE	AUTHOR
		Nathaniel Rosenblum
Climate change and the Maple Syrup Industry in Massachusetts	2014	Tufts: Emma Hanson, Matt Hazel, Christa Mayfield, Nina Rogowsky
Massachusetts Food Insecurity	2014	Tufts: Erin Foster West, Abby Harper, Samantha Kelly, Elena Martinez, Ashley McCarthy, and Nina Rogowsky
Climate change and Cranberry Production in Massachusetts	2014	Tufts: Erin Foster West, Elena Martinez, Ashley McCarthy, Max Wall
Addressing Climate Change: Massachusetts Dairy Industry	2014	Tufts: Hilary Cunningham, Kate Schaffner, Emily Dimiero
Climate Change and Massachusetts Marine Fishing	2014	Tufts: Nicole Ayache, Abigail Harper, Leah Hermens, Hannah Sobel
Pest Management Adaptation for Specialty Crops in the Face of Climate Change	2014	Tufts: Taylor Jang, Ravdeep Jaidka, Nate Spence, & Alyssa Charney
Inclusive Local: Case Studies and Recommendations for More Equitable Local Food Retail in Massachusetts	2014	Tufts: Victoria Kulwicki, Caitlin Matthews, and Hannah Sobel
Evaluation of Healthy Incentives Pilot - final report summary	2014	United States Department of Agriculture
Aggregate Public Benefits of Farm to School Programs Suggest MA and Other States Should Make Concerted Efforts to Increase Participation Rates of Both Schools and Farms	2015	National Attorneys General Training and Research Institute
GAP and its Impact on us as Growers	ND	Rich Bonnano (UMass Extension)

Independent Research Conducted for MFSP

Topic: Food Insecurity in the Clinical Setting: An Exploration of Models in Massachusetts.
Partner: University of Massachusetts Medical School
Researchers: Kathryn K.P. Brodowski, M.D.

Topics: Research on climate change impacts to agriculture and fishing in Massachusetts, and the Massachusetts food waste ban
Partner: Tufts University, Friedman School of Nutrition. Professors Timothy Griffin, Christian Peters. Teaching Assistant Megan Lehnerd.
Researchers: Nicole Ayache, Emma Hanson, Matt Hazel, Christa Mayfield, Nina Rogowsky, Taylor Jang, Ravdeep Jaidka, Nate Spence, Alyssa Charney, Abigail Harper, Leah Hermens, Hannah Sobel, Abraham Faham, Theresa McMenomy, Adrienne Roberts, Nathaniel Rosenblum, Erin Foster West, Elena Martinez, Ashley McCarthy, Max Wall, Hilary Cunningham, Kate Schaffner, and Emily Dimiero.

Topic: Massachusetts Food Insecurity: Landscape and Innovations
Partner: Tufts University, Friedman School of Nutrition and Urban and Environmental Policy and Planning. Adjunct Professor Jennifer Obadia and Professor Julian Agyeman.
Researchers: Erin Foster West, Abby Harper, Samantha Kelly, Elena Martinez, Ashley McCarthy, and Nina Rogowsky.

Topic: Inclusive Local: Case Studies and Recommendations for More Equitable Local Food Retail in Massachusetts
Partner: Tufts University, Urban and Environmental Policy and Planning. Professor Julian Agyeman
Researchers: Victoria Kulwicki, Caitlin Matthews, and Hannah Sobel.

Topic: Employment in the Food System: Strategies for Improving Wages and Living Conditions for Farm Laborers.
Partner: University of Massachusetts, Amherst. Professor Clare Hammonds
Researcher: Nikolas Bazurto

Appendix F

Glossary

TERMS	ACRONYMS	DEFINITIONS
Agricultural commission		Agriculture commissions are committees formed by town meeting vote, or town- or city-councils that serve as an advocacy board for farmers, farm businesses, and farm interests.
Agricultural Conservation Easement Program	ACEP	The Agricultural Conservation Easement Program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits.
Agricultural Environmental Program	AEP	The Agricultural Environmental Program supports agricultural operations that are looking to implement conservation practices that prevent direct impacts on water quality, ensure efficient use of water, and address impacts on air quality.
Agricultural Improvement Program	AIP	The Agricultural Improvement Program provides grants for infrastructure improvements on permanently protected farmland.
Agricultural Land Easement Program	ALE	The Agricultural Land Easement Program enables eligible partners to receive financial assistance to purchase agricultural land easements targeted at working agricultural lands.
Agricultural Lands Preservation Committee	ALPC	The Agricultural Land Preservation Committee evaluates whether or not to accept or reject Agricultural Preservation Restriction (APR) applications for the APR Program based upon the suitability of land and soil, fair market value, and other criteria for agricultural use.
Agricultural Preservation Restriction Program	APR	The Agricultural Preservation Restriction Program protects farmland statewide and offers capital for farmers who sell an agricultural preservation restriction to expand their business or transfer their farm to the next generation.
Agritourism		Agritourism is the practice of bringing visitors to a farm or other agricultural operation to participate in farm-related activities for entertainment.
Alternative energy credit	AEC	Alternative energy credits are tax credits offered as incentives for the installation and operation of alternative energy systems.
Alternative Portfolio Standard	APS	Alternative Portfolio Standard (or Renewable Portfolio Standard) offers a new opportunity for Massachusetts businesses, institutions, and governments to receive an incentive for installing eligible alternative energy systems, which are not renewable. It requires a certain percentage of the state's electricity load be met by eligible technologies, including combined heat and power, flywheel storage, coal gasification, and efficient steam technologies.

TERMS	ACRONYMS	DEFINITIONS
Americans with Disabilities Act	ADA	The Americans with Disabilities Act is a piece of civil rights legislation that prohibits discrimination and guarantees that people with disabilities have the same opportunities as everyone else to participate in the mainstream of American life, and to enjoy employment opportunities, purchase goods and services, and participate in state and local government programs and services.
Anaerobic digestion	AD	Anaerobic digestion is a process whereby microorganisms break down organic materials, such as food scraps, manure, and sewage sludge, in the absence of oxygen. Recycling food waste through anaerobic digestion produces biogas and a soil amendment, two valuable products.
Anchor institutions		Anchor institutions are nonprofit institutions that tend to not move locations once they are established.
Aquaculture		Aquaculture is the farming of seafood.
Atlantic States Marine Fisheries Commission	ASMFC	The Atlantic States Marine Fisheries Commission is a deliberative body of the Atlantic coastal states, coordinating the conservation and management of twenty five near shore fish species.
Bill Emerson Good Samaritan Food Donation Act		The Bill Emerson Good Samaritan Food Donation Act is a federal law that protects the food donor and the recipient agency against food donation liability, with the exception of gross negligence and/or intentional misconduct.
Boston Bounty Bucks		The Boston Bounty Bucks program promotes the use of SNAP benefits by providing a dollar-for-dollar matching incentive at farmers markets for all SNAP purchases up to \$10. The program provides farmers markets with the Electronic Benefits Transfer (EBT) machine for these transactions.
Brownfields		Brownfields are potentially contaminated or polluted land parcels previously used for industrial or some commercial uses.
Bycatch		Bycatch is fish unintentionally caught while fishing for other target species.
Carbon farming		Carbon farming is farming in a way that reduces greenhouse gas emissions.
Carbon market		A carbon market is one in which entities volunteer to offset their carbon emissions by purchasing carbon credits that reduce the total amount of carbon in the atmosphere. The credits come from farmland and forest owners who sequester agreed upon levels of carbon on their land in exchange for payment for doing so.
Carbon sequestration		Carbon sequestration refers to the long term storage of carbon. Practices that achieve carbon sequestration are used as a climate change mitigation tool.

TERMS	ACRONYMS	DEFINITIONS
Chapter 61		Chapter 61 of the Massachusetts General Laws, is a current use program created to give preferential tax treatment to landowners who maintain their property as open space for the purposes of timber production, agriculture, or recreation.
Chapter 61A		Chapter 61A of the Massachusetts General Laws, offers reduced property taxes on land in active agricultural use in recognition of the benefits it provides and the fewer municipal services it requires.
Chapter 61B		Chapter 61B of the Massachusetts General Laws is a current use program created to give preferential tax treatment to landowners who maintain their property as open space for the purposes of timber production, agriculture, or recreation.
Chefs in Schools		Chefs in Schools is a Project Bread program that support schools in creating appealing lunch menus that increase the consumption of healthy and locally produced foods by school-age children.
Child and Adult Care Food Program	CACFP	Child and Adult Care Food Program provides aid to child and adult care institutions and family or group day care homes for the provision of nutritious foods that contribute to the wellness, healthy growth, and development of young children, and the health and wellness of older adults and chronically impaired disabled persons.
Cold-chain packaging		Cold-chain packaging refers to the process by which a product is packaged using temperature control, keeping the product frozen, refrigerated, or maintained at a controlled room temperature in its distribution to the retail- or end-user.
Colony Collapse Disorder		Colony Collapse Disorder is the phenomenon of the decline of bee colonies caused by an abandonment of worker bees from the hive and the queen bee. This reason for this phenomenon is not conclusive, though pathogens, viruses, and environmental pollutants are thought to be linked to the phenomenon.
Commonwealth Quality Program	CQP	Commonwealth Quality Program is a brand designed by the Massachusetts Department of Agricultural Resources that serves to identify locally sourced products that are grown, harvested, and processed in Massachusetts using practices that are safe, sustainable and don't harm the environment.
Community Eligibility Provision	CEP	Community Eligibility Provision is a provision from the Healthy, Hunger-Free Kids Act of 2010 that allows schools and local educational agencies (LEAs) with high poverty rates to provide free breakfast and lunch to all students.
Community kitchen		Community kitchens are kitchens used for community events, culinary classes, nutrition education, and shared meals, often operated by nonprofits and churches.

TERMS	ACRONYMS	DEFINITIONS
Community land trust		Community land trusts are nonprofit, community-based corporations with a place-based membership and commitment to the use and stewardship of land on behalf of the local population.
Community Preservation Act	CPA	The Community Preservation Act enables communities to create a local Community Preservation Fund dedicated to open space protection, historic preservation, affordable housing, and outdoor recreation.
Community supported agriculture	CSA	The community supported agriculture program is a local, community based economic model for agriculture and food distribution in which consumers pay up front for distributions of food throughout the coming season.
Community supported fishery	CSF	Community supported fisheries are local, community based economic models for seafood distribution in which consumers pay up front for distributions of fish throughout the coming season..
Conservation Law Foundation	CLF	Conservation Law Foundation uses the law, science, policymaking, and the business market to find pragmatic, innovative solutions to New England’s toughest environmental problems.
Conservation Stewardship Program	CSP	Conservation Stewardship Program offers payments to farmers that are actively managing, maintaining, and expanding conservation efforts.
Cooking Matters Program		Cooking Matters Program teaches participants to shop smarter, use nutrition information to make healthier choices, and cook delicious, affordable meals.
Cover crops		Cover crops are those planted primarily to improve the quality of the soil.
Cultural foods		Cultural foods are country-, regional-, heritage-, or ethnicity-specific fruits, vegetables, fish, meat, and other foods that are eaten and celebrated.
Dairy Farmer Tax Credit		The Dairy Farmer Tax Credit program is one under which a dairy farmer who holds a Certificate of Registration may be allowed a refundable income tax credit based on the amount of milk produced and sold.
Department of Early Education and Care	EEC	The Massachusetts Department of Early Education and Care provides the foundation that supports all children in their development as lifelong learners and contributing members of the community, and supports families in their essential work as parents and caregivers.
Department of Elementary and Secondary Education	DESE	The Department of Elementary and Secondary Education is a state agency that supports the public education system in Massachusetts through advising on curriculum, instruction, educator effectiveness, improving schools and school districts, and other activities.

TERMS	ACRONYMS	DEFINITIONS
Department of Energy Resources	DOER	The Department of Energy Resources develops and implements policies and programs aimed at ensuring the adequacy, security, diversity, and cost-effectiveness of the Commonwealth's energy supply within the context of creating a cleaner energy future.
Department of Fish & Game		The Department of Fish & Game works to preserve the state's natural resources and people's right to conservation of those resources. To carry out this mission, it assumes responsibility over the Commonwealth's marine and freshwater fisheries, wildlife species, plants, and natural communities, as well as the habitats that support them.
Department of Transitional Assistance	DTA	The Department of Transitional Assistance administers all state-funded emergency programs, including the Supplemental Nutrition Assistance Program (SNAP).
Determination of Need program	DoN	The Determination of Need program promotes the availability and accessibility of cost-effective, high quality health care services to the citizens of Massachusetts and assists in controlling health care costs.
Division of Marine Fisheries	DMF	The Division of Marine Fisheries is a division of the Massachusetts Department of Fish & Game that oversees marine fisheries.
Earned Income Tax Credit	EITC	The Earned Income Tax Credit is available to eligible low-income individuals who have earned income and meet certain federal requirements.
Economies of scale		Economies of scale is a term that describes cost advantages that can be incurred due to size. As an enterprise increases in scale, per unit costs generally decline as fixed costs are spread out over more units of output.
Elder Simplified Application Pilot	ESAP	The Elder Simplified Application Pilot program is designed to reinvent the SNAP process for elderly households.
Executive Office of Energy and Environmental Affairs	EOEEA	Executive Office of Energy and Environmental Affairs is a combination of six environmental-, natural resource-, and energy- regulatory agencies whose overall mission is to safeguard public health from environmental threats and to preserve, protect, and enhance the natural resources of the Commonwealth.
Environmental Quality Incentives Program	EQIP	The Environmental Quality Incentives Program is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private forestland.
Executive Order 193		The Executive Order 193 directs all relevant state agencies to seek to mediate the conversion of state-owned agricultural land.

TERMS	ACRONYMS	DEFINITIONS
Externality		Externalities are intended or unintended costs or benefits incurred by a third, unrelated party in a transaction.
Fair Labor Standards Act	FSLA	The Fair Labor Standards Act establishes minimum wage, overtime pay, recordkeeping, and youth employment standards affecting employees in the private sector and in federal, state, and local governments.
Farm Bill		The Farm Bill is a five-year bill that reforms agricultural policy.
Farm Energy Discount Program		The Farm Energy Discount Program provides discounts on electricity and natural gas bills of ten percent to eligible entities engaged in production agriculture.
Farm to Institution New England	FINE	Farm to Institution New England is a six-state network of nonprofit, public, and private entities working collaboratively to strengthen the food system by increasing the amount of New England-grown and processed food served in the region's schools, hospitals, colleges, and other institutions.
Farm Viability Enhancement Program	FVEP	The Farm Viability Enhancement Program provides grants for infrastructure improvements on farmland in exchange for a covenant to keep the land in farming.
Farmers Market Nutrition Program		Farmers Market Nutrition Program provides fresh, unprepared, locally grown fruits and vegetables to Women, Infants and Children (WIC) participants, and expands the awareness, use of, and sales at farmers markets.
Federal Poverty Level	FPL	The Federal Poverty Level is a measure of income level determined annually by the Department of Health and Human Services that is used to determine a person's eligibility for certain programs and benefits.
Food business incubators		Food business incubators support entrepreneurs with kitchen facilities and business technical assistance services at reasonable rates in a collaborative environment, reducing risk and increasing the chance of success.
Food insecurity		Food insecurity refers to inconsistent access to adequate food because of a lack of money and other resources at times during the year.
Food Insecurity Nutrition Incentive	FINI	The Food Insecurity Nutrition Initiative is a grant program that supports projects to increase the purchase of fruits and vegetables among low-income consumers participating in the Supplemental Nutrition Assistance Program (SNAP) by providing incentives at the point of purchase.
Food Safety Modernization Act	FSMA	The Food Safety Modernization Act aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.
Gateway Cities		Gateway cities are mid-size urban centers that anchor regional economies and for which industry was a primary driver of their economic and workforce resilience.

TERMS	ACRONYMS	DEFINITIONS
Global Warming Solutions Act	GWSA	The Global Warming Solutions Act created a framework for the State for reducing heat-trapping emissions to levels that scientists believe give us a decent chance of avoiding the worst effects of global warming. It requires reductions from all sectors of the economy to reach a target of a 25% reduction of Greenhouse Gas (GHG) emissions by 2020 and an 80% reduction by 2050.
Good Agricultural Practices	GAP	Good Agricultural Practices are voluntary audits that focus on best agricultural practices to verify that fruits and vegetables are produced, packed, handled, and stored in the safest manner possible to minimize risks of microbial food safety hazards.
Good Handling Practices	GHP	Good Handling Practices are voluntary audits that focus on best agricultural practices to verify that fruits and vegetables are produced, packed, handled, and stored in the safest manner possible to minimize risks of microbial food safety hazards.
Good Manufacturing Practices	GMP	Good Manufacturing Practices provide for systems that assure proper design, monitoring, and control of manufacturing processes and facilities.
Ground lease		A ground lease is one where only the land is leased, and it separates ownership of the land from any improvements or buildings constructed on the land.
Groundfish		Groundfish are fish species that live near the bottom of a body of water.
H2A Program		The H2A program allows U.S. employers or U.S. agents who meet specific regulatory requirements to bring foreign nationals to the United States to fill temporary agricultural jobs.
Health in All policies		Health in All Policies is a concept that encourages integration of health-related considerations into decision-making and planning throughout municipal and state agencies.
Healthy Incentives Program	HIP	The Healthy Incentives Program offers SNAP participants an incentive of 30 cents for every dollar in SNAP funds spent on eligible fruits and vegetables. These incentives can be applied when making purchases at participating SNAP retailers including superstores, convenience stores, farmers markets, farm stands, medium and large supermarkets.
Infill		Infill is a practice of focusing development to existing population centers thereby slowing development of farmland and forest.
Integrated Pest Management	IPM	Integrated Pest Management is a system of long term prevention of pests or their damage by managing the ecosystem.
Land trust		Land trusts are agreement in which a trustee maintains ownership of a piece of property for the benefit of another party.

TERMS	ACRONYMS	DEFINITIONS
Low income		Individuals and families earning up to 80% of area median income by household size, as established by U.S. Department of Housing and Urban Development for the region in which they live. The average median income for a family of four per county in Massachusetts is \$77,200.
Mass Grown and Fresher program		Mass Grown and Fresher is an online marketing initiative that expands connections between consumers and local farmers to promote local farm products, specialty foods, and agritourism.
Mass in Motion	MiM	Mass in Motion is a statewide program that promotes opportunities for healthy eating and active living in the places people live, learn, work, and play.
Mass. Gen. Laws, ch. 7, § 23B		Current law, Massachusetts General Laws Chapter 7, § 23B, asserts that state institutions ‘shall’ purchase, local foods, allowing them to spend up to 10 percent more for local foods.
Massachusetts Agricultural Experiment Station		Massachusetts Agricultural Experiment Station coordinates funding to advance science in disciplines related to agriculture, food, and natural resources.
Massachusetts Clean Energy Center	MassCEC	The Massachusetts Clean Energy Center is a publicly-funded agency dedicated to accelerating the success of clean energy technologies, companies, and projects in Massachusetts by providing early-stage investments to startup companies, funding renewable energy rebates for residents and businesses, and supporting the development of a local clean energy workforce.
Massachusetts Commercial Organic Materials Waste Ban		The Massachusetts Commercial Food Waste Ban is a Massachusetts Department of Environmental Protection ban on disposal of commercial organic wastes by businesses and institutions that dispose of one ton or more of these materials per week.
Massachusetts Conservation Districts		Massachusetts Conservation Districts are subdivisions of state government, established under state law to carry out programs for the conservation and wise management of soil, water and related resources.
Massachusetts Department of Agricultural Resources	MDAR	The Massachusetts Department of Agricultural Resources is a public agency that works to keep Massachusetts’ food supply safe, secure, and environmentally and economically sound.
Massachusetts Department of Environmental Protection	MassDEP	The Massachusetts Department of Environmental Protection is the state agency responsible for ensuring clean air and water, the safe management of toxics and hazards, the recycling of solid and hazardous wastes, the timely cleanup of hazardous waste sites and spills, and the preservation of wetlands and coastal resources.

TERMS	ACRONYMS	DEFINITIONS
Massachusetts Emergency Food Assistance Program	MEFAP	The Massachusetts Emergency Food Assistance Program seeks to ensure that citizens in need have access to a supply of quality food in the Commonwealth. The program is implemented through a unique partnership between the state and a private, nonprofit food distribution network made up of four regional food banks.
Massachusetts Environmental Policy Act	MEPA	The Massachusetts Environmental Policy Act requires that state agencies study the environmental consequences of their actions, including permitting and financial assistance. It also requires them to take all feasible measures to avoid, minimize, and mitigate damage to the environment.
Massachusetts Farm Energy Program		Massachusetts Farm Energy Program is a joint project of the Center for EcoTechnology (CET) and MDAR that offers a range of services to the farming community to reduce energy use and produce renewable energy.
Massachusetts Farm to School		Massachusetts Farm to School is an organization that increases access to locally grown, healthy food in schools and other institutions.
Massachusetts Food Policy Council	FPC	The Massachusetts Food Policy Council is a public body charged with developing recommendations to further the Massachusetts food system.
Massachusetts Office of Business Development	MOBD	The Massachusetts Office of Business Development is a source for businesses seeking to relocate to Massachusetts and businesses wishing to expand their current operations in the state.
Massachusetts Office of Geographic Information	MassGIS	Massachusetts Office of Geographic Information develops and maintains a comprehensive, statewide database of spatial information for mapping and analysis supporting emergency response, environmental planning and management, transportation planning, economic development, and transparency in state government operations.
Massachusetts Partnership for Food Safety Education		The Massachusetts Partnership for Food Safety Education is a public/private partnership that represents over 5,000 food and regulatory members who serve and support consumers, regulators, and food workers in food production, processing, food service and retail establishments to reduce food-borne illness in Massachusetts by improving food safety knowledge and skills.
Massachusetts Seafood Marketing Program		The Massachusetts Seafood Marketing Program is a state program to educate consumers about Massachusetts-caught and -raised seafood.
MassDevelopment		MassDevelopment is the state's economic development and finance agency.
Metropolitan Regional Planning Organization	MPO	Metropolitan Regional Planning Organizations are federally funded and mandated transportation policy-making organizations.

TERMS	ACRONYMS	DEFINITIONS
Metropolitan Statistical Area	MSA	Metropolitan Statistical Areas are geographical regions with a high population density core and close economic ties throughout the area.
National Oceanic and Atmospheric Administration	NOAA	The National Oceanic and Atmospheric Administration is a federal agency focused on the condition of the oceans and the atmosphere.
Natural Resources Conservation Service	NRCS	The Natural Resources Conservation Service is a program of USDA and provides America's farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground.
Neonicotinoids		Neonicotinoids are a class of insecticides that paralyze and kill insects.
Non-point source pollution		Non-point source pollution is pollution that comes from many diffuse sources.
Parkland Acquisitions and Renovations for Communities Program	PARC Program	Parkland Acquisitions and Renovations for Communities is a program that assists cities and towns in acquiring and developing land for park and outdoor recreation purposes.
Phase II clean-up funds		Phase I and Phase II Environmental Site Assessments are performed to evaluate environmental issues at any site previously used for commercial purposes. 'Phase II clean-up funds' refers to the Massachusetts Brownfields Program that makes funding, loans, interest-free financing, post-remediation tax credits, and environmental insurance available for sites requiring cleanup for redevelopment.
Point of sale labeling		A Point of Sale system is software used in retail settings at the checkout station to track sales, inventory, and run reports. This enables stores to have accurate information for understanding sales, losses, and what to purchase and when. Point of sale labeling refers to the label that is scanned at the checkout that carries production description and other product information.
Point source pollution		Point source pollution is pollution that comes from an identifiable source, such as a pipe.
Poverty		People who are living at or below the poverty thresholds by household size for the 48 contiguous states as determined by U.S. Census are said to be living in poverty. The 2014 poverty threshold for a 3-person household including one child is \$19,055.
Process Authority		A Process Authority is the person or organization having expert knowledge of thermal processing requirements for foods in hermetically sealed containers, having access to facilities for making such determinations, and designated by the establishment to perform certain functions.
Regulatory certainty		Regulatory certainty is a term that refers to the justification for regulating, and implies that the problem has been clearly defined and there is a determined need for regulation to address the problem.

TERMS	ACRONYMS	DEFINITIONS
Retro commissioning		Retro commissioning is the process of testing an existing building's energy system and improving the efficiency of the building's equipment and systems.
Right to Farm Bylaw		The purpose and intent of the Right to Farm Bylaw is to provide the right to farm. This bylaw encourages the pursuit of agriculture, promotes agriculture-based economic opportunities, and protects farmlands within a town by allowing agricultural uses and related activities to function with minimal conflict with abutters and town agencies.
Saltonstall-Kennedy Federal Research Grant Program		The Saltonstall-Kennedy Federal Research Grant is a program that funds projects that address the needs of fishing communities, optimize economic benefits by building and maintaining sustainable fisheries, and increase other opportunities to keep working waterfronts viable.
Share our Strength		Share our Strength is a nonprofit organization that connects children in need with nutritious food and teaches their families how to cook healthy and affordable meals.
Shared-used facilities		Shared-use facilities are certified kitchen facilities available for rent and used by several food business entrepreneurs.
Sliding fee		Sliding fees or sliding scales are varied price options based on a customer's ability to pay.
Small Business Administration	SBA	The Small Business Administration provides assistance to small businesses in the form of loans, loan guarantees, contracts, counseling sessions, and other means.
Small Business Purchasing Program	SBPP	Small Business Purchasing Program supports the existence and growth of small businesses which meet the Program's eligibility requirements by providing them with special consideration within the Commonwealth's procurement process for goods and services required by state agencies.
Smart grid		Smart grid generally refers to a class of technology people are using to improve utility electricity delivery systems, using computer-based remote control and automation.
Summer Food Service Program	SFSP	The Summer Food Service Program ensures that low-income children continue to receive nutritious meals when school is not in session.
Supplemental Nutritional Assistance Program	SNAP	The Supplemental Nutritional Assistance Program is a national program that provides nutrition assistance to millions of eligible, low-income individuals and families in the United States.
Supplemental Security Income	SSI	Supplemental Security Income is a program that pays benefits to disabled adults and children who have limited income and resources.
Supplier Diversity Program	SDP	Supplier Diversity Program instituted policies to encourage the award of state contracts in a manner that develops and strengthens certified Minority- and Women- Owned Business Enterprises.

TERMS	ACRONYMS	DEFINITIONS
Supply chain		The term supply chain refers to the components, businesses, workers, and process involved in the production of a good through its distribution.
The Bay State Combined Application Project	Bay State CAP	Established in 2005, the Bay State Combined Application Process is a program that makes enrollment in the Supplemental Nutrition Assistance Program (SNAP) easier. When applying for Supplemental Security Income (SSI), people are also screened for SNAP eligibility, and the information was sent electronically to DTA. It is joint initiative by the Department of Transitional Assistance (DTA), the Social Security Administration, and the US Department of Agriculture's Food and Nutrition Service.
The Northwest Atlantic Marine Alliance	NAMA	The Northwest Atlantic Marine Alliance is a fisherman-led organization whose mission is to enhance and maintain healthy marine ecosystems by organizing a decentralized network of community-based fishermen, fish workers, and allies.
Transfer of Development Rights	TDRs	Transfer of Development rights describes a zoning technique used to direct growth away from and permanently protect lands such as farmland and other natural and cultural resources, to locations well suited and planned to accommodate higher density development.
Transportation Improvement Program	TIP	Transportation Improvement Program is four-year program aimed at making a transportation system that supports a strong economy, protects our natural environment, and enhances the quality of life and health of our residents and visitors to Massachusetts.
UMass Extension		UMass Extension provides education and training for the food and agricultural industry, as well as for the general public.
Water Management Act	WMA	The Water Management Act regulates water withdrawals in the Commonwealth.

Appendix G

Public Comments

A working draft of the full Massachusetts Local Food Action Plan was released in .PDF format for public comment via the project website (www.mapfoodplan.org) on October 23, 2015. Written comments were received from a total 43 individuals and organizations by the close of the comment period on November 6, 2015.

(Earlier drafts of the plan were provided to Project Advisors and all persons who had provided contact information and participated in public forums, workshops, interviews and other outreach efforts in July and August 2015, which produced numerous comments that were incorporated in the draft that was released to the general public on October 23, 2015.)

This appendix presents the verbatim comments of the individuals and organizations who provided comments during the final review period. While the plan is intended to present a general consensus on the topics and recommended actions to advance the Massachusetts Local Food System, this provides an opportunity for individuals and organizations involved in the food system to provide additional information, and to raise issues and ideas that they believe should receive further attention. Comments are reproduced here to help ensure that minority and/or underrepresented perspectives are not lost, to inform future work on implementation of the plan, and to encourage ongoing participation from a broad range of stakeholders as work to strengthen the Commonwealth's food system proceeds.

Comments are presented in the order received. Email addresses, phone numbers, street addresses and any identifying personal information have been removed.

Comment 1: Bill Wilson, Boston, Birds & Beans, LLC 10/26/2015,

Clearly a great deal of time, effort and thought has gone into this work.

I took the time to wade through the 'Plan Goals and Recommendations' document.

It all seems very complicated. My belief is that we need to 'un-complicate' if we are to fix the system.

Thoughts:

- goal for on-farm and off-farm workers should be \$15.00 an hour by 2018
- much more emphasis on organic farming for community health and environmental protection reasons
- my view – biggest problem is the complication that consumers need to understand they must pay more for better food while we need to find an efficient way to provide less advantaged families with a subsidy system for quality food purchase
- some recognition that big box grocers, global food processors, giant-agri and chemical manufacturers play a major part, maybe the key role, in creating a dysfunctional food system

- my view – only massive grass roots action that leads to reform of regulation and legislation can make the changes we need happen
- end-user education must be the basic foundation for the improvements we seek

Thank you for all your work.

RESPONSE: Thank you for taking the time to share your feedback on the Massachusetts Local Food Action Plan, Bill. Your thoughts reflect many of those that we heard throughout the process, and I particularly appreciate your interest in grass roots action to move the agenda forward. Increased education for consumers and producers of local food is a key theme of the plan. We hope you will continue to be involved.

Comment 2: Andrea Woods, Franklin Regional Council of Governments, 10/26/2015

I read the overview and searched Procurement in the action items. It appears that someone has done a lot of looking at procurement related angles in this endeavor.

I did notice that there isn't a mention that there is an exemption for public institutions to purchase local food up to \$25,000 with no need for procurement at all. So the idea that there needs to be benchmarks (like for MBE WBE) and that 10% must be purchased locally won't apply to many institutions who buy relatively small-ish amounts of local food. They just need to be encouraged to do so. Just a thought.

“Section 4(d) of Chapter 30B allows you to use sound business practices to award contracts of less than \$25,000 to Massachusetts farm operations for the procurement of products of agriculture, such as fruits, vegetables, eggs, dairy products, meat, fish, seafood and other aquatic products.”

Also, I don't know if you have seen any other instances in your research, but our local church donates its whole backyard (roughly an acre) to a local community garden. A local CSA farmer maintains it, extra produce is brought to the food pantry on Thursdays and community members may work the garden and take whatever they want in exchange after the CSA guy takes what he needs. So there may be a Faith based component to look at. Lots of rural New England churches have a fair amount of land attached to their buildings.

RESPONSE: Thank you for taking the time to read and comment on the Massachusetts Local Food Action Plan, Andrea. The information you provided about procurement will be of interest to stakeholders working on this issue. Also, your suggestion to consider using suitable church-owned properties for agriculture is a new and valuable suggestion, which we will share with stakeholders involved in this issue during implementation. We hope you will continue to be involved.

Comment 3. Francis Gouillart, Experience Co-Creation Partnership, 10/27/2015

First, I wanted to salute the excellent work of the team in putting together the Massachusetts local food action plan (I re-attach the short version for my colleagues). As the CEO of a shared kitchen that houses 21 food trucks and 30 food entrepreneurs in Malden (www.stockpotmalden.com) and runs a food truck

catering business ([www.heritagetruckcatering.com]www.heritagetruckcatering.com), I have had a chance to participate in a couple of sessions and think the team did a great job overall.

Let me however point to a missing element in the report, which has to do with the role of technology in demonstrating the intrinsically greater value of local food over industrial or imported food, particularly with the advent of the so-called Internet of Things approach. I have tried to attract the attention of the team, apparently without success, to the fact that the transformation of a complex ecosystem like agriculture and food typically takes the combination of a massive mobilization of the people (which the report describes very well), the development of some infrastructure (also well covered) but also some innovative technology (which the report misses out on). To understand the role that the Internet of Things can play in promoting local agriculture and food, you may want to take a look at the attached presentation recently delivered at the Cambridge Ted X conference that explains how an initiative called the Internet of Tomatoes, led by scientists from Analog Devices, a global Boston area integrated circuit firm, is changing the tomato supply chain in Massachusetts by tracking the productivity and quality of tomatoes across farming, distribution, processing and consumption. The technology will ultimately allow a consumer, in the future, to shine a light on a tomato and know everything about that tomato (sugar, acid, salt, water, ripeness, nutrients, residual chemicals, etc.) without having to destroy that tomato. If you are familiar with Star Trek's Tricorder, this is largely what our project is about, as it applies to agriculture and food. You may also look at a description of the Internet of Tomatoes project on the web site of my firm, Experience Co-Creation Partnership, which initiated and manages the project while assembling the consortium of technology firms required to make it happen (<http://www.eccpartnership.com/the-boston-iotomato-project.html>).

The greater Boston area is one of the three major US technology hubs for the Internet of Things (together with Silicon Valley and Texas), so there is a nice opportunity to create a "Local Food meets Local Technology" story and give the Silicon Valley a run for its money (there is a strong "Food Tech" movement there, even though their agriculture has increasingly little water!). The Internet of Things can be defined as the combination of placing lots of cheap sensors in a given place (say, humidity, temperate and light sensors in a tomato field), aggregating the data in a sensor hub, sending that data through a "gateway" to a computer in the cloud, grinding that data to make sense of it by developing what is known as an algorithm (e.g., when it gets hot and the soil is dry, then water), and then provide that information either to the farmer or directly to the irrigation system. The same approach can be used during distribution and retailing, allowing Costa Fruit and Produce or Whole Foods to know how the product is behaving (is it past its ripeness peak, has it been gassed with ethylene?), and ultimately tell the consumer how this product will taste inside a given recipe and whether is nutritious and safe (many prestigious chefs of Boston are also involved with us in the Internet of Tomatoes initiative). We have been able to model what judges at the Boston Tomato Contest value in each tomato and now have a "predictive model" of taste for tomatoes which farmers and chefs are beginning to use. As another example, the Heritage Truck Catering company has just developed a tomato sauce using local heirloom from two prominent tomato farms (Verrill Farm in Concord, Wards Berry Farm in Sharon), and has been using the new Internet of Things technology developed by Analog Devices to optimize its quality.

Just like Massachusetts/greater Boston was able to become a hub for biotechnology ten or fifteen years ago through the visionary work of a few state and city planners and leading private sector companies, we believe Massachusetts has a similar opportunity to become a nexus for the Ag-Food-Tech industries, given the local talent on all three dimensions. For all these reasons, it would be a pity if the high-quality report about to come out on local food were to miss on this important component. I am at your disposal to discuss this technology aspect (and possibly draft such a section for your consideration). You should also feel free to reach out to my colleagues at Analog Devices (Rob O'Reilly for the technical aspect of the technology, Mike Murray to describe the executive commitment, Maria Tagliaferro on all communication aspects, all copied on this).

RESPONSE: Thank you for taking the time to provide feedback on the Massachusetts Local Food Action Plan, Francis. Your comments about the role of technology as a key component of efforts to strengthen the Commonwealth's food system are important, and ongoing contributions and education about this topic from organizations like yours will be critical as work begins to implement this plan. Your comments are included, as submitted, in the final draft of the plan, so that other stakeholders who may be working on this issue, especially those who may be involved in community farming in urban areas, will be aware of this important need and the resources you have suggested. We hope you will continue to be involved.

Comment 4: Devin Ingersoll, Lowell, New Entry Sustainable Farming Project, 10/27/2015

Below I have bulleted my comments in relation to specific goals and metrics of the MA Food System Plan. Thank you for all your work on this very important document.

- Goal 6, Action 6.1.2: The action involves Emergency Food Assistance Programs to purchase 10% locally grown foods to distribute to clients. This is a very important action item but I worry that MEFAP budgets are already extremely tight and have limited staff capacity already. This action needs to be supported through either increased funding, or incentives for staff to spend their precious time on extra time procuring local items. I believe that the plan should include an action to create trainings and tools for MEFAP to purchase locally grown items for their clients in order to leverage the most food dollars for clients.
- Metrics 55 and 56: There needs to be a shared understanding of what "local" means and standards that are easily understood by every level of staff from the kitchen to administration. For schools near state borders, will only food grown and procured in MA be considered 'local'? If so, how do you quantify purchases of New England grown products that are sold through a regional distributor or MA farmer.

RESPONSE: Thank you for your feedback on the Massachusetts Local Food Action Plan, Devin. You raise an excellent point about the capacity of those agencies involved in administering MEFAP to implement the intent of Goal 6, Action 6.1.2 without additional funds. Your suggestion to have trainings and other tools for MEFAP as part of

implementation is an important one that will be of interest to stakeholders working to implement the plan. We hope you will continue to be involved.

Comment 5: Ted Cady, 10/27/2015

Your goal of encouraging agriculture is an ambitious effort, and you seem to have looked at things carefully. However, I sort of got the feeling that an element was missing that I can not quite put my finger on. However, there may be answer in looking at successful efforts.

Dean's Beans Coffee in Orange, MA is very successful and Dean Cycon, its founder, has received many international awards for his efforts. How did he succeed? What advice might he have for how to do it in farming? What model does he use?

Ocean Spray is now a large, powerful cooperative, but when I was a kid it was much smaller. What made it so successful? It has made cranberry growing the most valuable per acre crop in Mass. How did that happen? What was their model?

RESPONSE: Thank you for your feedback on the Massachusetts Local Food Action Plan, Ted. As you point out, there are many successful and innovative food businesses in Massachusetts from which we can learn more as we move to implement this plan. Some of these businesses participated in the planning process, and we will reprint your comment in the final draft to ensure that stakeholders who are working on implementation will try to engage more of these companies. We hope you will continue to be involved.

Comment 6: Martin Dagoberto, MA Right to Know GMOs, 10/28/2015

Thank you for your work on this. I hope these comments help to bring about a more comprehensive food system plan. Please confirm receipt.

I attended more than one listening session for the MA Food System Plan, at which the topic of genetically engineered crops (GMOs) was one of the most popular. Farmers and consumers have concerns about cross-contamination of non-GMO crops and resulting threats to export markets as well as to the integrity of seed biodiversity. As the number of GMO crops on the market increases and likely become more prevalent in our state, what will the MA Food System Plan include in order to protect local non-GMO agriculture and non-GMO food security? Many people have substantiated concerns about the environmental and health impacts of pesticide drift and GMO-related pesticide residue accumulation in foods. It's great to see mention of the need to protect pollinators and to look into the impacts of neonicotinoids and other compounds, but what kind of agricultural pesticide regulations, spraying disclosures, buffer zones, or public health impact assessment will the plan promote? Finally, poor people have as much a right to information about their food as people privileged enough to shop at health food stores and do research online: shouldn't everyone have the right to know if their food is genetically engineered? Why is there no mention of the popular demand for clear and conspicuous mandatory GMO labeling? The moderator of the sessions I attended, Mr. David Elvin, remarked that GMOs were a very

popular point of discussion. How is it that there are only 2 mentions of GMOs in the final 353-page MA Food System Plan? Something's amiss when the most popular topic in food issues is omitted from a "comprehensive" food system plan, and begs the question as to the integrity and purpose of the convening body. This, combined with the ridiculously short comment period right at the end of the farming season, throws into question the validity and importance of this report. I hope to see these issues addressed so that we can have a legitimate food system plan that we so greatly need for our Commonwealth.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Martin.

You have raised an important point about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included, verbatim, in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 7: Kathy Cunningham, Boston, UMass Extension, 10/28/2015

Overall the Massachusetts Local Food Plan is forward thinking in its goals and recommendations for change. To keep in progress with this forward thinking, language regarding *Action 4.1.1 Re-introduces contemporary Home Economics Classes could involve an integrated curriculum* should be updated. I would suggest using contemporary language for "Home Economics"

Below is the reflection of the American Association of Family & Consumer Sciences under which Home Economics originally was housed.

1994, the American Association of Family & Consumer Sciences, the only professional association dedicated to family and consumer sciences students and professionals decided to change the name of the field to family and consumer sciences from home economics to more accurately reflect the complexity of the profession. As times have changed, so have the issues and needs of daily living. And, the family and consumer sciences profession has evolved to meet the current challenges facing individuals, families, and communities.

Home economics has transformed into FCS due to the complex social and economic issues that individuals, families, and communities face today. Like any other applied science, family and consumer sciences has evolved with society and technology. Our emphasis is on issues relevant to today's individuals and families and skills critical to successful living and working in the 21st century global society. Our classes cover topics like personal and family finance, nutrition, responsible parenting, and peaceful conflict resolution.

I trust this gives you a reference for changing the name in Action 4.1.1. to Family and Consumer Science classes.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Kathy. The citation you have offered will be an important resource to stakeholders who may work on implementing this action. We hope you will continue to be involved.

Comment 8: Chitsanzo Chiko Kachaje, Norwood, Home Market Foods, 10/28/2015

I was very pleased to ‘read’ through the Massachusetts Local Food Action Plan. It was nice to know that an initiative like that one is underway. I am a Food Scientist whose responsibilities are mainly in Food Safety, Food Quality, and Quality Assurance. I am also personally interested in Food Security and Food Sustainability. With that background, I was interested in:

- a) Goal #4 – Reduce hunger and food insecurity, increase the availability of healthy food to all residents, and to reduce food waste;
- b) Processing Goal 2 – Food Processing businesses will be supported in producing safe food (p.80);
- c) Distribution Goal 5 – Food Safety regulations and certifications will be science- and scale-based and effective (p.101); and
- d) Distribution Goal 6 – Food Safety education at all levels will be improved (p.103)

Under Distribution Goal 5, Recommendation 5.1, Action 5.1.4, my suggestion is do not forget those in the industry/manufacturing as part of COP Technical Steering Committee (p.101) as well as to the Massachusetts Food Policy Council (FPC) if not there yet (p.141). When I was reading in the last pages on who was involved, I did not see representation from industry/manufacturing. Academia and Regulatory were well represented. That is my suggestion, and I am willing to be part of that representation if need be.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Chitsanzo, and for your willingness to serve as a representative of the food safety and quality assurance sector of the food economy. Your comments will be included in the final draft of the plan as a resource to stakeholders who may work on these and related issues during the implementation of the plan. We will also forward your name and willingness to serve to the Massachusetts Food Policy Council and other entities that may be involved in implementing the plan in the coming months. Thank you and, we hope you will continue to be involved.

Comment 9: Loreto P Ansaldo, Boston, 10/28/2015

With 90% of people in this country wanting GMO foods labeled, GMO crops deserve a thorough discussion in the MA Food System Plan. Please reach out to the various players in this debate, from MA Right to Know GMOs to local food justice orgs.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan Loreto. You have raised an important point about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included, verbatim, in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 10: Mari Creatini, Norwell, 10/28/2015

Page 5: “Support food system businesses, workers, and consumers with a strong research, educational, and technical assistance network. Build UMass Extension’s capacity to provide needed education and technical assistance targeted to the needs of the industry, and encourage other service providers to collaborate to avoid duplication and provide services where they are most needed.” Besides “capacity” which I imagine refers to type of knowledge and technical learning to be offered, there should be more [physical] access to urban centers. Being centered out of UMass-Amherst, a lot of the hands-on learning is not close enough to Boston and therefore not accessible. Same comment for section on page 13.

Page 14: “There are concerns that the costs of some regulations outweigh their benefits...Regulations and their enforcement should, above all, foster the production of better and more food while managing risk responsibly, not impose new management practices that producers and processors are unable to implement if they are to remain viable.” Provide a streamline process for small scale farmers to organic certifications and food safety inspection. Large scale farmers should have a separate process, if they do not qualify for the “streamline” version.

Page 18: “The state’s Chapter 61A program is an important tool...” and “These programs [ARP, FVEP, MEGA] are valuable and necessary to keep land in farming and farmers on the land, but policy challenges and gaps remain.” These programs target either existing farms or larger scale farming operations (5 acres or more). I would comment that part of the “gap” that needs to be addressed is small scale intensive farms that could benefit in urban areas where land is more costly, yet could still reach all the food system goals aforementioned.

Page 19: Recommendations /Actions regarding Chapter 61A laws. We need to expand the definition and redefine what is considered “farmland” per Chapter 61A. Size of land (currently set at minimum of 5 acres) should not be the only means for qualification, but rather by its operation and product output. Same recommendation as ‘Action 2.3.3: Increase the APR program’s current per-acre cap’; however, regarding Chapter 61A instead. Nice – this concern point is raised on page 26 and Recommendation 3.10.

Page 20-21: With regards to the APR, intensive farming practices and/or alternative farming operations like aquaculture, roof farming, and forest farming do not necessarily require prime agricultural land, but should be protected by “farming” definition.

Page 22: Action 2.3.1: spelling error on “expend” – should be expand

Page 26: Recommendation 3.2:

Page 27: Tax and zoning changes incentives for developing existing building structures defined as “Infill and compact development”. Similar to how Chapter 40R encourages affordable housing by allowing a change of existing zoning, there can be a similar law that promotes alternative farming practices that do not require prime farmland (i.e., roof can be dedicated as a greenhouse or open farming space; refer to Higher Ground Farm).

Page 31: “Recommendation 3.13: Provide improved and streamlined farm linking systems and matching services” These linking systems should be expanded to connect industry (academic, restaurant, etc) to farmers as well.

Page 36: “Recommendation 1.2: Prioritize reducing food waste and ensure that all stakeholders have the resources and technical assistance needed to affordably reduce food waste.” With regards to “food” waste, there should also be a program or education and/or resources on oil recovery systems. Used oil could be used in diesel engines as ‘bio-diesel’ and be used for school buses, snow plows, etc.

Page 59: “Action 2.4.10: Allow H2A temporary agricultural workers to remain in the U.S. for a full year” If they are permitted to remain for a full year, is the host farm responsible for additional income during the off-season?

Page 63: “Action 3.1.6: Implement a tax credit for farmers who donate their surplus crops.” Can tax incentives be also given to Land Owners, not just “farmers”? If in a new development, Owner chooses to plant perennial fruit trees that could then be harvested as part of the “surplus crops”. This could encourage wildlife habitat and food as well as human fruit in areas not considered prime farmland. Imagine if a parking lot that is lined with apple trees could then become a source of food?

Page 63: “Action 3.1.13: Forgive student debt for graduates of UMass agricultural education programs” Does the debt forgiveness need to be limited to public education? Also, what is defined as “public benefit”? Does it have to be a non-profit organization? This seems to be the same as “Action 2.4.11: Support federal legislation to forgive student loans to college graduates after ten” (page 59).

Page 66: “Recommendation 1.1: Encourage sustainable fishing practices that protect fish and shellfish stock and habitat.” What about sustainable fish farms offshore? Examples to model after: Kampachi Farms in Hawaii <http://www.kampachifarm.com/offshore-technology/>

Page 107: “Recommendation 1.2: Implement stronger Massachusetts and local branding in the food supply chain.” This is very much needed at different levels – branding should expand to “forest grown” similar to Pennsylvania Certified Organic (PCO) does theirs: <https://www.paorganic.org/forestgrown> - used for sustainably harvested non-timber forest products.

Page 144-148: Can the grid lines in the spreadsheet be added? It is hard to understand which items correspond with each other.

Page 148: “64 - Nutrition Education - Number of people directly and indirectly engaged in SNAP education programs - UMass Extension SNAP Education Program Annual Reports – FASH” There are more programs available than just ‘SNAP’. There are several non-profits that focus on this – for example, Let’s Talk About Food or Future Chefs.

RESPONSE: Thank you for taking the time to share your feedback on the Massachusetts Local Food Action Plan, Mari. We have made most of the copyediting corrections and graphic improvement suggestions that you offered. Regarding the role of UMass Extension and proximity to urban areas, Farming Goal 1 Action 1.1.3 does recommend funding the UMass Center for Urban Sustainability in Waltham, which would focus on the need you have cited. On streamlining regulations, your comment nicely summarizes the intent of multiple recommended actions throughout the plan, which we will work to highlight in the plan summary. The rest of your comments offer useful resources for stakeholders who will be working to implement the plan. We hope you will continue to be involved.

Comment 11: Mike Gioscia, 10/28/2015

I am writing to ask you to understand the role of GMOs in our food, and their negative affects on health since their inception. The widely used herbicide glyphosate, found in 'Roundup', has recently found to be a carcinogen, it causes cancer! Many GMOs have glyphosate woven into their DNA!

I attended the public hearing on GMO labeling at The State House. I listened to an amazing cross section of Massachusetts residents state their case for GMO labeling.

My son was diagnosed on the autism spectrum when he was 3. Autism is up 1500% since GMOs hit the market, as well as spikes in ADD, severe allergies, and asthma. Pesticide spraying is at an all time high.

The good news is that my son Ethan no longer tests on the autism spectrum! When people ask, “What was it? The therapies? Was he mis-diagnosed?”. One thing that certainly didn’t hurt, and I believe caused a world of good, was getting him onto an organic/non-GMO diet. AKA No-GMOs!

Hippocrates said “Let food be thy medicine and medicine thy food.”

We are solidly middle class and very connected to our food, and are raising our kids to be the same way. I truly believe GMOs in the food system are causing terrible health issues. If they are safe, then they should be labeled.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Mike. You have raised an important point about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend

the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 12: Mary DiGioia, Westfield, Services for New Americans, Ascentria Care Alliance, 10/28/2015

First off let me address that as someone who works in the nutrition field and is extremely passionate about food, Nutrition, sustainability, I am thrilled by this plan. I have been in huge support of the idea that our food system is intertwined and I feel that in order for any improvements to be made, this is a concept that must be accepted or publicized. It is innovative and exciting that it is being put into action, and I am proud to be living in a state that is taking this initiative. I do have a few constructive comments, however.

First- how will you address behavioral challenges? Often mental health is something that goes hand in hand with food insecurity, and acknowledging that there are other high-risk populations within the landscape is huge to leave out. The prevalence of obesity in homeless populations is astounding and recent studies suggest that overweight and obesity are major forms of malnutrition in homeless families, homelessness going hand in hand with mental health. I propose factoring in some training on awareness as well as screening for mental health. This will allow trained professionals to treat and assess food insecurity and provide assistance to existing issues while preventing future ones.

Second- addressing “home economics” is something that can be misconstrued, and perhaps deemed offensive. However, re-branding it as “consumer science” would be beneficial to all and entice both men and women to participate. I also am confused as to why this is not something that is included with health class curriculums. Is this not a health issue? In my high school health class (before it was cut from the budget) there was a lot of discussion about things I did not feel were useful, and re-evaluating a health class, or health education curriculum would be extremely useful in preventing further issues down the line.

Finally, again, I am so thrilled that this is happening and would love to help participate in any and all ways that I can. I was able to attend the event in Boston and was impressed by your words and the mission of this plan.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Mary. Your observation that food insecurity and mental health are related is an important one, and is hopefully addressed, at least in part, by Action 5.1.1 in Goal 5 of the Food Access, Security and Health (FASH) section, which calls for food insecurity screenings and referrals to nutrition assistance resources to be incorporated into regular doctors’ office visits. Regarding use of the term “home economics,” we will continue to look for a better term that addresses the concerns you have cited about it. We hope you will continue to be involved.

Comment 13: George Mokray, Cambridge, 11/1/2015

Thank for the MA Food Plan. It is very good work and much appreciated.

I remember the 1974 Governor's Commission on Food and have seen over the years what they proposed then has done for local agriculture and food systems now locally, regionally, nationally, and internationally over the last 40 years. In 1974, if memory serves, the Commonwealth produced 4-6% of what it ate and there were less than 20 farmers' markets. Now there are 253 three-season and 46 winter markets and we seem to be producing 15% of the food we eat (according to Joe Bonano, farmer and MA Farm Bureau quoted in *We Are Market Basket: The Story of the Unlikely Grassroots Movement That Saved a Beloved Business* by Daniel Korschun and Grant Welker (NY: AMACOM, 2015 ISBN 978-0-8144-3665-3)

[my full notes available at <http://hubeventsnotes.blogspot.com/2015/09/we-are-market-basket.html>]

I would like to see at least a paragraph on what the historical context of MA agriculture over the last 40 years. That would be informative.

a paragraph on how this fits into the different scales of existing agriculture plans:

Global - UN FAO [Food and Agriculture Organization] <http://www.fao.org/docrep/016/i3082e/i3082e.pdf>

National - USA: <http://www.usda.gov/documents/usda-strategic-plan-fy-2014-2018.pdf>

Regional - NE: <http://www.foodsolutionsne.org/new-england-food-vision>

Local - Greater Boston: <https://bostonurbanag.wordpress.com>

a paragraph on food self-sufficiency, food self-reliance, and high production high tech growing systems [examples at <http://cityag.blogspot.com>], especially in relation to urban agriculture and emergency preparedness

I would also like to see the application of the concepts of Economic Gardening to the MA agricultural economic ecosystem. Economic Gardening, (<http://www.governing.com/topics/finance/gov-how-to-grow-businesses-that-grow-the-economy.html>) was pioneered in Littleton, CO 30 years ago, and is a method of growing local businesses. It consists of three elements:

"Providing critical information needed by businesses to survive and thrive.

Developing and cultivating an infrastructure that goes beyond basic physical infrastructure and includes quality of life, a culture that embraces growth and change, and access to intellectual resources, including qualified and talented employees.

Developing connections between businesses and the people and organizations that can help take them to the next level — business associations, universities, roundtable groups, service providers and more."

Some of this is already going on but it might help to make it more explicit.

The MA Food Plan made me finally realize how much larger the fishery is compared to land-based agriculture. It also seems as if the management of fish and water-based food systems is not as easily centralized as farmers and foresters.

Hope these comments prove of some use.

Thanks for your time and your work.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, George. Your points about the importance of context are well taken, and the plan attempts to provide such background where possible. Your observations and further informational resources on Economic Gardening will help advance discussions that are now taking place at the Massachusetts Economic Development Planning Council and regional economic development planning organizations about building (and rebuilding) our state's food economy. We hope that you will participate as stakeholder organizations work toward implementation of the plan's goals.

Comment 14. Shauna Lynn, Shelburne Falls, Non-GMO Committee, Franklin Community Co-op, 11/2/2015

Massachusetts should ban the use of glyphosate/ Roundup, and other chemicals that are carcinogenic (especially from being used on food), as well as those chemicals that damage our pollinator populations (neonicotinoids). These toxic pesticides are causing resistant "super-weeds" and "super-pests", genocide of helpful insect and microorganism populations, and the chemicals are fouling our air, water and soil, as well as people's health when they eat food with these systemic chemicals. Glyphosate, (being found in the blood, urine and umbilical cords of the vast majority sampled) is patented as a chelator for cleaning mineral buildup out of boiler pipes, and as an antibiotic - nether appropriate to be ingesting on a regular basis on our food - especially for pregnant mothers, babies, elderly and others with compromised immune systems. Massachusetts should set some appropriate state standards for third-party scientifically-verified long-term testing on substances used on food, and use the precautionary principle of not using chemicals for food production until proven safe for the environment and for human consumption by these standards.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Shauna. You have raised important points about glyphosate and other pesticides. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 15: Nicholas Smith-Sebasto, 11/3/2015

I am in the process of reading the just-released MA Food System Plan. It is an impressive effort! One issue that has already gotten my attention concerns the use of the EPA Food Recovery Hierarchy graphic. I have long believed that it is misleading insofar as it presents composting near the bottom of the “most preferred” to “least preferred” continuum. Based on the graphic, one may presume that the only option that composting is better than is landfilling. The inverted pyramid shape no doubt contributes to such a potential misperception. Clearly, this is not at all an accurate assessment of the issue. A more appropriate graphic may be the new one the EPA is presenting in its updated Sustainable Materials Management initiative. It places composting near the top of the continuum. See pages 13 and 24 of <http://www2.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_rpt.pdf>.

Thanks you for the opportunity to provide feedback. I will contact you again should I have other contributions to offer as I continue to read the document.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Nicholas. We will include your comments about the food recovery graphic in full in the final draft of the Plan, so that this perspective can be shared with stakeholders who may be working on this topic during the implementation of the plan. We hope you will participate in implementation efforts as the Plan moves forward.

Comment 16: Kim McMann, New York State Community Action Association, 11/3/2015

Hello and THANK YOU! The website for the MA Food Plan is superb, the plan is attractive and the various reports/formats make it so accessible.

I live in the NY/MA border and coordinated a food security project for a few years in northern Berkshire County. Although I am not a resident of MA, I feel very strongly that I am part of the food system – in fact, I don’t think it’s all that simple to address the food system at the state level, when so many factors spill across these political borders. I live and vote in NY, but my CSA share is from a farm in Cheshire, the farmers market I most often frequent is the North Adams Farmers Market and the coop I belong to is in Williamstown. So, I hope that you won’t mind my comments coming from across the border! (And thank you for actions such as 1.1.7 under Processing goal 1 that illustrate how the plan addresses this.)

The Excel spreadsheet is the best tool I’ve seen released for a report comment period ever.

Because the Commonwealth doesn’t have county governments, I think it is vital that local public health boards, departments & regulations have statewide oversight specific to the plan, particularly to processing goals and actions. Processing Goal 1, Recommendation 1.2 is a great idea – consistency is much needed. Moving slaughter regulation to MDAR (same goal, Action 1.2.4) will also help with the consistency and level of expertise issues.

Under Processing Goal 2 it would be great to make some sort of plan to offer ServSafe (or other) certification available for free or very low cost – potential employees could have the certification prior to hire, volunteers at schools and farms could be required to have it prior to volunteering, families could even

benefit. While this may fit into Action 3.3.3 under processing, it may be more accessible if it's offered through local school districts or coops.

Distribution Goal 1 is important – and may be even more likely to occur with some non-traditional retail options – Recommendation 1.2 under Distribution Goal 1 suggests supporting traditional retail food establishments in communities with unmet needs, but I would suggest it should be traditional and non-traditional. A mobile market, buyers' club, pop-up grocery stores at schools or faith-based institutions may be more successful in such areas.

Distribution Action 2.3.1 describes data collection – will there be a way to share that data with farmers who are considering expanding to new crops?

Under Marketing Goal 1, Action 1.2.1 describes a statewide official term for “local food” – but I would suggest that particularly for schools trying to buy local food for cafeterias in western MA, food grown in CT, NY and VT are quite often more locally produced... please don't cause unintended consequences by eliminating truly LOCAL food with a narrow definition that would have great impact in Berkshire County.

Thank you for including Action 1.2.1 under FASH Goal 1 – supporting Living Wages!

FASH Goal 3 and the actions supporting it are terrific!

FAHS Goal 4, Action 4.2.4 – please add look for funding to help schools with this – the way school food budgets work make it hard for them to even have the kitchen tools necessary to cook! Quite often they are limited to box openers, can openers...

FASH Goal 5, action5.1.1 – could you include PEDIATRICIANS specifically?

FASH Goal 6 – while it's great to connect farmers to places where food won't go to waste, it's also important to find ways for farmers to be able to sell perfectly good food – for example, the ugly or small apples, the odd sized eggs... in addition to creating a connection to food charities for donations, help farmers get some money for food that isn't marketable but is fine for preparing good food like apple sauce, tomato sauce, using eggs for baking... You can find a way for schools to purchase food for cheaper than they normally would and get good, local produce... AND find a way for farmers to get something more than a tax write off. This maintains everybody's dignity and bottom line.

FASH Goal 8 – mention more access to FARMS as part of the education process. Nothing is more effective in getting kids to eat vegetables than KNOWING their farmers, seeing the farms...

Again, thank you for this amazing document, putting MA on the map! Hopefully this plan will become a model used by many other states!

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Kim. You raise an important point of the nature of what “local” food is, as it related to one of the key recommendations of the plan (Marketing Goal 1, Action 1.2.1) to develop an official, statewide definition for the term ‘local food.’ As you note, ‘local’ may have different meanings and relevancy in different regions of Massachusetts, especially those bordering our neighboring states. Your observations and suggested resources will be useful for stakeholders who will be working to implement the plan, and we hope that you will continue to stay involved in the plan.

Comment 17: Gretta Anderson, Arlington, Eastern Massachusetts CRAFT (collaborative regional alliance for farmer training), Boston Area Gleaners, 11/4/2015

First let me say "Wow!" Clearly a lot of good work went into this document. It does not seem like a draft at all. It seems well thought out, well presented and polished! I am grateful that the draft is so well put together.

My comment:

As far as I can tell, the plan only alludes to the role of gleaning in addressing food security. I would like see gleaning, and organizations that support gleaning, highlighted and supported in the plan.

Organizations like Boston Area Gleaners send farmer-led crews of volunteers to harvest, wash and transport excess crops to local food pantries and meal programs. It is not unusual for farmers to have excess crops in their fields and orchards. This often occurs at the end of a growing season, but also sporadically throughout the season. As a farmer, I think it's terrific when I'm able to divert this food to hunger relief organizations. Not so terrific is having to pay for these crops, for which I will receive no income, to be harvested. Gleaning organizations offer an incredibly valuable service to farmers and are able to dramatically increase the amount food diverted to hunger relief organizations.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Gretta. Your perspective as a farmer on the potential and actual ability of gleaning to address hunger and food insecurity is very important and will be of great interest to stakeholders who may be working in the future to implement actions related to gleaning in the plan. We hope you will be able to participate in these efforts, to ensure that the work of these groups gets the attention it deserves.

Comment 18: Jeanne Chambers, 11/4/2015

I read through the summary and the spreadsheets and i think you all have done a great job. I particularly think the goals of increasing access in the FASH section are important, because if people cannot find or do not understand how to use local fresh foods, it will not matter how much is produced. The small amount of research I have done on this subject leads me to believe that local food needs to be present and prominent as well as affordable for the demand for local food to grow.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Jeanne. We will include them in the final draft of the plan, and hope that you will participate in implementation efforts on FASH-related actions with stakeholders who will be working on these issues in the future. We hope you will continue to be involved.

Comment 19: Ed Stockman, Plainfield, Summit Farm, 11/5/2015

As an agrobiologist, 4th generation farmer and a consumer, I was disappointed in the Mass Food System Plan ("Plan") coverage of GMO issues. In the last 15 years, our food has been changed on a molecular level without our knowledge or our consent. GMOs in our food and the environmental impacts of growing GMO

crops has been a well-kept secret in American and this Plan supports and maintains that lack of transparency.

At the public forum I attended at UMass Amherst, much of the small group discussion focused on GMO concerns (both the health issues and environmental impacts) and included discussion of pesticide residues on and in food yet these issues were not brought forth in the Plan. I have to wonder if citizen input into the planning process and topics contained in the Plan had any real meaning.

A comprehensive Mass Food System Plan with goals to; (1) Increase production, sales and consumption of Massachusetts-grown foods, (2) Create jobs and economic opportunity in food and farming, and improve the wages and skills of food system workers, (3) Protect the land and water needed to produce food, maximize environmental benefits from agriculture and fishing, and ensure food safety, (4) Reduce hunger and food insecurity, increase the availability of healthy food to all residents, and reduce food waste should address the following points;

- As more and more genetic contamination of organic and non-GMO crops by GMO crops occurs, economic opportunities and job creation will be severely impacted. Farm numbers are increasing in MA and most growers are organic. Contamination issues need to be revealed in the Plan.
- I meet few people who know about systemic pesticides much less their mode of action. Why aren't the Impacts of systemic pesticide use on human and environmental health mentioned? I expect a complete Plan would discuss the fact that GMO crop and other conventionally grown crops contain pesticides that are systemic within the crop plant and cannot be washed or peeled off. Some of the pesticide residues, like glyphosate and 2,4-D, have recently been declared probable human carcinogens by the World Health organization. If the goal is truly healthy food production then these issues need to be addressed.
- Every poll taken finds a great percentage of Americans want to know if the food they purchase and feed to their families contains ingredients derived from genetic engineering. Some of the polls were taken in Mass. Why isn't mandatory labeling of GMO foods discussed in the Plan?
- The Plan claims to be concerned about environmental issues yet there is no mention of the environmental costs of GMO (industrial) agriculture practices. People need to know how their food is produced. The economics of farming are eventually impacted by environmental abusive farming practices. GMO farming is concerned with short-term profits rather than long-term stewardship of the ecosystems associated with agriculture.

The Plan fails in its leadership potential and should be re-evaluated from a consumer-farmer educational perspective.

Thank you for the opportunity to comment.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Ed. You have raised important points about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus

within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included, verbatim, in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 20: Brian Houghton, Boston, MA Food Association, 11/5/2015

As a member of the Advisory Council, I object to the following Action Plan for the following reasons:

FOOD ACCESS, SECURITY AND PUBLIC HEALTH – PAGE 131

Recommendation 8.4: Use tax policy to encourage purchases of healthy, locally produced food.

Action 8.4.1: Eliminate the sales tax exemption for sugar-added soda beverages and direct the resulting tax revenue to nutrition programs that increase the access to, and consumption of, healthy foods, including locally produced foods.

We believe that taxing such beverages, as is done in West Virginia, does not decrease the overall rate or level of obesity or incline individuals to purchase healthy, locally produced food as an alternative.

Educational efforts are not mentioned as a component for the use of this tax revenue, which would be more instrumental in helping to moderate the intake of such beverages.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Brian. I appreciate your participation in the planning process, and will include your comment in the final draft of the plan for the Food Policy Council to be aware of your concerns around this issue. We hope you will continue to be involved on this and other issues in the future.



240 South Road, Enfield, CT 06082-4451

800.562.2235 • 860.741.4380

Fax 860.741.4389

FarmCreditEast.com

November 5, 2015

Mr. Winton Pitcoff
Project Manager
Massachusetts Local Food Action Plan
c/o Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

Dear Mr. Pitcoff,

Farm Credit East welcomes the opportunity to provide comments on the draft Massachusetts Local Food Action Plan.

Farm Credit East is a member-owned cooperative which is the largest provider of credit and financial services to farmers, forest products businesses and commercial fisherman in the Northeast. In Massachusetts, Farm Credit East has over \$500 million in loan commitments to 930 customers. Farm Credit East has an office in Middleboro and its accounting and back office provider, Financial Partners, Inc., is based in Agawam. In addition, the Vice Chairman of Farm Credit East's board is cranberry grower Matt Beaton of Wareham.

Given the Massachusetts Local Food Action Plan's broad scope, we will focus our comments on a few specific topics in the Farming Goals section of the plan.

Farming Goal 1

Farm Credit East agrees with the important role UMass Extension and other public entities play in providing technical assistance to producers. As highlighted in the recommendation actions, these entities will play a key role in helping producers understand and comply with the new Food Safety Modernization Act (FSMA) regulations.

In addition to credit and related services which will be discussed later, Farm Credit East's Knowledge Exchange program seeks to educate members and other stakeholders on relevant economic and regulatory topics, and will be hosting a webinar on FSMA on December 10th.

<https://www.farmcrediteast.com/webinars>

Farming Goal 2

Farm Credit East strongly agrees with the intent of Goal 2 in terms of creating a more workable regulatory framework in Massachusetts in general, and specifically as it relates to maintaining a reliable supply of farm labor.

Farming Goal 3

As a provider of credit and financial services to Farm Credit East's members in Massachusetts, Farm Credit East recognizes the importance of financial and business planning support. We would recommend some changes, however, to the wording of the introduction and some of the actions under recommendation 3.2.

In the introduction, it is not clear what is meant by the following sentences: "For example there are resources available to help beginning farmers write business plans and obtain startup loans, but far fewer services are focused on business development, business management skills and access to capital. When financing is available it often saddles farmers with unsustainable debt."

While there are cases where farmers obtain debt they can't repay, we do not agree that this happens "often". Farm Credit East works hard to ensure that it doesn't happen even if it means not making a loan. I believe that last sentence speaks to a different issue which is that traditional debt is not appropriate in all cases.

When traditional debt is appropriate, we would submit that there are already both private sources like Farm Credit and public sources like the USDA's Farm Service Agency. Because Farm Credit East specializes in agriculture, our credit products can be tailored to the needs of individual producers with features like repayment terms which match the seasonal cash flows of the business.

And while we agree with the plan's premise that to be successful, farmers need a range of services in addition to credit, we believe that the draft doesn't recognize the existing services that are available from Farm Credit East and other providers. Farm Credit East provides a range of services including tax preparation, business consulting, financial recordkeeping, payroll, crop insurance and more, because Farm Credit East's business model is built on the spirit of action 3.2.3 to "Ensure that financial products for farm businesses are coupled with services and technical assistance that help farmers understand all options, commitments, and risks." <https://www.farmcrediteast.com/Products-and-Services.aspx>

In terms of serving producers at all stages of development, Farm Credit East has specific programs and incentives for Young and Beginning farmers. Farm Credit East now offers these products and services to veterans, and has partnered with the Farmer Veteran Coalition on a number of outreach efforts to connect with veterans who are interested in careers in agriculture.

I have attached a fact sheet with a brief summary of Farm Credit East's products and services for these producers. In particular I would point out the FarmStart investment program which is targeted to beginning farmers. In addition to investments of up to \$50,000, FarmStart provides coaching and assistance with budgeting and financial management to help new farmers be successful.

Given that that so many recommendations throughout the plan involve new programs or more resources for existing programs, creating new programs where viable options exist could divert resources from the plan's other priorities.

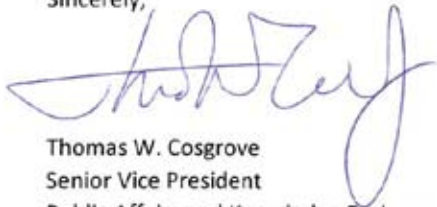
We recommend that whatever new initiatives are included in the final draft focus on leveraging and coordinating existing resources and making them more accessible. While we make this comment specifically in regard to new sources of capital and business assistance, it applies across all the recommendations in the report as we advocate leveraging existing programs or resources before recommending the creation of new ones.

Summary

We commend the Massachusetts Food Policy Council and its supporters. There are a number of worthwhile goals and recommendations in the plan and we believe this initiative could help highlight the importance food, agriculture and related industries in the Commonwealth. We are pleased to see that the plan highlights the economic impact of these industries and includes commercial fishing as part of the plan, as it is a critical industry in Massachusetts.

We recognize the time and effort that has gone into this plan, including the involvement of Farm Credit East's Jon Jaffe. We look forward to working with the task force members as the plan is implemented.

Sincerely,



Thomas W. Cosgrove
Senior Vice President
Public Affairs and Knowledge Exchange

Attachment:

Farm Credit East. . . Deep Commitment to Young and Beginning Farmers

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Tom. Wording under Farming Goal 3 was modified as you recommended, based on Farm Credit East's knowledge. Your observation that the plan does not acknowledge the full range of business-related technical assistance available to farmers is important and will be of value to stakeholders who may work on strategies to implement related actions in the future. Your letter will be included in the final draft of the plan, so that the Food Policy Council and stakeholders involved in will be aware of the knowledge and resources that Farm Credit East offers, and we hope that you will participate in the implementation of the plan.

November 5, 2015

To the Massachusetts Food Policy Council
and the Project Advisors and Executive Committee
of the Massachusetts Food System Plan
care of the Metropolitan Area Planning Council

Dear Council Members, Project Advisors, and Committee Members,

Re: DRAFT Massachusetts Food System Plan

I suggest that our state food system needs a stronger underlying public health component for the future. Should the plan be mainly about increasing production, sales, and consumption, or should it be about transforming the Massachusetts food industry into a partner in a food movement.

I propose that we DO NOT grow our food system economy just to sell more food, or market and advertise to get people just to buy more and eat more. We should be trying to produce the kinds of foods that our state residents want to buy for their quality and nutrients, in quantities that are reasonable to consume, and reduce dependency on food sources outside of New England and especially foreign ones. Adaptation to climate change and the resiliency of the food system will come at a cost, and that includes changing our priorities. "More" is not the only concept that the Massachusetts food industry should aspire to.

Please consider the detrimental effects of high-glycemic-index carbohydrate consumption on public health, leading to conditions like type-2 diabetes and chronic, auto-immune conditions, reported by practitioners and researchers, though not yet in the realm of FDA- or Surgeon General-level recommendations. This may be the defining medical and health issue of our time, and its root may be cheap food, highly-processed and produced at the cost of nutritional quality, the environment, and the welfare of living things (farmers, workers, and animals).

Diet, nutrition, and health care are personal and complex issues, but the MFSP can help achieve better outcomes by protecting the public from traditional marketing misinformation, helping farmers make different choices, and steering food processors away from the types of products that are patently unhealthy. We need a food policy that takes on specific public health issues like phasing-out processed, high-glycemic products that are reported to be a factor in several common public health issues.

I suggest that information from such sources as the Harvard School of Public Health¹ be the basis of a future, if not the currently drafted MFSP Plan. The usual drivers for the food system economy such as market rationality and economic bottom-line will not lookout for public health without some intervention from the State and other institutions. It will be hard to reconcile capitalist, free enterprise forces with healthy

¹ Carbohydrates and Blood Sugar. Harvard T.H. Chan School of Public Health. Retrieved from <http://www.hsph.harvard.edu/nutritionsource/carbohydrates/carbohydrates-and-blood-sugar/>

eating guidelines (such as eat less or no processed foods or consume smaller recommended portions based on body weight and activity level). The State could form a partnership with public and private stakeholders to put-together and implement a long-term plan that prioritizes the improvement and maintenance of public health. I propose a plan based on the most current public health information instead of on business, consumerism, and marketing principles.

Today, there are easily many reliable sources of guidance and statistics on obesity, chronic disease, and especially how conditions that did not manifest until much later in life are increasingly common among young children. Yes, we are living longer, but the signs are coming at earlier ages. There are experts who can connect diet to these conditions; diet that is primarily made up of highly processed foods. This is a simplified explanation but the important take-away is that through different diet choices such conditions can be prevented, delayed or minimized.

The Centers for Disease Control and Prevention (CDCP):

- Approximately 17% (or 12.7 million) of children and adolescents aged 2—19 years are obese
- The prevalence of obesity among children aged 2 to 5 years decreased significantly from 13.9% in 2003-2004 to 8.4% in 2011-2012.²

The American Cancer Society (ACS):

"You can lower the number of calories that you take in by eating smaller amounts of food (lowering portion sizes), limiting between-meal snacks, and limiting foods and drinks that are high in calories, fat, and/or added sugars, and that provide few nutrients. Fried foods, cookies, cakes, candy, ice cream, and regular soft drinks should be replaced with vegetables and fruits, whole grains, beans, and lower calorie beverages."³

In July 2012, the ACS Cancer Action Network wrote to the U.S. Department of Health and Human Services requesting a review of the effects of sugar-sweetened drinks on health.⁴ *"We know there is a direct link between excessive consumption of sugar-sweetened beverages and obesity, and the adverse health effect can be profound in children as they grow into adults and throughout their lives. As was the case in 1964, when the Surgeon General first revealed to the broad American public the dangers of tobacco consumption, an unbiased and comprehensive report on the impact of sugar-sweetened beverages could have a major impact on the public's consciousness and perhaps begin to change the direction of public behavior in their choices of food and drinks."*

² The Division of Nutrition, Physical Activity, and Obesity of the CDCP. Retrieved from <http://www.cdc.gov/obesity/childhood/index.html>.

³ The American Cancer Society. Guidelines on Nutrition and Physical Activity for Cancer Prevention. 2015 April. Retrieved from <http://www.cancer.org/acs/groups/cid/documents/webcontent/002577-pdf.pdf>.

⁴ Retrieved from <http://www.acscan.org/content/media-center/acs-can-requests-surgeon-generals-report-on-sugar-sweetened-beverages/>.

Scientific American blogger Feris Jabr⁵: *By consuming so much sugar we are not just demonstrating weak willpower and indulging our sweet tooth—we are in fact poisoning ourselves according to a group of doctors, nutritionists and biologists, one of the most prominent members of which is [Robert Lustig](#) of the University of California, San Francisco, famous for his viral YouTube video "[Sugar: The Bitter Truth](#)."*

The American Heart Association⁶: *"Science has advanced in the area of added sugars and health, creating mounting pressure to use better methods for translation and dissemination of the science for consumer education and for food companies to respond by producing foods and beverages with fewer added sugars. The new science also reinforces the importance of preventing, rather than simply treating diseases, especially overweight and obesity, diabetes mellitus, high blood pressure, heart disease, and stroke. Reducing added sugars consumption is a good target for addressing obesity, along with other sources of excess calories. However, the potential unintended consequences of substituting added sugars with ingredients that may not reduce calories and of increasing other macronutrients or food groups that may not result in a net health gain must be considered. Although there are many challenges to incorporating added sugars to the food label as was discussed during the conference, disclosure of added sugars content on food and beverage labels is an essential element in consumer education and can provide the information and motivation for making healthier food choices."*

If Massachusetts is to continue to provide a good quality of life for all its residents, I think our leadership needs to start linking its food system policies to the critical issues of diet and health. Do we want to be just another state with rising obesity rates, increasing health care costs, and a food system disconnected from its customers? I propose that a resilient food system needs a healthy public, and would be strongest if it is actively helping create a healthy environment.

Thank you for this initiative. The timing of your efforts could not come at a better time. It is a huge undertaking, greatly appreciated, and much needed.

Sincerely,

Monique F. Yaptenco
Boston MA 02116

⁵ Is Sugar Really Toxic: Sifting Through the Evidence. Retrieved from <http://blogs.scientificamerican.com/brainwaves/is-sugar-really-toxic-sifting-through-the-evidence/>

⁶ Linda Van Horn, Rachel K. Johnson, Brent D. Flickinger, Dorothea K. Vafiadis, and Shirley Yin-Piazza. *Circulation*. 2010;122:2470-2490 published online before print November 8 2010, doi:10.1161/CIR.0b013e3181ffdc0

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Monique. Your comments underscore those we received from many others during the planning process about the direct connections between diet and health. There are several recommendations and actions that address this issue, especially those under the Food Access, Security and Health Goal 5, "The roles of health care providers, institutions, and insurers in fostering access to healthy food will be expanded." Your comments will be included in the final plan so that this important perspective can be brought to the attention of the Food Policy Council and other stakeholders as implementation of the plan goes forward. We hope you will continue to be involved.

Comment 23: Catherine D'Amato, Boston, The Greater Boston Food Bank, 11/6/2015



Mr. Winton Pitcoff
Project Manager
Massachusetts Food System Plan

RE: Comments to 10-23-15 Draft

Dear Mr. Pitcoff,

Thank you for the opportunity to comment on the Massachusetts Food System Plan. The Greater Boston Food Bank (GBFB) is the largest food bank in Massachusetts and New England and among the top 20 food banks in the United States. In FY 2015 (which ended September 30), GBFB distributed 54.1 million pounds of high quality food (the equivalent of 45 million meals) to more than 550 hunger relief agencies and programs in Eastern Massachusetts. More than 25% of this distribution (13.8 million pounds) was fresh produce. Additionally, GBFB is contracted by the Commonwealth of Massachusetts to manage the Massachusetts Emergency Food Assistance Program (MEFAP). These funds are then shared on a pre-determined allocation with the three other food banks in Massachusetts (Food Bank of Western Massachusetts; Worcester County Food Bank; and Merrimack Valley Food Bank).

I am writing to provide commentary on two areas of recommendation within the Massachusetts Food System Plan: designation of MEFAP funds (FASH Recommendations 6.1) and supporting the seafood industry (FASH 6.2.2).

The greatest challenge for any food bank is to provide high quality, good variety food to those in need for the best value possible. On average, GBFB spends 29 cents per pound of food distributed¹ and we were one of the first food banks nationally to rate our inventory on a nutritional measurement. We are currently at 82% of inventory on an annual goal of 80%. But even in distributing 54 million pounds of healthy food in FY15, we fell short of our goal of providing enough food to feed food insecure individuals in eastern Massachusetts one meal a day. We are at 86% of that goal and not only do we expect to equal that achievement in FY 16; we hope to exceed it and reach one meal a day.

All of our highly nutritious product is made available to food insecure elderly, families and individuals who find themselves in the terrible predicament of not being able to afford food, let alone high quality food. By targeting 25% of our distribution as fresh fruits and vegetables, we are assured that our clients are not only treated with dignity but have access to those foods that will contribute to their health or the recovery of their health. Additionally, GBFB raises resources for capacity grants that are provided to selected agencies (through a rigorous grant review process) in order to serve food insecure individuals better, varied food more often and more conveniently. In FY15, GBFB raised \$120,000 for this purpose and also helped other donors direct an additional \$120,000 to agencies for capacity building. The most common use of these funds is refrigeration. While our research shows that agencies struggle with refrigeration capacity, it also shows that in most cases, clients do not have such restrictions.

¹ This is average to low for major food banks.

Beyond fruits and vegetables, clients seek protein and shelf stable items. While we always strive to find the best value on protein items, they are still our most costly category by far. We do receive donations from USDA and from the generous food industry in Massachusetts. That being said Massachusetts still imports more than 85% of its food, so it is often necessary to go outside of the Commonwealth to purchase requested products. There are items, such as ground beef, that are desired by our clients but too costly (and not as healthy) for us to consider. Instead, we purchase ground turkey and often receive chicken donations from the Federal Government (USDA) when it is available.

All of this is to illustrate that the management of food for emergency support is complex and unpredictable. MEFAP is one of five different food sources managed in our food acquisition process. We work closely with MDAR to maintain the intent of the appropriation, nutrient rich foods for people in need, while juggling costs and purchases to allow for a maximum variety, quality, consistency and availability. There are many considerations that include local sourcing and value. Annually, we have grown local fruits and vegetable spending in Massachusetts from \$260,000 in 1998 (this is an error in your document where it is stated in the plan summary on page 8 that MDAR began dedicating a portion of MEFAP in 2010, it was actually in 1998) to \$840,000 in FY15 with a FY16 projection of \$1,088,704. If other Massachusetts produced products are included, the FY16 purchasing of Massachusetts' specific products will be over \$2 million or 12.8% of the total contract.

We believe that your desire to support locally grown products is well supported in our management of the MEFAP contract. Adding arbitrary spending limits will only confound an already difficult food acquisition process and potentially reduce not only the amount of fresh product that clients receive but other important products like protein while increasing the cost per pound.

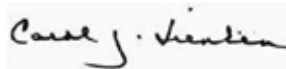
This leads to the recommendation of supporting the seafood industry. We wholeheartedly endorse any endeavor to purchase seafood locally. This is an area of opportunity and, hopefully, partnership for GBFB and the seafood industry. Currently, however, even non-traditional species such as dogfish or skate cost significantly more per pound than whitefish from other states. Additionally, consumer awareness of these non-traditional species is skeptical at best and would require significant awareness building. We would gladly participate in endeavors that will result in affordable, local seafood.

There are other comments made within the context of the plan that are not altogether accurate. Nutrition education is always important and the emergency food system works very hard to insure that clients are given every resource around food safety and nutrition that might be available. Obesity, however, is as much a product of economics as it is education. When a food insecure person has a choice of paying 99 cents for a hamburger or \$5 at a salad bar, what choice do they have? Until that inequity is addressed, food insecure people will continue to provide as much food as they can with the resources that they have including their knowledge of nutrition.

Sincerely,



Catherine D'Amato
President and CEO
The Greater Boston Food Bank



Carol Tienken
Chief Operating Officer
The Greater Boston Food Bank

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Catherine. The information that you provided about the quantities and nutritional content of food distributed by The Greater Boston Food Bank is an important addition to the plan and will be of value to stakeholders who will be involved in implementing the plan. We note your concern that the recommendation for setting a goal for purchases of local food through the MEFAP program could pose administrative and procurement problems; this is important information for stakeholders who may come together to work on this and related recommendations. We hope that The Greater Boston Food Bank will continue to be involved in this plan and its implementation.

Comment 24: Kathleen A. Vorce, Boxborough, 11/6/2015

While I was unable to attend local information sessions, I did take the time to watch live the entire Senate policy hearing on GMO's, and it offended my intelligence to see how "stacked" that panels of presenters were. I was extremely grateful for the appearance and testimony of Gary Hirshberg of Stonyfield Farm for his poised, polite and candid testimony, and his comments that the Other Side of the controversy over GMO's was disproportionately under-represented certainly reflected my own thoughts.

In the second paragraph of your Summary to the Draft Plan you state "the growing interest of Massachusetts consumers in "buying local" reflects their desire to eat more nutritious food, support the local economy, and sustain the environment." I concur with you about the truth of this statement. This growing desire is fueled by a growing awareness of the controversies that surround creation, cultivation, storage and processing of foods – things that many took for granted in the past. This being so, your plan leaves an aware population "starving" because you evade addressing the greatest controversy, that of GMO's. What scares me is that in this absence of information you may be allowing the invasion of our Local Economy by that which we question and resist the most.

I have listened to both sides of the GMO argument, from people whom I highly respect – not politicians, and I remain fixed in my opinion: I insist on my right to make an informed choice, and I would hold any propagator to a standard of strict liability for any cross-pollination from GMO crops (exactly the OPPOSITE holding that the courts have asserted) and I would absolutely allow any individual, community or state to defer out of commerce or use of systemic pesticides within its jurisdiction. The conclusions are too contradictory, and the evidence not gathered over a long enough time to support a decision for use in anything but an extremely controlled environment (if at all).

In answer to the Senators' most burning question about how to address the public's concern: TELL THEM FOR GOD'S SAKE. That excuses about the cost of labeling is even given air time, that not only are omissions of disclosures accepted but that public right-to-know legislation is being suppressed, that despite significant questioning at public forums GMO's are barely addressed in your own major policy paper – all of this panders to the food industry and not only insults the consumer, but incites a profound distrust and suspicion of any dialogue, where you ignore the popular consensus in your summary publication. You are widening the gap in trust and credibility rather than closing it. The public is not as stupid as you take them to be, and they are growing increasingly intolerant of patronizing politics-as-usual and manipulation of the public forum by the moneyed industrialists.

You have accomplished a mockery.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Kathleen. You have raised important points about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed during the planning process (which did not include the Senate hearing that you referred to). The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm

practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included in the final draft of the Plan and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward. They will also bring this issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 25: Debra Darby, Gloucester, Darby Marketing, 11/6/2015

The MA Food System Plan should include representatives from Northeastern MA - specifically Essex County and City of Gloucester. Essex County and City of Gloucester are important contributors to Massachusetts' local food systems to help MA Food System Plan achieve its goals.

Goal 1: Increase production, sales and consumption of Massachusetts' grown Foods. Massachusetts' strong agricultural, fishing, and processing sectors offers a platform upon which increased production, sales, and consumption of local food can be leveraged.

- Gloucester should continue to serve as a prominent fish processor, food manufacturer and supplier. Gloucester has the platform and workforce.
- Essex County is an agricultural area with high-quality mid-sized and small farms that provide a variety of local food to our communities.
- Gloucester's farmers market is one of the largest.

Goal 2: Create jobs and economic opportunity in food and farming, and improve the wages and skills of food system workers.

- Essex Technical High School is a resource for training in food production, farming.
- Gloucester is positioned to be a growing center for innovative food system production, products food processing waste for reuse.

Goal 3: Protect the land and water needed to produce food, maximize environmental benefits from agriculture and fishing, and ensure food safety.

- Essex County is increasing food production, adding to the sales and consumption of MA-grown foods as demonstrated by the increasing number of farms. Along with the diversity of food items including beef, milk, eggs, grains, beans, fruit, craft cheeses and beverages.
- Coastal Essex County's fishing communities are working to maintain a sustainable fishing industry and working waterfront. Fishing is MA's historical cornerstone of food production and supply.
- Essex County has a strong interest in diverting food waste to composting or other higher-value reuse. Several communities have voluntary programs working with local haulers and composters.
- One recommendation is to consider anaerobic digestion as a part of Gloucester's food processing infrastructure and wastewater treatment. Support Gloucester's eco-industrial infrastructure.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Debra. The information that you have provided about the interest of stakeholders in the Gloucester area, as well as the food system resources and businesses that are available

there, will be useful to stakeholders who may work on implementation of the plan. You may be aware that during the planning process the leader of the Fisheries Working Group was Valerie Nelson of Gloucester, and she held a working group session in the city. Also many fishermen from Gloucester and the North Shore participated in the planning process, and many farmers and consumers from your area either participated directly, or were represented by members of organizations that represent their interest. We hope you will be involved in the implementation of the plan and work to encourage others in the seafood industry to do so, as well.

Comment 26: Mayor Sefatia Romeo Theken, Gloucester, City of Gloucester, 11/6/2015

City Hall
Nine Dale Avenue
Gloucester, MA 01930



TEL 978-281-9700
FAX 978-281-9738
stheken@gloucester-ma.gov

CITY OF GLOUCESTER
OFFICE OF THE MAYOR

November 6, 2015

Mr. Winton Pitcoff
Project Manager
Massachusetts Food System Plan

Dear Mr. Pitcoff:

As Mayor of Gloucester, I would like to endorse several key recommendations in the draft MA Food System Plan, in particular with regard to the chapter on Fishing. Our community appreciates greatly the statewide interest and commitment to the goals in this chapter, in particular the protection of the marine ecosystem, the development of strong markets, and the restoration of a fisheries and seafood research program.

The fishing industry relies on a healthy ocean for a sustainable marine fisheries and shellfish industry, as referenced in Goal 1. We are exploring a pilot project for oyster restoration in our outer harbor and would benefit from state assistance and support for this and other restoration projects. We strongly support investments by the state in improved fisheries dependent and independent data collection and stock assessments, which are the foundation of fishery management plans. It is vital to incorporate knowledge and input from fishermen.

Goal 2, to create strong markets, support livelihoods and increase consumer demand is of particular interest for Gloucester's fishing fleets and processors. With cutbacks in total allowable catch for cod, it is necessary to expand markets for other species and value-added products. The City looks forward to working with the Seafood Marketing Commission and other state agencies in this regard.

The City of Gloucester, local partners, and the Urban Harbors Institute at U/Mass-Boston are particularly interested in support for Action 2.3.7, "to determine the feasibility and develop seafood innovation districts that include elements such as test kitchens, laboratories for developing value-added products and innovative technologies to recover and utilize waste, and start-up accelerators to develop new businesses. Include support systems such as active collaboration with food policy councils, grant writing, marketing studies, business planning, and early-stage financing." This recommendation builds upon a number of recommendations in harbor planning in Gloucester, as well as in the state-funded 2014 Port Recovery Plan.

My office is also interested in the development of goal 4 – "a local seafood system that is collaborative and networked". My intention is to work collaboratively with Mayors from other Massachusetts fishing ports in advancing a sustainable seafood system.

Finally, I would like to highlight the importance of Action 5.1.7 and 5.1.8 – "Commit state funding and grants to expanded research for local seafood product development and sustainable fish and shellfish operation innovation, with an eye toward expanding markets for underutilized species and revive and expand seafood science research and development laboratories", in particular in partnership with a reestablished University of Massachusetts seafood science facility, either at Hodgkins Cove or in the Designated Port Area.

Gloucester is fully supportive of state initiatives and funding to advance the multiple goals of the MA Food System Plan. Thank you for the opportunity to comment.

Sincerely,

Sefatia Romeo-Theken
Mayor

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Mayor Theken. We note your support of several recommendations related to the seafood industry and look forward to your participation in the implementation process.



Massachusetts Association of Conservation Commissions

protecting wetlands, open space and biological diversity through education and advocacy

**Massachusetts Association of Conservation Commissions
Comments on the
Massachusetts Local Food Action Plan October 23, 2015, Draft for Public Review**

November 6, 2015

INTRODUCTION

The Massachusetts Association of Conservation Commissions (MACC) appreciates the opportunity to comment on the excellent October 23, 2015, Draft for Public Review of the Massachusetts Local Food Action Plan (the Plan).

We agree with the four general goals established for the Plan. The goals set important markers for the state and recognize the economic, health, and social values of locally grown and consumed agricultural products. The Plan often strikes a good balance between the four goals and the many other economic, social, and environmental goals our state must achieve and maintain to be a good place to live, work, and thrive.

With all that is good and comprehensive in the Plan, we think the Plan strikes the wrong balance in places and misses opportunities. In particular, the recommendations about wetlands and farming are not well-founded, would set the stage for unnecessary conflict, and potentially damage vitally important natural resources. We support many of the other recommendations for increasing agricultural production and farm viability, such as revisions to state and local land use laws to promote more compact development in appropriate locations and allow for agriculture within residential and urban areas. Our comments focus on those important aspects of the Plan, where we have considerable expertise and experience.

MACC

MACC, established in 1961 and incorporated in 1978, is the professional association of Massachusetts conservation commissions. The conservation commission in each of the 351 cities and towns in Massachusetts is an integral part of its municipal government, with responsibilities for protecting wetlands, wildlife, and conservation lands. Conservation commissions administer and enforce the Massachusetts Wetlands Protection Act (G.L. c.131, § 40) and municipal home-rule wetlands laws and regulations. Most projects in or near wetlands require a permit (Order of Conditions) issued by the local conservation commission before work can be performed and the work must be consistent with the conditions of the permit and state and local wetlands protection requirements. Conservation commissions also protect conservation lands and other natural resources in their communities under the Massachusetts Conservation Commission Act (G.L. c.40, § 8c) and Community Preservation Act (G.L. c.44B). Many conservation commissions manage municipally-owned conservation lands; some hold conservation restrictions or easements on other parcels. In some communities, conservation commissions manage or hold conservation easements or restrictions on lands used for agriculture.

10 Juniper Road / Belmont, MA 02478
Phone: 617-489-3930 / Fax: 617-489-3935 / www.maccweb.org

We provide legal, scientific, policy, and technical training and advice to Massachusetts conservation commissioners: to new commissioners who may lack information about their responsibilities, the laws they must implement, and the scientific and technical basis of the work; and to more experienced commissioners faced with new laws, regulations, and policies, evolving science, new technologies, and other changing circumstances they must understand and consider. We also speak for wetland and open space protection on federal and state advisory committees and in meetings with state and federal officials. We advocate for environmental laws, regulations, and policies that will work, are scientifically sound, and can be implemented and enforced at the local level.

We wrote and publish *Protecting Wetlands and Open Space: MACC's Environmental Handbook for Massachusetts Conservation Commissioners*. With twenty-two chapters and eight special topic sections, it is the indispensable resource for those serving on, working with, or appearing before conservation commissions. We also wrote and publish the *Massachusetts Runoff, Erosion & Sediment Control Field Guide*, a reference used by conservation commissions in hearings and on field visits to assure that work done in wetlands does not result in runoff and erosion, major causes of water pollution and stream degradation. We created and present the ten-unit certificate course, *Fundamentals for Conservation Commissioners*, which provides a grounding in the laws, regulations, science, technology, and policy of wetlands protection and the acquisition and management of conservation lands. Our Annual Environmental Conference is the largest of its type in New England, with an annual attendance of about 750 people, offering workshops, trainings sessions, and exhibits focused on wetlands and open space protection and implementation of the Massachusetts Wetlands Protection Act and Conservation Commission Act.

Our comments are informed by our knowledge of the Massachusetts Wetlands Protection Act and its regulations, local wetland bylaws and ordinances, and the intersection between wetlands protection and agriculture, including the manual, *Farming in Wetland Resource Areas: A Guide to Agriculture and the Massachusetts Wetlands Protection Act*, (January 1996, produced by the Massachusetts Departments of Environmental Management, Environmental Protection, and Food and Agriculture). We also know and appreciate the value of having a vibrant and sustainable food system in Massachusetts.

DISCUSSION

Plan Goal 3 is to “protect the land and water needed to produce food, maximize environmental benefits from agriculture and fishing, and ensure food safety.” That is a laudable goal. The Plan, however, calls for making more land available for farming by, among other things, reviewing how to bring current wetlands back to agricultural use and changing the Wetlands Protection Act and regulations to allow wetlands to be converted to farmland. Those actions, if carried through, would destroy wetlands and the ecosystem services they provide. That is the wrong balance to strike in the Plan.

We were surprised to read a plan written in the 21st century that would create a pathway to reducing wetland acres in Massachusetts. Too many wetland acres in Massachusetts (and nationally) have been lost to development. The Plan replicates a sorry history of seeing wetlands as a path of least resistance for development because wetlands are undeveloped and thus often easier and less expensive to acquire and use than already developed land. The theme that runs through part of the draft Plan, especially in Goal 3 - to expand or redefine the agricultural exemption under the Wetlands Protection Act to allow more wetlands to be converted to farmland - is simply unacceptable and contrary to our state's goal to

protect its natural resources.¹ Wetlands are critical natural resources. They protect and improve water quality (including the drinking water for much of Massachusetts), provide opportunities for boating, fishing, birding, swimming, and other recreation, support active fisheries, and are home to native animals and plants, including rare and endangered species that would go extinct if not for wetlands. With a changing climate and rising sea levels, the ability of wetlands to soak up carbon and storm water and buffer us from floods is especially significant. Wetlands are a critical part of the web of life that supports and protects us all, locally and globally. The Plan, in its introduction to Goal 4, notes that wetlands and other natural resources on farmland “filter water, reduce flooding, recharge aquifers, and provide year-round habitat for many species of fish and wildlife and stopovers for migrating birds,” yet at the same time the Plan seeks pathways that would expand agricultural use into wetlands, destroying or reducing the critical environmental services those wetlands provide. The current balance in the law, exempting current farmland from most wetlands requirements, but not allowing more conversion, is the right balance and has served the Commonwealth well.

We think it is a mistake for the Plan to point back to the days when wetlands could be sacrificed for agricultural use. We now know more about the functions and values of wetlands and the environmental services they provide. Modern farming techniques do not have to rely on antiquated practices that converted wetlands to farmlands. Those marginal farming areas are better reverted to wetlands so they can provide adequate protection of water quality and ecosystem health needed to sustain long-term agricultural operations outside the wetlands.

The Plan identifies other options that would increase the availability of land for agricultural use without the many negative environmental impacts that would ensue from conversion of wetlands to farmlands. We agree with those other options and suggest the Plan include more emphasis on how low impact development, cluster development, and other modern zoning and site planning techniques can be used to designate uplands for agricultural use while at the same time provide buffers to important wetland and water resources. Agriculture can be mixed with other development, allowing small farms and other crop producing areas to be located throughout the state. Those zoning and site planning requirements can be written into the state zoning code or made an option for local communities to adopt. We suggest that Plan Recommendations 3.3 and 3.4 and the Action items under them be expanded to make planning and zoning changes more explicit. The Plan may also suggest working with organizations such as MACC and Citizen Planner Training Collaborative to revise local zoning bylaws and ordinances to allow for low impact residential development that could open upland areas to agriculture while at the same time protect wetlands.

We suggest the Plan include a recommendation or action item in Goal 3 that prime agricultural soils be mapped. That would allow those lands to be listed for potential future use as agriculture and perhaps protected to allow for agricultural expansion.

We are concerned that the Action items listed in Recommendation 3.7 appear to focus solely on agricultural uses having priority over wetlands protection. The discussion should not be about how to return wetlands to agricultural land. Instead, the discussion should be about developing standards to allow agriculture to exist in the landscape among important natural systems.

¹ The Plan ignores the federal Clean Water Act requirements related to wetlands and agriculture, which would serve to prevent conversion of wetlands to farmlands in most instances.

Recommendation 3.7 and Action items 3.7.1 through 3.7.4 also require better balance. We agree communication between the farming community and the conservation community can be beneficial. Ensuring a common understanding of wetland laws and regulations, wetlands values, functions, and protection opportunities, and agricultural practices would be important. We are ready to play a role in that undertaking and work with the MA Association of Agricultural Commissions, as recommended in Action item 3.7.4. For better balance, and a better starting point for discussion, we suggest that Action 3.7.3, to “Pursue a program that would allow towns to obtain better insurance rates if Conservation Commission members attend trainings,” should be extended to Agricultural Commissioners also.

We think Recommendation 3.7 and its Action items wrongly imply that conservation commissions have little or no understanding of the interaction between wetlands and agricultural lands. Our Annual Environmental Conference often includes a well-attended workshop on agriculture and the state wetlands regulations. *Protecting Wetlands and Open Space: MACC's Environmental Handbook for Massachusetts Conservation Commissioners* devotes a Special Topic section to agriculture and additional pages within the Handbook to the agriculture exemption.

The title of Recommendation 3.7 should not be the one-sided, “Improve understanding among the agriculture and conservation communities of state and federal wetlands laws and regulations and their impact on farmland.” The title should be more balanced; it should also include agriculture impacts on wetlands.

Recommendations 3.8 and 3.9 would benefit from suggesting financial incentives for farmers to place portions of their lands that are not suitable for farming into conservation easements or restrictions. Consistent with our comments on other recommendations, we suggest Recommendation 3.9 explicitly note that the recommendation is not intended to convert wetlands to agricultural land.

We agree with the Plan’s Inputs Goal 5 to increase energy efficiency and the use of renewable energy and reduction of energy costs. We would like to add a word of caution. We have learned of instances where wetlands on agricultural land, because they are inappropriate for agricultural use, were proposed for solar arrays. Placing solar arrays in a wetland is generally an inappropriate use of a wetland and would alter or harm the value of the wetland. We suggest the Plan acknowledge that use of renewable energy must be consistent with other state laws and regulations.

We appreciate the opportunity to comment on the Plan. Overall, we are heartened by its readability, comprehensiveness, and goals. As discussed in these comments, the Plan requires amendment to achieve a better balance between agriculture and the natural environment.

For follow up on these comments, please contact MACC Executive Director Eugene B. Benson at 617-489-3930 or eugene.benson@maccweb.org.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Eugene. We note your concerns about striking an appropriate balance with respect to issues related to wetlands and farmlands. The issues you raise are challenging ones and will require collaboration as implementation of this plan moves forward among knowledgeable stakeholders, including MACC, to develop and implement the kinds of regulatory changes that can help achieve the broader goals of the plan, upon which there is agreement. We look forward to MACC’s participation in the future.

Comment 28: Kristen Irvin, Eastham, Southern New England Livestock Association, 11/6/2015

The Southern New England Livestock Association (SNELA) is a non-profit organization comprised of farmers and local food advocates dedicated to addressing problems facing livestock farmers in Southern New England. Our mission is to strengthen the viability of the livestock industry in Southern New England through the creation of a new, USDA-certified, state-of-the-art slaughter and processing facility in Westport, MA, and to rebuild a healthy educational infrastructure for raising livestock in the 21st century.

SNELA supports many of the goals and recommendations in the draft Local Food Action Plan. Our organization's plans for the processing facility as well as our educational initiative are in line with the goals proposed in the LFAP. We see our mission overlapping with several objectives and recommendations, especially with regard to:

- investing in and facilitating development of livestock processing infrastructure (for pigs, cattle, goats, and sheep, as well as poultry)
- revising regulatory requirements for livestock processing
- moving slaughter oversight to MDAR
- ensuring stable, safe, and skilled employment in the processing sector and increasing training resources for following safe food handling practices
- providing technical assistance to operators and staff of meat processing facilities
- dedicating funding toward stronger promotion of MA-grown products in the supply chain and to support Buy Local organizations
- developing incentives that facilitate the purchase of local agricultural products by retail and wholesale buyers, restaurants and consumers
- protecting farmland, encouraging land trusts to lease land to farmers, and incentivizing farmers and farmland owners to keep their land in farming as it transfers out of their ownership

SNELA's proposed slaughter and processing facility will create employment, support and encourage the growth of livestock production, and will have economic ripple effects throughout the sector, thus many of the goals and recommendations speak to our overall goals with the facility. Our organization also focuses on education. We support any work your proposed Collaborative can do to increase funding to non-profit organizations that provide workshops and TA to future and existing livestock producers and farmers.

SNELA recognizes it will take a collaborative effort to carry out the action steps to achieve the goals of the plan and while we agree that most of the goals and recommendations of the plan are important, we are concerned that the plan would remain a list of unfunded action items that the Food Policy Council continues to meet about but not work to implement. Overall, we appreciate the consideration of the Implementation Goal of the plan and support the objectives to hire a project manager and subcontractors and to secure funds for operation.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Kristen. The information you have provide about SNELA's mission and activities (particularly your proposed

slaughter and processing facility) that will be of interest to stakeholders who may work together to implement actions of this plan related to livestock. We appreciate your collaborative perspective and look forward to your continued involvement in the implementation of the plan.

**Comment 29: A. Richard Bonanno, Marlborough, Massachusetts Farm Bureau Federation, Inc..
11/6/2015**



MASSACHUSETTS FARM BUREAU FEDERATION, INC.

"The Voice of Agriculture"

249 Lakeside Ave, Marlborough, MA 01752-4503 • Phone: 508.481.4766 Toll Free: 1.866.548.MFBB • Fax: 508.481.4768
www.MFBB.net

November 5, 2015

Winton Pitcoff, Project Manager
Massachusetts Food System Plan
wpitcoff@mapc.org

Winton,

First of all, thanks for all your hard work on the Food System Plan. Your dedication is truly evident in this product and I believe it will have life for years to come. Kudos also to your committee for their work over these many months.

I wanted to express a few thoughts relative to agriculture in the Commonwealth and the need to be all inclusive. This plan certainly must have broad appeal to everyone represented. It should not be controversial and in keeping that sentiment, has so much to offer.

In thinking about what can come out of the plan in the future, I would encourage you as well as those that will become stewards of this plan to consider the future viability of the farmers of Massachusetts. Any new legislation or regulation that comes from this plan must protect the ability of farmers to use all the tools available to them and be inclusive of new technology. The future is never certain but we are currently planning for both U.S. and worldwide increases in population, heightened concern over both animal and plant diseases, and increased scrutiny of a public that has limited knowledge of agriculture.

One area of concern is the expanding area of new plant breeding techniques including transgenesis, cisgenesis, intragenesis, targeted mutagenesis, targeted introductions of recombinant DNA, RNA-induced DNA methylation, and yet undiscovered forms of biotechnology. Currently we are focused on transgenesis which has given us both herbicide-tolerant and insect-tolerant crops. One example of this use in Massachusetts includes herbicide-tolerant field corn grown for silage by our dairy industry. Well over 90% of the acreage is planted with these varieties and has been for almost 20 years. Following the adoption of this technology, growers have reduced herbicide use by over 1 lb. active ingredient per acre or 34% with a resulting decrease of almost 30,000 lbs. of herbicide annually. Similarly, about 40% of sweet corn acreage is planted to insect-resistant varieties. In many cases, growers have reduced their insecticide use in this crop by 33% to 100% (3 applications down to 2, 1, or zero). Transgenic sweet corn varieties have been grown in Massachusetts since the late 1990's. There are a few groups and individuals that have chosen to demonize both this technology and the farmers who grow these crops, discounting or ignoring the benefits. Farm Bureau supports a policy of co-existence and the rights of farmers to choose any legal production practice that suits their personal preference and customer base.

Another area is that of food safety. This area is changing rapidly with new Federal regulations, marketing requirements, and customer demands. While we do not know how the future will be shaped by this changing technology, farmers must be able to remain viable while they comply. Two critical areas are water quality and manure management. We believe that the public can be best protected through the continued viability of small farmers. We hope that FDA, DAR, and public perception do not increase risk to the food supply and the public by advocating for policies that result in the exclusive survival of large farms.

Pressure on farmers regarding animal production practices is also a real concern in Massachusetts. Current pressure is on the elimination of practices that largely do not exist here but it is unclear how this will change in the future. Again, there must be flexibility as the future is unknown. For example, many poultry and egg producers have birds in outdoor environments. This practice is common, beloved by the public, and results in higher product costs for farmers. However, the migration of Avian Influenza across the US may make this production practice less viable into the future. Barns and cages may be the safe havens of the future. Again, encouraging varied legal production practices will insure that infrastructure is not lost and production practices can change based on real future needs.

Ultimately, Farm Bureau advocates for and encourages production practices that allow farmers to remain viable, feed the public, and protect the environment. The ones I have mentioned above represent only a snapshot of major current issues. We believe that this plan is in the interest of all farmers. Thank you for the opportunity to provide comment and we ask for continued involvement as this document evolves.

Sincerely,



A. Richard Bonanno, Ph.D.
President

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Rich. Your comments will be included in the final version of the plan, so that the Food Policy Council and others will be aware of this important perspective. Farm Bureau's participation in the planning process has brought many important voices to the table, and we hope that your organization will stay involved as we move toward implementation.

Comment 30: Francie Randolph, Truro, Sustainable CAPE- Center for Agricultural Preservation & Education, 11/6/2015

We at Sustainable CAPE would like to thank you for your time and efforts in creating a comprehensive plan. We would also like to respectfully share that we believe a key action to continue the expansion of employment and economic opportunity as well as to reduce hunger and food insecurity and to increase the availability of healthful food for all residents can be realized through linking Farmers Markets to Farm

to School programs in the State. In schools we interest children in growing food, which then translates to the children proudly eating the food they have grown. They actually eat it, and a lot of it. This new demand can then drive institutional purchasing for additional local food in the cafeteria. Finally, we bring farmers to the school and the children to farmers markets and through conversations, experience and backpack updates familiarize all children and their families with existing farmers' market nutrition incentive programs such as SNAP Doubling, etc.

Our "on the ground" experience also enables us to see that nutrition incentive programs could be simplified and unified, and attempts made to create one clear and easy-to-use program that could work for SNAP, WIC and Seniors (for instance the foods eligible for purchase vary). The varied incentive programs could be made simple to understand and easy to use for all constituents, including clients and potential clients, farmers, market managers, store/stand/CSA managers and more.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Francie. We appreciate your work on Farm-to-School initiatives in your region, as they already further many of the recommended actions in the plan, especially those under FASH Goal 4 Recommendation 4.2: "Support Farm-to-Institution programs to increase procurement of locally produced, healthy food by schools." Your comments will be included in the final draft of the plan, so that the Food Policy Council and other stakeholders who work on implementation of the plan's goals and recommendations will be aware of this important idea. We hope that you will stay engaged, as the plan moves into the implementation phase.

Comment 31: Erika F. Murphy, North Andover, North Andover Public Schools, 11/6/2015

My name is Erika Murphy and I am the director of food services for the North Andover Public Schools. I recently met with our school superintendent, Dr. Jennifer Price to discuss your food plan.

North Andover Public schools currently purchases fresh produce from local farms within Massachusetts however; we would like to do more business with the 7 working farms located in our own town.

Some of the challenges that our school district would face are:

- Delivery of product
- Labor to properly clean product for consumption
- Board of Health requirements regarding food safety
- Cost of products
- Contentious issues concerning animal welfare
- Ordering methods
- Consistency of product size
- Availability/reliability of product
- Promotion

Packaging

One of our goals this school year is to create a better collaboration between the schools and our local farmers. We would like for this to be successful and to positively impact both our local farming community and our students.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Erika. The information that you provided about the challenges that North Andover School are facing ring true to those expressed by other stakeholders throughout the planning process. The plan offers several recommended actions to help address and overcome the concerns you have raised, including many of those under Distribution Goal 7 "Farm-to-Institution sales will increase." We hope that you will continue to be involved in the plan and participate in its implementation.

Comment 32: Cheryl Sbarra, Winchester, Massachusetts Association of Health Boards, 11/6/2015

Thank you for the opportunity to comment on this document. As I mentioned before, I would like to go on record on behalf of the Massachusetts Association of Health Boards in supporting most of this ambitious, well done plan. I completely agree with the concept that we need reform in how regulations are developed and enforced, and that we should engage stakeholders at the beginning of the process. Enforcement activities of public health agencies, including local boards of health and local health agents should be about compliance with reasonable regulations and not about punishment. The tone of most of the farming chapter is very collaborative, encouraging education and technical assistance in areas such as urban agriculture and environmental and land use regulations. MAHB has been working with MFBF to encourage regulations that are more in keeping with normal agricultural practices and address farms on a case by case basis.

I agree that regulations should be in scale with a farm's size and should keep pace with the changing faces of farming. I especially agree in increasing outreach and education to farmers and municipalities regarding existing environmental policy and regulations related to agriculture. This appears to be a common thread in the document, which is a great thing.

There are many things I love about this document; however I must say that singling out local boards of health by emphasizing the need for "checks and balances" on them and only them, seems to fly in the face of the need to increase outreach and education to farmers and municipalities. I am not sure why local boards of health are the only segment of the equation that needs checks, balances and accountability.

While I certainly understand the challenges agriculture and local public health have had over the decades, and while I agree that my membership certainly needs to be educated and provided with technical assistance on farming and farmers markets in general, I respectfully submit that my members are not the only ones that need education and technical assistance.

I know that you believe that the "public health" community was well represented during the project, I respectfully submit that I do not believe that local public health was at the table. The Massachusetts Association of Health Boards, the Massachusetts Health Officers Association, and the Massachusetts

Environmental Health Association are some of the membership organizations representing local public health; and I do not believe any of these organization were contacted or involved. Again, I do not want to take away from the overall richness of the document; but I feel a need to express what I believe to be local public health's perspective on this specific issue.

Thank you for your attention to these matters.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Cheryl. The planning process sought to engage as broad a range of voices from the state's food system as possible, and did receive input from individuals and organizations representing a very diverse set of perspectives. We note your comment about local boards of health being "singled out"; that is not the intent of the plan's recommendations, but rather that improved educational and technical assistance opportunities for all stakeholders in the food system is needed. We will include your comments in the final draft of the plan so that the Food Policy Council is aware of your concerns, and we hope that MAHB will be an active participant in the implementation process.

Comment 33: Jennifer Ryan, and Cathy Wirth, The Trustees of Reservations, 11/6/2015



trustees

200 High Street
Boston, MA 02110

November 6, 2015

Massachusetts Food System Plan
c/o David Elvin
Pioneer Valley Planning Commission
60 Congress Street
Springfield, MA 01104

Re: Comments by The Trustees on the Massachusetts Food System Plan

Dear Mr. Elvin;

On behalf of The Trustees, thank you for the opportunity to provide comment on the Massachusetts Food System Plan. The Trustees also appreciate our inclusion in the process as Project Advisors and we look forward to further partnering as implementation unfolds.

The Trustees was founded in 1891 and is the Commonwealth's largest and oldest conservation and preservation organization, protecting 26,000+ acres statewide. In addition to our historic and ecologically significant properties, we protect and manage 2,000 acres of farmland and we have facilitated the protection of 12,000+ additional acres of agricultural land. We own and manage four community farms, have 1,250+ Community Supported Agriculture (CSA) members, employ 36 full and part-time farm staff, have three farm stores, donate 35,000 pounds of produce annually to food pantries, have 60 community gardens with 1,500 plots, run programs at our farms and gardens for 14,000+ people each year, and host 140,000+ visitors each year at our community farms and gardens. Key to our mission is connecting people to the land we protect, and in the case of our agricultural land, this means educating visitors about why that land is so important to the current and future health and well-being of the Commonwealth.

The Massachusetts Food System Plan is a critical step forward in growing and strengthening our local agricultural sector and we fully support these efforts. We provide the following comments, focusing on goals which align with our capacity and mission.

Education, Training, and Research

- We are very pleased to see the need for education throughout the food system highlighted as a cross cutting theme in the Massachusetts Food System Plan.
- We note that The Trustees are in a unique position to contribute to efforts to educate consumers about the importance of Massachusetts agriculture and the value of local food and food systems. As

mentioned above, over 140,000 people visit our agricultural properties each year, whether they are picking up a Community Supported Agriculture share at one of our community farms, cultivating a plot in our community gardens, or attending one of the hundreds of farm, garden, and food related events and programs we offer on our properties and at the Boston Public Market Kitchen.

Food Access

- The Food Access, Security and Public Health section of the Massachusetts Food System Plan focuses on the important task of assuring that progress towards a stronger Massachusetts food system benefits all Massachusetts residents, particularly those with the most limited access to local and healthy food.
- The Trustees have a strong commitment to making sure that a portion of the food that we grow reaches low-income Massachusetts residents. We donated over 35,000 pounds of produce to food pantries last year, and many of our Boston community gardens provide opportunities for residents of low-income, low food access neighborhoods to grow their own food.
- We look forward to supporting efforts to increase incentives and opportunities for low-income Massachusetts residents to purchase and access more fresh, local food.

Land

- Land conservation is integral to the work of The Trustees and we have a deep expertise in the tools and processes that result in land protection. We fully support the recommendation that the state develop a Farmland Action Plan, which would allow a better understanding of existing farmland preservation conditions and provide the analyses needed for future planning and goal setting.
- We are also advocates for state and federal land conservation programs, and fully support many of the programs identified in the Land section of the Massachusetts Food System Plan. We support improving utilization of the state land conservation tax credit and Community Preservation Act funds for farmland protection.

Thank you again for the opportunity to participate in the development of the Massachusetts Food System Plan and for the opportunity to provide comment. The Trustees looks forward to the next phase of implementation.

Sincerely,



Jennifer Ryan
Director of Policy



Cathy Wirth
Director of Agriculture

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Jennifer and Cathy. The Trustees participation in the planning process has been valuable to all stakeholders, and we look forward to your continued involvement as stakeholders now turn toward implementation.

Comment 34: Amie Lindenboim, Brookline, Northeast Organic Farming Association/Massachusetts Chapter, 11/6/2015

I did not have sufficient time for a thorough review the Plan, but I don't understand why the topic of genetically modified crops and GMO labeling was only mentioned twice in the Plan. Discussion of this could fall under many of your topic areas: Inputs, Farming, Fishing, Processing, Distribution and Marketing, Food Access, Security and Health. Failing to mention and discuss consumer demand for non-genetically modified foods (by both MA consumers, and our export markets), and the potential effect of growing genetically engineered crops on our local environment, human health, and economic justice, ignores a significant topic.

In addition, a deeper comparison of the certified organic vs non-organic farm systems in MA would seem critical to making any kind of "plan" for MA food. What is our plan for organic farms in this state? For conventional farms? Do they have different needs?

Just a couple of issues to add for a more inclusive document.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Amie. You have raised an important point about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts of GMO use and related production practices on consumer demand. Your comments are included, verbatim, in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you and NOFA/Mass will continue to be involved.



Mr. David Elvin
Pioneer Valley Planning Commission
60 Congress Street
Springfield, MA 01104

November 6, 2015

Dear Mr. Elvin,

Re: Comments of the Boston Public Health Commission in Response to MA Food System Plan

The Boston Public Health Commission (BPHIC) appreciates the opportunity to submit the following comments in response to the proposed Massachusetts Food System Plan. As a public health department, our mission is to protect, promote, and preserve the health and well-being of all Boston residents, particularly the most vulnerable. Our healthy eating and active living initiatives focus on obesity prevention through policy, systems, and environmental changes that support healthier choices and address racial/ethnic inequities in related health outcomes. We are also active members of the Act FRESH Campaign, a statewide coalition that works to make healthy food choices and regular physical activity available to residents in all communities in Massachusetts. We therefore applaud the leadership of the Massachusetts Food Policy Council in drafting a food plan with the purpose of increasing the availability of fresh, healthy food while promoting economic development in our state.

The following comments are in reference to the **Food Access, Security, and Public Health (FASH)** section of the Plan:

- *The goals and recommendations of this section focus on long-term, sustainable strategies to increase access to, and consumption of, healthy, locally produced food as part of overall efforts to reduce hunger and food insecurity in Massachusetts. (Page 110, 2nd ¶)*
 - o **Comment:** In addition to hunger and food insecurity, limited access to healthy foods contributes to diet-related chronic diseases (e.g. obesity, diabetes, cardiovascular disease). We feel you should make these a priority of this section as well.
- *USDA data suggest that available SNAP income deductions are significantly underutilized, which also results in people not receiving benefits. (Page 113, 4th ¶)*

- Comment: It appears that this is an area with great potential for improvement, and one that should have an action step linked directly to it. One suggestion would be to work with community organizations that assist clients in filling out SNAP applications and ensure their staff are aware of all the possible deductions to ask about. Action 2.1.2 (*The DTA should renew their focus on assisting clients, particularly elders, people with disabilities, and applicants with limited English proficiency, in securing required documentation and verification.*) could potentially increase the amount of deductions reported among these populations.
- *Known as the Healthy Incentives Program, this expanded effort will provide a 100% incentive match for each SNAP dollar that a participant spends on eligible fruits and vegetables purchased at farmers markets, farm stands, mobile markets, and community-supported agriculture (CSA) programs throughout Massachusetts. (Page 116, 3rd ¶)*
 - Comment: We recommend that the incentives offered in the HIP be redeemable at large chain store grocers, convenience stores, and supermarkets. We may need to invest more effort into building relationships and infrastructure to support expansion of HIP into these retailers, but the added access that would come with such an expansion should not be underestimated.
- *Recommendation 3.1: Support statewide funding, implementation and evaluation of consumer incentives that support purchasing more fruits and vegetables. (Page 117)*
 - Comment: We believe one of the recommended action steps should be to encourage Massachusetts' legislature to pass Senate Bill S69, An Act Establishing the Healthy Incentives Program. This could provide a sustainable source of funding for this program upon completion of the FINI grant.
- *School gardens can be effective educational tools that support students in making healthy food choices. Despite the benefits of school gardening initiatives, limited funding, lack of administrative staff and school board support, staff and teacher time constraints, and difficulty integrating programming during the academic year can make implementation difficult. (Page 118, 3rd ¶)*
 - Comment: We believe one of the recommended action steps should be to support school garden initiatives. To overcome some of the limitations mentioned here, emphasis could be placed on increasing partnerships between schools and non-profit organizations that already provide school garden programming.
- *Action 8.1.4: Work in partnership with schools and childcare providers to send guides for parents on how to pack a healthy school lunch and snack. Provide support for guides and other materials that are sent out at the beginning of the school year. (Page 130)*
 - Comment: We believe this is a great recommendation that has the potential to increase access to nutritional education. Given the diversity of the populations we serve, we would suggest that these materials also be culturally competent and provide suggestions for healthy meals with foods that are familiar to the residents being targeted.

The following comment is in reference to the **Distribution and Marketing** section of the Plan:

- *Recommendation 1.1: Support public and private investment to capitalize and implement the Massachusetts Food Trust. (Page 92)*
 - o Comment: As part of the Healthy Food Financing Working Group led by the Massachusetts Public Health Association, we are in full support of the strategies outlined in the Plan to fund the Massachusetts Food Trust.

Thank you for the opportunity to comment on the MA Food System Plan. We look forward to the release of the final document.

Sincerely,

Anne McHugh
Director, Chronic Disease Prevention & Control

Maria Rios
Policy Analyst, Intergovernmental Relations & Policy Development

Boston Public Health Commission
1010 Massachusetts Avenue
Boston, MA 02118
(617) 534-7781

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Maria and Anne. The additional information that you have provided, as well as your interest and recommended strategies for approaching several action of the plan, will be valuable to stakeholders who may work together to continue advancing the plan during the upcoming implementation phase. Your suggestions will be reproduced in the final plan so that the Food Policy Council and other stakeholders will be aware of your interests and recommendations, and we hope that you will continue to participate as implementation goes forward.

Comment 36: Sarah Brezniak, Westborough, Captus Group LLC, 11/6/2015

Comments on the Draft Massachusetts Food System Plan (10/23/15)

Submitted by: Sarah Brezniak
 Captus Group LLC
sbrezniak@captus-group.com
 Westborough, MA 01581

Comment	Reference (Rec./Action)
<p>1. Controlled Environment Agriculture (CEA). Considering that one of the key goals is to increase food system resilience, I am surprised and disappointed there is not more discussion of Controlled Environment Agriculture (CEA) methods like hydroponics. While land-based agriculture clearly needs to be optimized for quality and productivity, land-based options will not be enough, especially as MA does not have a year-round growing season. CEA methods can help achieve Inputs Goals 2, 3 and 4 while “protecting land and water needed to produce food” and enabling our food system to “withstand stresses related to climate change.” Specifically the benefits of CEA method such as indoor hydroponics are well-documented, and include, but are not limited to:</p> <ul style="list-style-type: none"> • Requires <1/8th of the land (i.e. footprint) as denser plantings generate higher yields in shorter cycles. • Uses >90% less water (and thus less energy to produce and transport that water). • Extends the growing season to year round. • Does not require traditional fertilizers, herbicides or pesticides virtually eliminating water pollution and making it eligible for organic certification. • Is less affected by weather, insects and other pests that can negatively affect yields. <p>Although Actions 2.2.5 and 3.17.3 mention increased support for hydroponics, a more comprehensive exploration of CEA is needed to determine the optimal profile of grow methods across the state to ensure maximum resilience.</p>	<p>2.2.5 3.17.3</p>
<p>2. Development Supported Agriculture (DSA). While relatively new to North America, DSA is a growing trend in peri-urban and urban re/development; this has the most potential for high impact in an urban environment. While DSA has its roots in CSA, it goes a step further by providing a model for developers and municipalities to incorporate “food production opportunities into new and redeveloped urban properties.” Action 2.2.5 is a start, but addresses only one component of the conditions needed to support urban DSA. The plan’s continuing relevance and application would benefit from a broader understanding of this concept and how it serves to achieve greater food security and resilience.</p>	<p>2.2.5 3.17</p>

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Sarah. Your perspective on Controlled Environment Agriculture will be included in the final plan so that the Food Policy Council and others working on implementation will be aware of these issues and take them into account. We hope you will participate in the implementation process.

Comment 37: Mindy Domb, Amherst, Amherst Survival Center, 11/6/2015

I am submitting these comments on the MA Food System Plan and support its efforts to reduce hunger and food insecurity and increase the availability of fresh healthy food to all residents of the

Commonwealth. My comments focus on four recommendations included in the chapter on Food Access, Security, and Public Health (FASH): 5.1: “Support actions by health care providers, hospitals and medical institutions that improve access to, and education about, healthy food, especially to people who are food insecure,” 6.1: “Increase purchase of locally produced food through the Massachusetts Emergency Food Assistance Program (MEFAP)”, 6.2:

Foster more direct connections among hunger relief agencies and local farmers, fishermen, and food producers,” and 7.1: “Support municipal and regional transportation planning efforts to more fully understand and identify related access barriers and opportunities to make it easier for all residents to obtain healthy food regularly.”

I want to express our support for Action 5.1.1 for food insecurity screenings and referrals to food assistance resources to be incorporated into regular practice for visits to the doctor’s office or health clinic. The Amherst Survival Center recently launched a project to partner with medical practices to accomplish this. Putting food insecurity screenings in the medical office treats it as the health issue it is, while destigmatizing the conversation and the follow-up that a patient may need to do when accessing a food pantry for the first time. Stronger collaborations between hunger relief organizations and local physicians will increase access to food for many individuals and families and will undoubtedly improve the health care they receive, as medical providers learn more about the food and nutrition challenges their patients confront. Resources to support, what we would hope would be, increased utilization of food pantries resulting from this action need to be in place. In addition, we think that creating a community of practice among health care providers and food pantry and meals providers to share best practices around assessment and referral would be beneficial.

In terms of recommendation 6.1, greater financial support for the MEFAP program on a consistent annual basis would both reduce food insecurity for Massachusetts residents and alleviate organizational concerns around sustainability and continuity.

As an organization with a robust, active and effective food recovery program, the Amherst Survival Center benefits greatly from our local generous farming community. In terms of Action 6.2.1, we would suggest that partnerships that further support local farmers to partner with hunger relief organizations should be encouraged. We’re excited by the proposed Action 6.2.3, and think a community of practice among food pantry and meals providers to share best practices would benefit all.

Lastly, we strongly believe that transit authorities should be incentivized (financially) when they ensure that public bus routes include stops at pantry and meals providers, and other hunger relief organizations. Recommendation 7.1 needs to go further. We need to support municipal and regional transportation planning efforts not only to more fully understand and identify opportunities to make it easier for all residents to obtain healthy food regularly, we need to reward them when they do. Recommendation 7.2 as it seeks to support regional measures to enhance access to healthy food, and we believe this support should be a financial incentive program for regional transit authorities who include hunger relief organizations on their bus routes.

Thank you for the opportunity to comment on the MA Food System Plan.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Mindy. The information and support that you offered in your letter will be useful to other stakeholders as implementation of the plan and its recommendations moves forward. We are pleased to know that you and the Amherst Survival Center are interested in working with others to make some of the recommendations a reality. We will include your comments in the final plan, so that the MA Food Policy Council and other stakeholders are aware of your interests.

Comment 38: Donna Lombardi, Worcester, Worcester Public Schools, 11/6/2015

MEMO

To: Winton Pitcoff, Project Manager, Massachusetts Food System Plan

From: The Massachusetts School Commissary Task Force Members
A Coalition for Better Food in Our Public Schools
Melissa Honeywood, Food Service Director, Cambridge Public Schools
Karen Pappa, Food Service Director, Taunton Public Schools
Donna Lombardi, Director of Nutrition Programs, Worcester Public Schools

Cc: David Elvin, Pioneer Valley Planning Commission
Andrea Silbert, President, Eos Foundation
Christy Mach Dubé, Director, Eos Foundation
Louisa Kasdon, CEO & Founder Let's Talk About Food LLC
Tony Geraci, Strategic School Food Service Consultant

Date: November 6, 2015

Re: Including School Commissaries in the Massachusetts Food System Plan

In our effort to bring the healthiest, freshest, and most cost-effective food to Massachusetts Public Schools, we propose that the Massachusetts Food Systems Plan be **amended** to include no fewer than three regional commissaries.

The commissaries would be geographically and strategically located to supply school districts across the state. The objective would be to share resources, process and buy locally when possible, and optimize quality. The commissaries would be a source of economic development within the state as they would provide training and jobs, and keep more of the food dollars spent by school departments within the Commonwealth's own economy. There are several examples across the country that prove commissaries to be successful models for high quality, locally sourced school meals that boost local farm production and create new, full-time jobs.

Plans to develop commissaries are in progress in Springfield, Worcester, and Boston. Brockton too is exploring the idea, and other communities may be as well.

Contact information on page 2.

Contact information

The Massachusetts School Commissary Task Force Members
A Coalition for Better Food in Our Public Schools

Name	Title/District	Email	Phone
Nancy Carvalho	Food Service Director, New Bedford	ncarvalho@newbedfordschools.org	508-997-4511 x3300
Timothy Gray	Food Service Administrator, Springfield	grayt@sps.springfield.ma.us	413-787-7141
Melissa Honeywood	Food Service Director Cambridge	mhoneywood@cpsd.us	617-349-6858
Deborah Jeffers	Food Service Director, Salem	deborahjeffers@salemk12.org	978-740-1230
Mark Jeffrey	Sodexo District Manager, Springfield	mark.jeffrey@sodexo.com	401-465-1109
Joanne Lennon	Food Service Director, Chicopee	jlennon@chicopeeps.org	413-594-3453
Donna Lombardi	Food Service Director Worcester	lombardiD@worc.k12.ma.us	508-799-3132
Cindy Lucas-Terra	Food Service Director, Weymouth	cindy.lucasterra@compass-usa.com	781-337-7500 x25170
Karen Pappa	Food Service Director, Taunton	kpappa@tauntonschools.org	508-821-1004
Monique Pierangeli	Assistant Business Manager, Webster	mpierangeli@webster-schools.org	508-943-0104
Anne Marie Stronach	Chief Executive Officer	annemarie.stronach@lawrence.k12.ma.us	978-975-5905 x25631
Madison Walker	Director of Food and Nutrition Services, Greenfield	madwal1@gpsk12.org	413-772-1335
Garry Watts	Manager of Nutrition Services, Lawrence	garry.watts@lawrence.k12.ma.us	978-722-8433

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Donna. We note your recommendation that no fewer than three regional commissaries be established to supply Massachusetts public schools with fresh food. There are several action items already within the plan that are related to the goal of providing students with fresher food, including those under Distribution Goal 7 to increase farm-to-school sales. Your recommendation will be important to stakeholders who will be working to implement the plan in the future. We will include your comment in the final plan so those stakeholders may consider it, and we encourage you to stay involved and advocate for this proposal.

Comment 39: Anna Hanchett, Plainfield, Plainfield Agricultural Commission, 11/6/2015

Trying to bring all these voices and interests together is admirable but probably a bit futile. For whatever reason it is unfortunate that there seems to be little attention given to the many issues which concern sustainable and organic farmers in this state where they are a viable economic force for many rural areas. It is evident that more of these farmers and their customers need to be represented and respected at the governing levels of the DAR, the Farm Bureau, and the Association of Ag. Comms. Although there are a small number of large farms which produce the most agricultural revenue, there are areas of the state where small and sustainable farms are the base of the agricultural economy and they need to be considered in any reports and resulting actions. They must be given an equal voice at the table of discussion and planning and their issues represented, if not accepted, as a dissenting opinion.

Our Plainfield Agricultural Commission will try to select some aspect of this huge report on which to work, both locally and statewide. We will try to plough through this voluminous report but we would also appreciate being informed, as a commission, of future activities which might result from this plan. We got no notices about the development of this plan until several days before the deadline of the comment period.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Anna. We conducted extensive outreach efforts throughout the planning process, including through organizations represented on our advisory committee, but clearly did not reach everyone. Many of the discussions and action items did take into account, and even focus on, the particular needs of small, diversified farms such as yours. We appreciate your interest in the plan, as well as your interest in staying engaged as implementation moves ahead in the future.

Comment 40: Lisa Mair, 11/6/2015

I am very concerned that there was so little attention given to the huge and looming GMO issue in the MA Food System Plan. Millions of citizens are gravely concerned that GMOs are contaminating non-GMO crops, and that pretty soon, we won't be able to eat non GMO any longer. Also, what about the toxicity of GMO pesticides and herbicides on our pollinators? Are we going to address these issues or just ignore them and hope they go away? Please be proactive create a plan to contain these threats to our food safety. Furthermore, we need GMO foods accurately labeled so that educated consumers can easily avoid them. You should not have to have a PhD in nutrition to eat healthy, unadulterated food.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Lisa. You have raised an important point about the topic of GMOs and product labeling. On this topic, a broad range of opinions and recommendations were expressed. The plan is intended to be a consensus document, and as such, the project advisors worked to achieve a consensus wherever possible. There were some topics, including this one, on which it was not possible to reach a consensus within the time available. We note that Farming Goal 1 Action 1.2.4 does recommend the development of educational materials about the science that is relevant to GMOs and related farm practices, and Marketing Goal 1 Action 1.1.3 recommends further research on market impacts

of GMO use and related production practices on consumer demand. Your comments are included, verbatim, in the final draft of the Plan, and will provide a resource for stakeholders who pursue this issue as implementation of the plan goes forward, and will bring the issue to the attention of the Massachusetts Food Policy Council. We hope you will continue to be involved.

Comment 41: David Dumaresque, Dracut, 11/6/2015

After reading the draft plan, one section that stood out is the FASH Goal 6 section mentioning MEFAP funding. One action line mentions “Modify food procurement contract language to utilize at least 10% of MEFAP dollars to purchase locally produced, healthy food.” Firstly, I believe that this should be reworded to specify “Massachusetts grown foods.” A locally produced food could include, for example, salsa made in Massachusetts with none of the ingredients grown in the state.

Secondly, I believe the 10% [goal] should be increased to a higher percentage incrementally. Perhaps the text could read “Modify food procurement contract language to utilize at least 10% of MEFAP dollars immediately to purchase locally grown, healthy food, and increase a minimum of 4% more per year to reach a goal of 50% in about ten years. The majority of the fresh MEFAP foods go to the Greater Boston Food Bank which has the facility and capacity to handle and distribute much more fresh produce, The last few years, the GBFB has had to curtail its purchases of locally grown MEFAP foods in Nov/Dec as its funding ran short later in the growing season, this while the yearly amount dedicated to MEFAP locally grown continued to increase. Why are we not allocating more of the taxpayers money to locally grown items rather than funding farmers out of the state, and often out of the country? Buying more Massachusetts grown foods will help to create more local jobs and thereby slightly reduce food insecurity, the goal of MEFAP funding, This change could inject an additional \$6+ million into the Massachusetts agriculture sector while providing the same benefit or more to the food insecure.

Thank you for your consideration.

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, David. A wide range of views about the MEFAP definition of “locally produced, healthy food” and the 10% goal were expressed during the planning process, and your letter adds to the body of comments about it. Implementation of any such goal for MEFAP will, of course, require further discussion of the definition and goal among stakeholders, and it is our hope that you will continue to participate in the implementation process to advocate for the position you have stated in your letter.

Comment 42: Judy Gillan, New England Small Farm Institute, 11/6/2015

Thank you for the opportunity to comment on the MA Local Food Action Plan. The document is truly impressive – and vast (!), deserving much closer scrutiny that I’ve yet found time to give to it. The following commentary includes issues that seem most important to me after a quick run-through, with hope (and expectation) that it will remain an open document, managed via an open process throughout the upcoming calendar year.

I have focused on two sections: Existing Conditions: Land, and Implementation Goal. I have not included issues such as “need to fix typo on page 191 - introductory paragraph, line 5,” since I assume that is not the purpose of this review, and my prior comments on earlier drafts still stand.

EXISTING CONDITIONS: LAND

Page 161: Land in Farms

Paragraph 2. Sentence 2: This is an improper use of the term “lessor” – an issue that arises several times in the document. Change “lessors” to “farmer” or better yet, to “farmland owner and farm operator.” Review for this issue throughout the document.

Amend final sentences in this paragraph to acknowledge that both length of term and insecurity of the tenure agreement (quite different issues) are disincentives. The sentence could read “...on the person farming the land, including insecure or overly-short term tenure, both of which discourage investment in or improvement of farmland.”

Page 162: Cost of Land and Taxes

Paragraph 1. Sentence 1: It is not absolutely clear, here, that this is reference to either market value of protected land or agricultural use value, and not to “fair market value.” Please clarify.

Paragraph 2. Question for David Elvin: would this be an appropriate place to reference value of ecosystem services?

Page 162: Causes of Farmland Loss

Paragraph 1. The end of this extremely long, one-sentence paragraph should be amended to read “...ensuring availability of farmland for those who want...” “Ensuring farmland” doesn’t make sense.

Page 163: Farmland Protection Programs and Strategies

Page 164: *Executive Order 193...*

Role of EO 193 in furthering intent of Article 97 should be mentioned here.

Page 164/5: *Community Preservation Act*

At the very least, the final sentence in this section should be amended to read “Funds from CPA could become a powerful tool...” There is a lot of controversy around use of the “Open Space” category to fund agricultural projects, and need for a lot of homework here.

Page 165: Demand for Farmland

Paragraph 2: I think there is an important point lurking here, but the paragraph doesn’t make sense. Could read: “People have become ever more creative in their searches for available farmland, including the approaches described below.

If we care about agriculture, this excerpt is inadequate. The first paragraph of Article 97 reads: “The people shall have the right to clean air and water, freedom from excessive noise, and the natural, scenic, historic, and esthetic qualities of their environment **and the protection of the people in their right to the conservation, development and utilization of the agricultural, mineral, forest, water, air and other natural resources is hereby declared to be a public purpose.**”

Paragraph 1: It might be valuable to reference (after the first or second sentence; possibly via an asterisk at the bottom of the page?) an inventory of state-owned agricultural land conducted in 1987 by the State-owned Farmland Stewardship Advisory Committee, which identified 3,567 acres of state-owned farmland. It would be interesting to learn the fate of each of the 27 parcels identified.

Paragraph 1: State-owned farmland managed by MDAR *IS NOT LEASED, IT IS LICENSED*. There is a significant difference, here, in tenure security, despite length of term. The entire document should be reviewed for misuse of these terms – it occurs several times.

It might also be valuable to reference the fact that some state-owned farmland is, in fact, leased. Examples are (a) farmland leased to Smith Vo/Ag (formerly part of the Northampton State Hospital Farm) in Northampton and (b) land leased to New England Small Farm Institute: “Lampson Brook Agricultural Reserve,” the 426 acre, former BSS farm in Belchertown. The latter includes eleven farm parcels, totaling 166 acres, each of which is managed under a separate sub-lease agreement “approved as to form” by the state.

In a document proposing means to foster *increased state-wide food production*, this section stands out for effectively driving home the purpose of a “local food action plan.” Throughout the document, reference is made to the importance of increased “agricultural production,” and lists of commodities produced by our agricultural sector are provided or referenced, but there is no suggestion that farmland now used to produce non-food products might be encouraged or supported to transition to food production *if proper incentives were provided*. While it’s true that such transition would be an enormous challenge, it should be considered in any plan devoted to increased food security for our already food-insecure Commonwealth.

Paragraph 2: “The biggest area of need in land segment of the food system is for technical service providers...?” Somebody has got to be kidding. I think this sentence should be dumped.

IMPLEMENTATION GOAL

This is a critical part of the plan that many working group members have not seen before. Its emphasis on collaboration (Stakeholder Collaborative) is perfect; it enables both inclusiveness and the possibility that a sufficiently large team of committed stakeholders can convened to get this important work done!

Page 138: Recommendation 2.1

Paragraph 2: "... engaging statewide network of engaged and connected food system stakeholders."

This implementation goal should include guidance and support for emergence of truly local groups, such as Ag Commissions and community groups that promote community food system development.

Implementation of a statewide "Local" Plan should draw its energy from the grass roots. (See page 142/3: (1) Recommendation 5.1.1: Support creation of regional, municipal or neighborhood food plans; (2) Recommendation 5.1.11: Develop resources to assist regions, municipalities and neighborhoods in conducting food system plans. This could be in the form of food system planning toolkits and guidelines; and (3) Recommendation 5.1.12: Add guidance on food system planning to municipal documents, including master plans, open space, community needs assessments, hazard mitigation plans, and others.)

Ditto for Networking: strong links between "Stakeholder Collaborators" and some evidence of their community roots should be encouraged if not required.

Page 141: Recommendation 3.1, Action 33.1.2.3: Critical!! POSSIBLY THE MOST IMPORTANT RECOMMENDATION IN THE FOOD PLAN DOCUMENT. It's how the state's first Food Plan achieved success!!! Formation of sub-committees or (better yet) Working Groups with specific focus and timeframe, mandated to accomplish specific tasks should be tracked and documented.

Thanks again for the opportunity for input.

With best regards,

Judith F. Gillan, Founding Director

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Judy. Your comments and additional information provided will be a useful resource to stakeholders who may work together to advance the recommendations of the plan. The land value reference on p.161 is drawn from USDA Summary Land Values (<http://www.usda.gov/nass/PUBS/TODAYRPT/land0815.pdf>) and so the definition is consistent with USDA's, which is: "farm real estate value, a measurement of the value of all land and buildings on farms." Regarding ecosystem service values, estimation requires detailed land use information and significant staff time for GIS analysis, which was not within the scope of this plan. Regarding your comments on implementation, we agree that broad energy and engagement will be necessary, and we look forward to the New England Small Farm Institute's continuing participation.

Comment 43: Jana Ferguson, MA Dept of Public Health, 11/6/2015

Thank you for giving DPH an opportunity to comment on the food plan and Congratulations! I know this has been a lot of work.

Several DPH staff reviewed the plan and we have some general and some specific comments.

First, I would like to express appreciation for the continued efforts to resolve the issues associated with local boards of health, including opportunities for facilitated sessions that may be able to bring different groups into closer alignment. DPH supports ongoing technical assistance and training for farmers, industry and local health departments to develop and comply with sound and protective regulations to protect the public health. DPH also supports a transparent regulatory development process with opportunities for the public to comment. DPH supports strong state and local public health statutory authority to develop and implement reasonable regulations to protect the health and safety of the public.

One of the DPH goals associated with Mass in Motion is the issue of increasing access to healthy and affordable foods. Given that this the plan is about increasing access to MA grown foods, it doesn't completely address the affordability part beyond some discussion of SNAP benefits. Families who do not qualify for benefits also face affordability concerns. There is a challenge about many foods being local and affordable. While there is little interest in affordability being the carried on the back of the farmers, it is important to acknowledge that there is this difficulty.

DPH appreciates the food plan's focus on transportation. Sometimes that gets left out and we focus on increasing food availability instead of recognizing that the food may be available and it is just that some people can't get to it.

Distribution and Marketing

Recommendation 1.1 focuses on the MA Food Trust. This will be important to advancing access to healthy affordable foods. DPH is not sure what our role can be in supporting this recommendation, because it is really looking at funding the Trust, but it is a vital strategy that will not only impact access to healthy food, but has economic development, workforce and other outcomes as well.

7.4 should link back to distribution. One of the challenges with healthy retail initiatives we have found is the actual produce. Some of the retailers are going to a grocery store or other outlet and buying their own or obtaining in quantities that they cannot sell before they go bad. Both speak to the need for food co-op or food hubs. The areas where healthy corner store/bodegas have been more successful, this has been key.

Action 5.1.4: Study the Determination of Need as well as the Community Benefit determination process and related community health improvement resources assigned to both for opportunities to expand and enhance health care facilities' role in promoting and increasing access to healthy food. Innovative examples include mobile markets and fresh produce kiosks inside hospitals.

Thanks again and please let me know if you have any questions.

Jana

Jana Ferguson, Deputy Director

Bureau of Environmental Health

MA Dept of Public Health

RESPONSE: Thank you for your comments on the Massachusetts Local Food Action Plan, Jana. Your comments will be included in the final draft, and will be a useful resource to stakeholders who may work together to advance the recommendations of the plan. They will also inform the Food Policy Council about the additional perspectives you highlight. I appreciate MDPH's commitment to the State's food system, and hope that you will work with stakeholders and other public agencies as they work toward implementation of the Plan's goals.

Acknowledgements

Thanks to staff members from team agencies who contributed to the Plan:

Metropolitan Area Planning Council

- Winton Pitcoff, Project Manager
- Heidi Stucker, Food System Planner
- Eric Hove, Strategic Initiatives Assistant Director
- Marc Draisen, Executive Director
- Karen Adelman, Communications Strategist
- Renato Castello, Community Engagement Specialist
- Matt Cloyd, Web Developer
- Julie Conroy, Senior Environmental Planner
- Jennifer Garcia, General Counsel
- Matt Gardner, Research Analyst
- Barry Keppard, Public Health Manager
- Ani Krishnan, Energy Planner
- Amanda Linehan, Communications Manager
- Christine Madore, Regional Planner I
- Lola Omolodun, Public Health Planner
- Jessie Partridge, Research Analyst
- Martin Pillsbury, Environmental Planning Director
- Holly St. Clair, Data Services Director
- Matt Smith, Senior Economic Development Planner
- Emily Torres-Cullinane, Community Engagement Manager
- Eliza Wallace, GIS Analyst
- Steve Winter, Economic Development Manager

Franklin Regional Council of Governments

- Mary Praus, Land Use Planner
- Linda Dunlavy, Executive Director
- Kimberly Noake MacPhee, Land Use/Natural Resources Program Manager
- Michael DeChiara, Assistant Planner
- Jessica Atwood, Economic Development Program Manager
- Peggy Sloan, Director of Planning & Development
- Glen Ayers, Regional Health Agent

Pioneer Valley Planning Commission

- David Elvin, AICP, Senior Planner
- Timothy Brennan, Executive Director
- Catherine Ratté, Principal Planner

Massachusetts Workforce Alliance

- Alex Risley Schroeder, Program Director
- Deborah Mutschler, Executive Director

Thanks to the staff at the Charlton Public Library and the Central Massachusetts Regional Planning Commission for the generous use of their facilities.

Thanks to the following organizations for partnering with us to conduct outreach for and facilitate the regional forums:

- Berkshire Grown
- Berkshire Regional Planning Commission
- Boston Collaborative for Food and Fitness
- Central Massachusetts Regional Planning Commission
- Food Sol at Babson College,
- Glynwood
- Groundwork Lawrence
- Haley House
- Massachusetts Department of Agricultural Resources
- Pioneer Valley Grows
- Real Food Challenge
- Southeastern Mass Food Security Network
- The Trust for Public Land
- Worcester Food and Active Living Policy Council

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- Rachel Dutton, UMass Amherst Auxiliary Services
- Tamika Francis
- Laura Fries, UMass School of Public Health
- Sammi Gay, UMass Real Food Challenge
- Rachel Greenberger, Food Sol
- Amanda Kinchla, Department of Food Science, University of Massachusetts
- Anna Hankins, UMass Real Food Challenge
- Jess Newton , UMass Real Food Challenge

- Susan Newton, Center for Public Policy and Administration, University of Massachusetts
- Joe Schoenfeld, College of Natural Sciences, University of Massachusetts
- Patricia Spence, Urban Farming Institute of Boston
- Hannah Weinronk, UMass Real Food Challenge
- Barbara Zheutlin, Berkshire Grown

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