WORCESTER REGIONAL FOOD HUB

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COMMERCIAL KITCHEN PROFITABILITY

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Worcester Regional Food Hub:
Commercial Kitchen Profitability

An Interactive Qualifying Project Report submitted to the faculty of Worcester Polytechnic Institute of the requirements for the Degree of Bachelor of Science

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ABSTRACT

The project determined the profitability of the commercial kitchen at the Worcester Regional Food Hub using market and financial analyses. The market analysis was developed using the results from research, stakeholder interviews, and a public interest survey in Worcester County. This analysis revealed that there was a high demand for trained culinary professionals, certifications, business classes, and value-added product services in the Worcester County market. The financial analysis, derived from the estimated costs and revenue of the kitchen based on similar venues, illustrated that the success and profitability of a commercial kitchen depends on the number of tenants and frequency of kitchen use. Other products of this research include recommended pricing schemes, kitchen requirements, culinary programs, marketing tactics, and expansion strategies.

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EXECUTIVE SUMMARY

Worcester residents have a need for fresh, local, and healthy food. The problem is that a great portion of Worcester's population has little to no access to this food. An establishment was needed to help alleviate this issue and the solution was a food hub containing a commercial kitchen. This food hub will aggregate fresh food from local farmers and help to remedy the food deserts in Worcester. The commercial kitchen provides a facility where individuals can incubate their food business, create value added products, and receive culinary training. The goal of this project was to determine the profitability of the commercial kitchen.

In order to achieve this goal, market and financial analyses were performed. The market analysis consisted of background research, stakeholder interviews, and a public interest survey. These methods investigated those interested in renting the commercial kitchen space. The research sought the kitchen programs that tenants wanted, the equipment they need, and the amount they are willing to pay. The financial analysis took the monetary information that research subjects provided and specifications of equipment in the kitchen. This created a cost estimate for the kitchen. From this estimate, a sensitivity study was produced to show three scenarios for the profitability of the kitchen.

From the financial data, interviews, and survey, recommendations were made to help make the kitchen profitable. A recommended pricing scheme for the kitchen includes a $40 per hour rental fee, various storage, application, and membership fees. The suggested kitchen requirements include kitchen leashes, movable steel preparation tables, a canning machine, a larger kettle, and a larger flat top grill. Shifting to culinary programs, these recommendations include various recreational, production, and business classes. These services may be offered by

the commercial kitchen staff or outside vendors. The kitchen should be marketed through various types of media, for example ads on local radio stations. Another important service and marketing tool is a premade, joint food product label that benefits the kitchen and producer. Finally, food hub and kitchen expansion ideas are to utilize a food truck, create a store, and foster a network of kitchens. A combination of these recommendations will lead to a profitable commercial kitchen at the Worcester Regional Food Hub.

CHAPTER 1: INTRODUCTION

Hunger is an issue for many Worcester residents. They lack accessible, affordable, and healthy local food (Chen and Ventola, 2015). To solve this problem, the Worcester Regional Chamber of Commerce (WRCC) partnered with the Regional Environmental Council of Central Massachusetts (REC) to create a regional food hub. The food hub will actively manage the aggregation, storage, processing, distribution, and marketing of regionally-produced food products (Barham, 2010). It presents an opportunity to expand access to healthy foods by assisting local producers and consumers.

At the Worcester Regional Food Hub, the WRCC and REC will implement five programs: light food processing and storage, aggregation, improved food access, culinary training, and a kitchen incubator. A commercial kitchen is the common facility for light food processing and storage, culinary training, and a kitchen incubator. The kitchen space contains industrial grade cooking equipment that can produce large quantities of processed food (Colletti, 2011). The Worcester Regional Food Hub will have a commercial kitchen space to fulfill these selected programs.

Establishing a commercial kitchen in Worcester is an extensive process. The WRCC and REC have initiated it by reaching out to the community, developing relationships and partnerships, acquiring funding, conducting initial research, setting goals, and initiating the business planning process. A vital part of the business planning process is investigating and establishing the profitability. This report will investigate and establish the profitability of a commercial kitchen in Worcester and make recommendations for the review of the stakeholders.

CHAPTER 2: LITERATURE REVIEW

The food industry relies on markets where food producers and consumers collaborate. There are several ways to implement this market. One mechanism is a food hub. A food hub manages a community's food market through the procurement, aggregation, and distribution of food. One of the features that food hubs use is a commercial kitchen. After a discussion of food needs in Worcester, the literature review explores the notion of a commercial kitchen in Worcester, in terms of food hubs, its stakeholders, its services, and its logistics.

2.1 FOOD NEEDS

Worcester needs fresh, healthy local food. Like all urban centers, there are too few markets that supply this healthy food at affordable prices. These geographic areas that lack food access are food deserts. A food desert is defined as "...a low-income census tract where either a substantial number or share of residents has low access to a supermarket or large grocery store" (Ver Ploeg & Breneman, 2015, p.1).

Within Worcester, there are three food deserts. The USDA provides a map (Figure 1) that illustrates their location (Ver Ploeg & Breneman, 2015). They can be seen in the east, west, and south regions of the city. The location and service radius of the grocery stores, combined with socio-economic variables such as percentage of poverty, describe accessibility (Chen, Kaczmarek & Ventola, 2015, p.12). To alleviate food deserts, food hubs are often

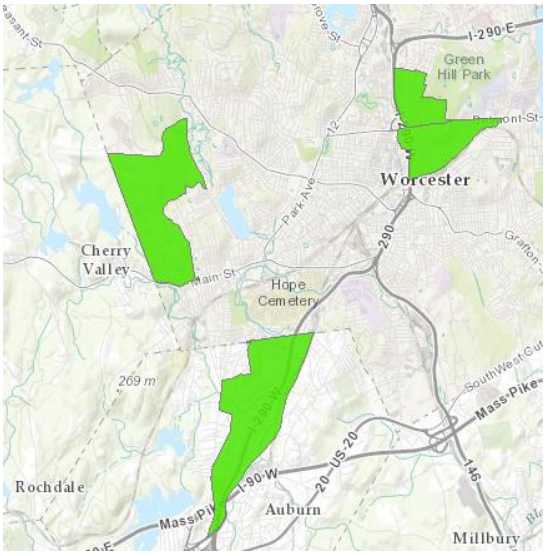

Figure 1: Food Deserts in Worcester

(Ver Ploeg & Breneman, 2015)

established to increase accessibility (Ver Ploeg & Breneman, 2015).

2.2 FOOD HUBS

Establishing a food hub in or around the Worcester food deserts will increase access to healthy, local food. A food hub does this by gathering farmers, wholesalers, industry suppliers, distributors, and high quantity food buyers into a single, dynamic community. The products managed through the food hub originate from local and regional producers. The consumers come from within the food hub borders, especially its underserved populations.

There are food hubs implemented around the United States, including over three hundred nationally; thirty-six are located in New England (NGFN, 2015a). As illustrated in Figure 2, food hubs are concentrated in larger cities, and are most common on the East Coast. Due to the population size and lack of accessible local healthy food, cities benefit greatly from food hubs (NGFN, 2015b). Some examples of food hubs in New England include: Intervale Food Hub in Vermont and Farm Fresh RI in Rhode Island (Shewchuk, Okray, Mahoney & Frankian, 2013, p.57-65).

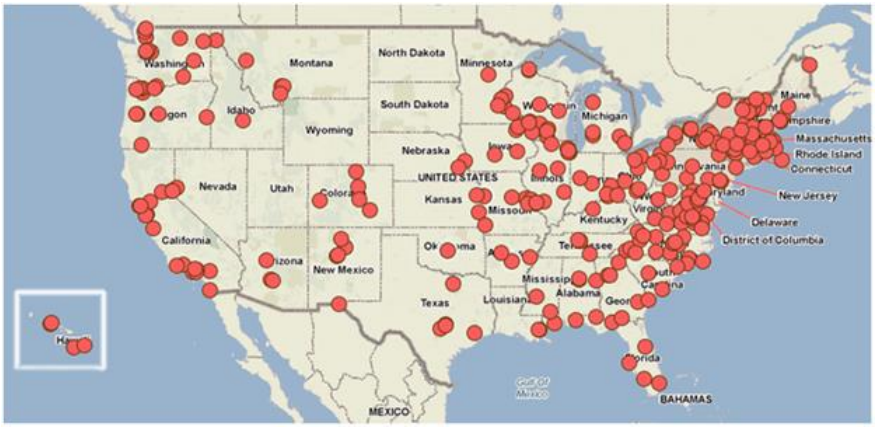

Figure 2: Food Hubs in the United States

(NGFN, 2015a)

2.3 COMMERCIAL KITCHEN & ITS STAKEHOLDERS

The commercial kitchen at the Worcester Regional Food Hub will coordinate a wide range of stakeholders, including sponsors, farmers, tenants, and consumers. As part of the trend in the United States that emphasizes locally grown food, Worcester is currently exploring better

methods to manage its local food supply. Today, local food enters Worcester through various and often independent methods, resulting in a splintered system. Coordination amongst stakeholders maximizes the local food industry, fulfilling "[t]he goal of a Worcester [food hub and its kitchen is]… to unify all of the separate distribution systems, leading to a centralized system for local producers and various distribution methods alike" (Chen, Kaczmarek & Ventola, 2015, p.30).

SPONSORS

The sponsors initiated, developed, and executed the business model for the food hub. The sponsors of the food hub are the Worcester Regional Chamber of Commerce (WRCC) and the Regional Environmental Council of Central Massachusetts (REC). The WRCC serves the region's business community by leading economic development through recruiting, retaining, and incubating (WRCC, 2015). The REC serves the region's environment by collaborating with local organizations to promote healthy and sustainable communities (REC, 2015).

The WRCC and the REC each have several goals for the Worcester Regional Food Hub and its kitchen. The WRCC wants to promote economic prosperity for local businesses and to create jobs. To achieve these goals, they will lead the business planning and finances. The REC's goals are to improve residents' health and access to healthier food. They will work with farmers and consumers to eliminate the food deserts.

FARMERS

Farmers will provide the Worcester Regional Food Hub and its kitchen with an abundance of crops. This is possible because Central Massachusetts is one of the densest farm regions in the country. The region ranks fifth highest in the country for direct market sales (DuTremble, 2014). The United States Department of Agriculture's (USDA) 2012 Agricultural

Census stated that Worcester County has 7,755 farms, averaging 68 acres in size and over sixty-five percent have sales of less than $10,000 (DuTremble, 2014). According to the same census, Worcester County farms sold approximately $57 million worth of crops and livestock, generating approximately $37,000 per farm (Luna, 2015). While findings from a national study from 2007-2012 show that there is a national decline in U.S. agriculture, Massachusetts has experienced a one percent increase (Commonwealth of Massachusetts, 2012). Of the 7,755 farms in the Commonwealth, eighty percent of these are family owned and ninety-five percent are considered "small" by the USDA (revenue under $250,000 per year) (Commonwealth of Massachusetts, 2012).

The produce from the farmers is currently not effectively or efficiently used. This is because despite the growth in Massachusetts' agriculture, there is little direct connection between farmers and city-based consumers. Small farmers in Worcester County generally sell their products through food stands and farmers markets (Burmeister, 2014). While farmers markets are becoming more common (number has grown from 1,755 to 6,132 between 1994 and 2010), this selling method is not efficient. It does not guarantee that the farmers will sell their total daily output (MRCOG, 2015). The Worcester Regional Food Hub will act as an intermediary to ensure local producers maximize output.

COMMERCIAL KITCHEN TENANTS

The purpose of the commercial kitchen is to serve its renting tenants. The tenants of commercial kitchens may include caterers, startup food businesses, large institutions (i.e. colleges and hospitals), culinary classes, workforce training programs, and local farmers. Since it is illegal to sell food products made in a household kitchen, commercial kitchens provide "...low-cost access to licensed kitchens and professional-grade equipment, connections with suppliers

and customers, assistance complying with health regulations and licensing issues, and a general sense of community for entrepreneurs…" (Ignaczak, 2013).

CONSUMERS

Many consumers are part of the Worcester Regional Food Hub; specifically, the sponsors have targeted institutions and the impoverished. Institutions are essential because they require large quantities of food. These institutions include over two hundred restaurants, nine colleges and universities (more than 36,000 students), and a number of hospitals in the city that contain large commercial kitchens (Superpages, 2015). The sponsors are targeting the impoverished because approximately 54,000 residents, thirty percent of Worcester's population, live in poverty. These residents represent a group that cannot afford or access local healthy food (Williams, 2014; WRRB, 2014). With limited resources, many families resort to cheaper, unhealthy processed food due to its longevity and affordable price. Consumption of this food increased obesity in Worcester. Nearly seventy percent of adults are overweight or obese and about twenty percent of children who begin public school are already obese in Worcester (Nunez, 2013). A food hub provides the opportunity to assist consumers by supplying healthy, local, quality food at an affordable price.

2.4 COMMERCIAL KITCHEN & ITS SERVICES

A commercial kitchen characterizes most food hubs, and is a vital aspect for one in Worcester. It is defined as a large-scale mechanized business enterprise that produces food for public consumption. It has a production cycle that ranges from "...the initial processing of raw materials to the final stage of food preparation" (GSE, 1979). Unlike a home kitchen, industrial sized kitchens are designed to handle large volumes of food preparation. Such commercial

kitchens typically range from a few hundred to over a thousand square feet (Colletti, 2011). They offer services that include culinary training, business incubation, and storage opportunities.

CULINARY PROGRAMS

Culinary programs consist of classes and hands-on-learning in the food preparation industry. These programs can be administered in a classroom or commercial kitchen. Culinary programs focus on refining cooking skills and kitchen safety.

A number of programs focus on increasing the culinary skills of the student. They can range from beginner to expert level. Courses that increase students' culinary skills provide multiple opportunities. They can prepare an individual for a career as a chef or caterer, or assist in producing home recipes with professional grade equipment on an industrial level.

Other culinary programs focus on kitchen safety and help the students obtain licenses and certifications required for working in the food industry. One popular certification is ServSafe. ServSafe is a program that leads the way in providing current and comprehensive educational materials to the restaurant industry (ServSafe, 2016).

BUSINESS INCUBATION

Business programs strongly augment culinary programs. They incubate food entrepreneurs and their start-up businesses. Over the last several years, "The food incubator model has really grown… from virtually no food incubators to probably about 200 [or more] in the U.S." (NPR, 2014). The demand for these incubators stems from, "The failure rate of food businesses — it's [the failure rate] enormous," stated Cullen Gilchrist, co-founder of food incubator Union Kitchen in Washington, D.C. (NPR, 2014). Marty Dudek, Associate Director of

dining services at The College of the Holy Cross, stated that only one in ten restaurants will survive past five years. These incubator kitchens are increasingly popular because of the growing demand for local food, and the great benefit it has to help starting food entrepreneurs.

The business programs teach students how to manage and operate a food business. Hope & Main in Rhode Island has several classes dedicated to business incubation such as marketing, branding, laws and regulations, and research and development of recipes. Additionally, to ensure that home recipes are safe for retail sale they have research and development classes that allow entrepreneurs to test their products. Culinary business classes also include managing a restaurant and its staff, running a catering company, or distributing one's own recipe. The CommonWealth Kitchen, Dorchester, MA, mass produces value added goods from farmers' access produce, such as tomato sauce and pickled zucchini. Farmers can adopt the CommonWealth Kitchen staff's certified recipe in order to manufacture their value added goods at lower unit costs. Similar services can be implemented in a commercial kitchen in Worcester.

STORAGE

Food storage is important for commercial kitchens. Storage ensures that food quantity and quality are maximized. There are several types of storage options including dry, refrigerated, and frozen. Food hubs and kitchens have different means of providing these storage techniques. Common practice of storages can be locked cages, shelving space, or moveable pallets as was the case at the Commonwealth Kitchen.

2.5 COMMERCIAL KITCHEN & ITS LOGISTICS

The profitability of commercial kitchens depends on multiple factors. The most influential factors to the Worcester commercial kitchen are local food market trends, its facility, and its finances.

FOOD MARKET TRENDS

Current food market trends demonstrate a few geographical products that are increasing in value and capacity around the United States. A report published by IBISWorld concluded that there are nine significant markets that have greatly increased in value and will continue to grow. The nine markets are food trucks, frozen yogurt stores, wine bars, juice and smoothie bars, sushi restaurants, fast food restaurants, soy and almond milk production, hot sauce production, and craft beer production (IBISWorld, 2014). As shown in the table labeled Industry Growth, some of the industries have grown more the twelve percent and even twenty percent from 2009-2014. Many of these markets are also predicted to show upwards of six percent increases from 2014-2019. These trends influenced many food entrepreneurs to consider targeting these markets.

Table 1: Industry Growth

Industry Growth	2009-14 % Growth	2014 % Growth	2014 Value ($m)	2019 Value ($m)	2014-19 % Growth
Food Trucks	12.5	4.4	803.8	985.3	4.2
Frozen Yogurt Stores	22.5	17.1	1,813.7	2,128.4	3.3
Wine Bars	3.4	2.9	637.6	749.1	3.3
Juice & Smoothie Bars	2.3	3.8	2,150.7	2,371.2	2.0
Sushi Restaurants	2.9	3.2	2,090.3	2,330.0	2.2
Fast Food Restaurants	1.4	1.4	198,865.6	219,341.0	2.0
Ice Cream & Gelato Store Franchises	-1.3	-0.7	3,145.8	3,100.0	-0.3
Soy & Almond Milk Production	7.7	5.6	1,051.5	1,402.7	5.9
Hot Sauce Production	3.6	3.5	1,069.4	1,343.6	4.7
Craft Beer Production	12.6	13.0	4,449.5	5,823.1	5.5

(IBISWorld, 2014)

Trends grew in these geographic products because of dynamics shifts of the consumer populations and its desires. With large immigrant populations coming to the United States, ethnic foods are also on the rise. The current U.S. population is made up of thirteen percent immigrants and with half of them being of Hispanic descent, there has been a large shift to spicy foods (IBISWorld, 2014). With people consciously trying to eat healthier, soy and almond milk are on the rise. Although fast food restaurants like McDonald's are a mainstay in U.S. culture, the "gourmet" fast food establishments are on the rise. These include places where consumers order at a counter, but food is not instantly ready. These places include Five Guys Burgers and Fries and Panera Bread (IBISWorld, 2014). Another small sector on the rise is pizza shops, making access more convenient by allowing customers to order their pizza online. Places such as Papa

John's, Pizza Hut, and Domino's have reported that forty percent of their sales come from online orders (IBISWorld, 2014).

FACILITY

The profitability of a commercial kitchen is strongly dependent upon its facility. The profitability is greatest when the needs of the tenants are best met. There are multiple factors to consider when choosing a facility including its location, equipment, hours of operation, and adaptability to tenant needs.

The commercial kitchen for Worcester Regional Food Hub will be located at the Worcester County Food Bank on Route 9 in Shrewsbury, MA. It is a pre-existing commercial kitchen that is up to code, has existing equipment, is in working order, and will operate Monday through Friday, eight hours per day. It is approximately one thousand square feet. For industrial equipment it has: a gas griddle, a dish washer, a floor kettle, a six burner stove, double convection oven, two meat slicers, a five gallon mixer, and various cleaning and preparing sinks. Additionally, there is a large collection of assorted pots, pans, and utensils. It contains a home style refrigerator, two door commercial refrigerator, and a chest freezer for cold and frozen storage. There will also be dry storage capabilities, but the size of this storage is not yet determined.

Although the Worcester Regional Food Hub is starting its kitchen at the Worcester County Food Bank, many factors go into selecting its criteria. Selecting the location of the commercial kitchen is essential and helps determine its size, structural layout, accessibility, and potential services. There are three initial categories: building a new facility, refurbishing an existing facility, or repurposing an existing facility. Building a new facility allows for the most

customization, but has the greatest overhead cost. Refurbishing an existing facility decreases costs and still allows for customized equipment and structural layout. The size, structural layout, and accessibility are limited by what is existing. Repurposing is the least expensive and least customizable. The facility's size, structural layout, and accessibility are firmly established. The potential services are still malleable through changes to the existing equipment.

Choosing the equipment for the commercial kitchen is essential and determines many of the services it provides. The equipment of a commercial kitchen is industrial sized and suited to the needs of the tenants. If a tenant plans to bake pastries in the commercial kitchen, then it must have the necessary equipment such as a conventional oven, mixing bowls, and a proofing cabinet to name a few. A benefit to repurposing a facility is that there may be existing equipment, but it may need to be replaced, updated, cleaned, fixed, or brought up to code.

Determining the facility's hours of operation is essential and determines the maximum amount of time that the commercial kitchen can be rented. The maximum amount of time also limits the maximum amount of profits produced from the rent payments.

FINANCES

Finances of commercial kitchens consist of its revenues and expenditures. There are multiple factors that affect revenues and expenditures of commercial kitchens. They are affected by the commercial kitchen's physical facility, services offered, accessibility, frequency of usage by tenants, number of tenants, hours of operation, and more.

Multiple sources will generate revenue. Some sources are grants, rent payment from tenants, and sale of food products. The Worcester Regional Food Hub received $161,650 for its planning year in 2015. An additional $423,235 was awarded for its pilot year, by the Health

Foundation of Central Massachusetts (HFCM, 2016). This grant will cover several conception and development costs of the food hub and commercial kitchen, including salaries, consulting services, utilities, and more. Rent paid by tenants is another source of revenue. It is generated by the tenants renting the kitchen or storage space. Kitchen space is often rented and charged by the hour. Other fees associated may include application, membership, and cleaning fees. Different kitchens have different rent payment structures. For example, if an annual membership is paid, then the hourly rate is reduced.

Multiple sources generate expenditures. Expenditures associated with commercial kitchens are utilities, labor, equipment, insurance, legal certifications, and maintenance. The Worcester Regional Chamber of Commerce will not be paying rent to the Worcester County Food Bank for the use of its kitchen for the pilot year. There is money in the budget from the Health Foundation to cover utilities cost for the food bank.

CHAPTER 3: METHODOLOGY

The profitability of the commercial kitchen at the Worcester Regional Food Hub was investigated through multiple methods. These methods were applied to explore a commercial kitchen and its potential stakeholders, services, and logistics. They were investigated through the application of case studies, interviews, a focus group, and a survey. The collected information was analyzed through market and financial analyses. These analyses identified how to establish a commercial kitchen in Worcester.

All communication was properly documented according to Worcester Polytechnic Institute's (WPI) Institutional Review Board's (IRB) code of ethics. Specifically, interviewees and other project participants were quoted only with permission. In addition, our survey left the option of the respondent to either leave their name as a potential client, or to finish as anonymous.

3.1 COMMERCIAL KITCHEN & ITS STAKEHOLDERS

Stakeholders are vital to the commercial kitchen at the Worcester Regional Food Hub. The stakeholders were identified through researching case studies. The case studies were reviewed for those who are typically involved and essential to the function of commercial kitchens. The stakeholders of the commercial kitchen in Worcester are categorized as sponsors, farmers, commercial kitchen tenants, and consumers.

Once the stakeholders were identified, it was important to establish and develop relationships with them. Cultivating these relationships allowed for collaboration through

interviews and a focus group. The information gathered from the collaboration shaped the results and recommendations.

SPONSORS

The sponsors were important to interview. The sponsors of the commercial kitchen at the Worcester Regional Food Hub are the Worcester Regional Chamber of Commerce and the Regional Environmental Council of Central Massachusetts. Consulting these organizations provided information on the expected operation usage of the kitchen. They provided information on the quantity of employees, salary and wages, and hours of operation of the kitchen. These aspects will all drive the expenditures and revenues of the kitchen that will ultimately affect profitability. The sponsors want the commercial kitchen to be a for-profit business that will not be aided by any additional outside grants or funding. The current grant will expire after the fifth year of the project.

FARMERS

Local farmers' products and their use of the facility is a vital component of the commercial kitchen. The demands of the farmers must be considered for optimal operation. On December 1, 2015, the REC met with a group of farmers interested in joining the food hub effort. The highlights of the focus group are in Appendix B. The information from the focus group and interviews with farmers was analyzed, and, based on the responses, recommendations were made.

COMMERCIAL KITCHEN TENANTS

The responses of residents helped to determine the schedule of the kitchen, hours of operation, and pricing schemes. Potential commercial kitchen tenants include culinary trainers, food entrepreneurs, and farmers. Interviewing culinary trainers, such as Quinsigamond Community College and SnapChef, provided insight into the necessary equipment and program curriculum. Consulting both food entrepreneurs and farmers interested in renting the kitchen contributed to the financial analysis. Also contacting managers of other local commercial kitchens gave valuable information with regard to the needs of culinary trainers, food entrepreneurs, and farmers.

CONSUMERS

It was important to study how the consumers of Worcester County impact the profitability of the commercial kitchen. These individuals include those interested in purchasing products created in the kitchen. They were interviewed to determine public perception and the demand for products the kitchen might produce.

3.2 COMMERCIAL KITCHEN & ITS SERVICES

The method to investigate the services of the commercial kitchen needed by the potential clientele was conducted through a survey and interviews. The survey and interviews determined the needs of potential tenants through questions that focused on five major topics. These topics inquire about the individual's level of interest, food industry experience, future food industry plans, services they require, and payment preferences. The services component specifically examined individual business assistance needs, estimated kitchen usage, potential products,

equipment requirements, and culinary education needs. A copy of the survey is in Appendix A. The responses to the survey were recorded and analyzed to determine what types of food, equipment, and usage the kitchen will expect. These findings and their interpretations underlie the recommendations necessary to the WRCC.

3.3 COMMERCIAL KITCHEN & ITS LOGISTICS

The methods to investigate the logistics of the commercial kitchen were case studies, interviews, and a survey. The logistics were divided into three categories. These categories were food market trends, facility, and finances.

FOOD MARKET TRENDS

The methods used to investigate the food market trends were case studies, interviews, and a survey. The case studies examined agricultural census data from 2007 and 2012 (USDA, 2014). It compared the data to show the growth or decline of individual food markets. The growth trends were targeted to create recommendations on food markets to expand the Worcester commercial kitchen's business. The commercial kitchen in Worcester can expand by investing in equipment for those growing industries. The questions of the interviews and survey targeted the needs of the stakeholders to investigate the food market trends unique to Worcester County. The responses were evaluated by the quantity and frequency of similar answers.

FACILITY

The methods used to investigate the facility were a site visit to the commercial kitchen located at the Worcester County Food Bank as well as a visit to Westerman Store and Restaurant Equipment. A list of the equipment at the food bank was made. The specifications of each piece

of equipment were then attained through the visit to Westerman's. The needs of the tenants determined the equipment the facility should invest in by upgrading or updating.

FINANCES

The finances were investigated through case studies and interviews. Case studies and interviews were conducted on local commercial kitchens, including the CommonWealth Kitchen and Hope & Main. These commercial kitchens were toured and their staff interviewed. A complete schedule of the culinary businesses interviewed and visited can be found in Appendix C. Upon the completion of investigating these commercial kitchens, the stakeholders of the commercial kitchens were contacted to determine their needs and any financial information they could provide.

A financial analysis was created from the financial information the stakeholders provided. The financial analysis was divided into two categories: expenditures and revenues. The commercial kitchen in Worcester would be profitable if the total revenue was greater than or equal to the total expenditures.

The expenditure analysis included the cost of equipment, labor, taxes, utilities (water, gas, and electricity), and operation and maintenance. The costs of utilities were determined by calculating the energy use for the equipment that is located in the kitchen. The BTU (British thermal unit) rating of gas powered equipment was converted to therms. The therms can then be turned into a cost per month based on the amount of hourly usage of the equipment and the gas rate in the town of Shrewsbury. The same was done for electricity where the lights and equipment were converted to kilowatt-hours and then charged based on the hourly usage and the

electricity rate. Labor costs include a "Food Hub Coordinator" with a salary of $50,000 (HFCM, 2016). Conservative estimates were made by estimating high costs and low revenues.

The revenue analysis included income from aggregation, renting kitchen and storage spaces, as well as application and membership fees. This revenue was then subtracted from the total expenditures to determine if the kitchen would breakeven. If the kitchen does not breakeven, additional revenue is required. The additional revenue could be generated by adjusting the cost to rent the facility.

In order to estimate the hourly rate the kitchen should charge for rent, the total cost was divided by the assumed percentage of time that the kitchen will be used. The total cost was adjusted for one hundred, seventy-five, fifty, and twenty-five percent use. This gave an hourly rate that needs to be charged in order to breakeven on the total costs. These suggestions for hourly rates are influenced by the hours of use of equipment, labor, various fees, and revenues made from aggregation and renting storage. The calculations can be found in Appendix D.

CHAPTER 4: RESULTS

The results for the commercial kitchen profitability study consist of three sections: services, stakeholders, and logistics. The services section explores the various avenues of business for the commercial kitchen at the Worcester Food Hub. These avenues include culinary training, business incubation, and storage. The stakeholder section represents the opinions of those invested in the food hub project. Such stakeholders include sponsors, farmers, tenants, and consumers. Lastly, the logistics section covers the financials necessary to achieve profitability.

4.1 COMMERCIAL KITCHEN & ITS STAKEHOLDERS

Presently there are three major stakeholders strongly interested in using the kitchen space. These three stakeholders are Quinsigamond Community College (QCC), SnapChef, and Worcester Public Schools. Each of these organizations have similar yet distinct needs for the kitchen.

QCC is on board as a partner for the culinary training aspect of the commercial kitchen. Currently the QCC culinary operations take place at the Worcester and Marlborough Senior Centers. They will expand their operations by leading two class cohorts consisting of ten to twelve students at the Worcester Food Hub kitchen location. These classes will study and practice food preparation. QCC has shown interest in having more stainless steel preparation tables, home style kitchen equipment, and more silverware to better operate these classes. One piece of equipment that QCC wants, in particular, is a vacuum sealer to help keep food fresh.

SnapChef, another major stakeholder, wants their employees to help run some culinary classes and to provide additional help on a part time basis. They also have shown interest in

using the Worcester Regional Food Hub kitchen as another location in their network of learning facilities. They also agree with QCC in that they would like more preparation tables and small cooking utensils.

Worcester Public Schools is interested in using the kitchen to train their staff. They want to partner with SnapChef and QCC to provide the instructors to train their employees.

4.2 COMMERCIAL KITCHEN & ITS SERVICES

Results for the commercial kitchen services came from a public survey. The survey provided information for the services that potential tenants are seeking in a commercial kitchen. The survey was analyzed by categories that include business aspirations, culinary services, and equipment needs. The complete list of survey questions can be found in Appendix A. It is important to note that the survey will continue to generate information beyond the life of the project because it is administered by the WRCC.

For business aspirations, the survey revealed that individuals were most interested in using the commercial kitchen as a location for their food production and starting or expanding their own business. For culinary services, survey participants wanted training for recipe development as well as process development and management. Other requested services were inventory management and using the kitchen as a dining place. For equipment needs, the survey highlighted that individuals were mostly interested in a package heat sealer, a food processor, gas range, canning machine, and commercial mixer.

Along with the survey results, interview results also supplied data for services and equipment in the kitchen. Interviews with Food Hubs such as CommonWealth Kitchen and Hope & Main concluded that value-added goods are popular among farmers. These venues also added

that having a scheduled process and standard recipes are essential to efficiency for large scale food production. In addition to these two, Wendell Kitchen agreed that canning and packaging were popular among their clientele. Also, survey participants and interview participants displayed equal interests in growing their own food and buying food from the kitchen for use.

4.3 COMMERCIAL KITCHEN & ITS LOGISTICS

A major aspect for the logistics of the commercial kitchen at the Worcester Regional Food Hub are the finances. Financial aspects that were considered were utility costs, salaries, aggregation and storage revenue, and various fees. Through various interviews with stakeholders, other food hubs, and commercial kitchen owners, specific costs for these items were estimated. The financial estimate led to the goal of determining the price per hour for kitchen rental. This was done to show how much needs to be charged for the kitchen to break even. The scenarios can be found in Scenarios 1-3.

The utility costs were estimated by taking into account the existing equipment in the kitchen. Specification sheets were obtained for the equipment from Westerman's, a kitchen supply company, in Worcester. These sheets provided the amount of gas or electricity that is consumed by each piece of equipment in terms of therms and kilowatt hours. By interviewing various stakeholders and commercial kitchen managers, estimates for fees and storage rates were also made. Three scenarios were modeled based on the spreadsheet in Appendix D.

SCENARIO 1: PESSIMISTIC APPROACH

Scenario 1 is a pessimistic approach that estimates minimal kitchen use and revenue from aggregation, storage, and fees.

Table 2: Scenario 1

Item	Use	Rate($)	Total*($)
All Gas Powered Equipment	600 hrs/yr 358.8 therms/yr	1.166/therm	-418.36
Total Electricity Costs	24/7	0.21139/kW/hr	-2,611.94
Food Hub Coordinator	1 FTE	50,000.00/yr	-50,000.00
Revenue from Aggregation	Per year	0.00/yr	0.00
Revenue from Dry Storage	4 months	40.00/mo	160.00
Revenue from Cold Storage	3 months	50.00/mo	150.00
Revenue from Frozen Storage	2 months	60.00/mo	120.00
Estimated Number of Tenants	10		
Application Fee	10	50.00/tenant	500.00
Membership Fee	10	100.00/tenant	1,000.00
Total			**-$51,100.30**

* Expenditures are shown as negative values and revenues as positive values.

Table 3: Kitchen Rent Estimates for Scenario 1

	Required Breakeven Rent Price	Price/hour
Kitchen Operating at 9 Hours per Day for 5 Days per Week	100% use (2080 hours/year)	*$24.57*
260 days/yr (2080 hours/yr)	75% use at 1560 hours/year	*$32.76*
	50% use at 1040 hours/year	*$49.13*
	25% use at 520 hours/year	*$98.27*

SCENARIO 2: REALISTIC APPROACH

Scenario 2 represents a realistic approach to the amount of kitchen use and an average amount of revenue from aggregation and storage. This scenario will be the most likely case for the commercial kitchen at the Worcester Regional Food Hub.

Table 4: Scenario 2

Item	Use	Rate($)	Total*($)
All Gas Powered Equipment	3000 hrs/yr 1794 therms/yr	1.166/therm	-2,091.80
Total Electricity Costs	24/7	0.21139/kW/hr	-3,586.03
Food Hub Coordinator	1 FTE	50,000/yr	-50,000.00
Revenue from Aggregation	Per year	5,000.00/yr	5,000.00
Revenue from Dry Storage	8 months	50.00/mo	$400.00
Revenue from Cold Storage	5 months	60.00/mo	300.00
Revenue from Frozen Storage	3 months	70.00/mo	210.00
Estimated Number of Tenants	15		
Application Fee	15	75.00/tenant	1,125.00
Membership Fee	15	200.00/tenant	3,000.00
Total			**-$45,642.83**

* Expenditures are shown as negative values and revenues as positive values.

Table 5: Kitchen Rent Estimates for Scenario 2

	Required Breakeven Rent Price	Price/hour
Kitchen Operating at 8 Hours per day for 5 days per week	100% use (2080 hours/year)	*$21.94*
260 days/yr (2080 hours/yr)	75% use at 1560 hours/year	*$29.26*
	50% use at 1040 hours/year	*$43.89*
	25% use at 520 hours/year	*$87.88*

SCENARIO 3: OPTIMISTIC APPROACH

Scenario 3 provides an optimistic vision of how the kitchen will generate costs and benefits. In this scenario, estimated revenues are high and the number of tenants expected is also over estimated.

Table 6: Scenario 3

Item	Use	Rate($)	Total*($)
All Gas Powered Equipment	6000 hrs/hrs 3588 therms/yr	1.166/therm	-4,183.61
Total Electricity Costs	24/7	0.21139/kW/hr	-4,803.63
Food Hub Coordinator	1 FTE	50,000.00/yr	-50,000.00
Revenue from Aggregation	Per year	10,000.00/yr	10,000.00
Revenue from Dry Storage	12 months	60.00/mo	720.00
Revenue from Cold Storage	8 months	70.00/mo	560.00
Revenue from Frozen Storage	5 months	80.00/mo	400.00
Estimated Number of Tenants	25		
Application Fee	25	75.00/tenant	1,875.00
Membership Fee	25	200.00/tenant	5,000.00
Total			**-$40,432.24**

* Expenditures are shown as negative values and revenues as positive values.

Table 7: Kitchen Rent Estimates for Scenario 3

	Required Breakeven Rent Price	Price/hour
Kitchen Operating at 8 Hours per day for 5 days per week	100% use (2080 hours/year)	*$19.44*
260 days/yr (2080 hours/yr)	75% use at 1560 hours/year	*$25.92*
	50% use at 1040 hours/year	*$38.88*
	25% use at 520 hours/year	*$77.75*

CHAPTER 5: RECOMMENDATIONS

The recommendation section builds on the data from the results and their interpretation. The data was compiled into five major topics: pricing scheme, kitchen requirements, culinary training, marketing, and food hub expansion.

5.1 PRICING SCHEME

The pricing scheme will be crucial in creating a profitable and sustainable kitchen. Since the kitchen will be in its beginning stages, it will not have a full capacity of tenants. Thus, recommendations derive from a modest expectation that the kitchen will be used fifty percent of the time for an eight hour day, five days a week regiment. This recommendation includes a pricing scheme for kitchen hourly rent, monthly rent for storage, as well as other fees in Table 8.

Table 8: Price Scheme

Kitchen Rent	Dry Storage Rent	Cold Storage Rent	Frozen Storage Rent	Application Fee	Membership Fee
$40.00/hour	$50.00/month	$60.00/month	$70.00/month	$75.00/month	$200.00/year

Based on the three scenarios from the results and the current stakeholders, $40.00 per hour for kitchen use is recommended. In addition, the public interest survey provided insight into kitchen hourly rates. The survey highlighted that people were willing to pay more than this $40.00 per hour estimate. The rates for the various storage methods were averaged from the rates that were found from interviews and research. The application fee and membership fees were also determined from interviews and research as well as from discussions with Stuart Loosemore of the Worcester Regional Chamber of Commerce.

Additional fees may include cleaning fees, member and non-member rates, and reduced rates for non-profit organizations. Along with the pricing scheme, it is critical to design an organized online scheduler. This is important to maximize kitchen usage and allow tenants to plan their schedules in advance.

5.2 KITCHEN REQUIRMENTS

The commercial kitchen will require various equipment additions or upgrades to enhance its functionality. One recommendation based on conversations with QCC and SnapChef is that there needs to be more stainless steel preparation tables. There are currently two tables in the kitchen. There will need to be six to eight tables to accommodate around ten to fifteen people for culinary training classes. A further recommendation, as suggested by Hope & Main, is to attach wheels to the preparation tables. This allows the tables and kitchen to utilize space more flexibly.

Figure 3: Kitchen Leash
(Kitchen Leash, 2014)

A second recommendation is for the facility to contain kitchen leashes to supply electricity to the prep tables. As shown in Figure 3, kitchen leashes allow devices to be plugged into outlets away from walls. SnapChef explained that these upgrades will create versatility in the kitchen as well as eliminate tripping hazards.

The third recommendation involves buying new or upgrading kitchen equipment to accommodate the growing tenant capacity and food volume. For example, a larger kettle is recommended because it has a multitude of uses and is popular among tenants from many different kitchen backgrounds (e.g., sauces, salsa, pasta, juices, etc..). A canning machine is also

desirable because many products are often canned or jarred. Another recommendation is to upgrade to a larger flat top grill to accommodate higher volume food preparation.

5.3 CULINARY PROGRAMS

Recommendations for potential programs at the commercial kitchen will consist of three types: recreational, production, and business classes. The first recommendation is to offer recreational programs. One example may be holiday-themed classes. These can include cookies for Christmas time, pumpkin inspired foods around Halloween, and Thanksgiving style foods in the fall. As an example, Hope & Main puts on a Harry Potter class for families and children. Other programs can be centered on specific foods. Such popular themes are pizza cooking, home beer brewing, and Mexican-themed classes. These classes can be led by the commercial kitchen staff or external guest instructors such as the head of the Worcester Restaurant Group.

The second recommendation is for production programs. One example is to teach canning and packaging of foods. This was popular for Wendell Kitchen, Hope & Main, and CommonWealth Kitchen. Another program to consider is assisting clients with research and development of their food products. This service will target tenants seeking to master a recipe and prepare it for larger scale production. Hope & Main and CommonWealth kitchen offer these services to ensure that food is safely produced, great tasting, and follows a scheduled process. "A scheduled process is a process selected by a processor as adequate for use under the conditions of manufacture for a food in achieving and maintaining a food product that will not permit the growth of microorganisms having public health significance" (Rushing & Fleming, 1999). The scheduled process is recommended to investigate further since it allows for time and cost efficient operations where recipes are already established and tested.

The third recommendation is to provide culinary business programs. Hope & Main suggested offering some form of accounting, labeling, legal-related, and marketing classes (e.g., social media workshops) to the food hub services curriculum. These classes could be led by the food hub staff or via outside partners. Along with the business classes, it is also important to offer certification programs such as ServSafe. ServSafe and other similar programs cover food managers, food handlers, and alcohol servers (ServSafe, 2016). These recreational, production, and business programs create opportunities to get new customers to the kitchen, as well as supplement the greater tenant business and fill scheduling gaps.

5.4 MARKETING

Marketing for the commercial kitchen will consist of two categories: advertising and labeling. The first category, advertising, is divided into print, broadcast, and internet media. The Worcester Telegram & Gazette and Worcester Magazine are two potential print media outlets for the food hub and its commercial kitchen. Ads can be placed in these print media to discuss up-coming events at the kitchen and special promotions. Broadcasting media includes television and radio. It is recommended that the food hub utilizes Charter TV3 for broadcasting news and events for the food hub. Radio ads on local Worcester Stations such 96.1 WSRS as 98.9 NASH Icon, 100.1 The Pike, 104.5 XLO can advertise deals and schedules for the commercial kitchen. Advertising on internet media can be done on the sponsors websites as well as social media. Todd Snopkowski from SnapChef highly recommended using social media to connect current members as well as garnish new interest. Social media outlets like Twitter, Instagram, Facebook, and LinkedIn. The WRCC and the REC can link the food hub pages to their own social media sites to spread the word to their audiences.

The second recommendation category is that the food hub investigate the value of labels and labelling. In interviews with farmers like Frank Carlson and the farmer focus group held at the Worcester Senior Center, Appendix B, all agreed that labeling is one of their greatest concerns. CommonWealth Kitchen has a premade label that can be used by their clients. The label is a stencil that includes a small space for their kitchen logo and a center location for the client's business logo. Depending on where the food is sold, an ingredients list and other information can be easily added. Hope & Main offers a small sticker label that promotes their business and also shows where the food product was made. The goal of these methods is to provide a cheap and easy labeling method that benefits both parties.

5.5 FOOD HUB EXPANSION

There are further recommendations for food hub expansion that are beyond the project focus of the commercial kitchen. There are three recommendations that include a produce truck, a store, and a network of kitchens. These expansions will provide additional business for the kitchen.

The first recommendation is a produce truck that can help address the food deserts in Worcester. The REC already has a mobile farmers' market vehicle which also can be used by the food hub. Worcester Public Schools has had great success with their food trucks. They established a summer food truck program which serves the underprivileged youth in the City of Worcester. There are currently two food trucks for their Summer Food Program where kids ages eighteen and under can get free meals. The effort is completely self-sustaining (Lombardi, 2016). Collaboration with the REC's mobile farmers market as well as Worcester Public Schools' summer food truck program will open more markets for the food hub products to be sold.

The second recommendation is a future investment for a food hub store. The store can sell food from aggregation and value added products made in the kitchen. Farmers, such as Frank Carlson, stated that he does not sell much of his value-added goods in his own store. Farmers and startup food businesses have trouble getting their products into grocery stores because of a lack of time and money. The food hub could sell value-added goods in their store and both parties would benefit. The Worcester Regional Food Hub may want to hire staff to make the value-added products for farmers who may not have the resources to accomplish this themselves.

The third recommendation is to offer a network of kitchens. The network will be supported by the food hub and can be utilized to meet the unique needs of tenants. This will allow tenants to have more venues for their use depending on their location and kitchen requirements. These kitchens may be large enough to have multiple stations to house several tenants at one time for production. There is an underutilized kitchen in Leominster, MA that may be the beginning of this kitchen network (Loosemore, 2016).

REFERENCES

Burmeister, J. (2014). The Worcester food hub: an economic development project around local food. *Worcester Food & Active Living Policy Council*. Retrieved November 6, 2015, from http://worcesterfoodandactiveliving.org/2014/07/23/the-worcester-food-hub-an-economic-development-project-around-local-food/.

Chen, Y., Kaczmarek, A., & Ventola, J. (2015). Worcester community food assessment. *Worcester Polytechnic Institute*. Retrieved November 6, 2015, from https://www.wpi.edu/Pubs/E-project/Available/E-project-030813-173340/unrestricted/foodprod_final_3-10-13--FINAL.pdf.

Colletti, J. (2011). What is a commercial kitchen for rent? *Chefs Center of California.* Retrieved November 22, 2015 from http://chefscenter.org/what_is.html.

Commonwealth of Massachusetts. (2012). Agricultural Resources Facts and Statistics. *Commonwealth of Massachusetts.* Retrieved November 15, 2015, from http://www.mass.gov/eea/agencies/agr/statistics/.

DuTremble, D. (2014). Regional planning commission pursuing food hub, awarded federal grant. *Central Massachusetts Regional Planning Commission (CMRPC)*. Retrieved November 6, 2015, from http://www.cmrpc.org/sites/default/files/download/news/Food%20Hub%20Press%20Release-%2010-21-14.pdf.

The Great Soviet Encyclopedia, 3rd Edition (1970-1979) (GSE). (2010). *The Gale Group, Inc.* Retrieved November 23, 2015, from http://encyclopedia2.thefreedictionary.com/Industrial+Kitchen.

The Health Foundation of Central Massachusetts (HFCM). (2016). Worcester regional food hub. *The health foundation of central massachusetts (CFCM).* Retrieved February 29, 2016, from https://www.hfcm.org/GrantsByInit/75.

IBISWorld. (2014). Serving Up Diversity: Major trends in the food-services sector. Retrieved February 26, 2016, from http://media.ibisworld.com/2014/07/02/serving-diversity-major-trends-food-services-sector/.

Ignaczak, N. M. (2013, November 5). How to start the airbnb of kitchen incubators in your community. [Weblog]. Retrieved from http://www.shareable.net/blog/how-to-start-the-airbnb-of-kitchen-incubators-in-your-community.

Kitchen Leash. (2014). Retrieved February 25, 2016, from http://kitchenleash.com/.

Luna, T. (2015). Plan for the food hub hasn't yet taken root in central, mass. *Boston Globe*. Retrieved November 6, 2015, from https://www.bostonglobe.com/business/2015/08/06/foodhub/XqLlrTQDPYcp3LHb3IHBWL/story.html.

Mid-Region Council of Governments of New Mexico (MRCOG). (2015). Regional food hubs face a growing need for technology. *Mid-Region Council of Governments of New Mexico.* Retrieved November 14, 2015, from http://www.mrcog-nm.gov/show-all-ag-blog/497-regional-food-hubs-face-a-growing-need-for-technology.

National Good Food Network (NGFN). (2015a). Food hub center. *Wallace Center at Winrock International*. Retrieved November 7, 2015, from http://www.ngfn.org/resources/food-hubs.

National Good Food Network (NGFN). (2015b). Vision. *Wallace Center at Winrock International*. Retrieved November 7, 2015, from http://www.ngfn.org/about/NationalGoodFoodNetworkOverview.pdf.

NPR. (2014). For Food Startups, Incubators Help Dish Up Success. Retrieved February 26, 2016, from http://www.npr.org/sections/thesalt/2014/08/18/336877182/for-food-start-ups-incubators-help-dish-up-success.

Nunez, Taylor. (2013). Food fight. *Worcester Magazine*. Retrieved November 6, 2015, from http://worcestermag.com/2013/07/03/food-fight-214067021/2913.

Regional Environmental Council of Central Massachusetts (REC). (2015). Who are we? *Regional Environmental Council of Central Massachusetts*. Retrieved November 6, 2015, from http://www.recworcester.org/#!who-we-are/csgz.

Rushing, J.E., & Fleming, H.P. (1999). Scheduled processes. *Department of Food Science NCSU*. Retrieved February 29, 2016, from https://fbns.ncsu.edu/extension_program/documents/acidified_scheduled_processes.pdf.

ServSafe. (2016). *ECertificates*. Retrieved February 25, 2016, from https://www.servsafe.com/home.

Shewchuk, T., Okray, B., Mahoney, R., & Frankian, W. (2013). An analysis of New England food hubs. *Worcester Polytechnic Institute*. Retrieved November 6, 2015, from http://www.wpi.edu/Pubs/E-project/Available/E-project-043013-151105/unrestricted/Food_Hub_IQP_Final_Report.pdf.

Superpages. (2015). Grocery stores & supermarkets. *Superpage.com*. Retrieved November 15, 2015, from http://www.superpages.com/yellowpages/C-Grocery+Stores+%26+Supermarkets/S-MA/T-Worcester/.

United States Department of Agriculture, National Agricultural Statistics Service (USDA). (2014, May). *2012 Census of Agriculture* (Vol. 1, Part 21). Retrieved January 26, 2016, from http://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Massachusetts/cp25027.pdf.

Ver Ploeg, M. & Breneman, V. (2015). Food access research atlas. *United States Department of Agriculture*. Retrieved November 5, 2015, from http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx.

Williams, G. (2014). What it means to be middle class today. *U.S. News & World Report*. Retrieved November 13, 2015, from http://money.usnews.com/money/personal-finance/articles/2014/04/24/what-it-means-to-be-middle-class-today.

Worcester Regional Research Bureau (WRRB). (2013). Worcester's Demographic Trends: 2010 Census. *Worcester Regional Research Bureau, Inc.* Retrieved November 14, 2015, from http://www.worcestermass.org/uploads/d3/09/d30955c08b8b8cbd3772f7b5bb81e9b4/WRRB-Worcester-Demographic-Trends-Feb-2013.pdf.

Worcester Regional Chamber of Commerce (WRCC). (2015). About us. *Worcester Regional Chamber of Commerce*. Retrieved November 6, 2015, from http://www.worcesterchamber.org/.

APPENDICES

APPENDIX A: SURVEY

1. How interested in renting a commercial kitchen are you?

2. (If response to Q1 was "Not Interested") Please tell us why you are not interested.

3. Do you currently own or operate a food-based business?

4. Do you plan to own or operate a food-based business?

5. What business assistance or services will you be interested in?

6. Do you have any work experience in the food industry?

7. What is your culinary training?

8. For what purpose will you rent a commercial kitchen?

9. What products will you process or produce?

10. What type of equipment will you need in a commercial kitchen to prepare you food product?

11. Will you provide your own food supplies (ingredients)?

12. How much are you willing to spend hourly to rent a commercial kitchen?

13. How much are you willing to spend for reduced rates with an annual membership fee?

14. Which of the two previous payment methods do you prefer?

15. On average, how many hours per week will you rent the commercial kitchen each month?

16. What time of day would you rent the commercial kitchen?

17. (Optional) If you would like more information about the Worcester Regional Food Hub and its commercial kitchen, please leave your name, email, and phone number.

APPENDIX B: FARMER FEEDBACK FOCUS GROUP

Important Themes from Food Hub Farmer Feedback Session
December 1st, 1:00 - 2:30 pm
Worcester Senior Center
128 Providence St, Worcester, MA

Synopsis: This meeting was run by the Regional Environmental Council with farmers who were are interested in joining the food hub effort by potentially signing on as producers for the food hub. The main question posed by the REC was, "What is it going to take for farmers to get on board with this food hub?"

Below is a bulleted list of the main concerns and wants of the farmers at the discussion.

- Prices - Who is going to set prices and how will that be determined?
- Transportation - Do I have to bring my food to the food hub, or will the food hub pick up my crops for me?
- Businesses - Who will be the end buyers and how reliable will their business be in the long run?
- Certifications - Will I have to be Gap Certified in order to use the food hub or Commonwealth Quality?
- Branding and Labeling - Will products from the food hub just say "Worcester Food Hub" or mention what farms each product came from?
- Model - For the next time we meet in January can the REC have a model for how the food hub will be run?

APPENDIX C: ROSTER OF INTERVIEWEES

Name	Position	Business	Type of Business	Location	Date(s)
Carlson, Frank	Owner	Carlson Orchards	Apple Orchard	Harvard, MA	2/4/16
Carnevale, Luca	Executive Director of Operations	Hope & Main	Kitchen Incubator	Warren, RI	2/15/16
Cerrone, Pam	Manager of Community Relations	Price Chopper Supermarkets	Supermarket	Schenectady, NY	1/29/16 2/10/16
Domenick, Dave	Owner	The Compass Tavern	Restaurant	Worcester, MA	1/19/16
Dudek, Marty	Associate Director of Dining Services	College of the Holy Cross	College Institution	Worcester, MA	1/28/16
Entwistle, Ron	Vice President	Westerman Store and Restaurant Equipment	Restaurant Equipment Store	Worcester, MA	2/3/16
Faigel, Jen	Executive Director and Co-Founder	CommonWealth Kitchen	Kitchen Incubator	Dorchester, MA	2/18/16
Freeman, Roz	Development & Community Relations	CommonWealth Kitchen	Kitchen Incubator	Dorchester, MA	2/18/16
Godfrey, Phoebe	Co-Founder and Board President	CLiCK	Shared-Use Kitchen	Windham, CT	2/11/16
Hall, Judy	Founder and Chair of the Board	Wendell Community Kitchen	Shared-Use Kitchen	Wendell, MA	1/26/16 2/2/16
Heller, Greg	CEO	American Communities Trust	Social Impact of Poorer Communities	Philadelphia, PA	1/28/16
Hutchinson, Pat	Professor	Quinsigamond Community College	College Institution	Marlboro, MA	2/2/16 2/3/16

Kraskouskas, Joe	Regional Director of Dining Services	Worcester Polytechnic Institute	College Institution	Worcester, MA	1/19/16
Lombardi, Donna	Director of Nutrition	Worcester Public Schools	Public School System	Worcester, MA	2/12/16
Loosemore, Stuart	General Counsel, Director of Government Affairs and Public Policy	Worcester Chamber of Commerce	Government Agency	Worcester, MA	2/2/16
Maglione, Andy	Owner	Helen's Bakery	Bakery	Worcester, MA	1/21/16
Montagnon, Ali	Director of Events and Market Manager	Hope & Main	Kitchen Incubator	Warren, RI	2/15/16
Monteverd, Brian	Food Hub Project Coordinator	Regional Environmental Council	Non-Profit Organization	Worcester, MA	1/22/16
Raioli, Lisa	Founder and President	Hope & Main	Kitchen Incubator	Warren, RI	2/15/16
Rosenfeld, Howard	Director	10 Main, LLC	Shared-Use Kitchen	New Preston, CT	2/5/16
Snopkowski, Todd	CEO and Founder	SnapChef	Culinary Training Business	Worcester, MA	2/2/16 2/4/16
Wainford, Bryanne	Director of Operations	Worcester County Food Bank	Food Shelter	Shrewsbury, MA	1/28/16

APPENDIX D: COST WORKSHEET

										Therms Cost
										1.166
Equipment	BTU/Hour	Estimated Hrs/Month	Therms/Hour	Therms/Month	Hours/Year	Therms/Year	Cost Per Hour	Cost Per Month	Cost Per Year	
20 Gallon Floor Kettle	85000	10	0.85	8.5	120	102	$ 0.99	$ 9.91	$ 118.93	
36" Wide, Med Duty Gas Range	24000	10	0.24	2.4	120	28.8	$ 0.28	$ 2.80	$ 33.58	
Full-Size Dual Flow Gas Conv Oven	110000	10	1.1	11	120	132	$ 1.28	$ 12.83	$ 153.91	
Gas Griddle w/ Thermostatic Controls	60000	10	0.6	6	120	72	$ 0.70	$ 7.00	$ 83.95	
Dishwashers	20000	10	0.2	2	120	24	$ 0.23	$ 2.33	$ 27.98	
					600	**358.8**	**$ 3.49**	**$ 34.86**	**$ 418.36**	

Electricity	Cost Per Hour	Cost Per day	Cost Per Month	Cost Per Year	kW/hr cost
*This assumes 1.92 kW/hr for lights and electic draw of equipment.	$ 0.41	$ 0.68	$ 20.29	$ 243.52	0.21139
Home Refrigerator	$ 0.01	$ 0.19	$ 5.71	$ 68.52	
Chest Freezer	$ 0.12	$ 2.96	$ 88.73	$ 1,064.77	
Big 2 Door Refrigerator	$ 0.14	$ 3.43	$ 102.93	$ 1,235.13	
				$ 2,611.94	

Labor	Salary	Wage Per Hour	Wage Per Week	Wage Per Month	Per Year
Food Hub Coordinator	$ 60,000.00	$ 28.85	$ 1,153.85	$ 4,615.38	$ 50,000.00
		$ 28.85	**$ 1,153.85**	**$ 4,615.38**	**$ 50,000.00**

Estimated Revenue From Aggregation	$ 5,000.00

Estimated Revenue From Storage	Charge Per Month	Estimated Months Used/year	Total
Dry Storage	$ 60.00	8	$ 480.00
Cold Storage	$ 70.00	5	$ 350.00
Frozen Storage	$ 80.00	3	$ 240.00
			$ 1,070.00

	Total Cost	$ 46,960.30
		Price/hour
Assume 8 Hours per day/5days per week	Required Breakeven Rent Price 100% Use at 2080 hours/year	$ 22.58
260 days/year	75% Use at 1560 hours/year	$ 30.10
	50% Use at 1040 hours/year	$ 45.15
	25% Use at 520 hours/year	$ 90.31

Estimated # of Clients	Application Fee	Membership Fee	Add Fee Here	Add Fee Here	Total	New Total Cost
10	$ 75.00	$ 200.00			$ 275.00	
	$ 750.00	$ 2,000.00	$ -	$ -	$ 2,750.00	$ 44,210.30

		Price/hour
Assume 8 Hours per day/5days per week	Required Breakeven Rent Price 100% Use at 2080 hours/year	$ 21.25
260 days/year	75% Use at 1560 hours/year	$ 28.34
	50% Use at 1040 hours/year	$ 42.51
	25% Use at 520 hours/year	$ 85.02