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A Reference Guide for Identifying the Technical Details of a Commercial, Shared-Use Kitchen in Bates Mill No. 5

Kei Matsunami

Tyler Sheffield

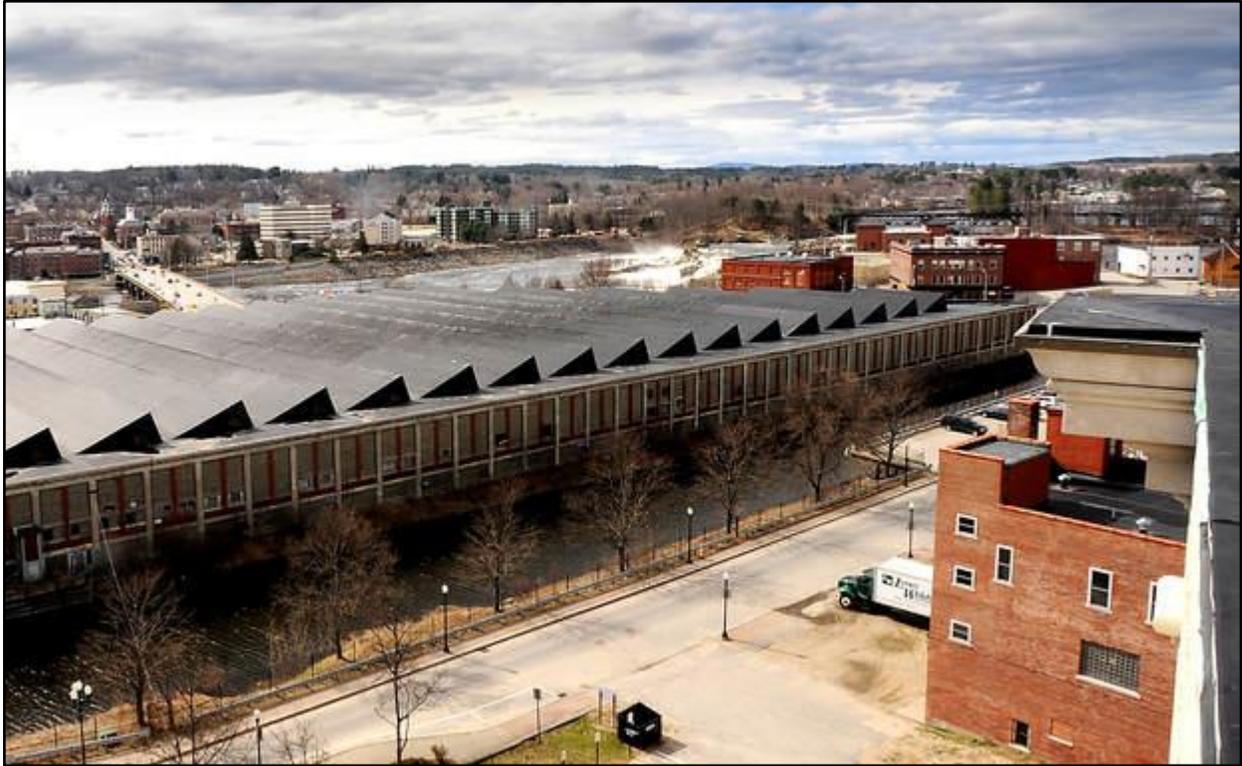
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A Reference Guide for Identifying the Technical Details of a Commercial, Shared-Use Kitchen in Bates Mill No. 5

Fall 2015

Prepared by Kei Matsunami, Tyler Sheffield, and Kristen Kelliher in collaboration with Bates College Environmental Studies Department and Nonprofit, Grow L+A. For more information, contact info@growla.org.



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PURPOSE

The three aims of this report are to:

- Identify and synthesize all licenses and regulations requirements for a shared-use commercial kitchen in Lewiston, ME.
- Research and Identify general and specialized equipment needed for the shared-use kitchen.
- Provide information on shared-use kitchen pricing structures with the ultimate goal of informing kitchen planners to help them make the most appropriate decisions for kitchen development.

While most of this research is compiled from public documents and federal websites, this work is heavily informed by local kitchen owners and out-of-state case studies.

EXECUTIVE SUMMARY

This guidebook will provide information about the technical aspects of creating a commercial shared-use kitchen in Bates Mill #5. Specifically, this report will address multiple levels of licensing, regulation, and certification requirements, the potential for providing for specific dietary restrictions, equipment required for general and specialized activities, and potential pricing structures, rental logistics, and operating models. This brief introduction will summarize our findings and recommendations.

For State licensing, the kitchen as well as each tenant producing food will need a license through either the Department of Health and Human Services or the Department of Agriculture, Conservation and Forestry. The Department of Health and Human Services handles food made for on-site consumption, such as restaurants and cafeterias and the Department of Agriculture, Conservation and Forestry handles food processing, wholesaling and selling of packaged foods. The kitchen will only need one of these licenses even if there is packaging and on-site consumption. The Health inspector will determine which license to acquire based on the kitchen's predominance of business.

The Maine Food Code should be the primary regulation handbook referenced because it includes all necessary requirements under both state and federal laws. The Code of Federal Regulations, Good Manufacturing Practices, and other government handbooks do not need to be used.

ServSafe is the most common American National Standards Institute (ANSI) Accredited Food Protection Manager Certification that we recommend. One of the kitchen staff is required by law to be a certified Food Protection Manager after 90 days of receiving a license, but many restaurants require ServSafe for all of their kitchen staff, which is what we recommend. A Hazard Analysis and Critical Control Point (HACCP) plan is a system for minimizing the risk of certain kitchen products and only needs to be considered for specialized activities that may be more hazardous.

We considered different requirements for the kitchen to provide nut-free, halal, kosher, and gluten-free products and determined that due to the scale of restrictions and the variety of different processes that will be taking place in the kitchen, we do not recommend that the kitchen produce kosher, nut-free, and gluten-free products at this time. However, the production of halal certified food is less restrictive and should be considered.

The equipment, pricing structure, rental logistics, and operating model of the kitchen ultimately depend on market demands and costs that are not known at this point in the development. Therefore, we decided that rather than making recommendations without adequate knowledge, we would provide information about equipment required for different processes, various options for necessary equipment, pricing structures, rental logistics, and

operating models. We also provide a suggested step-by-step guide for the kitchen logistics planning process with necessary “questions-to-ask” for each step. It is our hope that this information will serve as a valuable resource to assist Grow L+A in making appropriate and knowledgeable decisions for the kitchen as it moves through stages of development.

1. LICENSING AND REGULATION REQUIREMENTS

Before beginning the process of licensing the kitchen, the first step is to identify what the kitchen will be processing and how these products are to be sold. Although there is no “one size fits all” model for the licensing process of a kitchen, this report outlines a model of “one size fits most.” In this report, we outline both the general steps applicable to licensing any kitchen as well as some specialized steps should the kitchen produce specialized products (i.e. cured meats, smoked fish, vacuum sealed products.) In the event that the kitchen should run specialized processes that we have not outlined in this report, please seek the counsel of local code enforcement officers and city inspectors. (A list of these contacts can be found in Appendix C.)

Section 1.1 discusses state licensures for the kitchen and its users. All kitchens in the United States must be licensed through either the Department of Health and Human Services or the Department of Agriculture, Conservation and Forestry. Which licensure to apply for depends on the kitchen’s predominance of business. If the kitchen is to sell dishes to be consumed on site, it will need a license from the Department of Health and Human Services. If the kitchen is to sell value-added products to be brought home, it will need a license from the Department of Agriculture, Conservation and Forestry.

However, before applying for a license from either the Department of Health and Human Services or the Department of Agriculture, Conservation and Forestry, you must first submit a City of Lewiston Application for licensing the kitchen. This can be done through City Hall. Regardless of whether the kitchen is to be licensed under the Department of Health and Human Services or the Department of Agriculture, Conservation and Forestry, the kitchen is likely to be inspected by both departments as well as your local sanitation code enforcement officer.

The following are a few compulsory kitchen items according to the Maine Food Code, the Lewiston Fire Inspector, and the Lewiston sanitation enforcement officer will be looking for¹:

- 3 Bay Sink
- Culinary sink (with indirect drain)
- Hand sinks (preparation areas and warewashing areas)
- Mop sink
- Non-porous walls
- Non-porous flooring
- Drying racks

¹ Reny, Susan. Personal Interview. 1 December 2015.

- Shield lighting
- Hood range system with an Ansil System

To prepare for these inspections, there are several regulation guidebooks offered by the State or the federal government to ensure that the kitchen operates in a hazard-free environment. Section 1.2 gives an overview of each of these guidebooks as well as the reasoning to whether or not we recommend them for this kitchen. These guidebooks are extensive with much overlap. This is why the State of Maine Food Code 2013 is the only guidebook we recommend. We suggest keeping a printed copy of the Maine Food Code in the kitchen that employees and tenants can turn to for questions regarding food handling and sanitation.

Section 1.3 addresses certification programs and their place in the process of licensing a shared-use commercial kitchen. Because of the nature of a shared-use kitchen, it will be tricky to ensure that kitchen standards are upheld among tenants. We recommend that informative signs be put up around the kitchen to remind tenants of basic food safety rules (i.e. “Store food only in containers made for food,” “store ready-to-eat food above raw meats,” “rinse water must be 110°F.”)²

We also recommend that the kitchen employ on its staff a certified food protection manager to oversee the kitchen. If you are applying for a license under the Department of Health and Human Services, the certified food protection manager must be hired within 90 days of a new eating establishment opening. We recommend that this manager be certified through ServSafe, a food provider safety training program.

Although the general steps to licensing any kitchen are more or less the same, specialized processes such as vacuum sealing, juice packaging, the curing and/or smoking of fish and poultry would require additional certifications, notably a Hazard Analysis Critical Control Point (HACCP) Certification.³ Because very little is known as to what the kitchen will be processing, we do not recommend that you enroll in a HACCP certification program at this time. If in the future, the kitchen decides to sell specialized products, the kitchen will need to be HACCP certified. Section 1.3.2 walks you through this process.

Section 1.4 addresses dietary restrictions and the regulations the kitchen must meet to be process halal, kosher, gluten-free, and nut-free certified foods. Some of these regulations to meet are costly and demand tremendous dedication from the kitchen. Because of this, we believe that producing kosher, gluten-free, and nut-free certified foods would be too ambitious of an endeavor for the kitchen at this time. Halal is the only dietary restriction we believe the kitchen can cater to.

² Pross, Mia Poliquin. Personal Interview. 8 October 2015.

³“Department of Agriculture.” *Specialized Processes and HACCP at Retail*. Department of Agriculture, n.d. Web. 06 Dec. 2015. <<http://www.agriculture.pa.gov/Protect/FoodSafety/Retail%20Food/Pages/Specialized-Processess-and-HACCP-at-Retail.aspx#.VmD4ayQ-Cnc>>.

1.1 STATE LICENSURES FOR THE KITCHEN AND ITS USES

Before applying for a license through either the Department of Agriculture, Forestry and Conservation or the Department of Health and Human Services, you must first determine the kitchen's predominance of business, which can be done using the prompts shown in Figure 1. If the kitchen is to sell dishes to be consumed on site, such as pasta dishes or meat dishes, it will need a license from the Department of Health and Human Services. If the kitchen is to sell value-added products, such as jams and canned goods, to be consumed at home, it will need a license from the Department of Agriculture, Conservation and Forestry.

In addition to licensing the facility, any entity producing food to be sold will also need a license. This means that a commercial shared-use kitchen needs to have the physical space licensed depending on its predominance of business and *each tenant* needs to have a license depending on their predominance of business. If, for example, the kitchen is licensed under the Department of Health and a user mostly creates processed foods (meaning they are licensed under the Department of Agriculture), it is acceptable so long as *each* entity has a license. The converse of this situation, where a kitchen is licensed under the Department of Agriculture and the tenant is licensed under the Department of Health and Human Services, is also permissible.

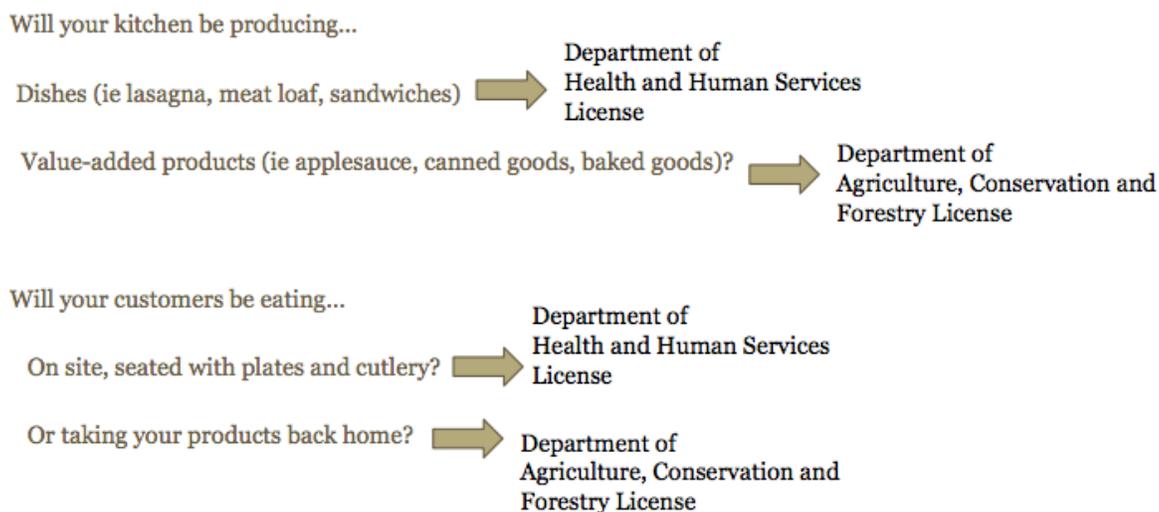


Figure 1: Determining the Kitchen's Predominance of Business

1.1.1 Department of Agriculture, Forestry and Conservation

The Department of Agriculture, Conservation and Forestry is department that determines the regulations and accepts license applications for commercial kitchens in which value-added products are produced. Value-added products as defined by the US Department of Agriculture are products whose value is enhanced by processing it usually through changing its physical state, such as turning apples into applesauce. This department is in charge of establishments that operate as bakeries, wholesaling food, processing food, canning, selling prepackaged foods, or making foods at home they need to abide by the rules and regulations put forth by the Department of Agriculture, Conservation and Forestry.

If the predominance of business for the kitchen itself is considered to fall under the Department of Agriculture, then the kitchen must be licensed through that department. When applying for a license through this department, there are a multitude of rules and regulations that must be followed. Chapter 343 “Food Processing and Manufacturing” however, outlines the exact rules that must be followed during the construction, operation, and maintenance of the kitchen. Its rules include⁴ :

- Premises
- Plant Construction and Design
- Equipment and Utensils
- Cleaning and Sanitizing of Food Contact Surfaces
- Sanitary Operations and Controls
- Processes and Controls
- Personnel
- Tobacco
- Licensing

Other chapters in the Department of Agriculture, Conservation and Forestry Division of Regulations that are especially helpful include, but are not limited to:

- Chapter 303 Packaging and Labeling
- Chapter 332 Rabbit Processing
- Chapter 341 Bakeries (Commercial, Retail and Distributors)
- Chapter 342 Cider and Apple Juice

⁴ "Food Processing and Manufacturing," *Department of Agriculture, Conservation and Forestry Division of Regulations*. N.p.: n.p., n.d. N. pag. U.S. FDA. Web. <<http://www.maine.gov/sos/cec/rules/01/001/001c343.doc>>.

- Chapter 358 Manufacturing of Potential Hazardous Foods
- Chapter 359 Rules Governing the Processing/Handling/Storing/Labeling of Smoke, Cured and Salted Fish

Each Department of Agriculture, Conservation and Forestry license application requires⁵ :

- Establishment information
- Owner Information
- License type retail
- License type food processor
- Wholesale and warehousing
- Retail fuel establishment

(More information on the Department of Agriculture, Conservation and Forestry License can be found in Appendix A.)

1.1.2 Department of Health and Human Services

State law requires any place where food is prepared and served to be registered with the Department of Health and Human Services (provided that the kitchen is not registered with the Department of Agriculture). Activities under the jurisdiction of the Department of Health and Human Services include serving food for takeout or on-site consumption by the public, catering services, and dispensing or preparing food from vending machines that is not prepackaged. Some examples of establishments licensed under the department of Health and Human Services include restaurants, hotels, cafeterias, bars, and food trucks.

Each Department of Health and Human Service license application requires :

- Information about the owner and proposal
- Information about the water supply and a copy of a water test if the facility uses well water
- Information about the septic system design if not on the public sewer system
- Provisions for food preparation and storage
- A menu

⁵ "Applications & Forms." *Applications Forms, Permits and Licenses for Businesses: Quality Assurance & Regulations: Maine DACF*. Department of Agriculture, Conservation and Forestry, n.d. Web. 19 Nov. 2015. <http://www.maine.gov/dacf/qar/permits_and_licenses/application_forms.shtml>.

- A floorplan

1.2 REGULATION HANDBOOKS

The most recognized guidebooks among kitchens in Maine are the State of Maine Food Code 2013, the Code of Federal Regulations, the Good Manufacturing Practices (GMPs), the Department of Agriculture, Conservation and Forestry Division of Regulations, and Standard Operating Procedures (SOPs).

Our findings have led us to the conclusion that the State of Maine Food Code is the most accessible and most comprehensible option for the kitchen and it is the only guidebook we recommend. While we do not recommend certain options such as the Code of Federal Regulations and the Good Manufacturing Practices (GMPs), there are options that we neither recommend nor discourage such as the Department of Agriculture, Conservation and Forestry Division of Regulations, and Standard Operating Procedures (SOPs).

1.2.1 State of Maine Food Code



We recommend the Maine Food Code for its comprehensibility and accessibility.

The Maine Food Code is intended for users from all levels of government and is designed to correspond with federal food laws and regulations. The Maine Food Code is not preemptive and it represents neither federal law nor federal regulation. Rather, it represents the FDA's best advice for a kitchen or establishment to ensure that food being sold is safe, properly protected and presented. The Maine Food Code 2013 is the latest edition available to the public and is recommended in lieu of less user-friendly options such as the Code of Federal Regulation.

The Maine Food Code is extensive, with exhaustive lists of chapters and subchapters governing management, prevention of disease, remedies, equipment, facilities, waste, and more. Relevant chapters at this point of the Mill 5 process, before construction or remodeling, are Chapter 4 "Equipment, Utensils, & Linens," Chapter 6 "Physical Facilities," and Chapter 8 "Compliance & Enforcement."

A permit applicant or permit holder shall submit to the Regulatory Authority properly prepared plans and specifications for review and approval before the construction, conversion, or remodeling of the food/eating establishment. The contents of these plans and specifications include, but are not limited to: (1) an intended menu, (2) the anticipated volume of food to be stored, (3) proposed layout and mechanical schematics, (4) proposed equipment and manufacturers, (5) evidence that procedure to ensure compliance with the Maine Food Code or HACCP prerequisite programs are being developed.⁶ (More information on the Maine Food Code can be found in Appendix A)

1.2.2 Code of Federal Regulations



We do not recommend the Code of Federal Regulations for its unnecessary costs and incomprehensibility.

Title 21 of the Code of Federal Regulations governs food and drugs within the United States for the Food and Drug Administration (FDA). Several chapters of Title 21 are available for purchase through Good Manufacturing Practices (GMP) Publication's online bookstore. The Code of Federal Regulations is not preemptive. This means that adherence to the Code of Federal Regulations text itself is not necessary to receive a license.

Chapters from Title 21 in the Code of Federal Regulations are available for purchase on the GMP Publications, Inc. online bookstore. Given that the Maine Food Code is a free, easily accessible, and comprehensible guidebook styled manual based heavily on the Code of Federal Regulations, we recommend its use in lieu of the Code of Federal Regulations.⁷

1.2.3 Good Manufacturing Practices



We do not recommend GMPs for their unnecessary costs and incomprehensibility.

The Good Manufacturing Practices (GMPs) are descriptions of the methods, equipment, facilities, and controls for producing safely processed food. Adherence to the GMPs ensures the quality and safety of processed foods. It also ensures that the food is packaged and labeled as specified in the master manufacturing record. GMPs are included in the Code of Federal Regulations and can be purchased in the same online bookstore.

⁶ "State of Maine Food Code." *Department of Health & Human Services Health Inspection Program and Department of Agriculture, Conservation and Forestry*, 1 Oct. 2013. Web. 24 Sept. 2015. <<http://www.maine.gov/dhhs/mecdc/environmental-health/el/site-files/rules/Food%20Code%20October%202013..pdf>>

⁷ "Food." *GMP Publications Inc.* U.S. FDA, n.d. Web. 19 Nov. 2015. <<http://www.gmppublications.com/iFood.htm>>.

Similarly to the Code of Federal Regulations, because of the prominent content overlap, the comprehensibility, and accessibility of the Maine Food Code, we recommend that it be used in lieu of the Good Manufacturing Practices (GMPs).⁸

1.2.4 Department of Agriculture, Conservation and Forestry Division of Regulations



We neither recommend nor discourage the use of DA Division of Regulations; the kitchen is free to use this alongside the Maine Food Code as it sees fit.

Within the Department of Agriculture, Conservation and Forestry, the applicable literature includes the “Food Safety Modernization Act,” “Laws and Rules,” “Permits and Licenses,” and “Inspection Programs.” There are two additional sections, “Weights and Measures” and “Laboratory Testing,” that are applicable to kitchen users and not for licensing the kitchen itself. This agency provides regulations to abide by from the beginning stages of constructing the kitchen to use practices within the kitchen.⁹

1.2.5 Food Safety Standard Operating Procedures (SOPs)



We neither recommend nor discourage the use of SOPs; the kitchen is free to use this alongside the Maine Food Code as it sees fit.

Food Service Standard Operating Procedures (SOPs) are written practices to producing food that is deemed safe for consumption. The National Food Service Management Institute (NFSMI) developed Food Safety SOPs in conjunction with the USDA, the FDA, and with the seven HACCP principles.

Both the SOPs and the site on which they are available for download are comprehensible and user-friendly. Separate chapters of the Food Safety SOPs are available online for download; but the user also has the option to download the full SOPs document in its entirety. Some chapters available for download include but are not limited to “Handling a Food Recall,” “Receiving Deliveries,” “Serving Food,” and “Cleaning and Sanitizing Food Contact Surfaces.” Their site also offers record keeping log sheets and food safety program worksheets available for download.¹⁰

⁸ “Good Manufacturing Practices.” Food Safety. Web. 2 Nov. 2015. <<http://www.foodsafety.unl.edu/haccp/prerequisites/gmp.html>>

⁹ “Quality Assurance & Regulations: Maine DACF.” *Quality Assurance & Regulations: Maine DACF*. Department of Agriculture, Conservation and Forestry, n.d. Web. 19 Nov. 2015. <<http://www.maine.gov/dacf/qar/index.shtml>>

¹⁰ “HACCP-Based SOPs.” *National Food Service Management Institute United States Department of Agriculture*. USDA, n.d. Web. 19 Nov. 2015. <http://sop.nfsmi.org/sop_list.php>.

1.3 KITCHEN AND KITCHEN USER CERTIFICATIONS

In addition to obtaining state licensing through the Department of Agriculture or the Department of Health within 90 days of opening the facility either each tenant or a kitchen “overseer,” who supervises the tenants must take a food safety training course. There are a variety of programs that can properly train individuals and can be found on the Department of Health website. We recommend ServSafe as the food safety training course as it is one of the most common certifications in the food industry. Additionally, depending on the type of foods that are prepared in the kitchen, individual tenants may require a Hazard Analysis Critical Control Point (HACCP) program. However, the Lewiston Sanitation Officer, Susan Reny, believed it would be highly unlikely that the kitchen would cook with or process foods that are categorized as “hazardous.”

1.3.1 ServSafe

ServSafe is a food provider safety-training program. It is administered by the National Restaurant Association and accredited by the American National Standards Institute (ANSI) and the Conference for Food Protection. There is a course for managers and a course for food handlers. The Manager Training Course covers:

- The importance of food safety
- Good Personal Hygiene
- Time and Temperature Control

- Preventing Cross-Contamination
- Cleaning and Sanitizing
- Safe Food Preparation
- Receiving and Storing Food
- Methods of Thawing, Cooking, Cooling, and Reheating Food
- HACCP
- Food Safety Regulations

The Food Handler Course covers:

- Basic Food Safety
- Personal Hygiene
- Cross-Contamination and Allergens
- Time and Temperature
- Cleaning and Sanitation¹¹

Any place where food is prepared in the state of Maine must have at least one staff member who is certified by an ANSI accredited program. Many restaurants require a safety and sanitation certification for all of their management staff. Furthermore, a market study of 40 shared-use kitchens found that 49% of kitchens required tenants to hold a ServSafe certification.¹² (More information on ServSafe can be found in Appendix A)

1.3.2 Hazard Analysis Critical Control Point

Hazard Analysis and Critical Control Point (HACCP) is an internationally recognized system for reducing the risk of safety hazards in the products of any kitchen involved in the manufacturing, processing, or handling of food. The HACCP System adheres to the seven principles of hazard analysis as well as those of management and quality. Although we do not recommend the implementation of a formal HACCP plan at this time, HACCP is mandatory by law according to the FDA and the Maine Food Code for food the production of specialized food products.¹³ Processes requiring a formal HACCP plan are:

- Smoking food as a method of preservation.
- Curing foods such as hams, sausages, etc.

¹¹ "ServSafe ECertificates." *ServSafe® Food Handler, Manager and Responsible Alcohol Training*. National Restaurant Association, n.d. Web. 19 Nov. 2015. <<http://www.servsafe.com/>>.

¹² Econsult Solutions. *U.S. Kitchen Incubators: An Industry Snapshot*. N.p.: n.p., 2013. Econsult Solutions. Web. 27 Sept. 2015. <http://www.econsultsolutions.com/wp-content/uploads/2013/08/ESI-SharedKitchenReport_2013.pdf>.

¹³ "Frequently Asked Questions - HACCP." *USDA National Agriculture Library*. USDA, n.d. Web. <<https://fsrio.nal.usda.gov/faq-page/haccp#t148n2499>>

- Using food additives or adding components such as vinegar as a method of food preservation.
- Reduced Oxygen Packaging.
- Using more than one container of shellfish at a time (co-mingling).
- Serving or offering for sale raw or lightly cooked animal foods in a ready-to-eat form (raw eggs, raw marinated fish, raw molluscan shell fish, steak tartar, lightly cooked fish, soft cooked eggs, undercooked meat other than “whole muscle intact beef).
- Molluscan shellfish display tanks that are used to store/display shellfish that are offered for human consumption.¹⁴

i. Prerequisites

Before implementing a HACCP Plan, the kitchen must first implement prerequisite programs. The FDA defines a HACCP prerequisite program as “procedures that address operational conditions providing the foundation for the HACCP system.”

Prerequisite programs provide the basic environmental and operating conditions necessary for the production of safe food. This means that adherence to the Maine Food Code, as well as other handbook-style documents such as the Food Safety SOPs, that produce conditions optimum for a HACCP plan is considered adherence to prerequisite programs.

There are HACCP-based prerequisite courses available online for purchase but they are not recommended because they are expensive accessories to the licensing process and are not necessary for the kitchen to be HACCP certified.

The effectiveness of the prerequisite programs is to be assessed during the design and implementation of the HACCP plan. All prerequisite programs are to be documented and regularly audited. It is important to note that the staff training is considered a prerequisite program and is not necessarily included in the HACCP plan.¹⁵

ii. HACCP Plan

The core of the HACCP system is the HACCP plan. Before the implementation of HACCP principles, the establishment must assemble a multidisciplinary team of individuals that will be responsible for writing and developing the HACCP plan.

¹⁴ “When is a Variance or HACCP Plan Required?” *Department of Agriculture, Trade and Consumer Protection*. Web. <<http://datep.wi.gov/uploads/Food/pdf/WhenIsAVarianceOrHACCPPlanRequired-21.pdf>>

¹⁵ “U.S. Food and Drug Administration.” *Hazard Analysis Critical Control Point (HACCP)*. U.S. FDA, n.d. Web. 19 Nov. 2015. <<http://www.fda.gov/Food/GuidanceRegulation/HACCP/>>.

Although certain establishments may use generic models as resources for developing their own plan, the HACCP plan is product or process specific. It is therefore essential that the unique conditions of the establishment be considered during the early steps of constructing a HACCP plan.

The HACCP plan is based on the seven principles of HACCP: (1) Conduct a hazard analysis, (2) determine critical control points, (3) establish the critical limits, (4) establish monitoring procedures, (5) establish corrective actions, (6) establish verification procedures, and (7) establish recordkeeping procedures.

Before engaging in an activity requiring a HACCP plan and the implementation of HACCP principles, a permit holder shall submit to the Regulatory Authority for approval a properly prepared HACCP plan and its relevant provisions. (More information on HACCP can be found in Appendix A)

1.4 CONSIDERATION OF POTENTIAL DIETARY RESTRICTIONS

A key factor that must be decided early in the process of designing a commercial kitchen is whether it will be certified to meet dietary restrictions. We examined the process needed to be certified for halal, kosher, gluten-free, and nut-free food. Out of the eight most common allergies, (milk, eggs, fish, Crustacean shellfish, tree nuts, peanuts, wheat, and soy) wheat and nuts were researched¹⁶. The findings revealed the difficulty in maintaining facilities that eliminate allergens and don't present issues of cross-contamination so the remaining six common allergies to food were not examined.

1.4.1 Halal



Given the feasibility of creating a halal certified kitchen, we recommend that the kitchen consider selling halal products.

Maintaining a space that produces halal certified products has a smaller number of guidelines compared to other dietary restrictions. Most natural foods such as fruits or vegetables are automatically halal, as are meats if they were slaughtered in the appropriate manner. Foods that are absolutely not halal are pork, pork products, and alcohol. Additionally, there are a few questions surrounding the use of some of the artificial and natural food additives such as glycerine, fatty acids, and food coloring. Allowing the use of these additives while still labeling the food as halal depends on the area, producer, and consumer preferences. By following storage, preparation, and cleaning guidelines, it is feasible that the commercial kitchen in Bates Mill No. 5 could easily cater to producers who want to make halal certified foods. (More information on halal can be found in Appendix A)

1.4.2 Nut-free



Given the difficulty of creating a nut-free kitchen, we do not recommend that the kitchen sell nut-free products.

Creating a nut-free commercial kitchen is a challenging endeavor, that is not recommended. If the kitchen has a diverse range of users who process a large variety of foods, it is probable that at some point nuts will be processed or cooked. According to the US

¹⁶ "Food Allergen Labeling and Consumer Protection Act of 2004 (Public Law 108-282, Title II)." *U.S. Food and Drug Administration*. U.S. Department of Health and Human Services, 23 Dec. 2014. Web. 2 Nov. 2015. <<http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm106187.htm>>.

Department of Agriculture, a facility can only be nut-free if no type of nuts (tree nuts, peanuts, etc) ever enter the kitchen¹⁷. In all other circumstances, even if GMPs and sanitation standard operating procedures (SOPs) are effectively implemented, it is not possible to eliminate all traces. For example, if chopping peanuts to make a “dry Thai-style sauce mix,” the act of chopping up the peanuts would cause peanut dust to contaminate other surfaces, appliances, utensils, or ingredients¹⁸. Due to the resulting unavoidable cross contamination, any food product produced in that environment would then have to be identified as a good that was “produced in a plant that uses peanuts” or “may contain peanuts” to fully inform the consumer. Given the inherent nature of a shared-use kitchen, it is not recommended that the commercial kitchen adhere to strict dietary restrictions such as nut allergies. (More information on nut-free can be found in Appendix A)

1.4.3 Gluten-free



Given the challenges of creating a gluten-free kitchen, we do not recommend that the kitchen consider selling gluten-free products.

Creating and maintaining a kitchen that prevents cross contamination of wheat and gluten also presents a challenge due to the variety of users and the ability for flour to become airborne and affect other surfaces or appliances.¹⁹ By stringently checking user ingredient lists and following the Maine Food Code regulations for processing or making allergen-free foods, it is possible to create an environment in which products can be labeled as gluten free.²⁰

There are several gluten-free certification programs that require varying levels of gluten in their products, ranging from 20 parts per million (ppm) to 5 ppm for the food processor to use their seal of recognition. (More information on gluten-free can be found in Appendix A)

1.4.4 Kosher



Given the difficulty and expense of creating a kosher kitchen, we do not recommend that the kitchen sell kosher certified products.

¹⁷ "Allergens - Voluntary Labeling Statements." *Food Safety Inspection Service*. US Department of Agriculture, 23 June 2013. Web. 06 Nov. 2015. <<http://www.fsis.usda.gov/wps/portal/food%2Fguidance/regulatory-compliance/labeling/ingredients-guidance/allergens-voluntary-labeling-statements/allergens-voluntary-labeling-statements>>.

¹⁸ Ibid.

¹⁹ "Food Allergen Labeling and Consumer Protection Act of 2004 (Public Law 108-282, Title II)." *U.S. Food and Drug Administration*. U.S. Department of Health and Human Services, 23 Dec. 2014. Web. 28 Oct. 2015. <<http://www.fda.gov/food/food%2Fguidance/regulatory-compliance/labeling/ingredients-guidance/allergens-voluntary-labeling-statements/allergens-voluntary-labeling-statements>>.

²⁰ "Gluten Free / Organic." *Organic & Gluten Free Dedicated*. Certified Kitchens, 2013. Web. 22 Oct. 2015. <<http://visitcertifiedkitchens.com/our-story-2/gluten-free-organic/>>.

Certifying the commercial kitchen as kosher friendly is much more challenging than halal and its laws are comprehensive and extensive. Some of the stipulations include: all ingredients in the kitchen must be kosher, only certain types of fish can be processed or consumed, meat or poultry and dairy products cannot be cooked together, and distinct cooking ware (pots, pans, utensils, etc.) is required when those two food categories are cooked. The complexities of creating a kitchen that is kosher certified in addition to the increased cost from purchasing two of each type of utensil or appliance is a large deterrent in creating a space for producing kosher foods. (More information on kosher can be found in Appendix A.)

2. GENERAL AND SPECIALIZED EQUIPMENT AND KITCHENWARE

The goal of this section is to outline the types of equipment and appliances that should be included in any commercial kitchen and then to explore certain types of specialty appliances needed for the processing of value added foods.

2.1 GENERAL EQUIPMENT

For the commercial kitchen we were tasked with coming up with a list of general appliances that will be needed regardless if the kitchen is utilized for making food for consumption on site or for creating value added products or both. Initially we had hoped to provide a list of all potential appliances that included three versions of each, a basic appliance that was low cost, a mid range appliance in terms of cost and function, and finally a high end appliance that the kitchen could work its way towards.

However we ran into two problems with creating a “Goldilocks” option for each type of appliance. First, a comprehensive list of all possible appliances and kitchenware was not feasible, as the list of possibilities could have been endless especially since we don’t know how the kitchen will be set up and what types of food making or processing capabilities it should include. Second, after meeting with commercial kitchen consultants, Cheryl Lacey director of Bates Dining and Kevin Michaud Executive Chef at the Franco Center and Commercial Kitchen Consultant, we were dissuaded from creating a “Goldilocks” chart for appliances. They both felt that even though the initial upfront costs of appliances are quite large, it is important to splurge on appliances. The appliances that often cost more are higher quality and break down less, leading to overall savings in time and money that would have otherwise been spent repairing the cheaper versions of the appliance.

We did explicitly look into the basic appliances that will be needed regardless of how the kitchen space is used. Instead of the range of price and capabilities, different versions of appliances were explored and their pros and cons are listed in the tables that follow.

2.1.1 Refrigerator/Freezer

We recommend walk-in refrigerator and freezers that are complemented with refrigerated prep tables.

All refrigerators must maintain temperatures between 34-40°F and freezers must maintain temperatures between -10-0°F. There are four types of refrigeration units that were examined: reach-ins, walk-ins, refrigerated prep tables, and undercounter refrigerators. Refrigeration units that we did not consider due to their impracticality include refrigerated merchandisers and bar refrigeration.²¹

Table 1. The recommended use, door description, storage capacity, and floor description of four types of refrigeration units.

	Reach-In	Walk-In	Refrigerated Prep Tables	Undercounter Refrigerators
Recommended Use	Small scale operations	Restaurant and large scale operations	Cook line or prep area in commercial kitchens	Used when space is a limiting factor
Doors	Solid or glass, full or half-length	Solid, full-length	Half doors with drawers below for storage	Function like upright reach-ins
Storage Capacity	Based on cubic feet	Huge capacity, great for organizing many items	Not that large, usually 36 in high to act as a work surface	Smaller capacity
Floors		Some require specialized floors, others use preexisting floor		

2.1.2 Ovens

We recommend a combination of impingement conveyor ovens and a combination oven.

When examining types of ovens, we analyzed the speed, capacity, mechanism, and utility of five ovens including: conventional range ovens, impingement conveyor ovens, radiant

²¹ Rahm, Jason. "Guide to Refrigeration: What, Why & Which Do You Need?" *FSW Season'd*. Food Service Warehouse, 15 July 2015. Web. 2 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/commercial-refrigeration-buying-guide/>>

conveyor ovens, combination (combi) ovens, and accelerated cooking ovens.^{22,23,24,25} We chose not to research pizza ovens, brick ovens, toaster ovens, or microwave ovens due to their impracticality in a versatile shared use commercial kitchen.

Table 2. The speed, capacity, mechanism, and utility of five types of ovens units.

	Conventional Range Oven	Impingement Conveyor Oven	Radiant Conveyor Oven	Combination (Combi) Oven	Accelerated Cooking Oven
Speed	Slow	Adjustable and Fast	Adjustable and Fast	Fast	Fast
Capacity	Limited	High for similar foods due to speed	High for similar foods due to speed	High due to speed	High due to speed, but limited overall
Mechanism	Gas or electric	Pressurized hot air above/below conveyor belt	Heats air around food, like conventional oven	Dried steam to heat oven	Microwave and impingement oven technology
Utility	Found in most homes, easy for kitchen users	Can stack on top of each other and is easy to use	Can stack on top of each other and is easy to use	Convection oven and steamer	Versatile uses (toasting, poaching, baking, etc.)
Other considerations	By relying on convection heating of foods, it's more challenging to cook foods	2-4 times faster than a radiant conveyor oven. Even cooking		Make sure the kitchen can handle 200 amps if electrical combi oven	Requires ample electricity

²² Moulatsiotis, Maggie. "About Commercial Conventional Ovens." *FSW Season'd*. Food Service Warehouse, 16 July 2015. Web. 2 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/commercial-conventional-ovens/>>.

²³ Moulatsiotis, Maggie. "About Commercial Conveyor Ovens." *FSW Season'd*. Food Service Warehouse, 16 July 2015. Web. 2 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/commercial-conveyor-ovens/>>.

²⁴ Niswander, Rachael. "A Guide to Combination Ovens." *FSW Season'd*. Food Service Warehouse, 16 July 2015. Web. 2 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/combination-oven-buying-guide/>>.

²⁵ Moulatsiotis, Maggie. "About Accelerated Cooking Ovens." *FSW Season'd*. Food Service Warehouse, 16 July 2015. Web. 19 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/accelerated-cooking-ovens/>>.

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2.1.3 Stove

We recommend a combination surface due to its versatility and space saving capacity of having all cook surfaces under one hood.

Commercial stoves, or ranges as they're sometimes called, are gas or electric stove tops that are much more powerful than stoves that are found in a home.²⁶ Ranges are the most common commercial kitchen appliance and quite often the most important piece of equipment in the kitchen as it can be used for frying, grilling, broiling, sautéing, boiling, braising, simmering, and warming.²⁷ The five types of range surfaces that were explored were: gas open burner, hot top, french plate, griddle top, or combination surface.

Table 3. The utility and power source of five types of range surfaces.

	Gas Open Burner	Hot Top	French Plate	Griddle Top	Combination Surface
Utility	Versatility, typically used for boiling/frying in a pot or pan	Versatile, typically for pots and pans	Pots and pans, same versatility as gas open burner	No pan needed, cook directly on surface	Versatile, hot top and griddle combination
Gas vs. Electric	Gas	Either	Electric	Either	Either

²⁶ "What Is a Commercial Range?" *FSW Season'd*. Food Service Warehouse, 30 July 2015. Web. 3 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/what-is-a-commercial-range/>>.

²⁷ Parpal, Monica. "The What & Why of Commercial Kitchens." *FSW Season'd*. Food Service Warehouse, 16 July 2015. Web. 3 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/the-what-why-of-commercial-ranges/>>.

Other Considerations		Heats evenly		Ideal for breakfast places	Ideal for having only one hood vent so everything is cooked in one location
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2.1.4 Dishwasher

We recommend a conveyor dishwasher due to its efficiency, capacity, and its cleaning mechanism.

When examining types of dishwashers, we analyzed their mechanism, speed and capacity, and whether it washes and sanitizes. These four dishwashers were: door dishwashers, undercounter dishmachines, conveyor dishwashers, and Flight dishwashers.²⁸ We chose not to closely examine glasswashers and pot and pan dishwashers due to their specialization.

Table 4. Mechanism, speed and capacity, and wash and/or sanitizing capabilities of four dishwashers.

	Door Dishwasher	Undercounter Dishwasher	Conveyor Dishwasher	Flight Dishwasher
Mechanism	Stand-alone machine with a tall door that pulls down. It uses a dump and fill cycle	Looks like a home dishwasher, opens like an oven and sanitizes small kitchenware	Can have up to 3 tanks for wash, rinse, and sanitizing. Usually uses hot water for sanitizing.	Like a conveyor but the dishes are placed on a moving belt without a rack

²⁸ Niswander, Rachael. "Types of Dishwashers." *FSW Season'd*. Food Service Warehouse, 15 July 2015. Web. 3 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/types-of-dishwashers/>>.

Speed and Capacity	50-125 dish racks per hour. 300-1500 covers per day.	35 racks per hour. 520 covers per day.	400 dish racks per hour. For kitchens that serve 1,500 meals per day	Up to 14,000 dishes per hour.
Wash and/or Sanitize	Both	Sanitizing	Both	Both
Other Considerations	Dishes must have food scraps removed before use	Needs to be used in conjunction with a 2 or 3 compartment sink set-up		Custom built for each customer, very expensive.

Another consideration when deciding which dishwasher to buy is whether it uses heat and hot water to clean and sanitize or if it uses chemicals. Although high temperature sanitation has a larger upfront cost, it doesn't require the continual purchasing of chemical sanitization and is more environmentally friendly.

Table 5. Water temperature, sanitizing mechanism, drying time, and cost for two types of dishwashing cleaning and sanitation mechanisms.²⁹

	High-temperature Sanitation	Chemical Sanitation
Water Temperature	180°, easily removes fats, lipstick, etc.	140°, doesn't easily remove fats, may have to run twice
Sanitizing Mechanism	Hot water from booster	Bleach or other chemicals
Drying Time	Instantly with hot air	Longer duration
Cost	High upfront cost, no additional costs	Low upfront cost, must keep buying sanitizer/detergents

²⁹ Niswander, Rachael. "Infographic: High-Temp vs. Chemical Dishwasher Sanitation." *FSW Season'd*. Food Service Warehouse, 18 Sept. 2015. Web. 3 Nov. 2015. <<http://www.foodservicewarehouse.com/blog/infographic-high-temp-vs-chemical-dishwasher-sanitation/>>.

2.2 SPECIALIZED EQUIPMENT

In addition to determining the generalized list of equipment and appliances, we were also tasked with determining which types of specialized equipment might be necessary for certain types of food processing actions. We explored the specialized equipment that is used for processing foods in seven different categories. These value-added food processes include: fruit and vegetable processing, meat processing, baking, juicing, sauces and dressings, canning, and pickling. By no means does this this encompass all the ways that foods can be processed and have value added to them, but we felt that these seven categories represented the most likely ways that food would be processed, cooked, or baked in the shared use commercial kitchen. We have written descriptions of each type of value added food category and highlighted a few crucial appliances for each. (For more information about process specific appliances see Appendix B.)

2.2.1 Fruit and Vegetable Processing

Some of the processing of fruits and vegetables include, but are not limited to: removing pits/seeds, cutting and drying, making jams, preserves, and chutneys, and frying.³⁰ Fruit and vegetable processing equipment:^{31,32}

- Food strainers and mills
- Nut crackers
- Peelers and slicers
- Pea shellers
- Cherry Stoners
- Corn cutters
- Colanders
- Dehydrators

2.2.2 Meat Processing

Meat processing covers a wide range of preparing meats such as dehydrating, slicing, curing, grilling, smoking, and making sausages. Meat processing equipment includes:^{33,34,35}

- Fryers
- Patty makers
- Cubers
- Slicers
- Meat and bone saws
- Tenderizers
- Dehydrators
- Mixers and blenders
- Grinders
- Smokers

2.2.3 Baking

Baking processes include savory and sweet goods such as breads, pizzas, tortillas, pitas, cookies, donuts, cakes, and pastries. Baking equipment includes:^{36,37}

- Baking sheets and pans
- Rolling pins
- Whisks and whippers
- Dough mixers
- Pots and pans
- Pastry/Turnover machine
- Chocolate equipment
- Donut, bagel, cookie, pie equipment

³⁰ Dr. Fellows, Peter, and A. Dr. Ouaouich. "Small-scale Fruit and Vegetable Processing and Products." *UNIDO Technology Manuel*(2004): 263-86. *Unido.org*. United Nations Industrial Development Organization, 2012. Web. 9 Nov. 2015. <http://www.unido.org/fileadmin/import/32382_fruitsDec21.2.pdf>.

³¹ "Fruit & Vegetable Processing Equipment." *Fruit & Vegetable Processing Equipment*. Canning Pantry, 12 Nov. 2015. Web. 20 Nov. 2015. <<http://www.canningpantry.com/vegetable-fruit-processing.html>>.

³² "Vanmark Equipment Products." *Vanmark Equipment*. Vanmark, 2013. Web. 12 Nov. 2015. <<http://www.vanmarkequipment.com/>>.

³³ "The Internet's Best Prices and Friendliest Customer Service! See Our Discount & Gift Centers! Featured Products & Articles." *Meatprocessingproducts.com*. Meat Processings Products, 2015. Web. 12 Nov. 2015. <<http://www.meatprocessingproducts.com/>>.

³⁴ *Commercial Food & Butcher Equipment*. Hess Meat Machines, 2015. Web. 12 Nov. 2015. <<http://hessmm.com/>>.

³⁵ *Meat Processing Equipment*. Walton's, 2015. Web. 12 Nov. 2015. <<https://www.waltonsinc.com/equipment>>.

³⁶ "Bakery Equipment." *Wholesale Equipment & Supplies*. Central Restaurant Products, n.d. Web. 12 Nov. 2015. <<http://www.centralrestaurant.com/Bakery+Equipment-sn78.html>>.

³⁷ "Welcome to Bakeryequipment.com." *Wholesale Bakery Equipment, Retail Bakery Equipment, Small Wares & Cake Decorating Supplies*. Bakeryequipment.com, 19 Nov. 2015. Web. 12 Nov. 2015. <<http://www.bakeryequipment.com/>>.

2.2.4 Juicing

Both fruits and vegetables can be transformed into marketable juices, meaning there is a lot of overlap in the preparatory equipment and appliances for both types of food processing. There are electric and human powered juicers. An electric one is preferred because it is more efficient and time saving for potential kitchen users. Another consideration for juicers is how the fruit or vegetable must be initially processed (removing the skin, etc.) and how much filtration the juicer does itself (i.e. does it remove pulp?). Another thing to consider is the versatility of the juicer. Finding one that works well for both fruits and vegetables is optimal. Juicing equipment includes^{38,39}

- Peelers and slicers
- Pulp extractor
- Automatic juicers
- Citrus reamers
- Lemon/Lime squeezer
- Masticating juicers
- Juice presses
- Pulp extractors

2.2.5 Sauces

The sauce making process is done in two different ways, by either pasteurizing the sauce after all the ingredients are mixed in, or by pasteurizing ingredients separately (in mayonnaise, the egg and oil are done individually).⁴⁰ Sauce making equipment:⁴¹

- Electric sauce maker
- Tomato strainer
- Pasteurizer
- Pots/Strainers
- Slat conveyor
- Crusher
- Bottle filler
- Frying pan

2.2.6 Canning

When canning there are two methods, water bath canning or pressure canning. Water bath canning is done in a large cooking pot with a tight fitting lid and a rack of canning jars inside the pot. Water bath canning is more commonly used at home in smaller scale canning

³⁸ "Electric Juicing Machines." *Electric Juicing Machines*. Webstaurant Store Food Service Equipment and Supply Company, 2015. Web. 12 Nov. 2015. <<http://www.webstaurantstore.com/14111/electric-juicing-machines.html>>.

³⁹ "The Commercial Juicer Buyers Guide." *The Commercial Juicer Buyers Guide*. Katom Restaurant Supply Inc., 2015. Web. 12 Nov. 2015. <<https://www.katom.com/cat/juicers/the-commercial-juicer-buyers-guide.html>>.

⁴⁰ "Sauce Making." *Sauce Making*. Machine Point Engineering, 2015. Web. 12 Nov. 2015. <http://www.machinepoint.com/foodtechnologies/machinery.nsf/beverage_technology/sauce_making.html>.

⁴¹ *Sauce Making Equipment*. Costante Imports Inc., 2015. Web. 12 Nov. 2015. <<http://www.costanteimports.com.au/category/sauce-making-equipment/167>>.

productions. It is the safe method for canning highly acidic foods, such as fruits, jams, jellies, pickles, and preserves. Pressure canning is done in a specialized pot that can be latched shut and pressurizes the air to create a canning seal. This type of canning is the only safe method for canning low acid foods such as meats, vegetables, poultry, seafood, and dairy.^{42,43} Canning equipment includes:⁴⁴

- Boiling water bath canner
- Jar band tightening tools
- Pressure canner
- Glass preserving jars, lids, bands
- Large pot
- Jar lifter
- Electric multi-cookers
- Canning rack
- Secure grip for handling hot jars

2.2.7 Pickling

Pickling is one of the oldest ways food has been preserved historically and there are four classes: brined or fermented, fresh packed, quick-processed, and fruit and relishes. When pickling foods, it is important to remain vigilant during the processing to maintain a certain level of acidity to prevent the growth of harmful bacteria.⁴⁵ Pickling equipment includes:^{46,47}

- Standard canning jars
- Slab slicer and filler
- Vegetable peeler and cutter
- Spear cutter
- Large buckets
- Spear packer
- Boiling water canner

⁴² "Canning Basics For Preserving Food." *Canning and Preserving*. Canning Food Recipes.com, 2008. Web. 20 Nov. 2015. <<http://www.canning-food-recipes.com/canning.htm>>.

⁴³ "What Is Canning?" *How to Can - Canning Guide - Learn How To Can and Preserve with Ball*. Ball, 2015. Web. 12 Nov. 2015. <<http://www.freshpreserving.com/getting-started>>.

⁴⁴ "General Canning Information." *Http://nchfp.uga.edu/*. National Center for Home Food Preservation, n.d. Web. 12 Nov. 2015. <http://nchfp.uga.edu/how/general/recomm_canners.html>.

⁴⁵ Garden-Robinson, Julie, and Joan Hegerfeld-Baker. "Making Pickled Products." *Food Preservation* (n.d.): n. pag. *North Dakota State University Agriculture*. North Dakota State University Extension Service, 2013. Web. 12 Nov. 2015. <<https://www.ag.ndsu.edu/pubs/yf/foods/fn189.pdf>>.

⁴⁶ "How Do I Pickle." *Nchfp.uga.edu/*. National Center for Home Food Preservation, n.d. Web. 12 Nov. 2015. <http://nchfp.uga.edu/how/can_06/prep_foods.html>.

⁴⁷ "Pickle Equipment." *Solbern*. Markel Food Group Company, n.d. Web. 12 Nov. 2015. <<http://www.solbern.com/pickles.html>>.

2.3 ADDITIONAL CONSIDERATIONS

2.3.1 Water Filtration System

During our tour of the Bates College dining facility and our meetings with consultant, Kevin Michaud, executive chef at the Franco Center in Lewiston, ME we were advised to obtain a water filtration system. This is due to the water infrastructure in Lewiston. The pipes that bring water from Lake Auburn into the Lewiston town water system are over 180 years old. This plumbing makes the water “hard,” meaning there are mineral deposits such as calcium that tend to interfere and/or clog appliances such as steamers. By putting in a proactive filtration system, it can prevent maintenance and repair costs as well as the cost of replacing an entire appliance.

To determine which type of water filtration system should be used, it is necessary to test the water and see which types of minerals need to be filtered out. This can be done by contracting with a local water quality testing and servicing company.

2.3.2 Appliance Servicing Companies

During the construction phase of the kitchen it is paramount to consider the proximity of local servicing companies for the equipment and appliances. During visits of local commercial kitchens, it was made abundantly clear that if a freezer breaks there needs to be a company close by that can come and fix the freezer immediately so that the food inside doesn't spoil. This should inform the process of purchasing appliances as the local companies must carry the type of appliance you purchase or they must have the capability to repair the brand of appliance in the kitchen. Kevin Michaud, the Executive Chef at the Franco Center recommended C. Caprara Food Service Equipment based in Winthrop, ME as he stated they supplied and serviced the majority of commercial kitchens in Maine.

2.3.3 Suggested Further Research

We recognize that the information that we compiled about generalized and specialized equipment is not complete or exhaustive. There were several areas that we recognized as areas that need to be explored but did not feel as if they were the most crucial to include in this initial report. These additional categories for further research include:

- Food preparation clothing (aprons, hair nets, etc.)
 - Small utensil wear (spatulas, measuring spoons, etc.)
 - Solid waste disposal bins (compost, non-compostable food scraps, food packaging waste)
- Packaging equipment (bagging, wrapping)

3. PRICING STRUCTURE, RENTAL LOGISTICS, AND OPERATING MODEL

The goal of this section is to provide information about pricing structures, rental logistics, and operating models of shared-use kitchens and to layout some of the questions that are vital to ask in the development of a new kitchen. A large amount of useful information gathered for this section comes from two invaluable resources that we recommend kitchen planners look at:

- A market study of shared-use kitchens produced by Econsult Solutions, Inc. titled *U.S. Kitchen Incubators: An Industry Snapshot* where 40 shared-use kitchens were surveyed and information gathered is presented as a representation of the industry
- *The Shared-Use Kitchen Planning Toolkit* produced by Iowa State University as a guide to shared-use kitchen planners

3.1 PRICING

3.1.1 Rental Fees

Hourly rental rates are the most common pricing model for a shared-use kitchen. These rates can vary significantly based on numerous factors such as the size of the kitchen and available amenities. Rental rates usually range from \$10/hour to upwards of \$40/hour. A 2013 market study of 40 shared-use kitchens found that 52% of kitchens charge \$10-19/hour, 36% of kitchens charge \$20-29/hour, and 12% of kitchens charge \$30-39/hour with an average rental rate of \$20.82/hour⁴⁸. The vast majority of kitchens require monthly payments, while some do monthly or per-use payments. Types of kitchen-user agreements commonly used are leases (often monthly or annual) or contracts between the tenants and kitchen.

3.1.2 Scaling Fees

⁴⁸ Econsult Solutions. *U.S. Kitchen Incubators: An Industry Snapshot*. N.p.: n.p., 2013. Econsult Solutions. Web. 27 Sept. 2015. <http://www.econsultsolutions.com/wp-content/uploads/2013/08/ESI-SharedKitchenReport_2013.pdf>.

Many shared-use kitchens have fees that are scaled for different reasons. The study found that 37% of kitchens had different rates based on the time of day the kitchen was rented and 59% had different rates depending on the number of hours rented⁴⁹. Furthermore, a kitchen may give better rates to frequent renters. Few kitchens charge rental fees based solely on individual equipment used, but many have higher rates for extra services or specific utility intensive equipment.

3.1.3 Additional Fees and Revenues

Kitchens usually charge for monthly dry storage, cooler space, and freezer space. Some kitchens maintain a supply of some cooking supplies that can be used by their clients for a fee. It is also common to give tenants the option of paying extra for business coaching or cooking classes provided by the staff.

3.2 TENANTS

There are multiple types of tenants that will likely rent the kitchen. Tenants can range from local food producers, to farmers, to cooking professionals teaching classes. There may be full-time, part-time, and one-time renters. A kitchen may offer the best rates for full-time tenants who are vital to the success of the kitchen. For one-time renters there may be a minimum number of hours required. Prospective tenants are required to submit an application and pay an application fee, provide proof of insurance, and have some form of ANSI certified food safety certification (See Section 1.3.1 on ServSafe).

Needless to say, there are a certain number of anchor tenants required for the community kitchen to stay afloat. The number of anchor tenants, just like the exact rental rates, ultimately depends on the costs of the kitchen. Most kitchens in the market study had fewer than 25 tenants (67%)⁵⁰. The number of tenants maintained also depends on the number of rentable kitchen stations. In the study, 59% of kitchens had fewer than 3 stations, 33% had 3-5 stations, 3% had 6-7 stations, and 5% had more than 7 stations⁵¹.

3.2.1 Kitchen access

⁴⁹ Ibid.

⁵⁰ Econsult Solutions. *U.S. Kitchen Incubators: An Industry Snapshot*. N.p.: n.p., 2013. Econsult Solutions. Web. 27 Sept. 2015. <http://www.econsultsolutions.com/wp-content/uploads/2013/08/ESI-SharedKitchenReport_2013.pdf>.

⁵¹ Ibid.

There are many different ways that commercial kitchens allow tenants to access the rented spaces. The vast majority of kitchens provide tenants with keys, keycards, or a key code to the kitchen and only 19% require a staff member to let the tenant in each time.⁵² Providing tenants with their own access to the kitchen cuts down on staffing costs and allows tenants to rent the space at any time. Furthermore, 86% of kitchens have 24/7 hours of operation, which may be beneficial with a large number of tenants⁵³. Additionally, a key code or key card system may be a good way to keep track of who is in the kitchen for specific times and could deny access or expire after the rental period. While there is a risk for losing physical keys, a key card or code could be easily deleted and replaced.

3.3 EMPLOYEES

Kitchen managers are essential for the functioning of the shared-use kitchen as a business. The industry study found that 77% of community kitchens had fewer than three full-time staff members and none of the 40 kitchens had more than five⁵⁴. The number of staff depends on the kitchen's policy regarding tenant access and supervision. A kitchen may also want to hire a professional chef to assist tenants as requested or teach cooking classes that can be scheduled around renters.

3.4 FINANCIAL FEASIBILITY

The industry study found that 16% of kitchens were losing money, 53% were breaking even, and 31% were making money⁵⁵. Arguably, the most important factors for success are an operating scale fitting for the level of local demand. It is important to meet, but not overestimate the needs of tenants. Therefore a new kitchen may take the approach of beginning operations on a scale smaller than demand indicates is possible then adding to the kitchen as the tenant base grows. The study found that most of the kitchens that reported their annual budget operated on less than \$100,000 a year⁵⁶.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Ibid.

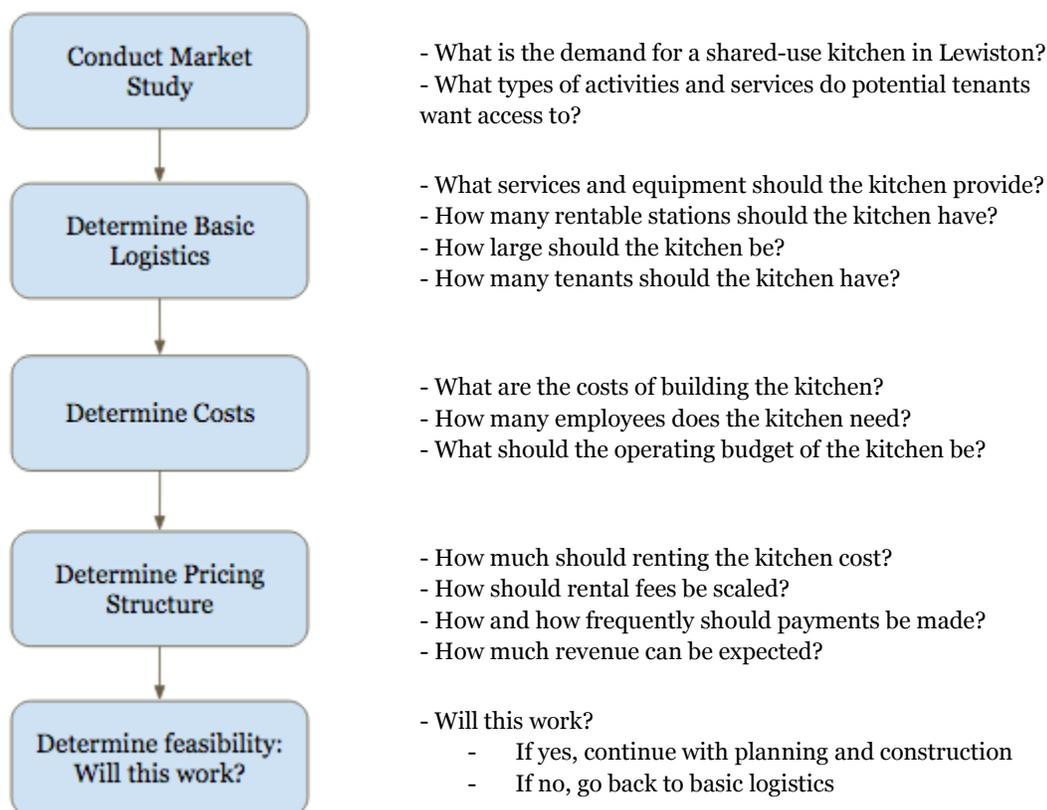
⁵⁵ Econsult Solutions. *U.S. Kitchen Incubators: An Industry Snapshot*. N.p.: n.p., 2013. Econsult Solutions. Web. 27 Sept. 2015. <http://www.econsultsolutions.com/wp-content/uploads/2013/08/ESI-SharedKitchenReport_2013.pdf>.

⁵⁶ Ibid.

A majority (73%) of kitchens offer some form of business support for their tenants such as business coaching, licensing and insurance assistance, and ingredient sourcing⁵⁷. This requires increased staffing, but may contribute to the success of the kitchen, which is directly related to the success of its tenants.

3.5 PLANNING PROCESS

The many decisions to be made in the process of developing the kitchen policies, operating model, and pricing structure are greatly dependent on one another and therefore, should be addressed in a logical order based on known information. A recommended approach can be viewed as a flowchart in Figure 2.



⁵⁷ Ibid.

Figure 2. Planning Process Flowchart and Questions to Consider for establishing a Pricing Structure.

APPENDICES

APPENDIX A: Additional References for Licensing and Regulations

Maine Food Code

- The State of Maine Food Code, 2013 is available for download at <https://www.maine.gov/dhhs/mecdc/environmental-health/el/site-files/rules/Food%20Code%20October%202013..pdf>
- For more on the application process, go to Chapter 8-2 “Plan Submission and Approval” of the State of Maine Food Code, 2013.

Halal

- For more information on how to create a Halal-Friendly Kitchen, visit Med-Diet Inc.: <http://www.ifanca.org/HFSK/Halal%20Kitchen%20In-Service%20Guide%20for%20Foodservice%20Operators.pdf>
- For more information on Halal Guidelines for Manufacturers, visit Halal and Food Safety Institute: http://www.sudairy.com/mer/halal_guidelines_1.pdf
- For more information on General Guidelines for the Use of the Term “Halal,” visit Food and Agriculture Organization of the United Nations: <http://www.fao.org/docrep/005/y2770e/y2770e08.htm>

Nut Free

- For more information on proper allergen labeling, visit: <http://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/labeling/ingredients-guidance/allergens-voluntary-labeling-statements/allergens-voluntary-labeling-statements>
- For more information on Food Allergen Labeling and the Consumer Production Act of 2004, visit: <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm106187.htm>

Gluten Free

- For more information on the Gluten Free Certification Organization, visit: <http://www.gfco.org/get-certified/standards/>

- For more information on the Celiac Support Association Recognition Seal Program, visit: http://www.csaceliacs.org/csa_recognition_seal_program_requirements.jsp
- For more information on National Foundation for Celiac Awareness Gluten Free Certification Program, visit: <http://www.gf-cert.org/>
- For more information on the USDA Gluten-Free Labeling Rules, visit: <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm362880.htm>
- For more information on certification programs for prepared foods to be consumed on site, visit:
 - Gluten Free Food Service Certification: <http://www.gffoodservice.org/get-gffs-certified/standards/>
 - GREAT Gluten-Free Food Service Training: <http://www.celiaccentral.org/great-gluten-free-foodservice-training/>

Kosher

- For more information on the Orthodox Union Kosher Certification Program and Guide, visit: <https://oukosher.org/the-kosher-primer/>
- For more information on Star-K Kosher Certification Program, visit: <http://www.star-k.org/articles/articles/getting-certified/certification-process/1366/how-to-become-kosher-certified-the-process-in-depth/>
- For more information on transforming a kitchen to follow Kosher rules, visit: http://www.chabad.org/library/article_cdo/aid/82667/jewish/Koshering-Your-Kitchen.htm

HACCP

- For more information on prerequisite programs or the development of a HACCP plan, visit: <http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006801.htm#impl>
- For more information on HACCP and its 7 principles, visit: <http://www.foodsafety.unl.edu/haccp/principles/principles.html> and <http://www.22000-tools.com/what-is-haccp.html>

ServSafe

- For more information on other ANSI Accredited Food Protection Manager Certification Programs, visit:
 - Learn2Serve: <http://www.learn2serve.com/maine-food-safety-certification/>
 - The National Registry of Food Safety Professionals: <http://www.nrfsp.com/>
 - Prometric Certified Professional Food Manager: <https://www.prometric.com/en-us/clients/foodsafety/Pages/landing.aspx>

Department of Agriculture, Conservation and Forestry License

- For a complete list of regulations, visit:
http://www.maine.gov/dacf/qar/laws_and_rules/food_laws_rules.shtml

APPENDIX B: Additional References for Food Processing Equipment and Appliances

Generalized Kitchen Equipment Websites

- C. Capara Food Service Equipment, kitchen appliance distributor and servicer in Winthrop, ME, that Kevin Michaud, executive chef at the Franco Center recommended: <https://www.caprara.com/>
- Pine Tree Food Equipment, located in Brewer, ME: <http://www.pinetreefoodequipment.com/>
- Bubba's Food Service Equipment, located in Newport, ME: <http://www.bubbasequipment.com/>
- R.M. Flagg Foodservice Equipment Company, located in Bangor, ME: <https://www.rmflagg.com/>

Fruit and Vegetable Processing

- For more information on the United Nations Industrial Development Organization's guide to processing fruits and vegetables, visit: http://www.unido.org/fileadmin/import/32382_fruitsDec21.2.pdf
- For more information on fruit and vegetable processing equipment, visit: <http://www.canningpantry.com/vegetable-fruit-processing.html>
- <http://www.vanmarkequipment.com/>

Meat Processing

- For more information on meat processing equipment visit: <https://www.waltonsinc.com/equipment>
- <http://hessmm.com>
- <http://www.meatprocessingproducts.com>

Baking

- For more information on baking equipment, visit: <http://www.centralrestaurant.com/Bakery+Equipment-sn78.html>
- <http://www.bakeryequipment.com>

Juicing

- For more information on juicing equipment, visit: <http://www.webstaurantstore.com/14111/electric-juicing-machines.html>
- For more information on the Commercial Juicer Buyer's Guide, visit: <https://www.katom.com/cat/juicers/the-commercial-juicer-buyers-guide.html>

Sauces

- For more information on sauces equipment, visit:
<http://www.costanteimports.com.au/category/sauce-making-equipment/167>
- For more information on types of sauce processing, visit:
http://www.machinepoint.com/foodtechnologies/machinery.nsf/beverage_technology/sauce_making.html
- For information from the EPA about sauce processing, visit:
<http://www3.epa.gov/ttnchie1/ap42/ch09/final/c9s08-3.pdf>

Canning

- For more information on canning techniques water bath vs. pressure canning, visit:
<http://www.freshpreserving.com/getting-started>
- <http://www.canning-food-recipes.com/canning.htm>
- For extensive information on the technical aspects of canning, visit:
http://nchfp.uga.edu/how/can_home.html

Pickling

- For extensive information on the technical aspects of pickling, visit:
http://nchfp.uga.edu/how/can6b_pickle.html
- For high volume pickling equipment, visit: <http://www.solbern.com/pickles.html>
- For a comprehensive packet on how to make pickled products, visit:
<https://www.ag.ndsu.edu/pubs/yf/foods/fn189.pdf>

APPENDIX C: List of Contacts for Additional Information

Shared-Use Kitchens in Lewiston/Auburn that were visited for the creation of this guidebook:

- Cheryl Lacey - Director of Dining, Bates College, Lewiston, ME
- John Rasmussen - Energy Manager, Bates College, Lewiston, ME
- Paul Farnsworth - Senior Project Manager, Bates College, Lewiston, ME
- Mia Poliquin - Head of Operations at St. Mary's Nutrition Center, Lewiston, ME
- Kevin Michaud - Executive Chef at the Franco Center, Lewiston, ME

Lewiston Code Enforcement and Permitting Officers:

- Paul Ouellette - Fire Inspector, 513-3002 ext. 3605
- Kelly Brooks - City Clerks office for City of Lewiston Application, 513-3124 ext. 3220
- Planning and Code department - for new use permit application or sign permitting, 3rd floor of Lewiston City Hall
- Gary Campbell - Plumbing Inspector, 513-3125 ext. 3225
- Gerry Caron - Electrical Inspector, 513-3003 ext. 3426
- David Hediger - Planner/Deputy Director Planning/Code, 513-3125 ext. 3225
- Susan Reny - Sanitation Inspector, 513-3125 ext. 3224

Maine State Department Offices:

- Department of Health and Human Services, 287-5675
- Department of Agriculture, Conservation and Forestry, 287-3200