Kamuela Vacuum Cooling Plant Expansion Master Plan and Feasibility Study

Final Report

February 2019

SUBMITTED TO:

State of Hawaii
Department of Agriculture
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EXECUTIVE SUMMARY

To support the agricultural community, the State of Hawai‘i’s Department of Agriculture looked at expanding the uses at the Kamuela Vacuum Cooling Plant to include additional amenities that would help farmers comply with the Food Safety Modernization Act and promote farming. In this process, feedback from farmers was solicited to understand their needs to make recommendations for improvements to the existing vacuum cooling facility and future expansion of the site.

The Kamuela Vacuum Cooling Plant is located on a 3.675 acre parcel in the South Kohala District on the island of Hawai‘i. It is owned by the State of Hawai‘i’s Department of Agriculture, and leased by the Kamuela Vacuum Cooling Cooperative, Ltd., in which both parties entered a lease agreement in 1993 for a term of 35 years. The cooperative’s members pay a $200 annual membership fee to use the facility in addition to a usage rate, which is calculated per pound of produce that is vacuum cooled or refrigerated. Board members are elected at the start of every fiscal year, which starts in June and ends in May. Analysis over a five-year period of the facility’s usage shows that vacuum cooling has significantly declined, while refrigeration has maintained a fairly stable trend.

Agricultural data from the 2012 Census shows that in the State and County of Hawai‘i the farming industry has remained fairly stable; the County of Hawai‘i only saw a decrease of 368 farms from 2007 to 2012. The island also maintains 61% of all the farms in the State of Hawai‘i. The farming industry has maintained its stability through the community’s desire for fresh and local produce, which is evident in the growth and stability of farmers markets. In just the Waimea region alone four new farmers markets were established between 2009 and 2015. These markets sell a diversity of fresh produce and value-added agricultural products.

As a means of supporting and protecting the production and consumption of fresh and local produce, the Food Safety Modernization Act was signed into law on January 4, 2011 by President Barack Obama. The primary purpose of the act is to strengthen the food safety system by targeting prevention of food safety problems (foodborne illness, diseases, etc.) rather than focusing on reacting to the problems after they occur. While the rules under this act will affect farmers throughout all stages of farming, the Produce Safety Rule and the Preventative Controls for Human Food rule are the primary rules that will affect the stages and processes that occur at the Kamuela Vacuum Cooling Plant.

In order to understand the needs of the farmers, two public outreach methods were conducted throughout the project. The first method of soliciting feedback was through a mail-out survey that was sent to identified stakeholders of the Waimea community. The survey was created to understand the types of farming that is happening in the area, the types of amenities that farmers would like to see at the Kamuela Vacuum Cooling Plant, and any Food Safety Modernization Act concerns that they had. The second method was through two focus group meetings that were held on August 7th and November 14th of 2018. At the first meeting the attendees were informed of the project goals, objective, and process, and also the results of the mail-out survey. A Food Safety Modernization Act

trainer was also present to give a brief presentation on how the rules of the act will affect farmers. At the end of the meeting, attendees were prompted to share feedback on the amenities they'd like to see at the vacuum cooling plant, and to understand their concerns with Food Safety Modernization Act compliance. During the second meeting, attendees were briefed on the summary of feedback received from the first meeting, as well as the recommendations for upgrades to the existing site, which included the addition of a commercial kitchen and a post-slaughter facility. Associated costs, revenue, permits and an approximate schedule for construction were also shared.

In addition to public outreach, case studies of commercial kitchens were analyzed to evaluate the feasibility of including one at the Kamuela Vacuum Cooling Plant. A report on the Worcester Regional Food Hub assessed the profitability of including a commercial kitchen by identifying all of the sources of expenditures and revenue that the kitchen would generate on a monthly and annual basis. Three different scenarios were designed to estimate the changes in fees that would be charged to users in order for the kitchen's finances to breakeven. The commercial kitchen was eventually built and they currently have thirteen business tenants who are charged $25 an hour to use the kitchen. Another commercial kitchen that was analyzed was the Pacific Gateway Center's incubator kitchen, which is located on the island of O'ahu. This kitchen has twelve individual kitchens that are available for rent; four for baking, four for food prep and four for cooking. The baking and prep kitchens are approximately 300 SF each, while half of the cooking kitchens are 400 SF and the other half are 500 SF. Currently 92 businesses utilize the incubator kitchen, and usage rates start at $38.50 per hour.

From the data and feedback gathered throughout the project's process, an understanding of the community's needs and desires for the Kamuela Vacuum Cooling Plant has been finalized and formulated into a list of recommendations for upgrades to the site. The list is prioritized by order of importance to the health, well-being and overall efficiency of the Kamuela Vacuum Cooling Plant's operations and its users.

1. **Demolition of the abandoned vacuum cooling structures**

   The abandoned structures were built in 1968 and are currently only used as shelter and storage of miscellaneous materials. Based on the year it was built and observations of the materiality of the structures, it is assumed that they contain lead-based paint and asbestos. This is recommended to be the first priority for the facility and the Department of Agriculture as the asbestos-containing materials pose a health risk to the users should the materials be damaged or disturbed, which would cause the asbestos fibers to be released into the air.

2. **Upgrades to the existing vacuum cooling facility for Food Safety Modernization Act compliance**

   At minimum, the existing vacuum cooling facility will need the following upgrades to be compliant with the Food Safety Modernization Act:

   - Assessment, preparation and enforcement of a food safety plan for the vacuum cooling facility
   - Include a handwashing station in the vacuum cooling warehouse
   - Include an equipment washing station outside of the warehouse

- Have signs with proper handwashing steps posted at washing stations and in the office's bathroom
- Create a secured/covered entry for the roll-up doors to prevent outside animals and bugs from entering the facility
- Include a drinking water dispenser or fountain in the vacuum cooling warehouse
- Contract pest control services to be maintained on a regular basis
- Fix and seal any gaps in the refrigeration/cold storage area

3. Addition of a certified commercial kitchen

Based off of the feedback collected from the mail-out survey and the first focus group meeting, a certified commercial kitchen was the most desired amenity that stakeholders indicated they would be interested in using at the Kamuela Vacuum Cooling Plant site. They also indicated that they would like the kitchen to provide equipment to do canning, chopping, prepping, dehydrating, and hosting cooking classes. Providing a certified commercial kitchen for the public to rent and use would allow users to avoid the upfront large capital investment of purchasing all of the equipment themselves. It would also ensure that safety and health standards are implemented during production activities by the means of permit requirements.

1.0 INTRODUCTION

1.1 PURPOSE & NEED

According to the 2012 Census of Agriculture, approximately 61% of all farms in the state of Hawai‘i is located on the island of Hawai‘i. The amount of farms on the island of Hawai‘i has only seen an approximate 8% decrease since 2007. Support for these farm businesses come from the community’s desire for fresh and local produce. In Waimea alone there are four farmers markets that occur on Saturdays, and one that occurs on Wednesdays. According to the Hawai‘i County Food Self-Sufficiency Baseline 2012 study done by the University of Hawai‘i at Hilo (Melrose and Delparte), within the context of data that was available, the study suggests that over 34% of vegetables consumed on the island of Hawai‘i was produced locally.

1.2 OBJECTIVE

In order to continue to provide the community with local produce and to support the farming community and local businesses, the Department of Agriculture has proposed to expand the Kamuela Vacuum Cooling Plant facility to include additional amenities that would assist farmers in complying with the Food Safety Modernization Act. The Food Safety Modernization Act was signed in 2011 by President Obama with the objective to prevent foodborne outbreaks before they occur. While the act will create standards to better protect the public, compliance with these standards may pose a challenge to smaller local farms who cannot afford the additional amenities and operations needed to comply. The goal of this project is to understand the needs of the farmers in the community, and to assess the feasibility of expanding the Kamuela Vacuum Cooling Plant to accommodate additional facilities that would assist farmers in becoming compliant with the Food Safety Modernization Act.

2.0 THE KAMUELA VACUUM COOLING PLANT AND THE KAMUELA VACUUM COOLING COOPERATIVE

2.1 KAMUELA VACUUM COOLING PLANT (KVCP)

2.1.1 SITE IDENTIFICATION AND LOCATION

The Kamuela Vacuum Cooling Plant (KVCP) is located in the South Kohala District of Hawai‘i Island on Māmalahoa Highway, between Pu'u Opelu Rd and Ala Ohia Rd. It is situated on a 3.675 acre parcel identified as Tax Map Key (3) 6-6-005: 028, which is owned by the State of Hawai‘i and leased by the Kamuela Vacuum Cooling Cooperative, Ltd. (KVCC). The parcel lies on the mauka border of the Lālāmilo ahupua‘a and Waikoloa ahupua‘a, and is adjacent to the Department of Hawaiian Home Lands (DHHL) Lālāmilo farm lots subdivision to the south. It is approximately 0.2 miles south of the nearest residential home in Waimea Town Center. In 2018, the parcel's net taxable land value is $14,700 and the net taxable building value is $418,200.

2.1.2 LAND USES

The parcel currently contains three structures - an abandoned warehouse, a vacuum cooling and refrigeration warehouse, and an administrative office. The area of the structures are 4,620 sq. ft., 8,610 sq. ft., and 432 sq. ft., respectively, and totals to approximately 13,662 sq. ft. of building area. The abandoned warehouse is currently being used as a shelter to store packing materials, wooden planks and other miscellaneous materials. The administrative office contains a desk, sink, bathroom, tables, and chairs.

Figures 1 - 3 are provided to illustrate the following regulatory land use designations identified for the parcel:

- The State Land Use District (SLUD) designation for the parcel is Agricultural.
- Under County zoning, the parcel primarily falls in Agricultural District 1-a (minimum building site of 1 acre), while a portion of the parcel is in Agricultural District 5-a (minimum building site of 5 acres).
- The parcel is designated as "urban expansion" according to the County General Plan's Land Use Planning Allocation Guide (LUPAG).

The agricultural designated lands immediately adjacent to the KVCP (identified as TMKs (3) 6-6-001: 037 and (3) 6-6-001: 038) is undeveloped and owned by PR Maunakea LLC. The parcel south of the KVCP (TMK (3) 6-6-005: 019) is owned by the Hirayama Family Trust, which operates Y. Hirayama Farm, Inc. and is a member of the KVCC. Directly across Māmalahoa Highway is an undeveloped land parcel owned by Parker Land Trust, which is designated as Urban under the SLUD.

The KVCP is located within the South Kohala Community Development Plan (SKCDP) area. The SKCDP includes four (types of) policies relating to Agriculture of which pertain directly to the project at hand. The four general policies that pertain to this parcel include: preserving the

Figure 1: STATE LAND USE DISTRICT DESIGNATION

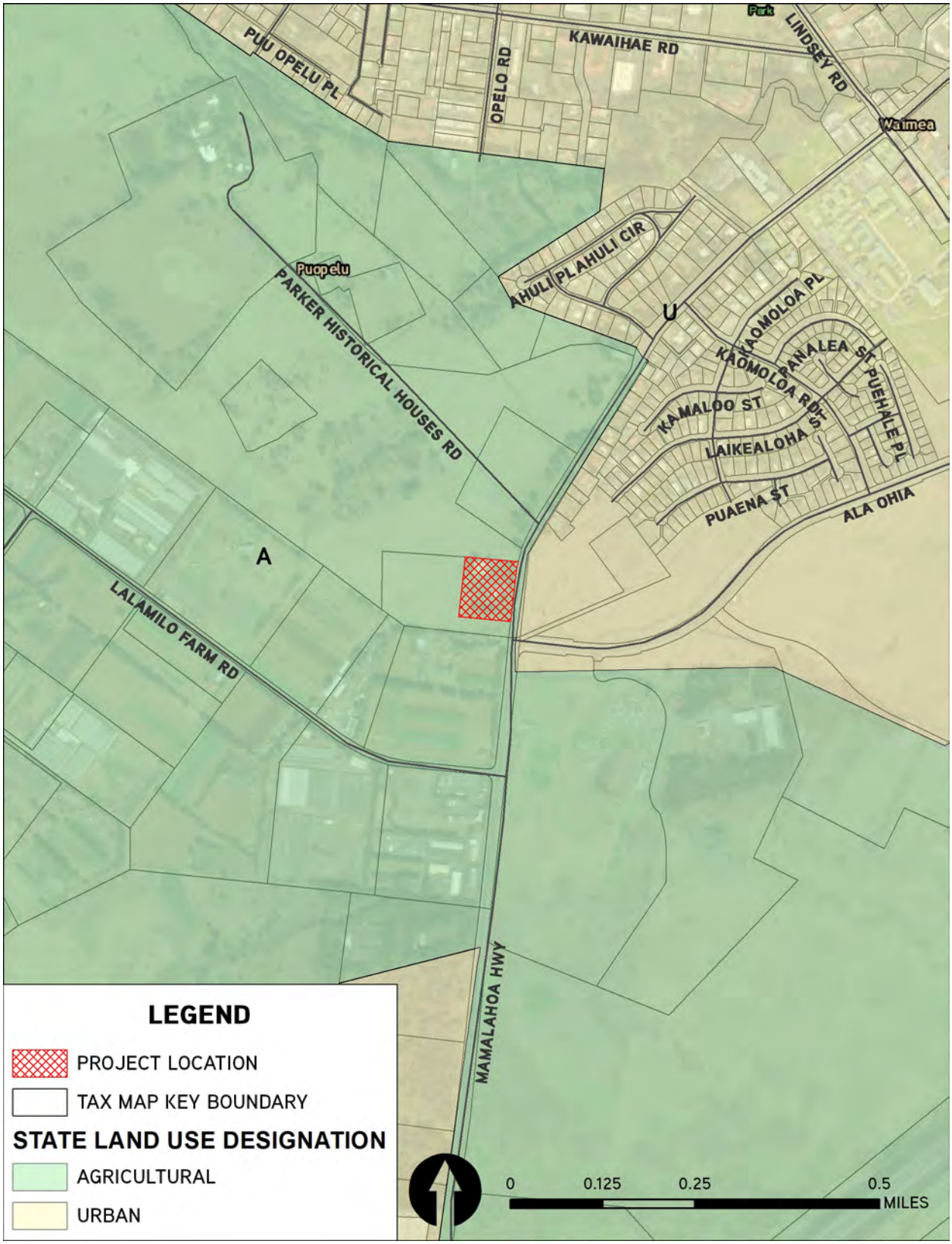


Figure 2: COUNTY OF HAWAI'I ZONING DISTRICTS

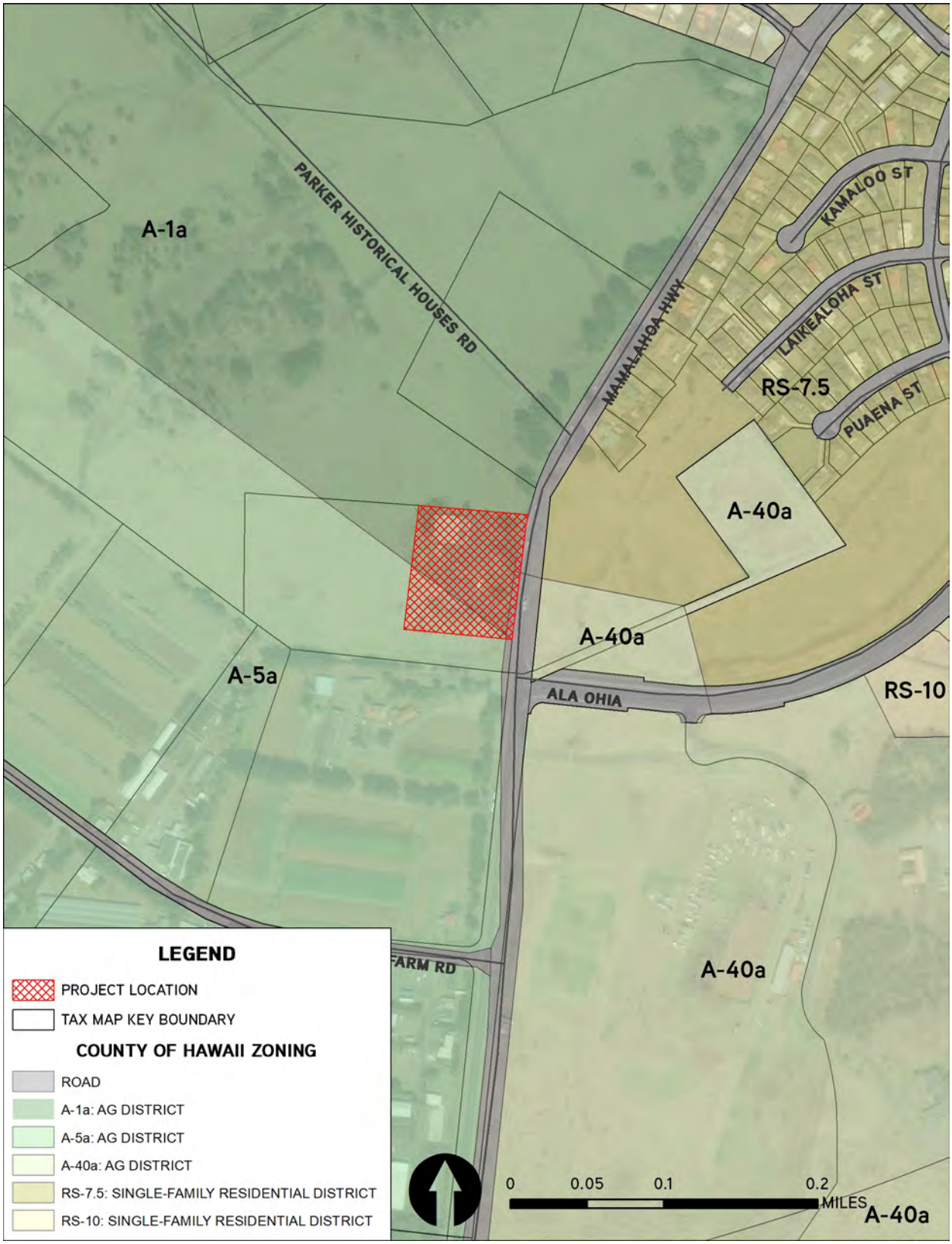
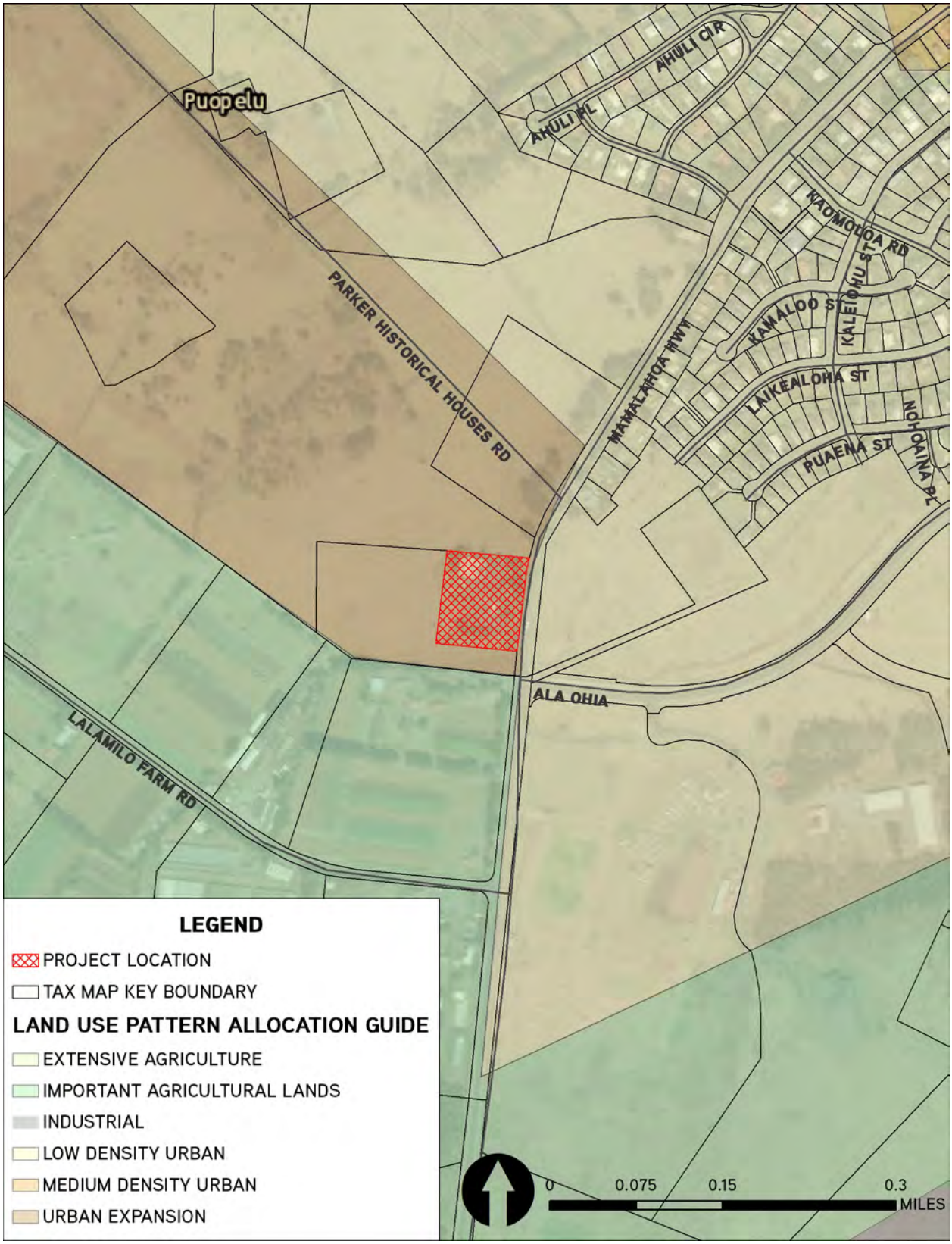


Figure 3: LAND USE PATTERN ALLOCATION GUIDE



cultural sense of place of South Kohala communities, providing transportation and circulation needs of the South Kohala community and for commuters to/from South Kohala, developing programs and standards that will protect South Kohala from natural hazards, and developing guidelines and programs that promote environmental stewardship and the concept of sustainability. (The South Kohala Community)

Included in this CDP is the Waimea Town Plan, which includes three more policies; preserving Waimea's sense of place, responsible growth and environmental stewardship. These policies ensure responsible development while taking the natural and cultural resources of the SK area into consideration for every project. These regulations do not hinder the project itself but ensures that any project that occurs on this parcel is sensitive to its surroundings.

2.1.3 SITE CONDITIONS AND OPERATIONS

The KVCP was established in the 1960s to assist local farmers in the cooling and cold storage of their produce. Currently, three (3) Young Brothers operated refrigerated container trucks pick up produce at KVCP and transports them to the Kawaihae Harbor for inter-island shipping to Oahu. Approximately 7,000,000 pounds of produce passes through the facility annually.

At a KVCC regular meeting that occurred on June 18, 2009 members expressed repairs, upgrades and concerns for the KVCP that was documented in the "Report to the Twenty-Fifth Legislature 2010 Regular Session, Development of a Plan to Optimize the Use of the Kamuela Vacuum Cooling Plant", included in Appendix A. The following is a summary of the concerns for the KVCP:

- Main Building: A portion of the roof is rotting so farmers are concerned that the electricity may be severed should high winds hit the plant. The power outage may result in spoilage of products.
- Aging Equipment: There is a Freon leak in the vacuum cooler, which is causing the electricity costs to escalate. Also the vacuum pumps are not working efficiently.
- Loading Dock: The Young Brothers' refrigerated container hooks up at the loading dock and one of the three-prong electrical plugs is not operational.
- Main Building Floor: Flooring of the building is deteriorating and needs to be resurfaced. This presents a hazard to forklifts and other machinery operating in the area.
- Electricity Costs: About half of the operational cost ($10,000 a month) is used to pay for electricity.

In a letter dated June 17th, 2014 from Royce Hirayama, KVCC President at the time, the KVCC was introducing R.P. Delio and Company, Inc. as a consultant to produce an energy efficiency plan and alternate energy feasibility study to improve the plant's energy efficiency and lower energy costs. In the letter, Royce stated that there are two vacuum cooling chambers, but only one is operational. One of the concerns mentioned by the KVCC in 2009 stated that half of the facility's operational cost is used to pay for electricity, which leaves only a small portion to be dedicated to maintenance costs.

Efforts to address the aforementioned repairs and concerns have since been made. They include the following:

- Installation of a new vacuum cooling chamber.

- Replacement of portions of the roof/siding.
- Replacement of a portion of the warehouse flooring with concrete.
- Replacement of refrigerator doors.
- Installation of gutters and downspouts to the roof.

To address the electricity costs, a photovoltaic (PV) system will be installed beginning in 2019. The PV panels will be installed onto a new independent steel post roof structure which will serve a dual purpose by providing 18 covered parking stalls just south of the existing administrative office building. To comply with the Americans with Disabilities Act (ADA) Standards for Accessible Design, two parking stalls that meet ADA accessibility standards will be installed with the carport. The ADA stalls will be located between the carport and the administrative office building.

The KVCC is currently not connected to any municipal sewer system.

2.1.4 TRANSPORTATION/ACCESS

Vehicular access to the site is from Māmalahoa Highway and there are three (3) ingress/egress driveways to the KVCP. All three driveways have a chain-linked gate, which can be locked. The two south gates are typically left open during business hours. Each driveway is paved with asphalt and are about 15 to 20 feet wide.

Māmalahoa Highway is a two-lane highway owned and maintained by the State of Hawai‘i Department of Transportation (HDOT).

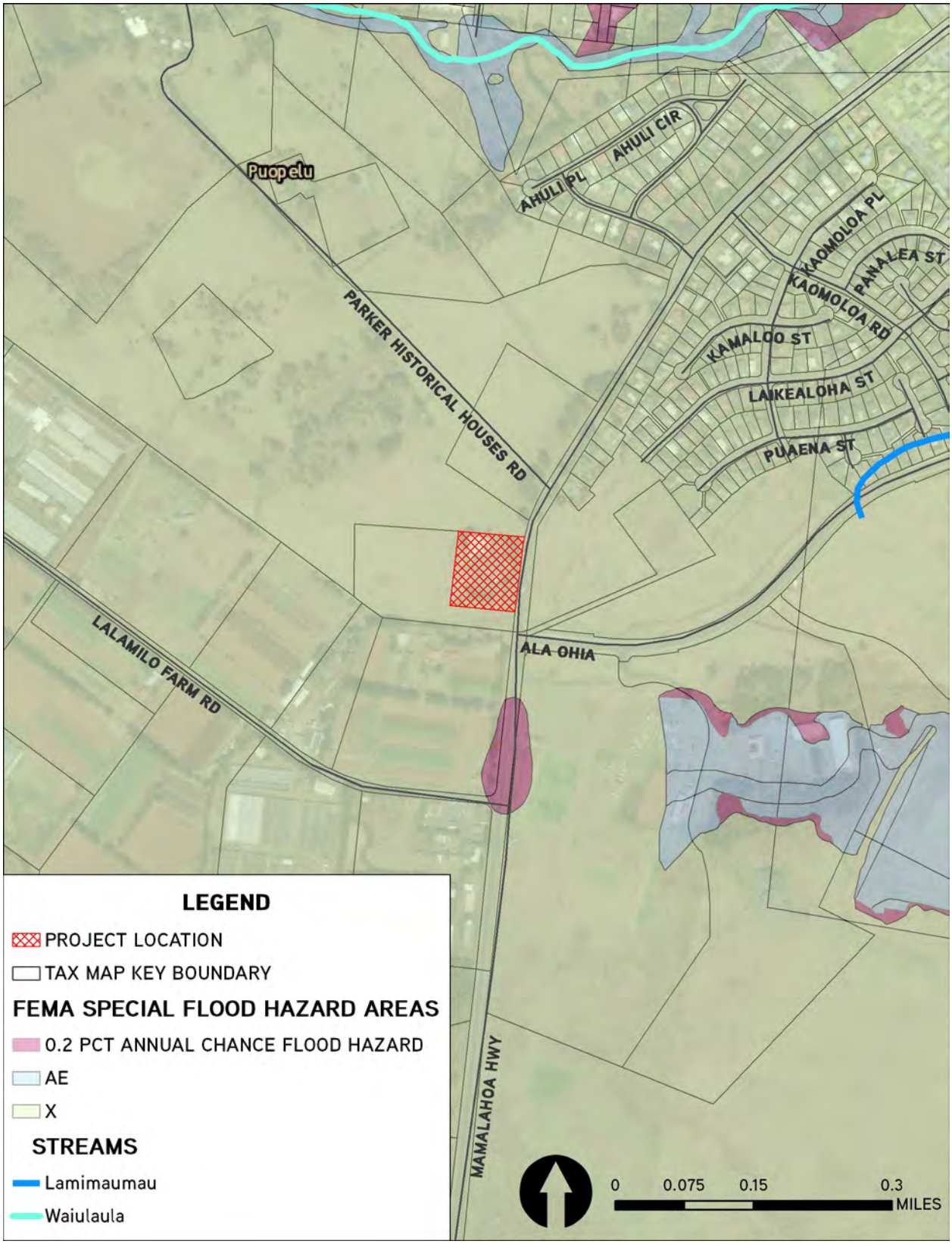
Though Kohala is the safest district in Hawai‘i County when it comes to natural hazards, it is still vulnerable to two major hazards; fire and floods.

2.1.5 NATURAL HAZARDS

The parcel lies in the Wai‘ula‘ula watershed and sits between two streams, the Waikoloa and Kamuela streams. The parcel is not within any floodplains or tsunami evacuation zones, but is in a dam evacuation zone. It is located in Flood Zone X, which corresponds to being located outside the 1-percent annual chance floodplain, as shown in Figure 4. No base flood elevations or depths are mapped in this zone.

Since the Lālāmilo area receives less rain than Waimea town, the area remains dry and as such, is also a potential fire hazard. This fire hazard increases as winds begin to exceed 15 mph.

Figure 4: FEMA SPECIAL FLOOD HAZARD AREAS



2.2 KAMUELA VACUUM COOLING COOPERATIVE (KVCC)

2.2.1 LEASE AGREEMENT WITH THE STATE OF HAWAI'I, DEPARTMENT OF AGRICULTURE

The Kamuela Vacuum Cooling Cooperative was established on November 23, 1964 as a non-profit agriculture cooperative. The KVCC entered into a lease agreement with the State of Hawaii's Department of Agriculture (DOA) on September 22, 1993 for a term of thirty-five (35) years from December 1, 1993 until November 30, 2028. The KVCP site was set aside by the Governor's Executive Order No. 2413.

2.2.2 CURRENT OPERATIONS AND MEMBERSHIP

Members of the KVCP currently pay a $200 annual membership fee to use the facility. In addition to the annual membership fee, the following is the rate schedule as of January 1, 2014:

1. Vacuum cooling and refrigeration charges:

    - Member: $.021/lb. vacuum-cooling
      $.015/lb. refrigeration only

    - Non-member: $.042/lb. vacuum-cooling
      $.030/lb. refrigeration only

2. Repair/maintenance fee of $.001/lb. on vacuum and non-vacuum cooling items
3. Pallet charge of $2/pallet for any items not attached to chilled or vacuum cooled products and stored on KVCC property
4. Containers parked on premise: $50/container/mo.

There are currently seventeen (17) farmers who belong to the KVCC. Within the KVCC there are four officers and five board members. New officers are elected at the start of every fiscal year, which starts in June and ends in May. The KVCC holds monthly meetings on the third Tuesday of every month.

In a memorandum dated March 21, 2016 addressed to all KVCP users from the KVCC Board of Directors, the following ongoing problems were identified:

1. Theft of produce and property
2. Gate left open
3. Doors left open
4. Lights left on
5. Property damage

To address the aforementioned issues, the KVCP changed its operational hours (as of May 1, 2017) to Monday through Friday from 8AM - 4PM. The doors and gate remains locked at all other times - only active board members have keys to access the facility.

2.2.3 KVCP USAGE TRENDS

According to the KVCP's annual production report, the facility saw a rise of 14.4% in vacuum cooling usage from FY13 to FY15. Approximately 3 million pounds of produce was vacuum cooled in FY13, 3.27 million pounds in FY14 and 3.46 million pounds in FY15. After FY16, vacuum cooling began to see a significant drop in usage, with a 67.8% decrease from FY16 to FY18. Figure 5 shows a comparison of the total pounds of produce vacuum cooled per FY from 2013 to 2018.

Analyzing data from the same KVCP annual production report, refrigeration usage shows a fairly stable trend in comparison to vacuum cooling usage. In FY13 refrigeration usage was at its highest during the five-year period (FY13 –FY18), with a total of approximately 1 million pounds of produce being refrigerated. For the next three years, the pounds of produce refrigerated stayed within the 800,000 range. In FY17 refrigeration usage saw its biggest decline with a 30.2% decrease in usage from FY16; from about 895,000 pounds to 624,000 pounds of produce being refrigerated. The following year saw a significant increase to bring refrigeration usage back to its average range – from about 624,000 pounds in FY17 to 948,000 pounds of produce in FY18. Figure 6 shows a comparison of the total pounds of produce refrigerated per FY from 2013 to 2018.

Based off of discussions with KVCC members, the KVCP usage has been on a decline since the early years of operation. The facility used to be utilized 24 hours a day, 7 days a week and had three full-time employees managing the operations. As the usage declined the amount of full-time staff also decreased, as there are currently no full-time employees managing the facility. A majority of the KVCC members are retired, but about half are still active farmers. Should the KVCC seek to increase the usage of the facility, efforts should be made to understand when and why the usage started to decrease.

Figure 5: FY13 – FY18 VACUUM COOLING USAGE REPORT PER YEAR

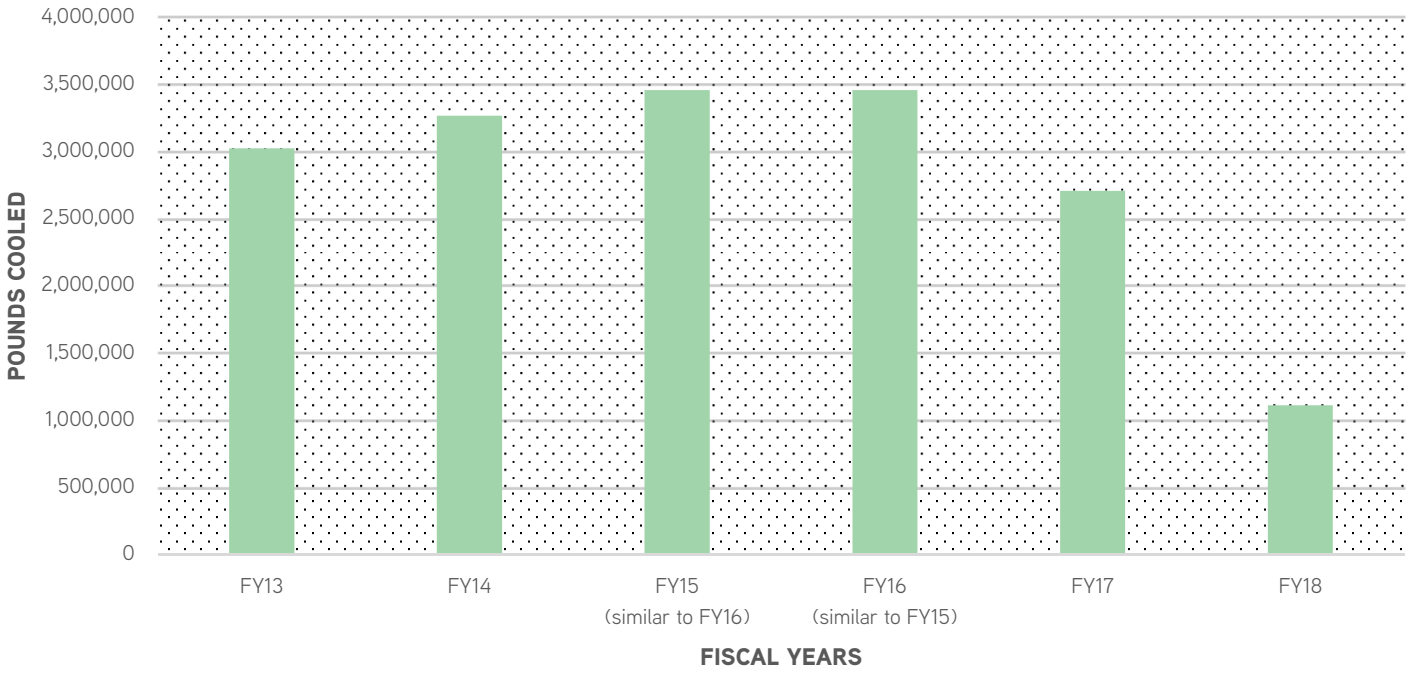
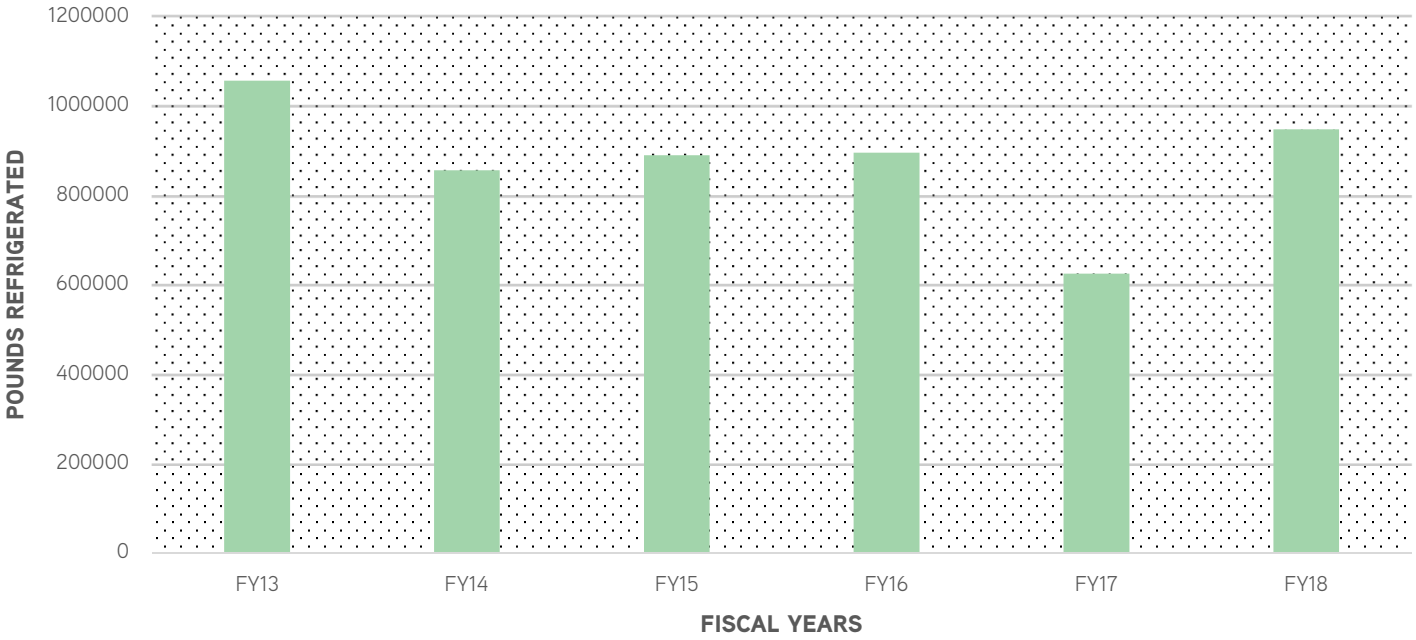


Figure 6: FY13 – FY18 REFRIGERATION USAGE REPORT PER YEAR



3.0 AGRICULTURE IN THE STATE AND COUNTY OF HAWAI'I

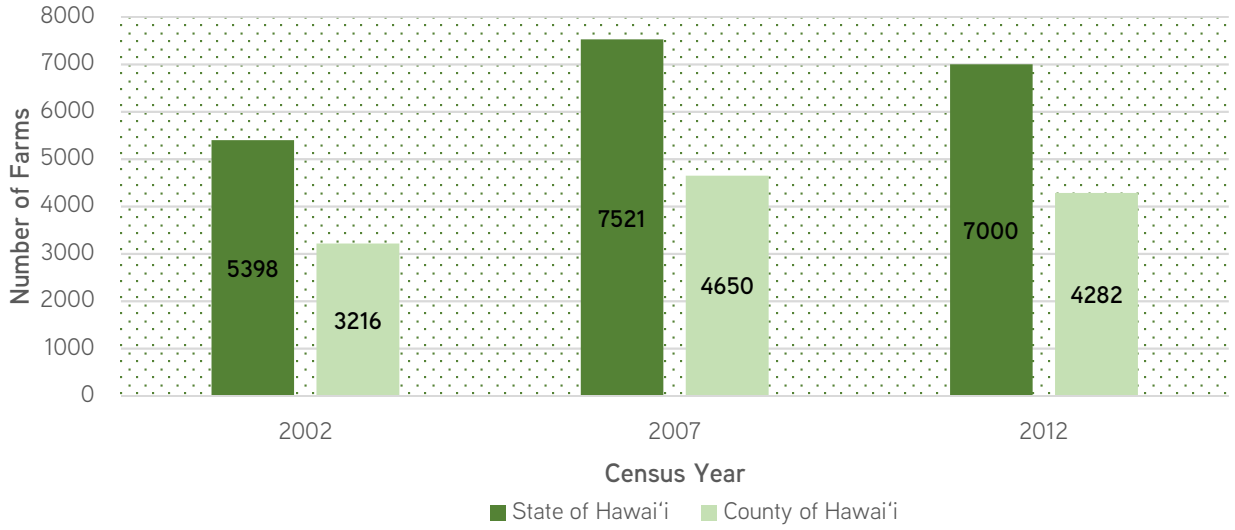
3.1 AGRICULTURAL TRENDS IN RECENT YEARS

Every five years, the United States Department of Agriculture (USDA) releases "The Census of Agriculture", which counts farms and ranches across the United States, and the people who operate them. For the purposes of this census, the USDA defines a "farm" as "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the Census year" (USDA). Data for this census is collected via mail questionnaires to farm and ranch operators from The National Agricultural Statistics Service (NASS) (USDA). It is a United States law (Title 7 USC 2204(g) Public Law 105-113) that anyone who receives a Census of Agricultural report form is required to respond, even if they did not operate a farm or ranch during the census year (USDA).

For the purposes of this report, census data during a ten-year period (from years 2002, 2007, and 2012) will be used to analyze agricultural trends. According to USDA's Census of Agriculture website, the results of the 2017 Census of Agriculture will not be provided until February 2019, thus it is not available to include in this analysis.

As stated in the "2012 Census of Agriculture", there were 7,000 farms in the State of Hawai'i and 4,282 farms in the County of Hawai'i. As of 2012, approximately 61% of all the farms in the state were located on the Big Island of Hawai'i; in terms of land, this amounts to 686,856 acres of farm lands. A comparison of the number of farms in the State of Hawai'i and the County of Hawai'i from census years 2002, 2007 and 2012 is illustrated in Figure 7.

Figure 7: NUMBER OF FARMS IN THE STATE OF HAWAI'I AND THE COUNTY OF HAWAI'I



While the number of farms in the State and County of Hawai‘i has increased since 2002, the average net cash farm income per farm has decreased significantly. In the Census, the USDA defines “net cash farm income of the operations” as a “concept derived by subtracting total farm expenses from total sales, government payments, and other farm-related income.” The average net cash farm income of operations (per farm) in the County of Hawai‘i was $7,252 in 2012; $5,362 in 2007; and $10,639 in 2002. Correspondingly, the number of farms with net gains, which includes those that broke-even, showed a significant decrease from 2002 to 2007, and then a slight increase from 2007 to 2012. In 2012, approximately 49% of all the farms in the County of Hawai‘i reported net gains; in 2007 approximately 43%; and in 2002 approximately 61%.

One explanation for the decrease in net cash farm income and net gains for farmers may be the increase in estimated market value of land, buildings, machinery, and equipment. The estimated average market value of land and buildings (per farm) in the County of Hawai‘i was $1,280,898 in 2012; $1,022,976 in 2007; and $724,308 in 2002. For machinery and equipment, the estimated average market value (per farm) in the County of Hawai‘i was $36,698 in 2012; $31,981 in 2007; and $23,981 in 2002.

3.2 FARMERS MARKETS ON THE BIG ISLAND

Although the data from the USDA’s Census of Agriculture may show a decrease in profitability for farmers, and an increase in market value of expenses such as land, buildings, machinery, and equipment, the desire and market for locally-grown, locally-produced, fresh, and/or organic food and produce has been on the rise. Established in 1992, the Waimea Homestead Farmers Market was one of the first markets to make locally grown produce easily available to Waimea residents. Since then, four new farmers markets were established between 2009 and 2015, totaling to five farmers markets in just Waimea alone. Currently, four of the five markets operate every Saturday, while one occurs every Wednesday.

The Waimea Homestead Farmers Market currently has about nine vendors and occurs every Saturday, from 7AM – 12PM at Waimea Middle & Elementary School Playground. The biggest farmers market, with about 44 listed vendors, is the Waimea Town Farmers Market, which occurs every Saturday, from 7:30AM – 12PM at Parker School. Second largest is the Kamuela Farmers Market, which has about 41 listed vendors and occurs every Saturday, from 7:30AM – 1PM. The Kūhiō Hale Farmers Market has about 16 vendors and occurs every Saturday, from 7:30AM – 12:30PM. The Waimea Midweek Farmers Market has about 30 vendors and is the only market that occurs on a weekday; every Wednesday from 9AM – 3PM.

Bigger markets, like the Waimea Town Farmers Market and the Kamuela Farmers Market, have a variety of vendors selling more than just fresh produce. Over half of the vendors at these markets sell “value-added agricultural products”, which is defined by the USDA as being “a change in the physical state or form of the product (such as milling wheat into flour or making strawberries into jam; the production of a product in a manner that enhances its value, as demonstrated through a business plan (such as organically produced products); the physical segregation of an agricultural commodity or product in a manner that results in the enhancement of the value of that commodity or product (such as an identity preserved marketing system).” Some examples of value-added agricultural products being sold include jams, jellies, popsicles, lemonade, juices, gelato, cheese, dog treats, herbal teas, and sea salt.

Photos from the Kamuela Farmers Market.

Photo credit: www.kamuelafarmersmarket.com

4.0 THE FOOD SAFETY MODERNIZATION ACT

The U.S. Food & Drug Administration's (FDA) Food Safety Modernization Act (FSMA) was signed into law on January 4, 2011 by President Barack Obama. The primary purpose of FSMA is to strengthen the food safety system by targeting prevention of food safety problems (foodborne illness, diseases, etc.) rather than focusing on reacting to the problems after they occur. FSMA contains the seven primary rules listed below:

1. Standards for the Growing, Harvesting, Packing and Holding of Produce for Human Consumption (Produce Safety Rule)
2. Accredited Third-Party Certification
3. Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Human Food (Preventative Controls for Human Food)
4. Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Food for Animals (Preventative Controls for Animal Food)
5. Sanitary Transportation of Human and Animal Food (Sanitary Transportation)
6. Foreign Supplier Verification Programs for Importers of Food for Humans and Animals (Foreign Supplier)
7. Mitigation Strategies to Protect Food Against Intentional Adulteration (Food Defense)

Both the Produce Safety Rule and the Preventative Controls for Human Food rule will affect the current and future operations at the KVCP. While farmers and users of the KVCP are responsible for their own individual farm operations being in compliance with all of FSMA's rules, the Produce Safety Rule and Preventative Controls for Human Food rule have specific requirements that will apply to operations and processes that occur at the KVCP.

4.1 REQUIREMENTS OF THE PRODUCE SAFETY RULE

The Produce Safety Rule is the first mandatory federal standard for the production and processing of fruits and vegetables in the United States. It was established to put regulations in place to prevent contamination and the spread of foodborne illness at each stage of food production. The rule is divided into six parts, and includes standards for agricultural water; biological soil amendments; sprouts; domesticated and wild animals; worker training and health and hygiene; and equipment, tools and buildings. To assist produce farmers in understanding and complying with the requirements, the Produce Safety Alliance (PSA) was established in collaboration between the FDA, U.S. Department of Agriculture's Agricultural Marketing Service (AMS) and Cornell University. PSA provides resources such as the Grower Training course, Train-the-Trainer course, farm food safety plan writing resources, trainer directory, and many other sources of information to educate farmers.

Under the Produce Safety Rule, the worker training and health and hygiene standards would require KVCP users to do the following:

- "Take measures to prevent contamination of produce and food-contact surfaces by ill or infected persons, for example, instructing personnel to notify their supervisors

if they may have a health condition that may result in contamination of covered produce or food contact surfaces.
- Use hygienic practices when handling (contacting) covered produce or food-contact surfaces, for example, washing and drying hands thoroughly at certain times such as after using the toilet.
- Take measures to prevent visitors from contaminating covered produce and/or food-contact surfaces, for example, by making toilet and hand-washing facilities accessible to visitors." (Final Rule on Produce Safety)

Users of the facility are also required to be trained on the importance of health and hygiene, and have the education and experience necessary to perform their assigned duties.

4.2 REQUIREMENTS OF THE PREVENTATIVE CONTROLS FOR HUMAN FOOD RULE

The Preventative Controls for Human Food rule requires that "food facilities that are required to register with section 415 of the Food, Drug, & Cosmetic Act (FD&C Act) must comply with the requirements for risk-based preventive controls mandated by the FDA FSMA as well as the modernized Current Good Manufacturing Practices (CGMPs) of this rule (unless an exemption applies)" (Final Rule on Preventive Controls). As stated in section 415 of the FD&C Act, food facilities that must register with the FDA include "domestic and foreign facilities that manufacture, process, pack or hold food, as defined in 21 CFR 1.227, for human or animal consumption in the United States" (Title 21). Food facilities that are subject to this rule are required to have a food safety plan in place that identifies risks and hazards with controls to mitigate them. The rule also requires that employees must have education and training in food hygiene and safety, and have the necessary experience to manufacture, process, pack, or hold food.

5.0 ASSESSING PROJECT NEED THROUGH PUBLIC OUTREACH

In order to understand the needs of the farming community in Waimea and to identify possible expanded uses at the KVCP facility, two public outreach methods were used to initiate feedback from farmers. The first method was through a mail-out (a copy is provided in Appendix B), which contained a letter from the DOA explaining the project and describing the feedback process, a fact sheet on FSMA and post-harvest facilities/food hubs, a feasibility study survey, and a flyer for the first focus group meeting for the project. The focus group meetings were the second method of public outreach; two were conducted during the project process. The first focus group meeting was to introduce the project and relevant FSMA regulations (as they relate to the facility) to the farming community, and to elicit feedback on expanded uses they would like to see at the KVCP. The second focus group meeting was to share the results of the feedback received from the focus group meeting, which would include additional amenities in a conceptual master plan for the KVCP.

5.1 SUPPLEMENTAL OUTREACH – MAIL-OUT

The DOA and SSFM International (SSFM) identified a list of stakeholders to obtain feedback for the project. This list of stakeholders included the KVCC members, Waimea Irrigation System users, and also farmers within the Waimea district who were identified mainly through farmers markets' websites. The mail-out was sent to stakeholders on July 10, 2018, and they were asked to return a filled out survey by July 20th either through mail (a stamped envelope was provided in the mail-out) or by scanning a copy and sending it to an identified SSFM email address. A week after the mail-out was sent, follow-up calls were conducted to: ensure the stakeholders received the mail-out, answer questions, request that the survey be filled out and sent back, and to remind them when the first focus group meeting would be held. Through this outreach process a total of fifteen completed surveys were received; two of which were completed during over-the-phone interviews, while the rest were received via mail or email. Since some of the information requested on the survey may be regarded as confidential, only responses from the FSMA and KVCP questions will be included and will be provided anonymously in Appendix C.

In summary, the desired amenities and/or services that survey responders indicated they'd be interested in the most was washing, packing, cold storage, and a commercial kitchen. The main concerns that responders had regarding the FSMA was that it does not consider small family-sized farms and would require added costs, thus forcing small farms out of business. In regards to current KVCP issues, responders indicated that new compressors for the refrigerators were needed, there is a lack of use of the facility, and that birds' nests needed to be cleaned-up. One responder was concerned that in order to use the KVCP facility the user's farm needed to be food safety certified. In terms of overall suggestions, the most received response was that a facility manager needs to be hired to maintain the facility. The second most received response was that the KVCP would be difficult to up-keep and justify when there has been a decline in farms due to farmers retiring or cut-backs on production.

5.2 FOCUS GROUP MEETING #1

The first focus group meeting for the project was held on Tuesday, August 7, 2018 at 5PM at the Department of Hawaiian Home Lands (DHHL) West Hawai'i District Office in the Kūhiō Hale. The purpose of the meeting was to inform the community on the following: project goals, objective and process; general overview on the FSMA, post-harvest facilities and food hubs; the KVCP's usage data; and the results and feedback received from the mail-out survey. It was also intended to gather feedback from meeting attendees on any FSMA compliance concerns, desired amenities at the KVCP and any issues and concerns with the KVCP. The meeting attendees included staff from the DOA (and Hawai'i Island's DOA), SSFM and a FSMA trainer that was hired by SSFM to present general information on the FSMA regulations. A copy of the mail-out documents were provided at the meeting, as well as additional FSMA fact sheets and surveys; a copy of these handouts are provided in Appendix B.

SSFM presented a PowerPoint presentation during the first half of the meeting; a copy of the PowerPoint presentation is included in Appendix B. The project goals, objectives and process was explained, along with background information on the KVCC. The FSMA trainer gave a short presentation on FSMA regulations, and how it will affect farmers and their processes when they use the KVCP. Information on the KVCP's usage data from fiscal years 2013 – 2018 was shared, along with responses received from the mail-out survey.

After the presentation concluded, meeting attendees were prompted to share their thoughts and concerns on the following topics in an open-discussion format:

- complying with FSMA regulations at their farms and at the KVCP;
- desired amenities to have, and activities to perform at the KVCP;
- and any existing concerns with the facility.

A summary of the meeting and the comments collected are provided in Appendix B.

5.3 FOCUS GROUP MEETING #2

The second focus group meeting for the project was held on Wednesday, November 14, 2018 at 5:30pm at Waimea Middle School's Science, Technology, Engineering, Arts/'Aina and Math (STEAM) building. The purpose of the meeting was to inform the community on the findings since the first focus group meeting, which included recommendations for upgrades to the existing KVCP site and a recommendation for the addition of a commercial kitchen and post-slaughter facility. The meeting was also intended to gather feedback from meeting attendees on the recommendations for the additional facilities and any other desired upgrades and amenities they'd like to see at the KVCP. The meeting attendees included staff from the DOA (including Hawai'i Island's DOA) and SSFM. A copy of the handout provided at the meeting is included in Appendix D.

SSFM presented a PowerPoint presentation during the first half of the meeting, which started off with a recap of the project goals, objectives and process along with background information on the KVCC; a copy of the PowerPoint presentation is included in Appendix D. Feedback from the mail-out survey and the first focus group meeting was then shared with the group. The recommendations for improvements to the existing KVCP and the addition of a commercial kitchen, post-slaughter facility and a facility manager was presented. The associated costs,

revenue, permits, and approximate schedule for the construction of the commercial kitchen was also shared.

After the presentation concluded, meeting attendees were prompted to share their thoughts and concerns in an open-discussion format. A summary of the meeting and comments collected are provided in Appendix D.

5.4 SUMMARY OF PUBLIC OUTREACH

Based off of the feedback received from the mail-out survey and the first focus group meeting, stakeholders had indicated that the types of amenities and services they would like to be provided at the KVCP included washing, packing, cold storage, a commercial kitchen and a post-slaughter facility. In addition to these added amenities and services, upgrades and repairs to improve the existing facility was desired. While all of the concerns were analyzed for its feasibility not all were included in the final recommendations for upgrades and expansion of the site.

It was determined that providing bulk produce washing facilities would not be feasible at this time. A wash facility would produce a large amount of waste water as the vats utilized to wash produce would require draining and sanitization after every use since each type of produce has different requirements for washing. This differs from washing facilities on the farm as the water would be used to wash several batches of the same produce and only drained when the water has reached a certain level of turbidity. KVCP is currently not connected to any municipal sewer system. The nearest sewer connection would be provided by the Waimea Wastewater Company and is located within the Parker Ranch residential development, but it is currently at capacity and is not able to accept any new users. As such, any waste water generated at KVCP will need to be handled by the installation of an underground septic tank, which would be cost prohibited if sized to accommodate the amount of waste water that would be generated by a washing facility. Parker Ranch is currently in design to increase the processing capacity of the sewer treatment plant. A washing facility could be revisited once sewer capacity is increased or an alternate municipal sewer connection becomes available.

Although packing facilities were also indicated as a desire from stakeholders in the mail-out survey, it was not further considered as a recommendation due to the lack of interest it received in the first focus group meeting. It was also mentioned on less than half of the surveys received. Similarly, any desire for cold storage facilities (other than what is existing) was not mentioned during the first focus group meeting, although it was mentioned on over half of the mail-out surveys received. It is unclear whether the mail-out survey responders who had indicated a desire for cold storage would require additional or different cold storage facilities from what is already offered at the KVCP. Should the issue arise in the next phase of the master plan more consultation should be conducted with stakeholders to clarify additional needs for cold storage facilities.

During the focus group meetings, the Hawai‘i Island Meat Cooperative (HIMC) expressed interest in developing a post-slaughter facility to be located at the KVCP. The post-slaughter facility would serve as a “chill-cut-wrap” facility in which carcasses are cut down to market-size pieces, packaged/wrapped and then chilled in a refrigerator unit. This facility would serve as the second component to the Mobile Slaughter Unit (MSU) operations. The post-slaughter facility

would require two (2) 40’ x 8’ units; one for processing and cutting, and the other for refrigeration. This option will require research and coordination beyond the scope of this study. A better understanding is needed to address concerns of cross-contamination and food safety with the operation of a post-slaughter facility and the existing operations of the KVCP.

6.0 METHODOLOGY – CASE STUDIES

In addition to the feedback collected from identified stakeholders, the feasibility of expanding the KVCP to include additional amenities will be analyzed through the application of case studies. From the comments collected from the mail-out surveys and focus group meetings, the desired amenity that a majority of stakeholders were interested in was a certified commercial kitchen. There are only a few facilities in the State of Hawai‘i that operate solely as a certified commercial kitchen available to rent. Because of this, only one certified commercial kitchen on the island of O‘ahu will be used as a case study, while the other study comes from a regional food hub located in Worcester, Massachusetts.

6.1 WORCESTER REGIONAL FOOD HUB: COMMERCIAL KITCHEN PROFITABILITY STUDY

The “Worcester Regional Food Hub: Commercial Kitchen Profitability” report (included in Appendix E) was written by four undergraduate students at the Worcester Polytechnic Institute. The intent of the report was to assess the profitability of having a commercial kitchen at the Worcester Regional Food Hub (WRFH). The methods used to determine its profitability included research, stakeholder interviews, public interest surveys, and the use of estimated expenditures and revenues of kitchens in similar venues. Through these methods, the students were able to create pricing schemes, kitchen requirements and expansion strategies.

For this report, the stakeholders that were identified included sponsors, farmers, commercial kitchen tenants, and consumers. Stakeholders were asked to participate in surveys and interviews to determine the services that were desired at the commercial kitchen. Local commercial kitchens were also interviewed to gather financial data on their expenditures and revenues. To analyze and create estimates for expenditures, the cost for equipment, labor, taxes, utilities (including water, gas and electricity), and operation and maintenance was collected. Utility costs were calculated 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” (Comei et al.). The report states that the same calculations were done for electricity costs “where the lights and equipment were converted to kilowatt-hours and then charged based on the hourly usage and the electricity rate” (Comei et al.). The revenue calculations included income from aggregation, renting kitchen and storage spaces, and application and membership fees. The calculated revenue was then subtracted from expenditures to analyze whether the commercial kitchen could breakeven, or if other sources of revenue was needed. Different cost scenarios were generated to calculate the required rental price in order for the kitchen to breakeven when it experiences minimal, average and high usage.

The following tables show the different scenarios that were calculated and included in the report. Scenario 1 was the “pessimistic approach” that estimated minimal kitchen use and revenue; Scenario 2 was the “realistic approach” that estimated an average amount of kitchen use and revenue, and was assumed to be the most likely case; and Scenario 3 was the “optimistic

approach" which estimated high revenues by means of number of tenants, aggregation, and dry, cold and frozen storage.

Table 1: 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 hrs/7 days a week	$0.21139/kW/hr	-$2,611.94
Food Hub Coordinator	1 full-time employee	$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
Membership Fee	10	$100.00/tenant	$1,000.00
Total			**-$51,100.30**

Table 2: KITCHEN RENT ESTIMATES FOR SCENARIO 1

	Required Breakeven Rent Price	Price/Hour
Kitchen Operating at 8 hours/day for 5 days/week	100% use (2,080 hours/year)	$24.57
260 days/yr (2080 hours/yr)	75% use at 1,560 hours/year	$32.76
	50% use at 1,040 hours/year	$49.13
	25% use at 520 hours/year	$98.27

Table 3: SCENARIO 2

Item	Use	Rate	Total
All Gas Powered Equipment	3,000 hrs/yr 1,794 therms/yr	$1.166/therm	-$2,091.80
Total Electricity Costs	24 hrs/7 days a week	$0.21139/kW/hr	-$3,586.03
Food Hub Coordinator	1 full-time employee	$50,000.00/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**

Table 4: KITCHEN RENT ESTIMATES FOR SCENARIO 2

	Required Breakeven Rent Price	Price/Hour
Kitchen Operating at 8 hours/day for 5 days/week	100% use (2,080 hours/year)	$21.94
260 days/yr (2080 hours/yr)	75% use at 1,560 hours/year	$29.26
	50% use at 1,040 hours/year	$43.89
	25% use at 520 hours/year	$87.88

Table 5: SCENARIO 3

Item	Use	Rate	Total
All Gas Powered Equipment	6,000 hrs/yr 3,588 therms/yr	$1.166/therm	-$4,183.61
Total Electricity Costs	24 hrs/7 days a week	$0.21139/kW/hr	-$4,803.63
Food Hub Coordinator	1 full-time employee	$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**

Table 6: KITCHEN RENT ESTIMATES FOR SCENARIO 3

	Required Breakeven Rent Price	Price/Hour
Kitchen Operating at 8 hours/day for 5 days/week	100% use (2,080 hours/year)	$19.44
260 days/yr (2080 hours/yr)	75% use at 1,560 hours/year	$25.92
	50% use at 1,040 hours/year	$38.88
	25% use at 520 hours/year	$77.75

6.1.1 COMMERCIAL KITCHEN SUCCESSES

In June 2016 the WRFH incubator kitchen was permitted and made available to the public. The main components of the incubator kitchen included licensed commercial kitchen facilities, culinary training, and planning assistance to develop food businesses by farmers, caterers or other entrepreneurs. The WRFH and the incubator kitchen was made possible by a collaborative effort between the Regional Environmental Council of Central Massachusetts and the Worcester Regional Chamber of Commerce, and generous support from The Health Foundation of Central Massachusetts, the partnership of Quinsigamond Community College and the Worcester County Food Bank, and other organizational, business, and farmer partners within the region (Worcester Regional Hub).

The WRFH is run by a senior project manager, sales manager and a kitchen operations manager. The kitchen operations manager helps guide food entrepreneurs in pursuing their business ventures through business and culinary development. The WRFH incubator kitchen also offers training, workshops and referrals to business development experts, marketing resources, and financial sources (Worcester Regional Hub). In addition to these resources, members of the incubator kitchen also have access to source local ingredients from the WRFH's farmers.

In the article "Cooking Up Success: The Worcester Food Hub" featured in *Edible Boston*, a magazine on local food, dining and gardening in Boston, writer Margaret LeRoux interviewed tenants at the WRFH incubator kitchen to find out their success stories since starting at the kitchen. According to the article, which was written in August 2018, the incubator kitchen currently has thirteen business tenants and charges a usage fee of $25 per hour. One of the tenants produces his granola, called Nutty Bird Granola, at the incubator kitchen and then sells it at farmers markets in Hopkinson, Medfield and Natick. Besides having access to all of the production resources he needs at the WRFH incubator kitchen, the owner of Nutty Bird Granola says that the kitchen operations manager offered him assistance in applying for permits and licenses to be able to sell his granola to wholesale markets, which would allow him to greatly expand his business. Another business called StrEATfoodRX uses the kitchen to prep their gluten-free and dairy-free food for their food truck business, while also utilizing the meat, produce, tortillas, and hot sauce that come from local producers and other incubator kitchen users at the WRFH. In the article, the senior project manager of the WRFH states that the incubator kitchen is "at the point now where we're running the kitchen from 9am to 5pm daily to accommodate all our clients" (LeRoux). As demand for the kitchen continues to grow, the staff will consider adding early-morning and evening hours to the schedule.

6.2 CERTIFIED COMMERCIAL KITCHEN ON O'AHU – PACIFIC GATEWAY CENTER

The Pacific Gateway Center (PGC) is a community-based non-profit organization that assists immigrants, refugees and low-income members in building skills for self-sufficiency. The PGC opened a culinary kitchen incubator in 2000 for entrepreneurs interested in operating a business in the food industry. They currently have twelve individual kitchens that are available to rent; four for baking, four for food prep and four for cooking. The baking and prep kitchens are approximately 300 SF each, while half of the cooking kitchens are 400 SF (small size) and the other half are 500 SF (big size). There are currently 92 businesses who utilize the PGC kitchen

incubator. Users of the kitchen are charged a monthly rent, which also includes the cost of utilities. The rent is calculated by usage, starting at $38.50 per hour with a minimum usage of five hours per month; discounted rates are offered as the hours of usage increases. Refrigeration, freezer and dry storage is available, but is an additional cost to the monthly rent. In order to be qualified to use the kitchen users must have a ServSafe certification, a general excise tax license, a temporary or permanent food license/permit issued by the State of Hawai‘i Department of Health – Sanitation Division, and general liability insurance (with at least $1,000,000 minimum coverage). A table of their rates and other required documents and forms are listed in Appendix F.

The PGC kitchen incubator is currently operated by one facility manager and three maintenance employees. Janitorial assistance and solid waste disposal services are contracted out and occur two to three times a week. Cleaning of the kitchen after it is used is part of the contract and terms of use, but is only based on an honor system. According to the facility manager, when a business applies for a Temporary Establishment Permit or Annual Permit with the State of Hawai‘i Department of Health (DOH) to use the kitchen incubator, the health inspector will review a proper cleaning process with the users to ensure they are in compliance with health standards. DOH will also conduct unannounced health inspections of the facility, and will present color-coded placards based on their compliance; a green card indicates no more than one critical violation, a yellow card indicates two or more violations and a red indicates immediate closure is needed because the establishment poses an imminent health hazard to the community. The facility manager indicated the importance of the responsibility him and the janitorial and maintenance staff have in ensuring the facility is in compliance on a daily basis; if the PGC kitchen fails to comply with DOH standards then all 92 businesses and users of the facility will be greatly affected.

According to the center’s executive director, Tin Myaing Thein, the reason for calling the PGC’s kitchen an “incubator kitchen” is “because, once the businesses can stand on their own two feet and have created a customer base, they usually move out” (LeRoux). This was the case for Tom Purdy, the owner of Taro Delights, which is a line of flavored taro dips and spreads. He initially started off at the PGC’s incubator kitchen, but now rents space at a facility owned by a friend, who also started at the PGC. When asked about the PGC kitchen, Purdy mentioned that “the rent is reasonable and you have the opportunity to meet a lot of different small-business owners in the same boat as you. You never know who will have an extra case of chopsticks or takeout containers that they’re willing to sell to you.” Many businesses that use the PGC incubator kitchen are those selling food at farmers markets, food trucks, gas stations, and convenient stores. Besides serving as a starting point for those interested in creating a food business as their primary source of income, it also provides support to those who just want a small side business. Myaing says “there’s one elderly woman who makes cookies on the side just to supplement her income. She doesn’t ever plan to open her own store or grow too big. She just wants to bake.”

7.0 RECOMMENDATIONS FOR UPGRADES AND EXPANSION OF THE KVCP

The recommendations and conceptual master plan expansion was developed based off of the rules and standards set under the FSMA, feedback received from stakeholders during the public outreach phase, and also from research and case studies of similar facilities or projects. The conceptual master plan was realized after analyzing the feedback received up to the first focus group meeting, and was then revised to reflect the additional feedback received after it was shared with stakeholders at the second focus group meeting. Requirements, benefits and estimated costs have been assessed for each additional amenity included in the conceptual master plan.

7.1 DEMOLITION OF EXISTING AGRICULTURAL WAREHOUSES

The existing KVCP site has two abandoned warehouse structures located east of the vacuum cooling and refrigeration warehouses near the entry to the driveway. These structures are only being used as a shelter for old and inoperable equipment, and to protect and store packing materials, wooden planks and other miscellaneous materials. To ensure the available land on the KVCP site is being used in the best and most efficient manner that suits the farmers' needs, it is recommended that the abandoned warehouse structures be demolished to create space for the master plan expansion.

Based on the year the warehouse structures were built (1968) and current observations, it is assumed that they contain lead-based paint and asbestos. Transite panels were used for the exterior of the structures, and it is an asbestos-containing material. With these assumptions, it is estimated that the cost for special handling of hazardous materials (for demolition) would cost approximately $150,000. Separately, the cost for demolition and disposal is estimated to be $300,000. Because this building has hazardous materials and poses a health risk to the KVCP users, it is recommended that the demolition and removal of the building be the first priority out of all of the following recommendations made in this section.

Consultation with the State Historic Preservation Division (SHPD) will be required prior to any demolition work, as the warehouse structure is over 50 years old and thus considered a historic property. Based off of a comment made by a focus group meeting attendee (from the DOA Hawaii Island), it is believed that the structure was originally located at Kawaihae Harbor and had been relocated to the KVCP site. Assuming that this relocation had occurred, the structure would have lost its historical integrity since the historic associations between property and location is destroyed. With this assumption, it is anticipated that only a one-time consultation is needed with SHPD before demolition work can be scheduled.

It is recommended to perform an environmental level II hazardous material sampling and analysis of the building. While no special demolition permits are required, toxicity characteristic leaching procedure (TCLP) tests will need to be conducted to determine whether the lead-based paint material must be disposed of at a landfill specifically approved for lead disposal, or if it can be disposed as construction and demolition debris. The environmental consultant would also be required to notify DOH of the hazardous material removal and demolition work due to the large quantity of material present. A work plan that includes specifications would need to be drafted

by the contractor and reviewed by an environmental consultant to ensure that all applicable controls are in place. It is estimated that the sampling and analysis work would take approximately eight weeks.

7.2 UPGRADES TO THE EXISTING KVCP FACILITY FOR FSMA COMPLIANCE

7.2.1 THE PRODUCE SAFETY RULE

While there are no specific processes or methods to meet the health and hygiene standards, minor upgrades to the KVCP facility could assist users in sustaining good hygienic practices to comply with the Produce Safety Rule. To prevent the contamination of covered produce, washing stations for hands and equipment should be provided at the KVCP. Currently, there are only two sinks at the KVCP; one is in the main room, and the other in the bathroom of the office building. There is also a water hose located on the east side of the warehouse. At minimum, there should be one handwashing station (with soap, running water, and adequate drying devices to dry hands) provided in the cooling plant warehouse where KVCP users can easily access the station in-between the handling and transportation of produce. Another washing station/area should be provided outside of the warehouse where users could wash tools, equipment, footwear, and/or clothing if needed to prevent potential contamination. The cost to install these additional washing stations is estimated to be $3,000.

Signs listing proper handwashing steps should also be posted near washing stations. According to the PSA Grower Training Course Handbook (PSA 16) necessary steps for proper handwashing include:

1. Wet hands with water
2. Apply soap and lather. Be sure to wash the front and backs of hands as well as in between the fingers. Rub hands together for at least 20 seconds.
3. Rinse hands thoroughly with clean water.
4. Dry with a paper towel (turn off faucet with used towel).
5. Throw the paper towel in a trash can.

The signs should also list instances when handwashing is necessary, such as: before starting work; before putting on gloves; after using the toilet; upon return to the work station after breaks or other absence; as soon as practical after touching animals or animal waste; and at any other time workers hands may have become contaminated (PSA 15).

To prevent the contamination of produce through direct or indirect contact with animals, the entrance to the cooling plant warehouse should be better secured and covered to prevent outside animals and bugs, such as rats, birds, mongoose, cockroaches, etc. from entering the facility. Currently, the main entrances to the warehouse are through two roll-up doors. These doors remain open while the facility is being used, as vehicles drive up to the doors to load and unload produce directly to and from the warehouse; allowing easy access for animals and bugs to enter too. During the second focus group meeting a KVCC member stated that a FSMA expert had previously inspected the KVCP and had also noted that this same issue would need to be addressed for the facility to be in compliance. The cost to install a secured/covered entry is estimated to be $100,000.

Similarly, any gaps in the refrigeration areas should be sealed as this will allow pests to enter the facility, and will also cause more electricity to be consumed. The cost to seal the gaps in refrigeration is estimated to be $20,000. A pest control company should be contracted to perform inspection and control services on a regular basis. It is estimated that pest control services could cost approximately $600 a year.

To address health standards, the KVCP should have potable drinking water easily available to the users. Currently, the sink in the main office is the only source of drinking water available. A water dispenser or water fountain should be provided in the cooling plant warehouse or the office building to reduce the risk of dehydration and heat exhaustion in users of the KVCP. If a water dispenser is installed, single use cups should also be provided so that users do not share cups or containers. A water dispenser is estimated to cost $50 a month. The Hawaii County Department of Water has confirmed that additional potable water is available, should the KVCC wish to add more washing stations and water fountains.

7.2.2 THE PREVENTATIVE CONTROLS FOR HUMAN FOOD RULE

The KVCP is currently operated by the members of the KVCC and has no employee or staff managing the facility. If applicable, a manager may be required to comply with the Preventative Controls for Human Food rule. Based on the current usage of the facility, the facility manager could be a part-time employee; should the usage and amount of users increase a full-time employee may be recommended. The facility manager should be someone outside of the KVCC and should be fully knowledgeable and experienced in agricultural practices. They should also be required to have taken the PSA's Grower Training course and Food Safety Preventive Controls Alliance's (FSPCA) Preventive Controls for Human Food Course. FSPCA's Preventive Controls for Human Food Course was recognized by the FDA as the "standardized curriculum" and states that "successfully completing this course is one way to meet the requirements for a "preventive controls qualified individual"" (FSPCA). Training course schedules and resources are available on PSA and FSPCA's websites.

The primary responsibilities of the facility manager will be to register or renew the KVCP facility with the FDA, as needed, and also create a food safety plan that should actively be enforced on the activities and operations at the KVCP. A facility is required to submit a registration to the FDA only once, and must renew the registration every other year during the period beginning on October 1st and ending on December 31st of each even-numbered year (Office of Compliance). To register the KVCP the facility manager must fill out a Form FDA 3537, which is available online or in paper form; a request must be made to FDA via mail or phone to obtain a paper copy. Registration, registration renewals or updates to registration are free of costs. Beginning January 4, 2020, registrations, registration renewals, updates, or cancellations must be made to the FDA electronically, unless the FDA has granted a waiver under 21 CFR 1.245 (Office of Compliance). By completing this registration, the facility will be subject to inspection by the FDA, as permitted by the FD&C Act.

Once registration or renewal of registration has occurred, a food safety plan must be drafted by the facility manager. According to FDA's website, the food safety plan must contain the following:

1. Hazard analysis: hazard identification, which must consider known or reasonably foreseeable biological, chemical, and physical hazards. If the hazard analysis reveals one or more hazards that require a preventive control, the facility must have and implement written preventive controls for the identified hazards.
2. Preventive controls: must be written and implemented to ensure that any hazards requiring a preventive control will be significantly minimized or prevented and help ensure that the food is not adulterated. The rule includes the following preventive controls:
    a. Process controls: includes procedures that ensure the control parameters are met. It can include operations such as cooking, refrigerating, and acidifying foods.
    b. Food allergen controls: written procedures the facility must have and implement to control allergen cross-contact and ensure allergens are appropriately listed on the labels of packaged food products.
    c. Sanitation controls: procedures, practices, and processes to ensure that the facility is maintained in a sanitary condition to minimize or prevent hazards such as environmental pathogens, hazards from employees handling food, and food allergen hazards.
    d. Other controls: controls that are not described in the above but are necessary to ensure that a hazard requiring a preventive control will be significantly minimized or prevented.
3. Oversight and management of preventive controls: Once a facility has identified a preventive control for a hazard, the facility must make sure that the controls are being met by doing the following:
    a. Monitoring: these procedures are designed to provide assurance that preventive controls are consistently performed. Monitoring is conducted as appropriate to the preventive control and must be documented.
    b. Corrections: these are steps taken, in a timely manner, to identify and correct a minor, isolated problem that occurs during food production.
    c. Corrective actions: includes actions to identify and correct a problem implementing a preventive control, reduce the likelihood the problem will recur, evaluate affected food for safety, and prevent that food from entering commerce if you cannot ensure that the affected food is not adulterated. Corrective actions must be documented with records.
    d. Verification: these activities are required to ensure that preventive controls are consistently implemented and effective in minimizing hazards. Includes reviewing records to ensure that monitoring and corrective actions (if necessary) are being conducted. Verification activities must be documented.
4. Supply chain program: manufacturers must have and implement a risk-based supply chain program if the hazard analysis identifies a hazard that (1) requires a preventive control and (2) the control will be applied in the facility's supply chain.
5. Recall plan: if the hazard analysis identifies a hazard requiring a preventive control the facility must have a written recall plan that describes the procedures to perform a recall of the product. The recall plan must include procedures to notify consignees, to notify the public when necessary, to conduct effectiveness checks and to appropriately dispose of recalled product. (Final Rule on Preventive Controls)

The facility manager, with input and feedback from the KVCC, should draft a food safety plan that will address all of the above mentioned requirements for all activities and operations at the

KVCP. The manager should inform any new KVCC members of the food safety plan and the controls and processes put in place to comply with the Preventative Controls for Human Food rule. If any new amenities or processes are added, the facility manager should update the food safety plan and inform and train the KVCC members as necessary for compliance.

At minimum, the KVCC will need to make the aforementioned upgrades to the facility to be in compliance with the FSMA. Should funding be unavailable for the facility upgrades and incorporation of a part-time facility manager, the KVCC should consider raising their usage rates to generate more revenue from the existing and future users. Other sources of funding may be available through the assistance of The Kohala Center's Rural and Cooperative Business Development Services program. This program aids cooperatives in researching and applying for loans and grants that they are eligible for.

7.3 CERTIFIED COMMERCIAL KITCHEN

Based off of the feedback collected from the mail-out surveys and first focus group meeting, a certified commercial kitchen was the most desired amenity that stakeholders indicated they would be interested in using at the KVCP. They also indicated that they'd like the kitchen to be able to provide activities such as canning, chopping, prepping, dehydrating, and hosting cooking classes. Having a commercial kitchen would allow users to be able to explore new ventures to expand their businesses; from creating value-added agricultural products, starting a catering business, hosting cooking classes, and more. It would also address any market or consumer health and safety concerns since the produce and/or products will be processed in a certified kitchen.

The agricultural census data collected in Section 3 shows that there has been a decrease in net cash farm income, and an increase in the estimated market value of land, buildings, machinery, and equipment. This may show that the increase in costs to purchase land, equipment and machinery could be a factor in the decrease in farm income from 2002 to 2012. By providing amenities like a certified commercial kitchen at the KVCP, farmers can take advantage of the shared kitchen while avoiding the upfront large capital investment of purchasing the equipment by themselves. Costs for maintenance and repairs would also be shared amongst the users, taking the burden off of individual farmers.

Although the census data also shows a decrease in farms, the desire and market for fresh produce and local products has been on the rise. There are currently five farmers markets that operate in Waimea alone, with four operating on Saturdays and one operating on Wednesday. The products primarily being sold at these farmers markets are value-added agricultural products, which would require that the products be prepared in a certified commercial kitchen, according to DOH requirements. Access to certified commercial kitchen spaces to rent is low in Waimea.

A few stakeholders mentioned that they currently use certified commercial kitchens at restaurants that rent them out for use, but it is inconvenient because of the limited time periods it is made available to the public. It is important for the kitchen at the KVCP to be accessible during non-working/farming hours, and to also have an organized scheduling system so users have the ability to easily reserve the kitchen for designated periods of time.

Through the case studies discussed in the previous section, it is apparent at how much value commercial kitchens can provide to the community. Since the WRFH and PGC's kitchens are

able to provide facilities and commercial-grade amenities at an affordable rental price, entrepreneurs, food truck business owners, farmers market tenants and more are able to use the kitchen to start and support their businesses. Besides providing the facilities and amenities, the kitchen also ensures safety and health standards are implemented during production activities through permit requirements. It supports small local businesses while also providing the fresh and local food products that the community desires.

7.3.1 CONCEPTUAL LAYOUT AND EQUIPMENT

Similar to the PGC's incubator kitchen layout, the proposed commercial kitchen at the KVCP would offer three different types of kitchens to rent; one (1) baking kitchen, one (1) prep kitchen and two (2) cooking kitchens. The baking and prep kitchens will be 300 SF in size, while the cooking kitchens will be 500 SF in size. The conceptual layout for the commercial kitchen and its potential locations on the site is included in Appendix G. The proposed equipment for each kitchen type is listed in Tables 7 - 9, along with their estimated costs. Miscellaneous equipment that would be located in the common area is listed separately in Table 10. Equipment costs were provided by a restaurant equipment and supplies company located in Hawai'i.

Table 7: BAKING KITCHEN EQUIPMENT LIST

Baking Kitchen (300 SF)		
Qty	**Equipment**	**Price**
1	Planetary Mixer	$ 12,400
1	One (1) Compartment Sink	$ 2,200
2	Work Table, Stainless Steel Top	$ 1,800
5	Shelving, Wall-Mounted	$ 1,500
1	Exhaust Hood with Stainless Steel Wall Flashing	$ 12,500
1	Convection Oven, Gas	$ 15,300
1	Work Table, Stainless Steel Top	$ 800
1	Microwave Oven	$ 1,500
1	Reach-in Refrigerator	$ 10,100
1	Three (3) Compartment Sink	$ 4,200
1	Fire Suppression System	$ 5,000
	SUBTOTAL	**$ 67,300**
	DELIVERY & INSTALL	**15%**
	TAX	**4.712%**
	TOTAL	**$ 81,042**

Table 8: PREP KITCHEN EQUIPMENT LIST

Prep Kitchen (300 SF)		
Qty	**Equipment**	**Price**
1	One (1) Compartment Sink	$ 2,200
2	Work Table, Stainless Steel Top	$ 1,800
5	Shelving, Wall-Mounted	$ 1,500
1	Convection Oven, Gas	$ 15,300
2	Work Table, Stainless Steel Top	$ 1,800
1	Microwave Oven	$ 1,500
1	Reach-in Refrigerator	$ 10,100
1	Three (3) Compartment Sink	$ 4,200
	SUBTOTAL	**$ 38,400**
	DELIVERY & INSTALL	**15%**
	TAX	**4.712%**
	TOTAL	**$ 46,241**

Table 9: COOKING KITCHEN EQUIPMENT

Cooking Kitchen (500 SF x 2)		
Qty	**Equipment**	**Price**
2	Work Table, Stainless Steel Top	$ 1,800
5	Shelving, Wall-Mounted	$ 1,500
1	Exhaust Hood with Stainless Steel Wall Flashing	$ 60,000
1	Kettle, Gas, Countertop	$ 19,400
2	Range, 24", 4 Open Burners	$ 8,600
1	Gas Countertop Griddle	$ 4,200
1	One (1) Compartment Sink	$ 2,200
1	Work Table, Stainless Steel Top	$ 900
1	Convection Oven, Gas	$ 15,300
2	Work Table, Stainless Steel Top	$ 1,800
1	Reach-in Refrigerator and Freezer	$ 20,000
5	Shelving, Wall-Mounted	$ 1,500
1	Work Table, Stainless Steel Top	$ 800
1	Microwave Oven	$ 1,500
1	Three (3) Compartment Sink	$ 4,200
1	Fire Suppression System	$ 10,000
	SUBTOTAL (for one)	**$ 153,700**
	SUBTOTAL (for two)	**$ 307,400**
	DELIVERY & INSTALL	**15%**
	TAX	**4.712%**
	TOTAL (for two)	**$ 370,167**

Table 10: MISCELLANEOUS EQUIPMENT

Miscellaneous Equipment		
Qty	**Equipment**	**Price**
4	Dry Storage	$ 800
1	Cold Storage (Refrigeration and Freezer)	$ 45,000
1	Plumbing and Regulator for Gas Tank **(No Installation Fee)**	$ 15,000
	SUBTOTAL	**$ 60,800**
	DELIVERY & INSTALL	**15%**
	TAX	**4.712%**
	TOTAL	**$ 70,859**

A factor of 15% was used to calculate the delivery and installation of all of the equipment. Including State tax (4.712%), the total cost for the kitchen equipment, including delivery and installation, would be approximately $568,309.

Another option to create a commercial kitchen would be to use a portable modular building. The cost for a modular kitchen would be approximately $295 per square foot of space. This price includes the modular building, shipping and the above listed equipment. In comparison, a permanent structure is estimated to cost $620,000, which would include the design and construction of the building. Infrastructure work would still need to be done to accommodate the modular building. As the demand for kitchen space grows, more space could be added to the modular unit to meet the demand. The modular unit offers more flexibility than a permanent structure as it can be adjusted according to the amount of usage of the kitchen.

7.3.2 INFRASTRUCTURE

To upgrade the existing site and to accommodate the addition of the commercial kitchen, the following assumptions and recommendations were made to create cost estimates for the infrastructure improvements. A summary of the cost for infrastructure improvements is included in Table 11.

Site Demolition and Erosion Control

- Demolish existing gravel/asphalt concrete pavement for the new commercial kitchen
- Assumed silt fence for the perimeter of the commercial kitchen
- Assumed one (1) construction entrance, unless project is phased or there is more than one (1) entrance/exit

Site Work

- Embankment and excavation - no topographic survey was done, so the amount of grading is not known at this time, and quantity included in calculations is a placeholder. Quantity can be refined should a topographic survey be conducted
- Assumed structural fill is needed for new commercial kitchen at 3’ over excavation depth. This can be confirmed should a geotechnical investigation be conducted

- Cold planing to remove top 3" of existing asphalt parking lot. This quantity and conditions can be confirmed should geotechnical investigation and civil observations are conducted
- Repaving of existing parking lot at 3". This quantity can be confirmed should a geotechnical investigation be conducted and a pavement recommendation report is completed
- Assuming the leach field goes under the parking lot, the entire pavement section will need to be removed (rather than just resurfacing). Therefore, base course will need to be put back after the leach field is installed
    - Quantity (depth of aggregate base course) can be confirmed should a geotechnical investigation be conducted and a pavement recommendation report is completed
- Assumed traffic control for any work at driveway connection needed along Māmalahoa Highway

Utilities – Water (calculations and further cost breakdowns can be found in Appendix H)

- Assumed new 1" copper lateral and meter off of main line to the new commercial kitchen (price difference between 1" or 2" is nominal). It is unknown if there is an existing lateral and meter to be re-used
- Assumed external hose bibbs, one (1) on each side of the building, except on the east side (side near the road) of the building where there is only landscaping
- Assumed new fireline and fire hydrant off of main line to fire protection for new commercial kitchen. Sizing not known at this time until design develops and fire requirements are known. The cost assumes a 6" fire line
- Assumed separate backflow prevention devices

Utilities – Sewer (calculations and further cost breakdowns can be found in Appendix H)

- Assumed a 4" PVC sewerline, which is a typical size for commercial sewer
- Assumed cleanout to grade for any bends in the sewerline. This is a placeholder as routing of sewerline and leach field are not known
- Grease trap interceptor
- Leach Field
    - Includes area of aggregate and any filter fabric as needed
    - A low percolation rate was assumed. Percolation rate can be confirmed should a geotechnical investigation be conducted. The percolation rate impacts square footage (and subsequently the number of chambers needed)
    - Distribution Box and Inspection Pipe are typical parts of the leach field system
- Since the topography is not known, and the leach field needs to be located in a flat area, it was assumed that the leach field would be placed in the parking lot. Therefore, H_20 chambers need to be traffic rated (it is typically 3-4 times more costly than non-traffic rated chambers)

Utilities – Drainage

- Assumed a 4" PVC drainline, which is the typical drain pipe sizing for downspout connections
- Assumed a 6" PVC drainline, which is the typical drain pipe sizing for inlet to drywell applications

- Assumed shallow drywells – drainage calculations have not been performed
    - It is unclear if any drainage system currently exists and where the water flows. Therefore, a provision for one (1) additional drywell has been added as a placeholder in the event that any drainage or flooding issues need to be addressed as design progresses

Electricity

The construction cost associated with the commercial kitchen would only be for the underground conduit infrastructure.

Propane Gas

The stove tops, griddles, ovens, and gas burners are proposed to be powered by propane. The most cost effective means to provide propane is by installation of a bulk propane tank (approximately 500 gallons) installed on a concrete pad that will be adjacent to the kitchen. Typically, the gas company would provide the tank at no charge, while the construction of a concrete pad and associated piping to the building would be included in the overall construction of the project (estimated construction cost is $50,000). The gas company would recoup their capital investment of the bulk tank in the cost of the propane, which is estimated to be approximately $9 per gallon.

Table 11: SUMMARY OF INFRASTRUCTURE IMPROVEMENT COSTS

Improvements	Estimated Cost
Site Demolition and Erosion Control	$2,900
Site Work	$357,166
Utilities – Water	$37,770
Utilities – Sewer	$88,400
Utilities – Drainage	$23,800
Electricity (for underground conduit infrastructure)	$80,000
Propane gas (construction of concrete pad and associated piping to the building)	$50,000
TOTAL	**$640,036**

7.3.3 REQUIREMENTS FOR USERS

In order to ensure safety and security of the KVCP and the public, the following will be required of any potential commercial kitchen users:

1. **Proof of Citizenship** (Hawai‘i State ID; Birth Certificate; Naturalization Records; Alien Registration Card; U.S. or Foreign Passport)
2. **Proof of Residence** (Driver’s License/State ID; Recent Postmarked Mail; Rental Agreement/Utility Bill)
3. **General Excise Tax License** (To apply for this see Form BB-1 State of Hawai‘i Basic Business Application)
4. **Taxpayer Identification Number** (Social Security Number of Federal EIN)
5. **TB Clearance** (For any/all persons handling food)
6. **General Business Liability Insurance Policy** (with at least $1,000,000 minimum coverage – the KVCP would need to be listed on policy as an additional insured)
7. **ServSafe Food Handlers Certification** (As mandated by the Department of Health, it requires at least one employee present at every food establishment during normal hours to have a formal food handlers training level certification)
8. **Temporary or Permanent Food License/Permit** (Issued by the Department of Health – Sanitation Division)

The list of requirements is modeled after the PGC’s incubator kitchen user requirements, which is included in Appendix F.

7.3.4 MONTHLY COST SCENARIO

To assess the feasibility of including a commercial kitchen at the KVCP, the current revenues and expenditures of the existing operations were analyzed. Expense and revenue reports from FY13 to FY18 were provided by the KVCP’s bookkeeper and is included in Appendix I. From FY13 to FY16 expense and revenue data was provided for every month, but from FY17 to FY18 data was recorded on a quarterly basis. The data from FY18 will be used as a model for the monthly cost scenario, as it is the most current. FY18 data is presented in Tables 11 - 13.

Table 12: FY18 Vacuum Cooling and Refrigeration Expenses

Operating Expenses	Quarter Ended 8/31/17	Quarter Ended 11/30/17	Quarter Ended 2/28/18	Quarter Ended 5/31/18
Utilities	$ 8,046	$ 8,898	$ 7,924	$ 9,595
Depreciation	$ 1,550	$ 1,551	$ 1,551	$ 1,551
Professional Fees	$ 1,734	$ 900	$ 937	$ 1,875
Office	$ 425	$ 134	$ 79	$ 30
Bookkeeping Service	$ 900	$ 900	$ 900	$ 900
Real Property Tax	$ 2,024		$ 2,024	
Rent and Lease Expense	$ 639	$ 638	$ 638	$ 638
Insurance	$ 416	$ 416	$ 909	$ 453
Warehouse Supplies		$ 40		
Propane	$ 934	$ 436	$ 659	$ 589
Repairs and Maintenance (Vacuum Cooling Unit)				$ 436
Repairs and Maintenance (Other)		$ 376	$ 2,258	$ 2,685
TOTAL OPERATING EXPENSES	**$ 16,668**	**$ 14,289**	**$ 17,879**	**$ 18,752**
AVERAGE MONTHLY EXPENSES (BASED ON QUARTER TOTALS)	**$ 5,556**	**$ 4,763**	**$ 5,960**	**$ 6,251**

Table 13: FY18 Vacuum Cooling and Refrigeration Revenues

Revenues	Quarter Ended 8/31/17	Quarter Ended 11/30/17	Quarter Ended 2/28/18	Quarter Ended 5/31/18
Vacuum Cooling Service	$ 5,832	$ 4,867	$ 5,653	$ 7,008
Refrigeration Service	$ 3,440	$ 3,198	$ 2,924	$ 4,781
Pallet Charges	$ 1,372	$ 1,234	$ 1,306	$ 1,296
R&M Handling Fee	$ 509	$ 445	$ 464	$ 651
User Fee	$ 200	$ 190	$ 185	$ 175
Interest Income	$ 149	$ 139	$ 166	$ 157
Dock Fee		$ 50	$ 50	$ 50
TOTAL REVENUES	**$ 11,502**	**$ 10,123**	**$ 10,748**	**$ 14,118**
AVERAGE MONTHLY REVENUE (BASED ON QUARTER TOTALS)	**$ 3,834**	**$ 3,374**	**$ 3,583**	**$ 4,706**

Table 14: FY18 Net Income

NET INCOME (LOSS)	**$ (5,166)**	**$ (4,166)**	**$ (7,131)**	**$ (4,634)**

The total expenses for FY18 was $67,588 and the calculated average monthly expense was $5,632. For revenue, the total for FY18 was $46,491 and the average monthly revenue was $3,874.

To calculate the monthly cost scenario, all expense and revenue items that is expected to be generated from the commercial kitchen will be listed along with their estimated values. In addition, the average monthly calculations based on data from FY18 will be added to the calculation. It is assumed that the kitchen will be open from 5AM – 10PM (17 hours) for 7 days a week.

Table 15: ESTIMATED MONTHLY EXPENSE SCENARIO

Expenses	Use	Rate	Total with Estimated Operations	Monthly Total
All Gas Powered Equipment	455,000 BTU/hour[1] or 4.97 gal/hour	$9/gal	$358 for 8 hours/day[2]	$ 10,740
Total Electricity Costs	24 hrs/7 days a week	$0.30/kw/hr	5,000 kw/hr	$1,500
Total Water Costs	----	----	----	$400
KVCP Facility Manager	1 full-time employee	$90,000/year (includes fringe benefits)		$7,500
KVCP FY18 Average Expenses				$ 5,632
TOTAL				**$ 25,772**

[1]Assumes all gas-powered equipment uses 65,000 BTU/hour
[2]Assumes gas-powered equipment will be in operation for half of the time the kitchen is open

Table 16: ESTIMATED MONTHLY REVENUE SCENARIO

Revenues	Use	Rate	Total with Estimated # of Users	Total with Estimated Full Operations (17 hrs/day)	Monthly Total
Revenue from Dry Storage	12 months	$80/month	$1,200		$ 1,200
Revenue from Cold Storage	12 months	$100/month	$1,500		$ 1,500
Revenue from Frozen Storage	12 months	$100/month	$1,500		$ 1,500
Estimated Number of Users	15				
Usage Fee	4 kitchens	$60/hour		$ 4,080	$122,400
Membership Fee	15 members	$100/user			$ 1,500
KVCP FY18 Average Revenue					$ 3,874
TOTAL					**$131,974**

7.3.5 KVCP FACILITY AND COMMERCIAL KITCHEN MANAGER

Should a commercial kitchen be added to the KVCP, the facility manager that was previously recommended in section 7.2.2 should be maintained as a full-time employee. As mentioned in section 7.2.2, a facility manager would assist in ensuring the KVCP's existing operations are in compliance with the FSMA, as well as acquiring additional responsibilities that will come with the commercial kitchen. It is recommended that the facility manager be someone who is not a part of the KVCC. Minimum qualifications for the facility manager should be:

1. PSA Grower Training Course completion
2. FSPCA Preventive Controls for Human Food Course completion
3. ServSafe Food Manager Certification
4. Agricultural/farming experience (minimum of five years)
5. Business management experience (minimum of five years)

The following is a list of the primary responsibilities that the KVCP facility manager would have:

1. Bookkeeping to include billings, accounting, banking, etc.
2. FDA registration renewal and audit preparation
3. Drafting and enforcement of the facility's Food Safety Plan
4. Record-keeping (vacuum cooling and refrigeration usage, commercial kitchen usage, repairs/maintenance, equipment cleaning, etc.)
5. Scheduling of commercial kitchen usage (and vacuum cooling, if needed)
6. Pest control services (contracting and scheduling routine services)
7. Equipment and facility repairs and maintenance (contracting and scheduling routine maintenance services and repairs when necessary)
8. Membership management and solicitation

9. Grant-writing for facility and/or co-op development

The facility manager should also attend the monthly KVCC meetings to hear any feedback and recommendations that the members may have. Any plans for new activities/operations, equipment repairs and maintenance and addition of new members should be coordinated with the KVCC prior to any action, unless otherwise noted by the members. As shown in Table 15, it is estimated that the cost to employ a full-time facility manager would be $90,000 a year, which includes fringe benefits.

7.4 PERMITS AND COMPLIANCE WITH FSMA

During the planning, design and construction phases for the buildout of the commercial kitchen it is anticipated that the permits and approvals listed below will need to be obtained. The cost for the planning and permitting phase is estimated to be $100,000. Figure 8 illustrates the sequencing of when the process for each permit or approval can occur during the three phases.

- Environmental Assessment (EA)

An EA will need to be completed for the addition of the commercial kitchen. The approving agency would be DOA, and the estimated duration would be nine months.

- Plan Approval

The Plan Approval process could start during the preliminary/schematic stage of design, and would be reviewed by the County of Hawai‘i’s (COH) Planning Department. The estimated duration would be 3 – 4 months.

- Demolition & Building Permit

The Demolition & Building Permit could be submitted under one permit, and would be reviewed by the COH Department of Public Works (DPW), Building Division. The estimated duration would be 6 months to 1 year.

- Grading Permit

The Grading Permit process could be done concurrently with the Demolition & Building Permit, and would be reviewed by the State’s Department of Land and Natural Resources (DLNR), SHPD, the COH Planning Department, and COH DPW, Engineering Division. The estimated duration would be four months.

- National Pollution Discharge Elimination System (NPDES) Permit

The NPDES permit would be reviewed by the State’s Department of Health, Clean Water Branch. The estimated duration would be 3 – 4 months.

- Hawai‘i Electric Light Company (HELCO) Approval

Approval of service request for new service drops would be reviewed by HELCO, and the estimated duration would be two months.

- Disability and Communication Access Board (DCAB)

The estimated duration for DCAB’s review and approval of the plans would be about three months.

- DPW Approval for connection to Māmalahoa Highway

The approval for connection to Māmalahoa Highway would be from DPW's Engineering Division, and the estimated duration would be three months.

- DOH Wastewater System Approval

The approval for an Individual Wastewater System (IWS) or to connect to the Waimea Wastewater Company's system (should it be made available) would be from DOH's Safe Drinking Water Branch or the Waimea Wastewater Company. The estimated duration would be 3 – 4 months.

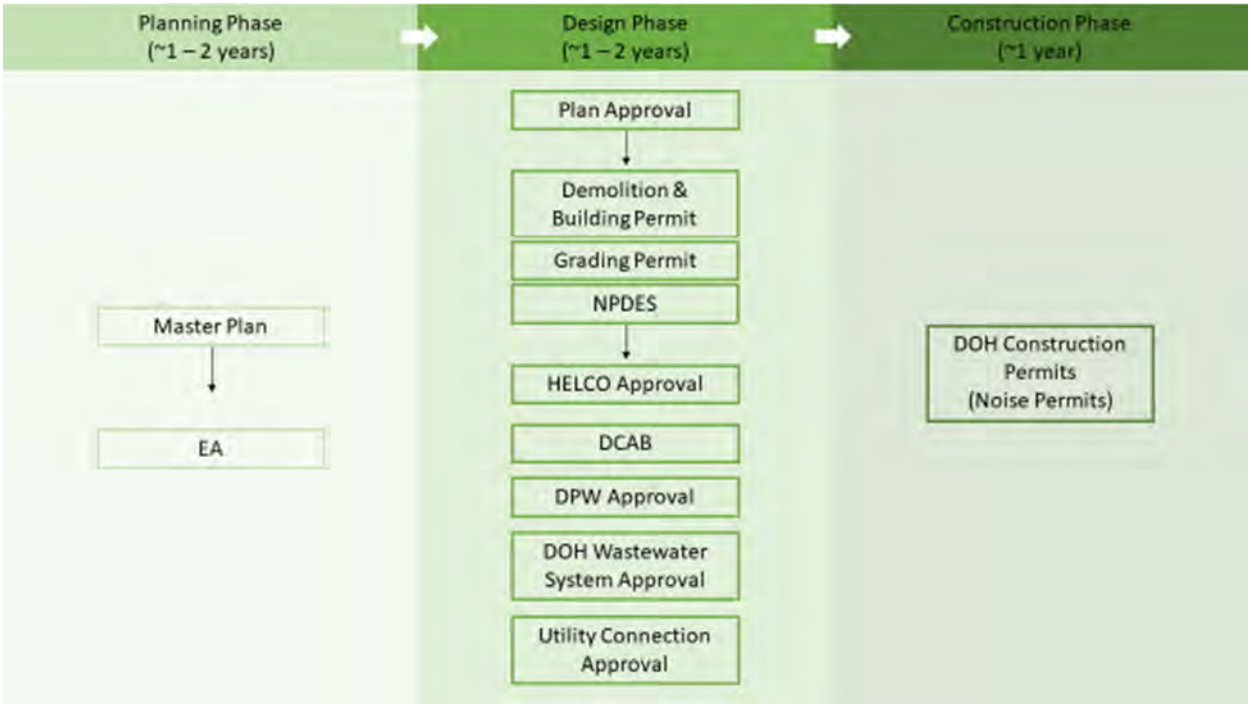
- Utility Connection Approvals

COH Department of Water Supply (DWS) would provide the approval for utility connections, and the estimated duration would be 3 – 4 months.

- Noise Permit

The Noise Permit would be approved by the DOH Indoor and Radiological Health Branch, and the estimated duration would be 1 – 2 months.

Figure 8: SEQUENCING OF PERMITS AND APPROVALS FOR THE CONSTRUCTION OF THE COMMERCIAL KITCHEN



Prior to demolition of the abandoned warehouse consultation with SHPD is required since the warehouse is over 50 years old; as previously discussed in section 7.1. For the hazardous material handling for the demolition of the abandoned warehouse no special permits are anticipated, however the landfill where the building materials will be disposed of needs to be

approved for lead disposal, unless a toxicity characteristic leaching procedure (TCLP) test shows that it can be disposed of with construction and demolition debris. Notification to DOH must also be made prior to the removal/demolition of suspect materials. A work plan and specifications will need to be generated by the contractor prior to removal/demolition to ensure all the applicable controls are in place.

The Preventative Controls for Human Food rule of FSMA requires that "food facilities that are required to register with section 415 of the Food, Drug, & Cosmetic Act (FD&C Act) must comply with the requirements for risk-based preventive controls mandated by the FDA FSMA as well as the modernized Current Good Manufacturing Practices (CGMPs) of this rule (unless an exemption applies)" (Final Rule on Preventive Controls). Should the KVCP, along with the addition of the commercial kitchen, be considered food facilities that manufactures, processes, packs or holds food, as defined in 21 CFR 1.227, for human consumption, then it must be registered with the FDA. Renewal of registration occurs every other year during the period beginning on October 1st and ending on December 31st of each even-numbered year. Beginning January 4, 2020, registrations, registration renewals, updates, or cancellations must be made to the FDA electronically, unless the facilities are granted a waiver by the FDA under 21 CFR 1.245. By completion of registration, the facilities are subject to inspection by the FDA.

Besides registering with the FDA, the commercial kitchen must also have a food safety plan in order to comply with the Preventative Controls for Human Food rule under FSMA. Requirements for the food safety plan are listed under Section 7.2.2.

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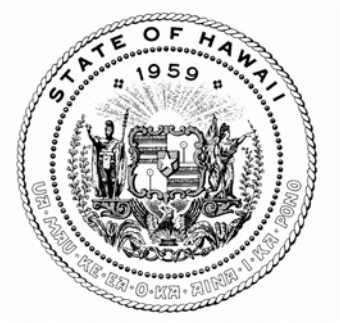
Appendix A

REPORT TO THE TWENTY-FIFTH LEGISLATURE
2010 REGULAR SESSION

DEVELOPMENT OF A PLAN TO OPTIMIZE THE USE OF THE KAMUELA VACUUM COOLING PLANT

IN RESPONSE TO HOUSE CONCURRENT RESOLUTION NO. 113
2009 LEGISLATIVE SESSION



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE

DECEMBER 2009

Background

House Concurrent Resolution 113 was introduced by Representative Cindy Evans and stated in part:

WHEREAS, the Kamuela Vacuum Cooling Plant on the island of Hawaii is operated by the Kamuela Farmers Cooperative, which consists of sixty members, and processes approximately seven million pounds of produce annually, while also providing storage and limited processing services; and

WHEREAS, the Kamuela Vacuum Cooling Plant is nearly thirty years old and has sustained severe wind damage that led to its roof being repaired in 2008; the Plant's maintenance program crippled by energy costs; and

WHEREAS, a comprehensive plan is needed to ensure that the Kamuela Vacuum Cooling Plant is used in the most efficient and effective manner possible; now, therefore,

BE IT RESOLVED by the House of Representatives of the Twenty-fifth Legislature of the State of Hawaii, Regular Session of 2009, the Senate concurring, that the Department of Agriculture is requested to consult with the Lalamilo Farmers Cooperative and the Big Island Farm Bureau to develop a plan to optimize the use of the Kamuela Vacuum Cooling Plant; and

BE IT FURTHER RESOLVED that the Legislature requests that the plan address, at a minimum, the following items of concern:

(1) The needs of farmers and how the Kamuela Vacuum Cooling Plant can best address these needs;

(2) The potential of the Kamuela Vacuum Cooling Plant to support farmers, assist in the diversification of agriculture, provide for value-added products, and support economies of scale; and

(3) An evaluation of the costs to operate, repair, and upgrade the Kamuela Vacuum Cooling Plant to meet the needs and achieve the goals specified in items (1) and (2), above.

There were no funds appropriated to develop this plan and therefore the Hawaii Department of Agriculture (HDOA) had to assign a staff member from Hilo and depend on the cooperation of the Lalamilo Farmers and members of the Big Island Farm Bureau to address the three items of concern. Concern number 1 has been partially addressed in this report. Concerns 2 and 3 were beyond the capability of the small working group to properly address. Without a formal economic benefit study and engineering assessment, any estimate of the potential of the Cooling Plant or the costs involved to operate, repair and upgrade the Cooling Plant would be unreliable.

The Needs of Farmers and How the Kamuela Vacuum Cooling Plant Can Best Address These Needs

The Kamuela Vacuum Cooling Plant operates five days per week. Approximately 7,000,000 pounds of produce pass through the plant annually. The building is at least 30 years old, and in need of an upgrade and repairs, specifically, the vacuum pump and the roof. It also serves as a central meeting place for the Waimea farming community.

HDOA receives $2,327.04 in annual rent from the Kamuela Farmers Cooperative. Twenty percent of this amount is paid to OHA and the rest goes into a trust fund pending a legal decision on making additional payments to OHA or for transfer to the general fund.

The regular meeting of the Kamuela Farmers Cooperative was held on June 18, 2009. All of the sixty members of the Cooperative were invited. The primary agenda item was to discuss areas in which the Cooling Plant could be made to operate in the most efficient and effective manner possible. Attendees included: Joyce Wong (HDOA), and Robert Nakamoto, Chris Robb, Wendell Kuwano, Curtis Yamamoto and Larry Nakamoto, members of the Cooling Plant Cooperative. The repairs and upgrades suggested here are essential to the vacuum cooling plant's future survival and success.

The main points of concern were:

Main Building: A portion of the roof is rotting. Farmers are concerned with the electricity being severed should high winds hit Kamuela. HELCO's power line is attached to the Hilo-side corner of the roof which happens to be that portion that is deteriorating. The result of such a power outage would mean spoilage of products.

Aging Equipment: There is a Freon leak in the vacuum cooler due to holes in the chambers and therefore, is not working to its full capacity causing the electricity cost to escalate. Additionally, the vacuum pumps are not working efficiently. There is currently one compressor that works. According to the technician that services the plant, the one compressor is sufficient.

Loading Dock: The Young Brothers' refrigerated container hooks up at the loading dock. One of the three-prong electrical plugs is not working and is in need of repair.

Main Building Floor: The asphalt flooring of the main building is deteriorating and needs to be resurfaced. The farmers are unable to hose the area down for fear of further degrading the asphalt. The deteriorated asphalt also presents a safety issue when forklifts or other machinery are operating in the area.

Electricity Costs: It costs $10,000 per month to operate the Kamuela Vacuum Cooling Plant, half of which is used to pay for electricity. The repairs previously mentioned to the roof, vacuum cooler compressor and loading dock areas would contribute greatly to minimizing potential hazards, lost product or production, and provide a stable base for

the Co-op to operate. Another suggestion was made to install solar panels or a photovoltaic system on the main building which would help to reduce the cost of electricity.

Unless the cooling and electrical systems can be repaired or up-graded, expansion and diversification of the overall operation of the cooling plant cannot be achieved. Further, the introduction of new commodities will be difficult and the currently limited processing/packing operations will remain limited.

Other Comments Made by the Farmers

- Young Brothers, Inc. is used to truck the farmers' products to Kawaihae Harbor. The farmers transfer their products from the cooler in the main building to the loading dock area. They load the Young Brothers' container the night before for transport to the harbor the following day. The system seems to be working for the Kamuela Vacuum Cooling Plant Co-op members.

- Farmers commented that some examples of enhancing the farmers' incomes might be through achieving greater efficiency of resource use, including land, water and fertilizer, and developing new ways of working with existing agricultural commodities.

Conclusions and Recommendations:

Given the current economic climate, it is unrealistic to expect that legislative funds will be made available immediately to undertake the improvements. A more practical approach would be to share this report with the Cooperative membership and expand the participation in the planning process beyond the five farmers and include as many of the 60 farmers who comprise the membership. The Cooperative should consider obtaining assistance from a foundation or community based organization to apply for grants to continue the planning process and undertake the economic and engineering studies needed. Upon completion of the studies, the Cooperative would then be in a better position to approach the legislature for funding assistance for capital improvements so that the Kamuela Vacuum Cooling Plant can continue to provide assistance to the local farming community.

Appendix B

September 10, 2018 SSFM 2017_141.000

State of Hawai‘i, Department of Agriculture (DOA)
Kamuela Vacuum Cooling Plant – Master Plan Feasibility Study
Focus Group Meeting #1

MEETING SUMMARY

Date Held: August 7, 2018
Time: 5:00 – 7:00 PM
Location: Department of Hawaiian Home Lands (DHHL), West Hawai‘i District Office
Kūhiō Hale

MEETING OBJECTIVES:

I. Inform the community on the following:
- Project goals, objective and process
- General overview on the Food Safety Modernization Act (FSMA)
- General overview on post-harvest facilities and food hubs
- Kamuela Vacuum Cooling Plant (KVCP) usage data
- Mail-out survey results

II. Gather feedback from stakeholders on the following:
- FSMA compliance concerns
- Desired amenities at the KVCP
- Other issues and concerns with the KVCP

MEETING ATTENDEES:

DOA:	Brian Kau, Janice Fujimoto
SSFM:	Darin Mar, Jared Chang, Carah Kadota, Kialoa Mossman
FSMA:	Julia Nemoto
DOA (Hawai‘i Island):	Luisa Castro
Public:	A copy of the sign-in sheet is attached

MEETING NOTICES:

The State of Hawai‘i, DOA drafted an outreach letter announcing the project and focus group meetings. SSFM prepared a supplemental outreach survey, meeting flyer, and a FSMA and food hub fact sheet. These documents were combined and mailed out to a list of stakeholders, which was identified by DOA and SSFM. A list of the stakeholders is attached.

A meeting flyer was also posted at the KVCP. A copy of the mail-out is attached.

MEETING SUMMARY:

Darin Mar (SSFM) opened the meeting by introducing the project team and recognizing special attendees (Senator Lorraine Inouye and State Representative Cindy Evans). He presented the project goals, objectives, and process and background information on the Kamuela Vacuum Cooling Cooperative (KVCC). Julia Nemoto (FSMA trainer) gave a short presentation on FSMA regulations, as it will affect farmers and their processes when they use the KVCP. Darin then gave an overview on what a post-harvest facility/food hub is, the amenities that it could include and how it can help farmers to be FSMA compliant. Jared Chang (SSFM) finished the presentation by reviewing the KVCP's usage data from FY13 – FY18, and also the responses received from the mail-out survey.

Following the PowerPoint presentation, Darin and Jared prompted meeting attendees to share their thoughts and concerns on the following topics in an open-discussion format:

1. Complying with FSMA regulations at their farms and at the KVCP
2. Desired amenities to have, and activities to perform at the KVCP
3. Existing concerns with the facility

Darin reminded the group that copies of the survey were available at the check-in table and responses were still being collected. The meeting ended at approximately 7:30PM.

PRESENTATION:

A copy of the PowerPoint presentation is attached.

HANDOUTS:

The handouts provided at the meeting are listed below and are also attached.

1. Kamuela Post-Harvest Facility/Food Hub – Feasibility Study Survey
2. Farm Information Survey
3. Food Safety Modernization Act Fact Sheet
4. "FSMA Resources and Reminders" Fact Sheet
5. "Food Safety Law and Your Farm" Fact Sheet

COMMENTS COLLECTED AT THE MEETING:

The following comments were made during the open-discussion. Comments are *italicized* and separated by topic. Responses to questions and/or comments from Luisa Castro (DOA, Hawai'i Island) are listed under **bold** heading.

What concerns (if any) do you have with FSMA compliance and regulations?

- *There is a lot of paperwork to do*
- *Do we need FSMA compliant employees and will there be inspections of farms?*
    - ***Response from Luisa:***
        - There must be one certified person per operation

    - Farms will not be inspected until later (no exact date provided)
- *Will the price of produce have to go up to pay for labor of paperwork (required for FSMA)?*
- *Will the cost to use the facility go up?*
- *Any notice on subsidies for training of farmers?*
    - ***Response from Luisa:***
        - There's up to $5,000 in subsidies available for farmers
- *How do farmers get contacted/informed about trainings?*
- *Where do we receive FSMA training?*
    - ***Response from Luisa:***
        - Ten trainings were done for the entire state in the last year and a half
        - Trainings can be done face-to-face or online
        - There's funding to do training for the next three years
        - Contact information for assistance with education and training can be found on the handout (attached)
- *Need to have training centers on the island*
- *Full-time staff needed to train farmers*
- *Need to be FSMA-certified to sell to stores*
- *Farmer's markets and restaurants don't require FSMA*
- *Will KVCC fall out of compliance?*
- *Is there a website with the information being shared at this meeting?*
- ***Response from Luisa (concerning overall FSMA questions)***
    - FSMA compliance is different from GAP third party audits
    - FSMA is a federal law, not a certification
    - GAP third party audit requirements are dependent on the buyer
- *Are there any issues with the water in Waimea?*
    - ***Response from Luisa:***
        - Currently, no, but it still needs to be inspected often
        - Water quality standards are still being worked out
        - Farmers will have four years to be in compliance, once the standards are put into place

Desired amenities to have, and activities to perform at the KVCP

- *Will need to have a full-time worker at the facility*
- *KVCP should be open to everyone to use*
- *If someone gets sick, who will inspect the water? How do farmers get in contact with the inspector/epidemiologist?*
- *Will need a management plan*
- *Mobile slaughterhouse*
    - *How can we leverage existing infrastructure for mobile slaughterhouse?*
    - *Have slaughterhouse on one half/end of the property*
- *All activities need to be separated for security, access, and to prevent cross-contamination*
- *Is there more State land available to use at the end of the 35-year lease?*
- *Consider the end result of packaging materials to reduce waste*
- *Could brand Waimea produce as "Waimea Grown"*
- *A retail space to assist with marketing*

- *Consolidate produce to be sold/distributed to stores – serve as a food hub*
    - *Farmer who had a contract with the DOE needed to produce a certain quantity of produce, so he contracted with other farmers to produce the amount needed*
- *Farmers can unite for one Good Agriculture Practices (GAP) certification and sell as one entity*
- *Ag tourism would introduce more pathogens to the site through people and pets*
    - *Would also need more restrooms*
    - *Not sure if current location would be good for ag tourism exposure*
- *Community kitchen*
    - *Include amenities for canning, chopping, prepping, dehydrating, and hosting cooking classes*
- *Currently have to use certified kitchens at restaurants during non-working hours*
- *Would like the ability to reserve a time to use the kitchen, and pay a fee based on usage*
- *Important to be accessible during non-working/farming hours*
- *Would operate on an "honor system" where the group can manage, clean and maintain the kitchen*
- *Public is concerned about food being processed at non-certified kitchens*
- *Having a commercial kitchen could open the opportunity for people to start catering businesses*
- *Farmers who have "leftover" produce could benefit from using a community kitchen to process and sell goods*

Existing concerns with the facility

- *Demolish the old warehouse, which has hazardous material concerns*
- *Improvements don't need to be drastic – small improvements would still help*
- *More money was approved in the past legislative session to make improvements to the facility (i.e. repairing the roof)*
- *The facility is fine the way it is, only small improvements are needed*
- *It's hard for the co-op to maintain the facility by themselves*
- *Difficult to get people to participate in cleaning and maintenance activities*
- *How to get and encourage new serious farmers?*
    - *There has been a reduction in farmers (mainly because they are retiring)*
- *Is the cooperative the right organization model to run the facility?*
- *There is a lot of traffic in the area and at the facility – hard for farmers to go in/out*
- *Prevention of wild animals entering farms and the facility*
    - *Additional costs to upkeep farm*
- *How to prevent cross-contamination?*
- *Will the project be phased or be one big plan (all or nothing)?*
- *Look to see if financial/community support is available*
- *Will the process be 1) find support/need to justify expanding the facility or 2) say amenities will be added to expansion, which will attract more people to use it*
- *Community has expressed desire for more farm-to-table food/local produce*
- *Important to continue to support needs of farmers today, and also their needs to be sustainable/successful in the future*
- *How will this plan carry through and be realized?*

A total of four (4) Kamuela Post-Harvest Facility/Food Hub – Feasibility Study Surveys and two (2) Farm Information Surveys were filled out and returned at the meeting. The feedback and issues noted on the surveys were similar to comments made during the open-discussion, and have already been noted in the above.

Prepared By: Carah Kadota
SSFM International, Inc.

-end-

ATTACHMENT:
Sign-in Sheet

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting Date: August 7, 2018 | Tuesday Time: 5:00 P.M.

Location: DHHL, West Hawaii District Office Kuhio Hale, 64-756 Mamalahoa Highway, Kamuela, HI 96743

NAME	ORGANIZATION	PHONE	EMAIL
Heather Forester	Hawaii Ant Lab	315-5656	heather.forester@littlefireants.
Mike Amado	HIMC	776-1870	MDAMADO@SBCGLOBAL.COM/.NET
Howard Hall	Hall's Farm	5578600	hhall9@icloud.com
Wendell Kawano		895 4153	
Charlene Hirayama	Y. Hirayama Farm, Inc.	885-7228	
Royce Hirayama	" "	" "	
Earl Yamamoto	Earlyfarm	885 7573	early31@msn.com
Carol Ignacio	Blue Zones	202-4958	carolvignacio@sharecare.com
Daniel Manuel	Kuhio Hale Farm	808 [illegible]-0403	danm1951@gmail.com
Nicole Milne	The Kohala Center	808-987-9210	nmilne@kohalacenter.org
Adrienne Hew	SELF	808 345 9876	heyhew@me.com
Max Bowman	Aroʻaro Farms	937-6485	max.ck.bowman@gmail.com
Noa Bowman	" "		
Kathy Manuel	Hana Hoe Farm	443.6479	Kman1951 2000@yahoo.c
M Kapuniai	Waimea HH Assoc Waimea Nui CDC	936 0157	
Betty Lau	Waimea Hawaiian Civic Club		bettyjylau@gmail
Luna Hakamo	HHC		lunahananio@gmail.com
Arleen Kauahi			
Gerald Kauahi			
Jerneen Kauahi			
Larry Nakamura	KVCC	987-6031	

SSFM International
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting Date: August 7, 2018 | Tuesday Time: 5:00 P.M.

Location: DHHL, West Hawaii District Office Kuhio Hale, 64-756 Mamalahoa Highway, Kamuela, HI 96743

NAME	ORGANIZATION	PHONE	EMAIL
Patricia Hodson	WHHA	960-2648	~~[illegible]~~ triciahodson6962@gmail.com
Nani Lehano	WHHA	640-5405	nanilehano@gmail.com

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting Date: August 7, 2018 | Tuesday Time: 5:00 P.M.

Location: DHHL, West Hawaii District Office Kuhio Hale, 64-756 Mamalahoa Highway, Kamuela, HI 96743

NAME	ORGANIZATION	PHONE	EMAIL
Rep Cindy Evans	State House	5586510	Repevans@capitol.hawaii.gov
Lorraine Inouye	State Senate	586-7335 / 430-4230	senlinouye@capitol.hawaii.gov
Maile Woodhall	The Kohala Center	8086400171	mwoodhall@kohalacenter.org
Anna Peach	Sqiash + Awe	494-7147	Squashandawe@gmail.com
Neil Achtmeyer	Parker Ranch	494-7462	ach.nepri-hi.com

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting   Date: August 7, 2018 | Tuesday   Time: 5:00 P.M.

Location: DHHL, West Hawaii District Office Kuhio Hale, 64-756 Mamalahoa Highway, Kamuela, HI 96743

NAME	ORGANIZATION	PHONE	EMAIL
Jared Cheng	SSFM		jcheng@ssfm.com
Marielle Hampton	TKC		marielle.hampton@gmail.com
Salvatore Saluzzo	Huluhulu Farms		huluhulufarms@gmail.com

ATTACHMENT:
Supplemental Outreach Mail-out

DAVID Y. IGE
Governor

DOUGLAS S. CHIN
Lt. Governor

SCOTT E. ENRIGHT
Chairperson, Board of Agriculture

PHYLLIS SHIMABUKURO-GEISER
Deputy to the Chairperson

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 South King Street
Honolulu, Hawaii 96814-2512
Phone: (808) 973-9600 FAX: (808) 973-9613

July 9, 2018

Aloha!

The Department of Agriculture, Agricultural Resource Management Division (ARMD) is exploring the concept of expanding the Kamuela Vacuum Cooing Plant property to include a Food Safety Modernization Act (FSMA)-certified, post-harvest facility/food hub. We are seeking your input to help with the development of this plan.

First, we are initiating a survey to understand the needs of the farming community and identify possible expanded uses at the Kamuela Vacuum Cooling Plant site. A post-harvest facility/food hub may be able to provide farmers with a fee per use site for the washing, packing, storing and/or processing of produce.

Next, a focus group meeting will be held on Tuesday, August 7, 2018, to discuss the project with interested members of the farming community. Please see the attached meeting flyer for more details.

Based on the findings of the survey and focus group meeting, we will develop a master plan and feasibility study for the proposed expansion of the Kamuela Vacuum Cooling Plant property. The master plan will seek to ensure that the site is used in the most efficient and effective manner possible to assist in the diversification of agriculture and to support local farmers and the economy at all scales. The feasibility study will explore the requirements and costs associated with the plan. An additional meeting will be held to discuss the survey findings, master plan, and feasibility study.

We have enlisted the assistance of SSFM International, Inc. for this project and kindly ask that you take a few minutes to fill out the attached survey and return using the stamped envelope provided or scanning it to jchang@ssfm.com by July 20, 2018.

For more information, please contact Ms. Janice Fujimoto of my staff at 808-973-9473 or Jared Chang from SSFM International, Inc. at 808-356-1242 or jchang@ssfm.com.

Sincerely,

BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Island Fresh

State of Hawaii
Department of Agriculture

KAMUELA VACUUM COOLING PLANT FEASIBILITY STUDY

The Department of Agriculture is initiating a feasibility study to determine the needs of the farming community in developing a master plan expansion of the Kamuela Vacuum Cooling Plant (KVCP) property. A meeting has been scheduled to collect feedback to understand the needs of the farmers in the area.

We Want Your Input!

PLEASE JOIN US AT THE FOLLOWING MEETING:

TUESDAY | **AUGUST 7TH** | **STARTING AT 5PM**

Department of Hawaiian Home Lands (DHHL)
West Hawaii District Office
Kuhio Hale
64-756 Mamalahoa Highway
Kamuela, HI 96743

If you require special assistance in these events (i.e. interpreter, wheelchair accessibility, etc.) please contact

Jared Chang at (808) 356-1242 or jchang@ssfm.com

at least three (3) business days prior to the meeting.

FOOD SAFETY MODERNIZATION ACT FACT SHEET

FOR USERS OF THE KAMUELA VACUUM COOLING PLANT

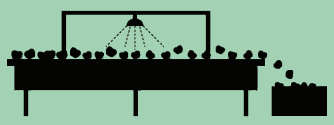
WHAT IS FSMA?

The Food Safety Modernization Act (FSMA) was signed into law on January 4, 2011 by President Obama and contains seven primary rules. The Produce Safety Rule is the first mandatory federal standard for the production and processing of fruits and vegetables in the United States. It was established to put regulations in place to prevent contamination and the spread of foodborne illness at each stage of food production. Some farmers may be exempt from FSMA. However, distributors, retailers, and consumers may still require that produce meet FSMA or other third-party certification requirements.

WHAT IS A FOOD HUB?

A food hub is a centralized facility that can provide space and equipment for farmers to wash, pack, store, and process their produce without the upfront large capital investment of purchasing equipment by themselves. The cost and use of the equipment would be shared amongst the farmers using the facility.

- For example, a food hub could include a commerical kitchen to produce jams and sauces, washing station, packing station, etc.
- The food hub could also serve as a centralized place for farmers to collaborate on business or marketing ventures.
- The cooling chambers currently at the Kamuela Vacuum Cooling Plant is an example of a shared resource.



ADDITIONAL INFORMATION

For more information on FSMA please visit:
https://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm

For more information on the FSMA Produce Safety Rule or on Good Agricultural Practices you may contact:

Luisa F. Castro, Ph. D.
Agricultural Food Safety Program Manager
808-974-4130
luisa.f.castro@hawaii.gov

Or visit http://www.hifarmsafe.org/

WHAT FSMA-COMPLIANT OPTIONS COULD A POST-HARVEST FACILITY/FOOD HUB PROVIDE?

A post-harvest facility/food hub could provide resources, such as equipment and facilities, to promote proper hygiene and best practices for limiting the spread of foodborne illnesses to meet FSMA standards. Restrooms, hand washing stations, pest management, training, fresh water for washing, etc. are some possible amenities that could be provided.

DEPARTMENT OF AGRICULTURE WANTS TO HEAR FROM YOU!

HDOA is developing a feasibility study and master plan to create a FSMA-compliant post-harvest facility/food hub at the Kamuela Vacuum Cooling Plant (KVCP). The goal is to upgrade the KVCP with a venue that can serve the agricultural community and assist farmers in complying with the new FSMA regulations.

We need your input to identify the areas in greatest demand. Please complete and return the attached questionnaire by July 20th.

KAMUELA POST-HARVEST FACILITY/FOOD HUB - FEASIBILITY STUDY SURVEY

Name:_____ Company/ Organization:_____

Physical Address (of farm):_____ Tax Map Key #:_____

Email:_____ Phone Number:_____

Number of Years of Farming (please circle one): 1 - 5 years | 6 - 10 years | 11 - 15 years | 16 - 20 years | 20+ years

Farm Acreage:_____

Type of Farming (family, commercial, etc.):_____

Please tell us how the proposed Post-Harvest Facility/Food Hub can serve you by answering the following questions:

1. Have you, and/or any of the workers on your farm, completed the Produce Safety Alliance Grower Training course or Train-the-Trainer course? If so, please state the month and year that the training course was completed.

2. The site is proposed to be a Food Safety Modernization Act (FSMA)-compliant post-harvest facility/food hub. What types of activities would you perform, and what types of amenities would you require [i.e. washing, packaging, commercial kitchen (mixer, oven, boiler, etc.)]? Please fill in the table below to identify the type of activity/amenity you would require for your produce, and the amount you'd be willing to pay to support it. Some activities/amenities have been provided as examples/suggestions - please check the box for each listed activity/amenity you'd like, otherwise please specify the activity/amenity you desire in the "OTHER" box.

TYPES OF PRODUCE	WASHING	PACKING	COLD STORAGE	COMMERCIAL KITCHEN	OTHER:_____	OTHER:_____	AMOUNT WILLING TO PAY TO SUPPORT ACTIVITY/AMENITY
Leafy Greens							$_____/month
Orchard, Fruit							$_____/month
Root Crops							$_____/month
Corn							$_____/month
Tomato							$_____/month
Peas, beans, zucchini, etc.							$_____/month
Taro							$_____/month
Other:_____							$_____/month

(continued on back)

3. What concerns (if any) do you have with FSMA compliance and regulations?

4. For current users of the Kamuela Vacuum Cooling Plant:
In June 2009, a list of issues and concerns were discussed amongst members of the Kamuela Vacuum Cooling Co-op. These issues included aging equipment, loading dock hook ups, electrical costs and concerns, and issues related to the main building's integrity (roof rotting, asphalt floor deteriorating, etc.). Improvements have since been made to the asphalt flooring, and a photovoltaic construction project is underway. Do you have any new issues or concerns with the KVCP?

5. Do you have suggestions for improving the overall facility? If so, please share your ideas.

ATTACHMENT:
PowerPoint Presentation

State of Hawai‘i

Department of Agriculture

KAMUELA POST-HARVEST FACILITY/FOOD HUB FEASIBILITY STUDY

FOCUS GROUP MEETING #1

Introduction

- **Project Goals and Objective**

  - State of Hawai‘i’s Department of Agriculture is proposing to expand the Kamuela Vacuum Cooling Plant to include a Food Safety Modernization Act (FSMA)-certified, post-harvest facility/food hub

  - A master plan and feasibility study will be prepared to identify the most efficient and effective manner to utilize the site, and to explore the requirements and costs associated with the plan

Introduction

- **Process:**
  1. Identify needs and opportunities through public outreach and feedback from farmers in the Waimea area
     - ✓ Mailed out survey
     - ✓ Focus Group Meeting #1 (August 7, 2018)
  2. Based on feedback, a conceptual master plan and draft feasibility study for the proposed expansion of the Kamuela Vacuum Cooling Plant (KVCP) will be prepared
  3. Conduct another Focus Group Meeting to discuss the conceptual master plan and draft feasibility study
     - Focus Group Meeting #2 (mid-October)
  4. Incorporate feedback into the Final Master Plan and Feasibility Study

Kamuela Vacuum Cooling Plant

Kamuela Vacuum Cooling Plant

Kamuela Vacuum Cooling Cooperative

- Entered lease agreement with the Department of Agriculture on September 22, 1994 for a term of thirty-five (35) years

- Membership:
  - Members currently pay $200 annually to use the facility
  - Additional rate schedule as of January 1, 2014:
    - Vacuum cooling and refrigeration charges:

a.	Member:	$.021/lb. vacuum-cooling
		$.015/lb. refrigeration only
b.	Non-member:	$.042/lb. vacuum-cooling
		$.030/lb. refrigeration only

    - Repair/maintenance fee of $.001/lb. on vacuum and non-vacuum cooling items
    - Pallet charge of $2.00/pallet for any items not attached to chilled or vacuum cooled products and stored on KVCP property
    - Containers parked on premise: $50/container/mo.

Produce Safety
ALLIANCE

Key Components of the Food Safety Modernization Act (FSMA) Produce Safety Rule

Cornell University
Department of Food Science

Outline

- FSMA Produce Safety Rule Background, Compliance Dates, and Definitions
- Key Requirements Within the Produce Safety Rule

This presentation is an introduction to the FSMA Produce Safety Rule and the content is not meant to be a summary of the Produce Safety Alliance training curriculum.

Produce Safety ALLIANCE

FDA Food Safety Modernization Act & Produce Safety Rule

- **Produce Safety Rule:**
  Focus on the growing, harvesting, and post-harvest handling of produce
- Focus is on the prevention, not detection of issues
- First ever mandatory regulation for the production, harvest, and handling of fruits and vegetables

Produce Safety ALLIANCE

FSMA Produce Safety Rule

- Published in the Federal Register on Nov. 27, 2015 and became effective Jan. 26, 2016

Business Size	Years to Comply After Effective Date (1-26-16)*
All other businesses (>$500K)	2
Small businesses (>$250K-500K)	3
Very small businesses (>$25K-250K)	4

**Compliance dates for certain aspects of the agricultural water requirements allow an additional two years beyond each of these compliance dates.*

Produce Safety ALLIANCE

Exclusions & Exemptions

- Some growers may be **excluded** based on:
  - Commodities grown (e.g., rarely consumed raw)
  - Average annual produce sales

- Some growers may be **exempt** based on:
  - Processing activities that include a 'kill step'
  - Average annual food sales and sales to 'qualified end users'
- Ultimately, <u>all</u> growers should understand and take action to reduce food safety risks on the farm regardless of if they are subject to the rule or not

Produce Safety ALLIANCE

Growers may be exempt from the regulation, but not from the market.

Produce Safety ALLIANCE

Worker Training Requirements

All workers who handle produce or touch food contact surfaces must receive appropriate training

- Upon hiring
- At least once annually thereafter

- Training must be easily understood by those being trained
- Workers must have a combination of education, training, and experience to perform job assignments
- Training must be documented
- One supervisor must have successfully completed training

Produce Safety ALLIANCE

Training Requirements: Farm Workers

- Training must include the following:
  - Principles of food hygiene and food safety
  - Importance of health and hygiene for all personnel and visitors
    - Includes recognizing symptoms of injury or sickness that could contaminate produce
  - How to communicate food safety risks to supervisors

Produce Safety ALLIANCE

Key Hygienic Practices

- Maintain personal cleanliness
- Avoid contact with animals other than working animals and take action to minimize likelihood of contamination of covered produce
- Wash hands thoroughly
- If using gloves, maintain in an intact and sanitary manner and replace when necessary
- Remove or cover hand jewelry that cannot be cleaned and sanitized when covered produce is manipulated by hand; and
- Do not eat, chew gum, or use tobacco products in the area used for a covered activity (drinking beverages is permitted)

Produce Safety ALLIANCE

Training Requirements: Field Harvesters

- Workers who harvest must be trained to:
  - Recognize when produce cannot be harvested due to contamination risks (sings of flooding, animal feces…)
  - Inspect harvest containers and equipment to be sure they are functioning, clean, and maintained
  - Correct and report problems with harvest containers or equipment
  - Not distribute dropped covered produce
    - Covered produce that drops to the ground before harvest

Produce Safety ALLIANCE

Equipment, Tools, and Sanitation

- Must use equipment and tools that are of adequate design, construction, and workmanship to enable them to be adequately cleaned and properly maintained
- Must inspect, maintain, and clean and, when necessary and appropriate, sanitize all food contact surfaces of equipment and tools used in covered activities as frequently as reasonably necessary to protect against contamination of covered produce
- Must maintain and clean all non-food contact surfaces or equipment and tools used during harvesting, packing, and holding as frequently as reasonably necessary to protect against contamination of covered produce

Produce Safety ALLIANCE

Cleaning vs. Sanitizing

What is the difference and why does it matter?

- **Cleaning:** Physical removal of dirt (soil) from surfaces which can include the use of clean water and detergent
- **Sanitizing:** Treatment of a cleaned surface to reduce or eliminate microorganisms

Important point: You cannot sanitize a dirty surface.

Cleaning always comes first!

Produce Safety ALLIANCE

Transportation Requirements

- Equipment used to transport covered produce a) be adequately cleaned prior to transporting produce and b) adequate for use in transporting covered produce

- Use equipment such as pallets, forklifts, tractors, and vehicles such that they are intended to, or likely to, contact covered produce, they must do so in a manner that minimizes the potential for contamination of covered produce or food contact surfaces with known or reasonably foreseeable hazards

Produce Safety ALLIANCE

The PSA Website

http://producesafetyalliance.cornell.edu/

- Friend us on Facebook or Twitter!
- **Join the listserve!**

Julia Nemoto, B.Sc., julianemoto@googlemail.com, **808.345.6230**
Gretchen L. Wall, M.S., Coordinator, glw53@cornell.edu, 607.882.3087
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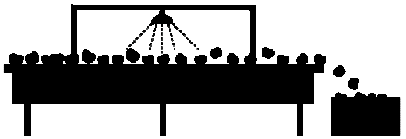
Produce Safety ALLIANCE

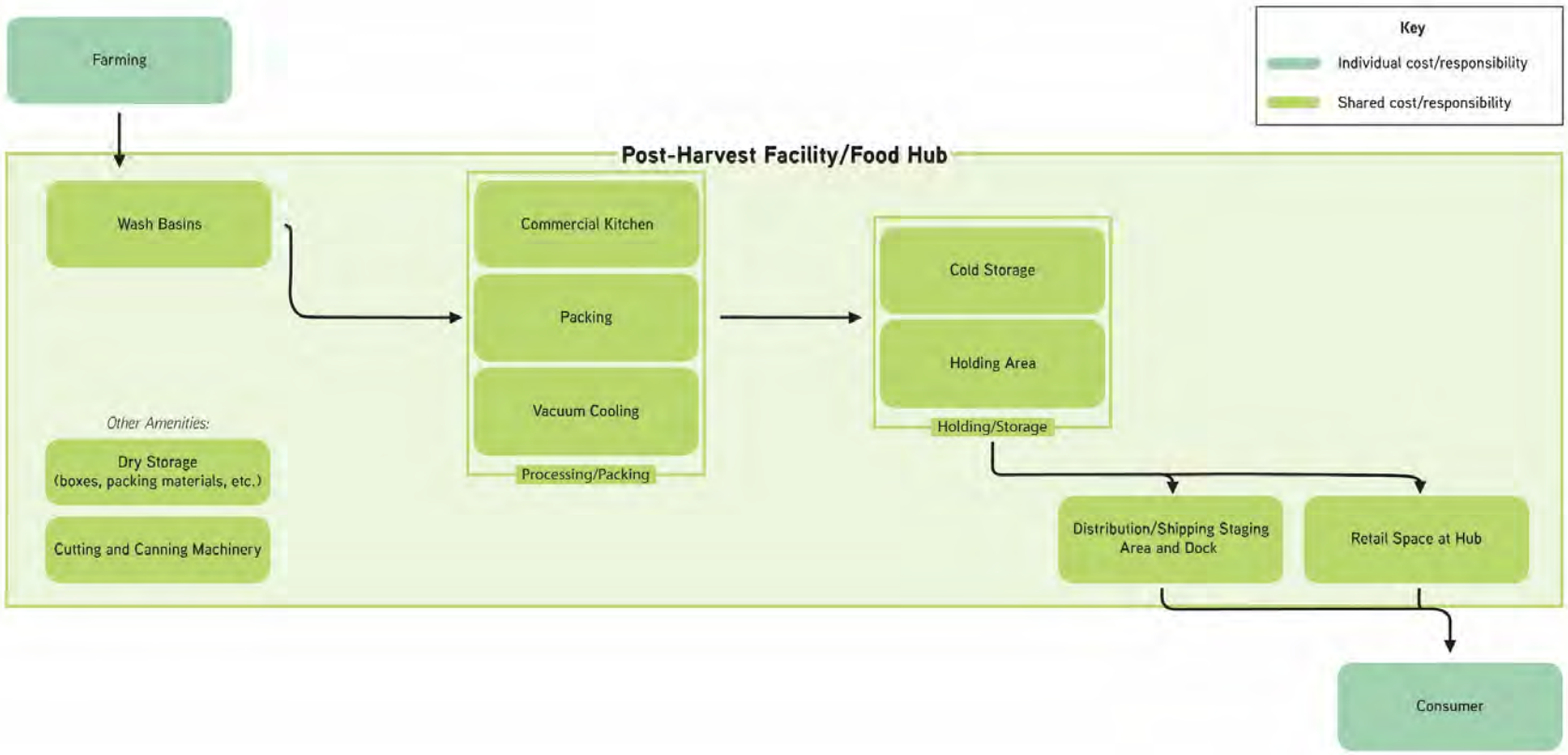
Post-Harvest Facility/Food Hubs



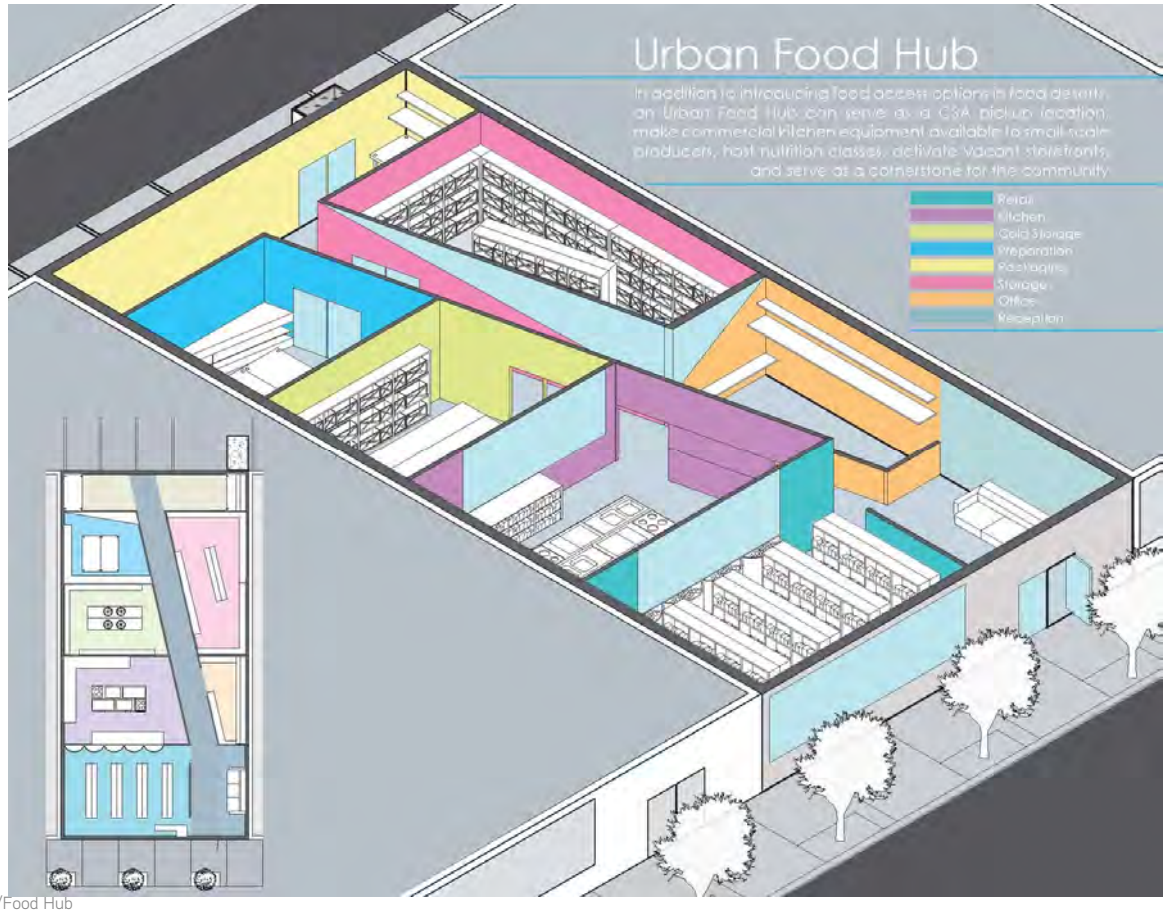
What is a Post-Harvest Facility/Food Hub?

- "A business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand." (Barham et al., 2012, p. 4)
  - Amenities/services could include:
    - Washing
    - Packing
    - Commercial Kitchen
    - Cold Storage
    - Dry Storage

Product Movement Through a Post-Harvest Facility/Food Hub



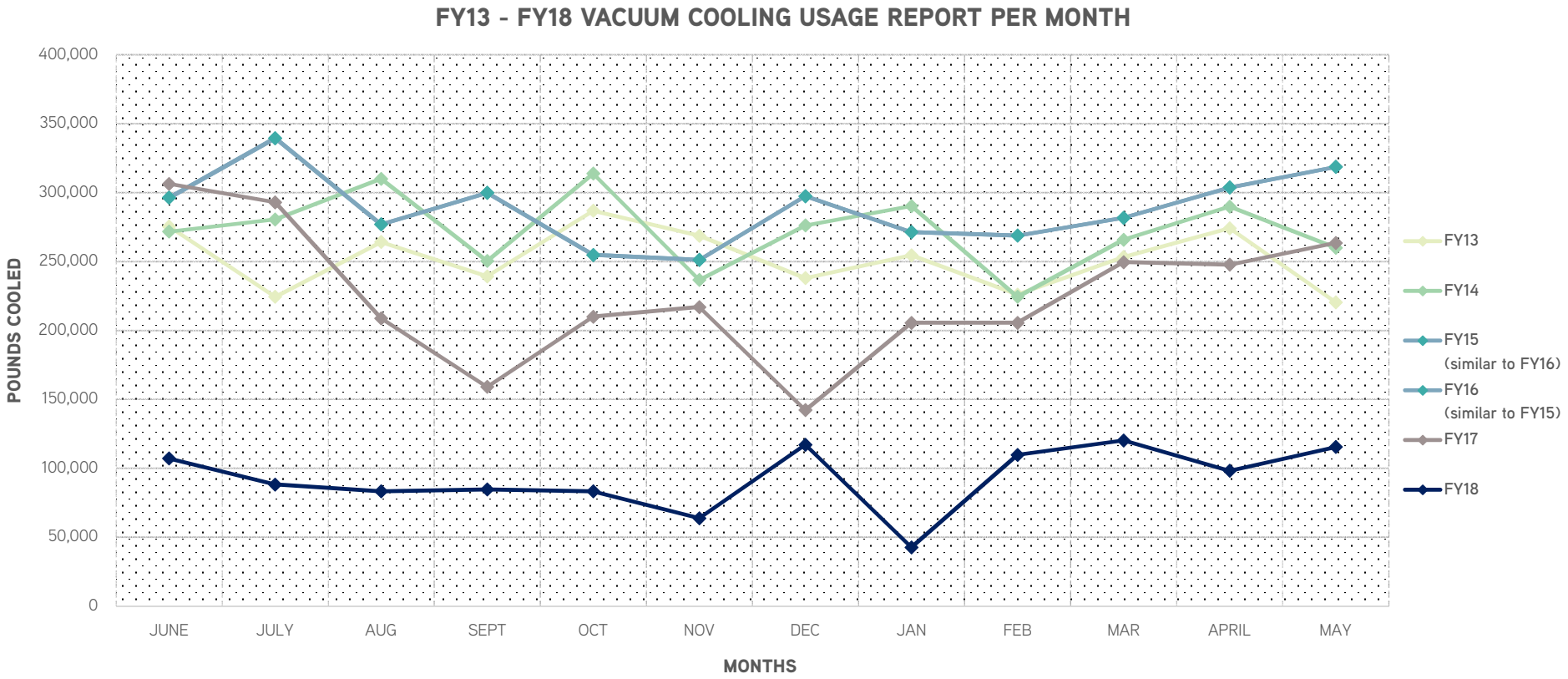
Food Hub Components



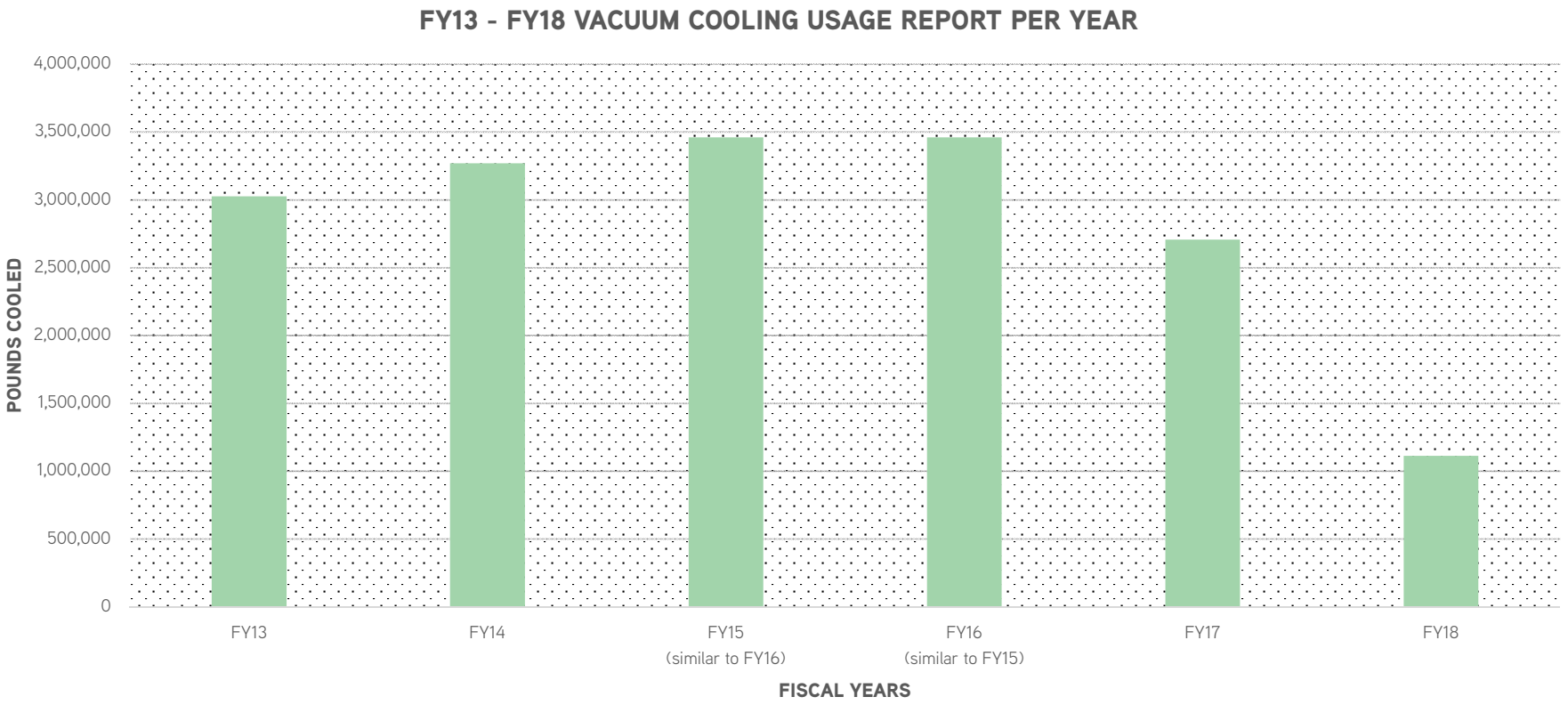
Source: Tim Bevins. 2015. *UrbanFoodHub graphics blog 3,* from https://www.globalgreen.org/blog/next-steps-establishing-and-expanding-food-hubs-for-food-deserts

Kamuela Vacuum Cooling Plant Usage Data and Mail-out Survey Results

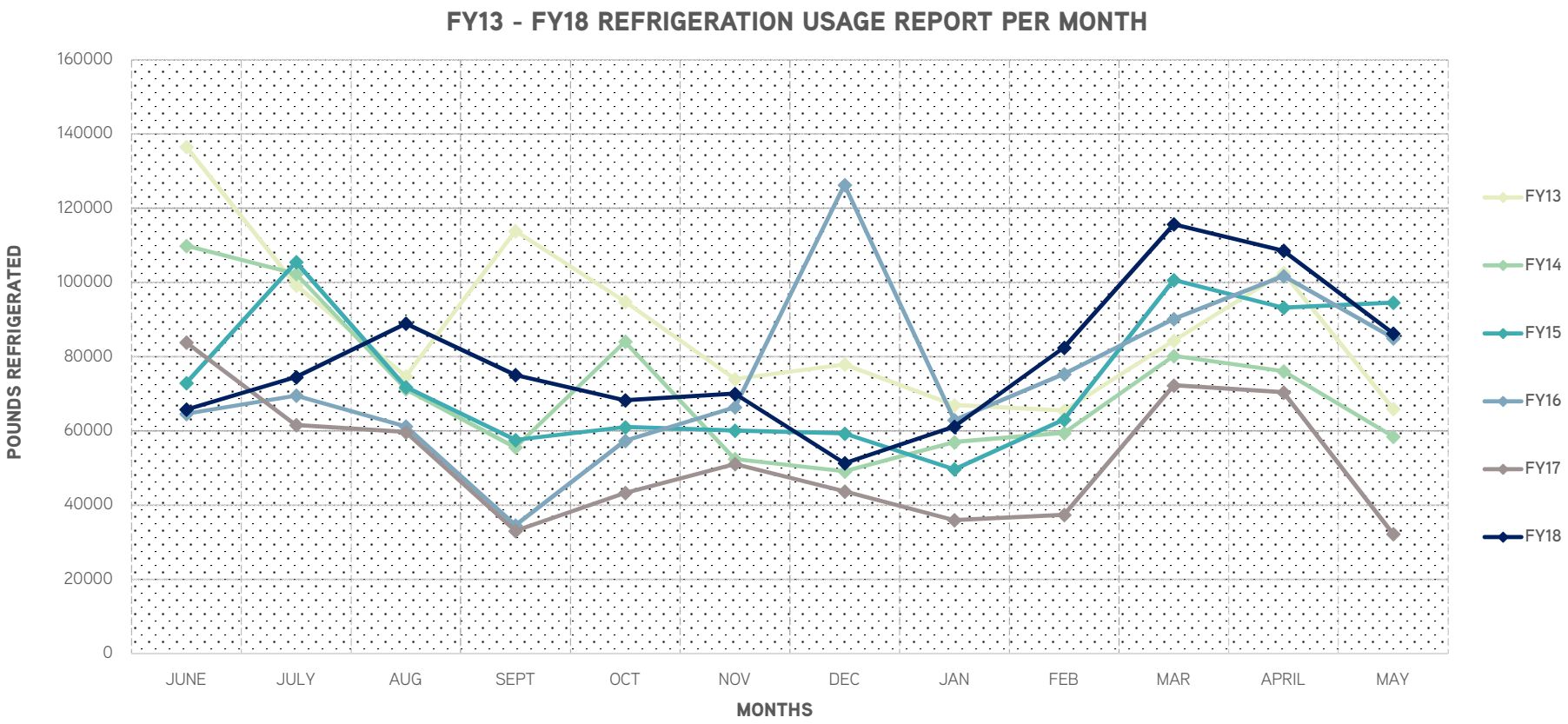
Kamuela Vacuum Cooling Plant Usage
Vacuum Cooling



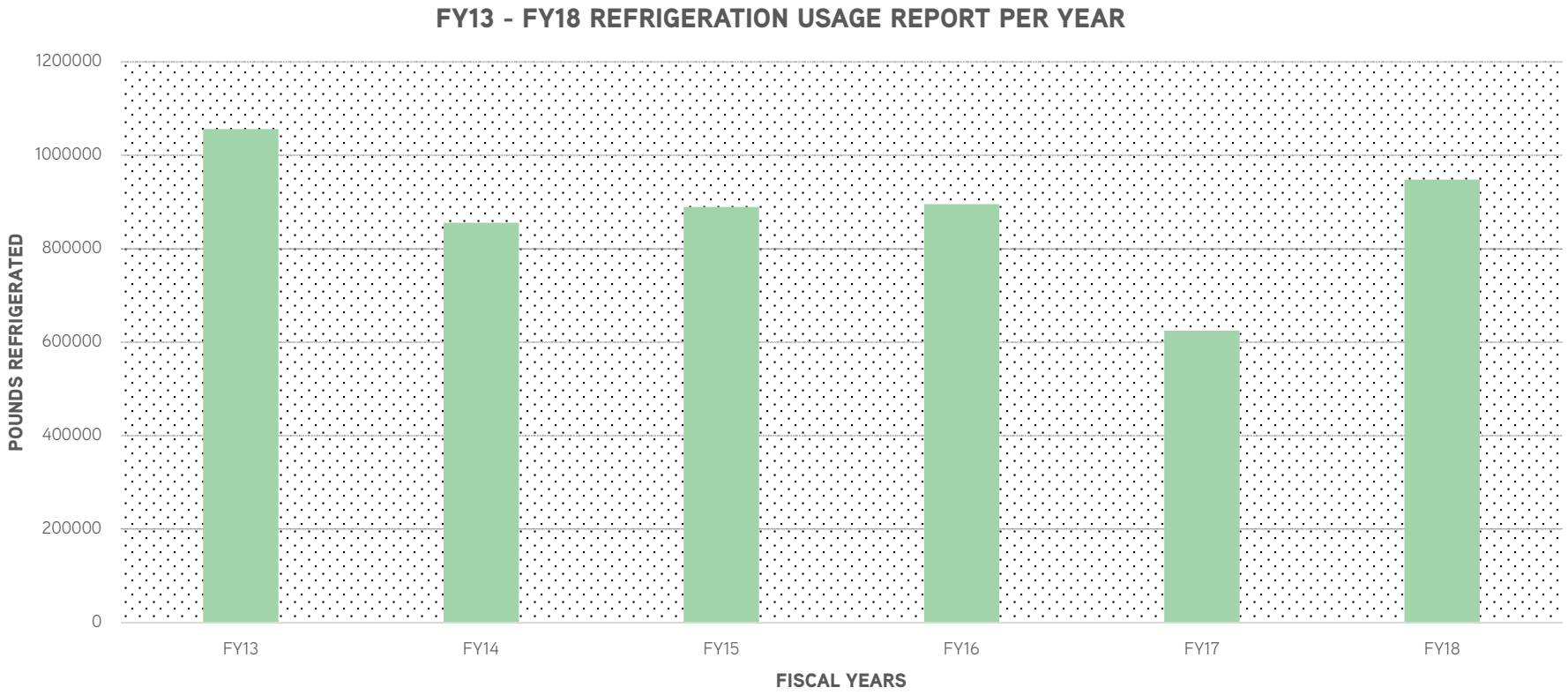
Kamuela Vacuum Cooling Plant Usage
Vacuum Cooling



Kamuela Vacuum Cooling Plant Usage Refrigeration



Kamuela Vacuum Cooling Plant Usage Refrigeration



Mail-out Survey Feedback

- **Desired Amenities/Services:**
  - Washing = 3
  - Packing = 3
  - Cold Storage = 5
  - Commercial Kitchen = 4
  - Canning = 1
  - Bottling = 1
  - Dehydrator = 1
  - Marketing = 1
  - Other comments
    - FSMA not applicable to small farms
    - Only use as a drop-off to distributors

- **FSMA Concerns:**
  - Rules and regulations should be modified to Hawai'i's farming operations because the acreage here is way less than on the Mainland. Very costly to be in compliance.
  - Does not consider where most food safety issues originate. It will only ensure that small family-sized farms will be further overworked.
  - Never going to work for small farms in South Kona. Only advantage to large farms.
  - Added cost, time and inconvenience of needing to use commercial kitchen or

Mail-out Survey Feedback

- **KVCP Issues:**
  - Need new compressors for the refrigerators as they are the original ones
  - Are all farmers required to be a food safety certified farm to use the facility? If not, does this mean that their produce that is coming from this facility considered to be food safety certified? If users must be a food certified farm, emphasis should be towards assisting the farmers to become a food safety certified farm first.
  - Lack of use
  - Cleanup birds' nests

Mail-out Survey Feedback

- **Overall Suggestions:**
  - Because of the decline in farms, it is extremely difficult for them to run KVCP while running their businesses
  - If a certified post-harvest facility is built, a manager must be hired to maintain said facility (i.e. setting schedule for use of facility, cleaning and sanitizing food contact surfaces, pest management and sanitation plan, perform periodic water sampling and microbial testing, etc.) [*3 others stated a similar concern*]
  - Since the State of Hawai'i is for agriculture sustainability, it should consider taking over the KVCP since the few farmers that we currently have cannot handle this
  - Facility is not the problem, number of farmers is the problem. As more farmers retire or cut back on production, the facility will become hard to justify. It is better to encourage more farmers and greater production first.
  - Marketing and production cost issues should be resolved so that farmers can

Mail-out Survey Feedback

- **Overall Suggestions *(continued):***
  - KVCP needs to be upgraded to meet food safety standards (cleaner and more sanitary)
  - Secure, vermin-proof storage for corrugated cardboard boxes and other packaging. Volume discounts could be shared if storage were available.

ATTACHMENT:
Meeting Handouts

KAMUELA POST-HARVEST FACILITY/FOOD HUB - FEASIBILITY STUDY SURVEY

Name:_____ Company/ Organization:_____

Physical Address (of farm):_____ Tax Map Key #:_____

Email:_____ Phone Number:_____

Number of Years of Farming (please circle one): 1 - 5 years | 6 - 10 years | 11 - 15 years | 16 - 20 years | 20+ years

Farm Acreage:_____

Type of Farming (family, commercial, etc.):_____

Please tell us how the proposed Post-Harvest Facility/Food Hub can serve you by answering the following questions:

1. Have you, and/or any of the workers on your farm, completed the Produce Safety Alliance Grower Training course or Train-the-Trainer course? If so, please state the month and year that the training course was completed.

2. The site is proposed to be a Food Safety Modernization Act (FSMA)-compliant post-harvest facility/food hub. What types of activities would you perform, and what types of amenities would you require [i.e. washing, packaging, commercial kitchen (mixer, oven, boiler, etc.)]? Please fill in the table below to identify the type of activity/amenity you would require for your produce, and the amount you'd be willing to pay to support it. Some activities/amenities have been provided as examples/suggestions - please check the box for each listed activity/amenity you'd like, otherwise please specify the activity/amenity you desire in the "OTHER" box.

TYPES OF PRODUCE	WASHING	PACKING	COLD STORAGE	COMMERCIAL KITCHEN	OTHER:_____	OTHER:_____	AMOUNT WILLING TO PAY TO SUPPORT ACTIVITY/AMENITY
Leafy Greens							$_____/month
Orchard, Fruit							$_____/month
Root Crops							$_____/month
Corn							$_____/month
Tomato							$_____/month
Peas, beans, zucchini, etc.							$_____/month
Taro							$_____/month
Other:_____							$_____/month

(continued on back)

3. What concerns (if any) do you have with FSMA compliance and regulations?

4. For current users of the Kamuela Vacuum Cooling Plant:
In June 2009, a list of issues and concerns were discussed amongst members of the Kamuela Vacuum Cooling Co-op. These issues included aging equipment, loading dock hook ups, electrical costs and concerns, and issues related to the main building's integrity (roof rotting, asphalt floor deteriorating, etc.). Improvements have since been made to the asphalt flooring, and a photovoltaic construction project is underway. Do you have any new issues or concerns with the KVCP?

5. Do you have suggestions for improving the overall facility? If so, please share your ideas.

PLEASE TELL US MORE ABOUT YOUR FARM!

The information provided below will only be used for the purposes of the Feasibility Study. Name and contact information will be eliminated in the Study and is optional to provide for the purposes of follow-up calls/emails by SSFM for data collection.

Name: _____ Company/ Organization: _____

Phone Number: _____ Email: _____

Type of Produce Being Grown:	*and*	Estimated Volume:

PLEASE TELL US MORE ABOUT YOUR FARM!

The information provided below will only be used for the purposes of the Feasibility Study. Name and contact information will be eliminated in the Study and is optional to provide for the purposes of follow-up calls/emails by SSFM for data collection.

Name: _____ Company/ Organization: _____

Phone Number: _____ Email: _____

Type of Produce Being Grown:	*and*	Estimated Volume:

FOOD SAFETY MODERNIZATION ACT FACT SHEET

FOR USERS OF THE KAMUELA VACUUM COOLING PLANT

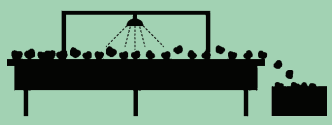
WHAT IS FSMA?

The Food Safety Modernization Act (FSMA) was signed into law on January 4, 2011 by President Obama and contains seven primary rules. The Produce Safety Rule is the first mandatory federal standard for the production and processing of fruits and vegetables in the United States. It was established to put regulations in place to prevent contamination and the spread of foodborne illness at each stage of food production. Some farmers may be exempt from FSMA. However, distributors, retailers, and consumers may still require that produce meet FSMA or other third-party certification requirements.

WHAT IS A FOOD HUB?

A food hub is a centralized facility that can provide space and equipment for farmers to wash, pack, store, and process their produce without the upfront large capital investment of purchasing equipment by themselves. The cost and use of the equipment would be shared amongst the farmers using the facility.

- For example, a food hub could include a commerical kitchen to produce jams and sauces, washing station, packing station, etc.
- The food hub could also serve as a centralized place for farmers to collaborate on business or marketing ventures.
- The cooling chambers currently at the Kamuela Vacuum Cooling Plant is an example of a shared resource.



ADDITIONAL INFORMATION

For more information on FSMA please visit:
https://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm

For more information on the FSMA Produce Safety Rule or on Good Agricultural Practices you may contact:

Luisa F. Castro, Ph. D.
Agricultural Food Safety Program Manager
808-974-4130
luisa.f.castro@hawaii.gov

Or visit http://www.hifarmsafe.org/

WHAT FSMA-COMPLIANT OPTIONS COULD A POST-HARVEST FACILITY/FOOD HUB PROVIDE?

A post-harvest facility/food hub could provide resources, such as equipment and facilities, to promote proper hygiene and best practices for limiting the spread of foodborne illnesses to meet FSMA standards. Restrooms, hand washing stations, pest management, training, fresh water for washing, etc. are some possible amenities that could be provided.

DEPARTMENT OF AGRICULTURE WANTS TO HEAR FROM YOU!

HDOA is developing a feasibility study and master plan to create a FSMA-compliant post-harvest facility/food hub at the Kamuela Vacuum Cooling Plant (KVCP). The goal is to upgrade the KVCP with a venue that can serve the agricultural community and assist farmers in complying with the new FSMA regulations.

We need your input to identify the areas in greatest demand. Please complete and return the attached questionnaire by July 20th.

RESOURCES AND REMINDERS

Training of Farm Workers & Harvesters	Supervisor Training
- Comprehensive training upon hire and at least annually. - Workers must be provided with training and material to perform food safety duties - Trainings must be documented.	- At least one supervisor at the farm/packing facility must be trained. Training must cover: - Principles of food hygiene and food safety - Importance of health and personal hygiene of workers & visitors. -e.g. PSA Grower Training

Cleaning & Sanitation of Equip. & Tools	Sanitation Practices	Transportation Requirements
- Must be in good repair. - Must be easy to clean.	- Cleaning and Sanitation must be documented.	- Containers and vehicles used to transport food must be clean.

RESOURCES

Department of Health, Sanitation Branch
http://health.hawaii.gov/san/food-safety-education/
Information about classes for food handlers and training resources (i.e. videos).

- Certification for food handlers

University of Hawai'i at Manoa, CTAHR
http://manoa.hawaii.edu/ctahr/farmfoodsafety/
Provides resources about food safety requirements and training (i.e. videos, posters and printable resources about food safety in Hawaii).

- Information about preventing rat lungworm.
- Resources about flood and vog damage.
- List of approved water tests in Hawaii.
- Overview of FSMA rules and compliances dates.

University of Hawai'i at Manoa, Food Safety Hawaii
http://foodsafetyhawaii.org

- Training and certification for farmers and producers, transporters and food handlers.
- PCQI certification

Cornell University, Product Safety Alliance
https://producesafetyalliance.cornell.edu/training/

- Grower and farm worker training and certification.
- Outreach and extension regarding food safety.
- Training resources such as posters.
- Resources about developing farm food safety plans.

FDA Food Safety Resources
https://www.fns.usda.gov/food-safety/food-safety-resources

- Allergen Management
- Food Defense
- Key FSMA Compliance dates:

https://www.fda.gov/downloads/Food/GuidanceRegulation/FSMA/UCM568798.pdf

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Agricultural Engineer
& Food Safety Specialist
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Food Safety Law and Your Farm

What is the Food Safety Modernization Act (FSMA)?

The Food Safety Modernization Act (FSMA) gives the U.S. Food and Drug Administration (FDA) authority to regulate food from farm to fork, which enables the FDA to better protect the public by strengthening the food safety system. FSMA was signed into law on January 4, 2011 and represents the nation's largest overhaul of the federal food safety laws since 1938. The goal is to prevent foodborne outbreaks before they occur by taking proactive measures. FSMA has created seven (7) new federal rules that address produce, human food, animal food, transportation, and imported food.

What is the Produce Safety Rule (PSR)?

The Produce Safety Rule is part of FSMA and establishes science-based minimum standards for the safe **growing, harvesting, packing, and holding of fruits and vegetables** grown for human consumption. As of January 26, 2016, this rule is in effect and compliance dates for some parts of the rule are already underway, with full compliance for many farms starting in January 2018.

Many farm operations will be impacted by at least part of the FSMA Produce Safety Rule, even farm operations that are very small. The Hawaii State Department of Agriculture (HDOA) and University of Hawaii (UH) Cooperative Extension encourage all who may be affected by this rule to educate themselves about FSMA. Compliance dates, exemptions, and more information on the rule can be viewed on the HDOA website at http://www.hifarmsafe.org/.

Do I Need to Comply?

To help determine whether your farm operation is covered under this new rule, please visit https://uidaho.co1.qualtrics.com/jfe/form/SV_8D1ucSlEeq749AF and go through an anonymous self-guided decision tool provided by the University of Idaho. If you know you are covered by this rule, please contact HDOA for more information.

What is the Hawaii Department of Agriculture's role?

The HDOA, through an FDA grant, is working to understand the scope of produce grown in Hawaii that is covered by the Produce Safety Rule. The goal of this grant is to implement an integrated food-safety program that will prevent or significantly reduce the likelihood of a foodborne illness through standardized and consistent implementation of the Produce Safety Rule (PSR).

Throughout this year and the next several years, HDOA and grant partner, UH Cooperative Extension, will be working together to provide **outreach, education, and technical assistance** to the produce industry to help them comply with the Produce Safety Rule.

We encourage you to access HDOA's new FSMA Produce Safety website: http://www.hifarmsafe.org/. Work has also begun identifying and developing supplemental instructional materials, videos, and Hawaii-specific communications to assist farm operations in implementing practices for the safe growing, harvesting, packing, and holding of produce covered by the rule.

What is the University of Hawaii Cooperative Extension's Role?

UH Cooperative Extension, in partnership with HDOA, is working to meet the education, outreach and technical assistance needs of the Hawaii produce industry. Funding through this collaboration will enable Extension to deliver FDA approved Produce Safety Alliance courses at a significantly reduced cost and conduct voluntary on-farm readiness reviews with farm operations prior to inspection.

Need Produce Safety Rule Accredited Training?

The FSMA Produce Safety Rule requires that one representative from each farm receive training accredited by the FDA. Below are training information and curricula that meet FDA requirements.

Training

Produce Safety Alliance (PSA) training is the only standardized national training program approved by FDA to prepare produce operations in meeting the regulatory requirements in FSMA Produce Safety Rule. Trained and certified staff from HDOA and grant partner UH Cooperative Extension are providing Produce Safety Alliance training courses statewide this fall and winter. This eight (8) hour, one-day Grower Training Course will cover key areas and requirements of the Produce Safety Rule including:

1. Introduction to Produce Safety
2. Worker Health, Hygiene, and Training
3. Soil Amendments
4. Wildlife, Domesticated Animals, and Land Use
5. Agricultural Water
6. Postharvest Handling and Sanitation
7. How to Develop a Farm Food Safety Plan

Please check the HDOA and/or UH Extension websites for future Hawaii training dates. Additional training can be found throughout the United States. Please visit the Produce Safety Alliance website at www.producesafetyalliance.cornell.edu/

For more information on training requirements, dates, location, cost, and registration please go to http://www.hifarmsafe.org/ or contact Luisa F. Castro at luisa.f.castro@hawaii.gov.

Whom Do I Contact?

HDOA: Please contact HDOA for assistance with education, training, regulations, and compliance.

Department of Agriculture
STATE OF HAWAII

HDOA Questions:
http://www.hifarmsafe.org/

Luisa F. Castro, PhD
FSMA Program Manager
luisa.f.castro@hawaii.gov
(808) 974-4130

UH Cooperative Extension: Please contact UH Cooperative Extension for assistance with education, training, and technical assistance.

COOPERATIVE EXTENSION
UNIVERSITY OF HAWAI'I AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

Honolulu Extension Office
1955 East-West Rd. Ag Sci III, Rm. 217, Honolulu, HI 96822
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Komohana Research and Extension Center
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Kahului Extension Office
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tel: (808)244-3242
kahului@ctahr.hawaii.edu

Molokai Extension Office
P.O. Box 394
Hoolehua, HI 96729
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molokai@ctahr.hawaii.edu

Appendix C

Kamuela Post-Harvest Facility/Food Hub - Feasibility Study Survey Responses

# of Years Farming	Farm Acreage	Type of Farming	Produce Safety Alliance Training - Grower Training or Train-the-Trainer Course	FSMA Amenities Desired & Amount Willing to Pay/Month	FMSA Concerns	KVCP Issues	Overall Suggestions
20+	26-28	Family corporation, truck farming	Grower Training Course Cheryl Hirayama completed on May 5, 2017	None	Rules and regulations should be modified to Hawai'i's farming operations because the acreage here is way less than on the Mainland. Very costly to be in compliance.	- Need new compressors for the refrigerators as they are the original ones. - As for the proposed construction of a certified post-harvest facility to be built at KVCP, are all farmers required to be a food safety certified farm to use the facility? If not, does this mean that their produce that is coming from this facility considered to be food safety certified? If users must be a food certified farm, emphasis should be towards assisting the farmers to become a food safety certified farm first	Because of the decline in farmers, it is extremely difficult for them to run KVCP while running their businesses. More so if a certified post-harvest facility is built, a manager must be hired to maintain said facility; i.e. setting schedule for use of facility, cleaning and sanitizing food contact surfaces, pest management and sanitation plan, perform periodic water sampling and microbial testing, etc. Since the State of Hawaii is for agriculture sustainability, it should consider taking over the KVCP since the few farmers that we currently have cannot handle this. Also, on or about 2014 Gov Abercrombie before leaving office allegedly awarded $3M to Hawaiian Homes in Puukapu, HI for agricultural development which supposedly included a certified post-harvest facility. It has been four years, and we are not aware of any developments nor of any accountability of these funds. If this was awarded, do you know the status of the alleged developments?
20+	20	Family run, vegetables	No	Marketing: Have the farmers drop the produce off at KVCP and have the State buy it and sell it. The farmer is paid by the State as an employee with full benefits.	FSMA was a poor way of dealing with food safety. It does not consider where most food safety issues originate. It will only ensure that small family-sized farms will be further overworked.	Lack of use. What comes first? The horse or the wagon?	The facility is not the problem. Farmer numbers are the problem. As we start seeing more farmers retire or cut back on production, the facility will become hard to justify. To put money into a facility that will see less and less use is not smart. It is better to look at ways to encourage more farmers and greater production first. Marketing and production cost issues should be resolved so that farmers can realize greater profit margins. This hopefully will help more people consider farming.
20+	9.75	Family run, organic vegetables, farmerly flowers		We probably would NOT use this facility			
20+	11	Family commercial farm	No, but all have food safety certification	(FSMA) not applicable to small farms under how much now!	Never going to work for small farms in South Kona. Only advantage to large farms.		Build a cold storage warehouse in South Kona for avocados. 900 farmers need help there and can't afford to drive to Kamuela.
1 - 5	10 (5 acres for greenhouse)	Corporation, mini cucumbers and cherry tomatoes	All are food safety certified, sells to Costcos and Safeways all over the state	None, only use as a drop-off location to distributors (Armstrong, other distributors who sell to smaller retail stores). Does not use the refrigeration or vacuum cooling.			KVCP needs to be upgraded to meet food safety standards. Needs to be cleaner/more sanitary. Would recommend that a full-time employee manage the facility, farmers and processes to ensure compliance.
20+	2	Family commercial	No	Leafy Greens: Washing, packing, cold storage Orchard, fruit: Washing, packing, cold storage, commercial kitchen Root crops: Washing, packing, cold storage, commercial kitchen Corn: Washing, packing, cold storage Peas, beans, zucchini, etc.: Washing, packing, cold storage, commercial kitchen Taro: Washing, packing, cold storage, commercial kitchen	Who will be responsible for compliance of the facility with food safety (day to day)? This will be a factor in how much I am willing to pay for usage of the facility.	As of this time, I do not use the facility	I have some, but will withhold comment until the PV system is worked out and the Directors of the Cooling Plant has given their suggestions.
20+	8.5	Certified organic market garden	Grower Training Course Completed in February 2018	For all types of produce listed: Cold storage			A valuable component would be secure, vermin-proof storage for corrugated cardboard boxes and other packaging. Volume discounts could be shared if storage were available. Many small operations don't have weather-proof secure storage for volume.
	10+	Not currently farming	No				Although not farming, looking at future use (5+ years), it would be nice to have a commercial kitchen. It would have to be managed in order to do that, paid staff would be needed - managed and maintained both the Cooling Plant and kitchen.
	10	Not currently farming					
20+	5	Retired from truck field farming					
20+	15	Family	No, we have not / currently we do not raise ccommerically because we do not have washing and processing facilities	Leafy Greens: Washing, packing, cold storage Orchard, fruit: Washing, packing, commercial kitchen Peas, beans, zucchini, etc.: Washing, packing, cold storage, commercial kitchen, canning Jams, jellies, pickles: Washing, packing, commercial kitchen, bottling - $100/month			
16 - 20	5	Commercial, greenhouse, cucumbers			General hygiene and tidyness	Cleanup birds' nests	General cleanup
1 - 5	20 (farming < 1/2 acre currently)	Family	No	Orchard, fruit: Washing, packing, cold storage, commercial kitchen, dehydrator	Added cost, time and inconvenience of needing to use commercial kitchen or hub vs. being able to perform these activities at homestead using good food safety practices		Haven't been to the facility, so none at this time
1 - 5	10	Commercial	No	All produce: "Maybe" washing, packing and commercial kitchen Cold storage: leafy greens, orchard, fruit, root crops, corn, tomato, peas, beans, zucchini, etc.	None	N/A	
	30k+ (co-op total)	Co-op of livestock producers		Meat: cold storage, commercial kitchen, processing, retail - $1000/month			
1 - 5		Family	No	Leafy greens: cold storage, commercial kitchen Tomato sauce, banana bread, value added products to sell at farmer's market			
1 - 5	1	Small scale garden/farm & food educator	No, only kitchen food safety certification for food preparation	Beans: Washing, commercial kitchen Squash: Washing, packing, cold storage, commercial kitchen, retail, food education classroom - $100 - $200/month or $1000+/year	I am a garden scale farm less than 1 acre. I do sell, but I'm confused how I fit into it. My crop is usually considered "low risk" or "no risk" (pumpkin/kabocha). But I am unsure how small micro producers fit in. I do not use manures, and I farm organically.		I'd support a commercial kitchen where small farms can prep their vegetables and transform them into value added products. I am interested in fermentation of vegetables (krauts) pickles, jams, dehydration, and baking. I also add value by making my own pet food with pumpkin. I chop/prep pumpkin for farmer's markets but retail stores are interested too.
1 - 5	1/2	Commercial - small scale (just starting up)		Leafy greens: Washing, cold storage Orchard, fruit: Washing, cold storage, commercial kitchen Root Crops: Washing, cold storage, commercial kitchen Peas, beans, zucchini, etc: Washing, cold storage, commercial kitchen	Not direct issues with facility or regulations, but making sure all users are held accountable		
1 - 5	> 1	Commercial	No	Root Crops: Washing, packing, commercial kitchen, dehydrator, making powder (ginger, olena) - $50 - 100/month	Well I guess my first thought is if it would be worth it to drive up to Kamuela and wash/pack there when I could do the same at my house? I'm not fully aware of what the FSMA compliance ensures - maybe less liability, a stamp/guaranteed FSMA product that opens more markets, etc.		None at this time, thank you for working on this and getting farmers' opinions

Appendix D

November 14, 2018 SSFM 2017_141.000

State of Hawai'i, Department of Agriculture (DOA)
Kamuela Vacuum Cooling Plant – Master Plan Feasibility Study
Focus Group Meeting #2

MEETING SUMMARY

Date Held: November 14, 2018
Time: 5:30 – 7:50 PM
Location: Waimea Middle School, STEAM Learning Center (Z105)
67-1229 Māmalahoa Highway, Kamuela, HI 96743

MEETING OBJECTIVES:

I. Inform the community on the following:
- Project goals, objective and process
- Mail-out survey and Focus Group Meeting No. 1 feedback received
- Recommended upgrades to the existing Vacuum Cooling facility
- Recommended addition of a commercial kitchen and post-slaughter facility
- Associated costs and revenue from the commercial kitchen
- Required permits and estimated schedule to obtain them
- Recommended facility manager for the commercial kitchen

II. Gather feedback from stakeholders on the following:
- Recommended existing Vacuum Cooling facility improvements
- Addition of a commercial kitchen and post-slaughter facility, and its estimated costs and revenue generation

MEETING ATTENDEES:

DOA:	Janice Fujimoto
SSFM:	Darin Mar, Jared Chang, Carah Kadota
DOA (Hawai'i Island):	David Greenwell
Public:	A copy of the sign-in sheet is attached

MEETING NOTICES:

SSFM prepared a meeting flyer that was mailed out to Waimea's farming and community stakeholders. A list of the stakeholders is attached.

A copy of the meeting flyer is attached.

MEETING SUMMARY:

Darin Mar (SSFM) opened the meeting by introducing the project team and recognizing special attendee Councilmember Tim Richards. Darin presented the project goals, objectives, and process and background information on the Kamuela Vacuum Cooling Cooperative (KVCC). He shared the feedback received from the mailout survey and from Focus Group Meeting #1. He then shared the recommendations for improvements to the existing Vacuum Cooling facility, the addition of a commercial kitchen, post-slaughter facility and adding a facility manager. Jared Chang (SSFM) discussed the potential required permits and estimated schedule through permitting, design and construction.

Following the PowerPoint presentation, Darin prompted meeting attendees to share their thoughts and concerns in an open-discussion format.

The meeting ended at approximately 7:50PM.

PRESENTATION:

A copy of the PowerPoint presentation is attached.

HANDOUT:

The handout provided at the meeting is listed below and is also attached.

1. "Food Safety Law and Your Farm" Fact Sheet

COMMENTS COLLECTED AT THE MEETING:

The following comments were made during the open-discussion. Comments are *italicized* and separated by topic. Responses to questions and/or comments are listed under **bold** heading.

Kamuela Vacuum Cooling Cooperative (KVCC) Issues/Comments

- *Currently have about 18 to 20 members, but only about a dozen are currently active – the rest have discontinued farming.*
- *KVCC members think the co-op operations have been sustainable in covering bills. However, it was also mentioned that the co-op is "culturally sustainable" described as the members within the co-op will do what is necessary to keep the vacuum cooling plant operating, meaning they work more, do maintenance on their own, etc.*
- *A FSMA expert inspected the Kamuela Vacuum Cooling Plant (KVCP) and their main concern for meeting compliance was the roll-up entry doors:*
    - *No protection from rodents, birds and bugs when it is open*
    - *Doors stay open throughout the day*

Kamuela Vacuum Cooling Plant (KVCP) Issues/Comments

- *David (DOA Hawai'i Island) guarantees that lead paint was used to paint the abandoned ag warehouse because it was originally a structure from Kawaihae Harbor and was relocated to the DOA property.*
- *Floor needs to be repaired – it is currently asphalt and concrete, but needs to be completely concrete*
- *How can they prevent cross-contamination of produce from different farms?*
- *Pallets come from different farms, ranches, etc. and there is no control measures in place to minimize cross contamination between produce.*

- *Cold storage could be compartmentalized so that it can better utilized*
    - *Ex. Currently temperature is too low for tomatoes to be refrigerated – could create compartmentalized cold storage that are set to different temperature zones suitable for different produce*
- *Hire a FSMA inspector to assess the KVCP site for recommended upgrades to achieve compliance*
- *Photovoltaic system project will help offset electricity costs by $20-30k a year*
    - *New vacuum cooling chamber and reduction in vacuum cooling usage also contribute to lower electricity costs*
- *Look for an example of a food safety plan for a vacuum cooling plant that the KVCP can use*
- *Does KVCP need to have a facility manager?*
- *We need the costs for the upgrades recommended to the existing KVCP so that the community can lobby legislators to fund.*
- *What are the estimated costs to improve the KVCP to be FSMA compliant?*
    - ***Estimated to cost about $200k***

Commercial Kitchen and Post-Slaughter Facility Issues/Comments

- *Post-slaughter facility would be inspected by USDA*
    - *Animals are already USDA certified during time of slaughter, but inspection follows each stage of production*
- *Can the new facilities connect to the Parker Ranch sewer?*
    - ***SSFM will check on this***
- *If proposing a commercial kitchen, shouldn't we be inviting more community members to the meeting?*
    - ***The project objective was to promote farming and identify facilities that farmers would benefit from having access, this resulted in the concept of a commercial kitchen. As design progresses more community members will be asked for their input.***
    - ***Carol Ignacio and Patti Cook sent the meeting flyer to about 40 people that they thought would be interested in attending***
- *Hawai'i Island Meat Cooperative (HIMC) pays about $25/hour for a manager*
    - *There is interest in sharing a facility manager with another operation.*
- *Who else can use the post-slaughter facility?*
    - ***Only one operator, per USDA rules***
- *Post-slaughter facility is scalable/modular – it can be adjusted as demand grows*
- *Are there other groups interested in a commercial kitchen?*
    - *St. James Church, start-up businesses/entrepreneurs, Waimea Nui, Kanu Hawai'i*
    - *Capital investment is too high for these entities to start their own commercial kitchen so none have been constructed to date.*

Prepared By: Carah Kadota
SSFM International, Inc.

-end-

ATTACHMENT:
Sign-in Sheet

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting Date: November 14, 2018 | Wednesday Time: 5:30 P.M.

Location: Waimea Middle School, STEAM Learning Center (Z105)

NAME	ORGANIZATION	PHONE	EMAIL
Raymond Kawamata	Farmer	808 960 6959	rkawamata-farms@gmail.com
Patti Cook	Cmty Assn + Middle School	957-2873	cookshi@aol.com
James Kong	NONE	381-3262	jkong2071@gmail.com
Noa Bowman	'Anuenue Farms	808-345-8088	

KAMUELA VACUUM COOLING PLANT

SIGN-IN SHEET

Purpose: Community Meeting Date: November 14, 2018 | Wednesday Time: 5:30 P.M.

Location: Waimea Middle School, STEAM Learning Center (Z105)

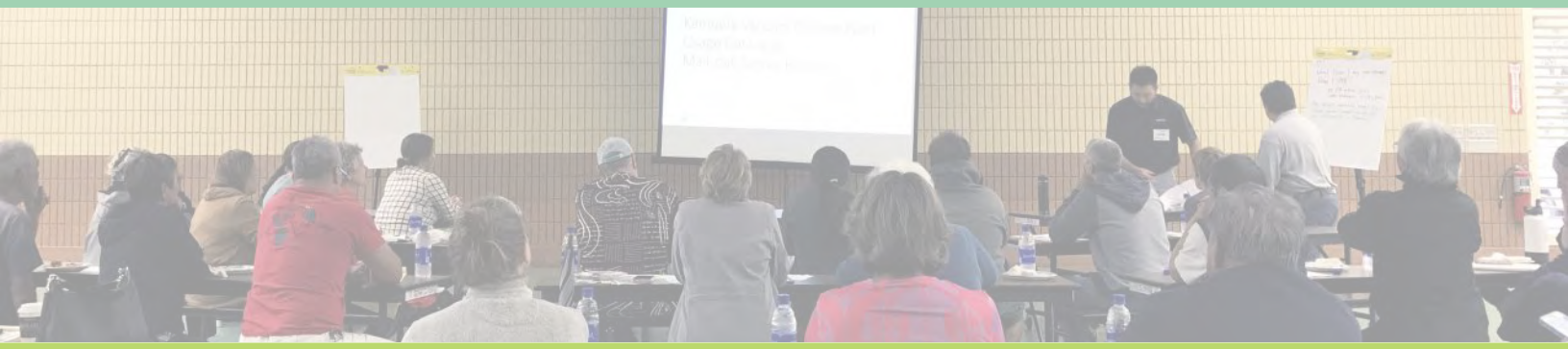
NAME	ORGANIZATION	PHONE	EMAIL
Carol Ignacio	DLP	2024958	carolr.ignacio@sharecare.com
DAVID OSHIRO		345-4416	DKOOSHIRO@HAWAII.RR.COM
Tim Richards	COH	8872069	TIM.RICHARDS@HAWAIICOUNTY.GOV
Mike Amado			
DAVID GREENWELL	DOA	960 3035	
Rose Perry			
Max Bowman			
Keawe Vaden		885-1904	

ATTACHMENT:
Meeting Flyer

NEW MEETING LOCATION!

State of Hawaii
Department of Agriculture

KAMUELA VACUUM COOLING PLANT FEASIBILITY STUDY



The Department of Agriculture is initiating a feasibility study to determine the needs of the farming community in developing a master plan expansion of the Kamuela Vacuum Cooling Plant (KVCP) property. A second meeting has been scheduled to share the conceptual master plan layout and recommendations for the KVCP. Feedback will be collected and will be included in the final master plan and feasibility study.

PLEASE JOIN US AT

FOCUS GROUP MEETING #2!

We Want Your Input!

WEDNESDAY | NOVEMBER 14th | 5:30PM - 7:30PM

Waimea Middle School
STEAM Learning Center, Demonstration Lab (Z105)*
67-1229 Mamalahoa Highway
Kamuela, HI 96743

*To access the STEAM Learning Center, enter Waimea School campus from Mamalahoa Hwy across from Carter Professional Center as if going to the cafeteria. Stay on entry drive and pass the cafeteria parking lot - the drive will make a sharp left (east) and you will now be able to see the 2-story STEAM building. You may park in the small lot immediately to the south of the entry drive sharp turn or continue on past more class-rooms and portables to park on the edge of the entry drive - fronting the Mala'ai school garden or field. DO NOT DRIVE ON THE FIELD to avoid damaging irrigation lines. A flash light (to see when walking back to your car) and a sweater or jacket is recommended.

If you require special assistance in these events (i.e. interpreter, wheelchair accessibility, etc.) please contact
Jared Chang at (808) 356-1242 or jchang@ssfm.com
at least three (3) business days prior to the meeting.

ATTACHMENT:
PowerPoint Presentation

State of Hawai‘i

Department of Agriculture

KAMUELA POST-HARVEST FACILITY/FOOD HUB FEASIBILITY STUDY

FOCUS GROUP MEETING #2

Introduction

- Project Goals and Objective
  - State of Hawai‘i’s Department of Agriculture is proposing to expand the Kamuela Vacuum Cooling Plant to include a Food Safety Modernization Act (FSMA)-certified, post-harvest facility/food hub
  - A master plan and feasibility study will be prepared to identify the most efficient and effective manner to utilize the site, and to explore the requirements and costs associated with the plan

Introduction

- Process:
  - ✓Identify needs and opportunities through public outreach and feedback from farmers in the Waimea area
    - ✓ Mailed out survey
    - ✓ Focus Group Meeting #1 (August 7, 2018)
  - ✓Based on feedback, a conceptual master plan and draft feasibility study for the proposed expansion of the Kamuela Vacuum Cooling Plant (KVCP) will be prepared
  - ❑Conduct another Focus Group Meeting to discuss the conceptual master plan and draft feasibility study
    - Focus Group Meeting #2 (November 14, 2018)
  - ❑Incorporate feedback into the Final Master Plan and Feasibility Study

Kamuela Vacuum Cooling Plant

Kamuela Vacuum Cooling Plant

Kamuela Vacuum Cooling Cooperative

- Entered lease agreement with the Department of Agriculture on September 22, 1994 for a term of thirty-five (35) years

- Membership:
  - Members currently pay $200 annually to use the facility
  - Additional rate schedule as of January 1, 2014:
    - Vacuum cooling and refrigeration charges:

a.	Member:	$.021/lb. vacuum-cooling
		$.015/lb. refrigeration only
b.	Non-member:	$.042/lb. vacuum-cooling
		$.030/lb. refrigeration only

    - Repair/maintenance fee of $.001/lb. on vacuum and non-vacuum cooling items
    - Pallet charge of $2.00/pallet for any items not attached to chilled or vacuum cooled products and stored on KVCP property
    - Containers parked on premise: $50/container/mo.

Summary of Comments
Mail-out Survey &
Focus Group Meeting No. 1

Mail-out Survey Feedback

- Desired Amenities/Services:
  - Washing = 3
  - Packing = 3
  - Cold Storage = 5
  - Commercial Kitchen = 4
  - Canning = 1
  - Bottling = 1
  - Dehydrator = 1
  - Marketing = 1
  - Other comments
    - FSMA not applicable to small farms
    - Only use as a drop-off to distributors

- FSMA Concerns:
  - Rules and regulations should be modified to Hawai‘i’s farming operations because the acreage here is way less than on the Mainland. Very costly to be in compliance.
  - Does not consider where most food safety issues originate. It will only ensure that small family-sized farms will be further overworked.
  - Never going to work for small farms in South Kohala. Only advantage to large farms.
  - Added cost, time and inconvenience of needing to use commercial kitchen or hub vs. being able to perform these activities at homestead using good food safety practices

Focus Group Meeting No. 1 Feedback

- FSMA Compliance
  - Lot of paperwork
  - Where do we receive FSMA training?
    - Information and resources can be found on the handout
  - FSMA is a federal law, not a certification
  - GAP third party audit requirements are dependent on the buyer
- Desired Amenities and Activities at the KVCP
  - Need a full-time worker
  - Mobile slaughterhouse
  - Retail space to assist with marketing
  - Create a food hub – consolidate produce from various farms to be sold/distributed to stores

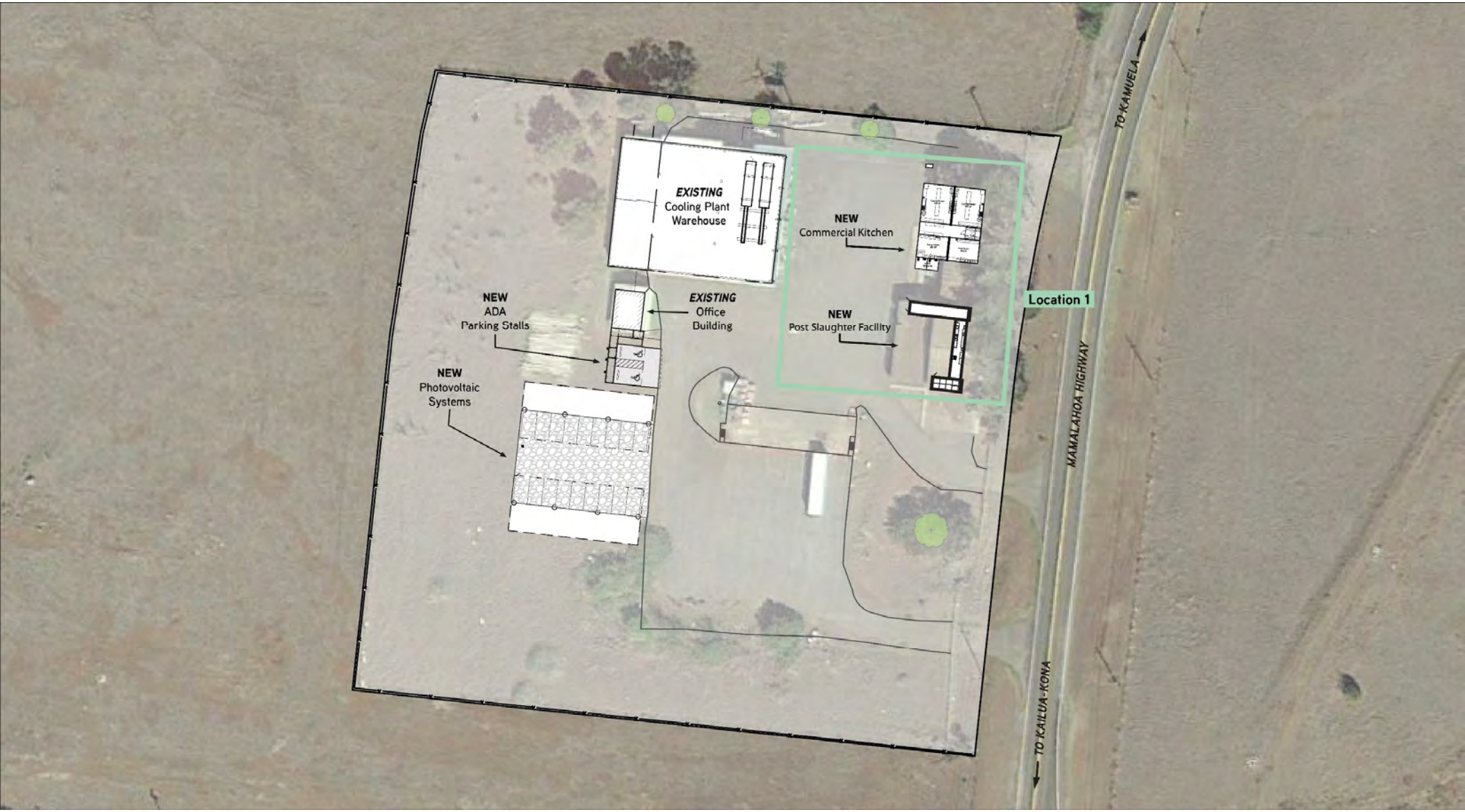
Focus Group Meeting No. 1 Feedback (cont.)

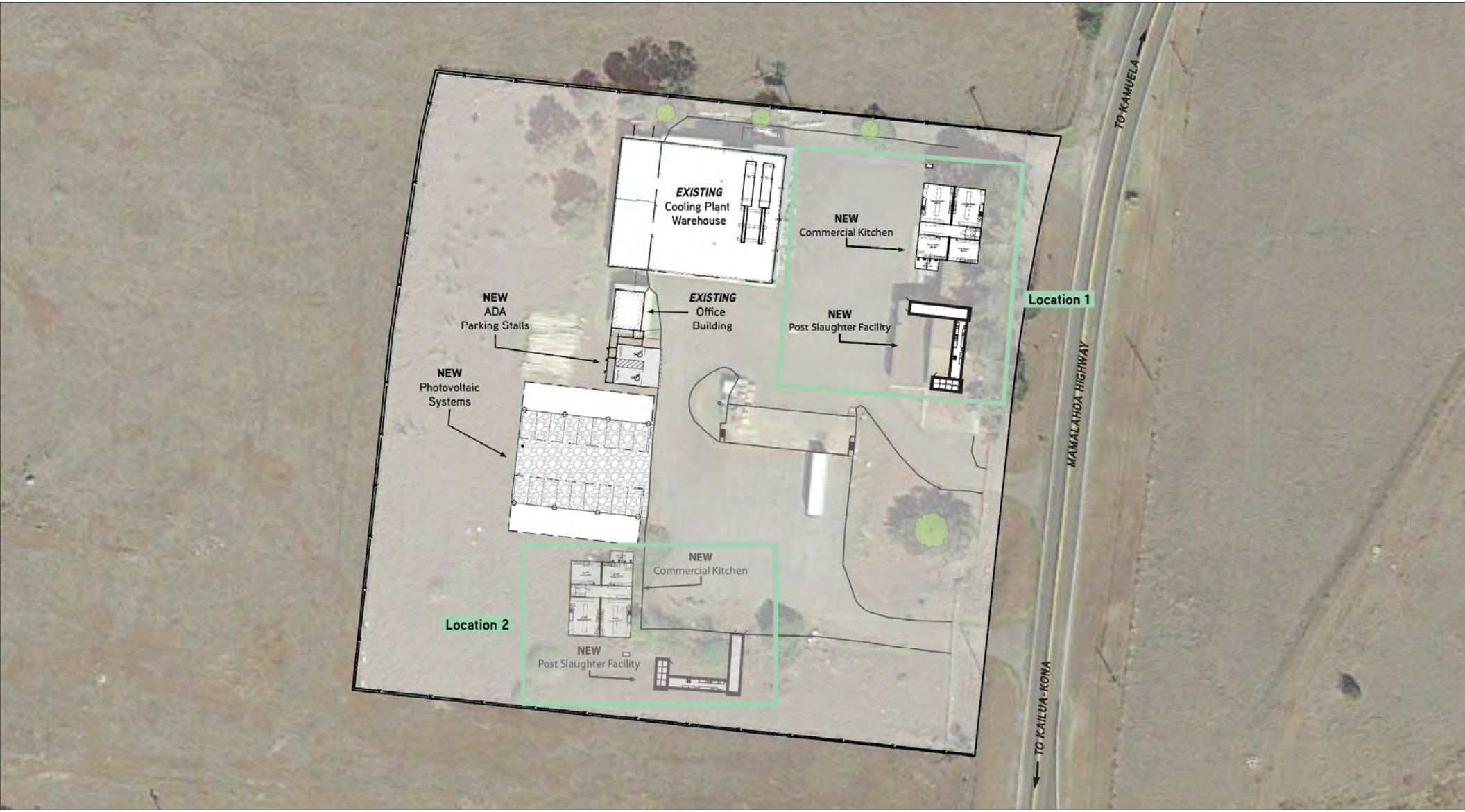
- Community kitchen
  - Include amenities for canning, chopping, prepping, dehydrating, and hosting cooking classes
  - Currently have to use certified kitchens at restaurants during non-working hours
  - Community kitchen could open the opportunity for people to start catering businesses
- Existing Concerns
  - Demolish the old warehouse
  - Hard for the co-op to maintain the facility by themselves
  - How to prevent cross-contamination?
  - Difficult to get people to participate in cleaning and maintenance activities
  - The facility is fine the way it is, only small improvements are needed

KVCP Existing Site Upgrades and Expansion Recommendations

Recommendations for Upgrades to Existing Site

- Additional washing stations
  - One handwashing station in the warehouse
    - Including posted instructions on handwashing process and when it is required
  - One washing station/area outside of the warehouse (for tools, equipment, footwear, and/or clothing)
- Install a covered/secured entry to prevent birds and bugs from easily entering facility
- Water dispenser or fountain
  - To have potable drinking water easily available to address health and safety standards for facility users
- Contract pest control company to eliminate birds, bugs, rodents, etc.
- Fix and seal any gaps in refrigeration/cold storage area and warehouse
- Install caged storage spaces in refrigeration/cold storage area
- Preparation of a procedural manual to include good hygiene and best practices when using the facility
  - Also to include routine cleaning of warehouse and vacuum equipment


EXISTING
Cooling Plant
Warehouse
NEW
Commercial Kitchen
NEW
ADA
Parking Stalls
EXISTING
Office
Building
NEW
Post Slaughter Facility
Location 1
NEW
Photovoltaic
Systems
TO KAMUELA
MAMALAHOA HIGHWAY
TO KAILUA-KONA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TO KAMUELA
MAMALAHOA HIGHWAY
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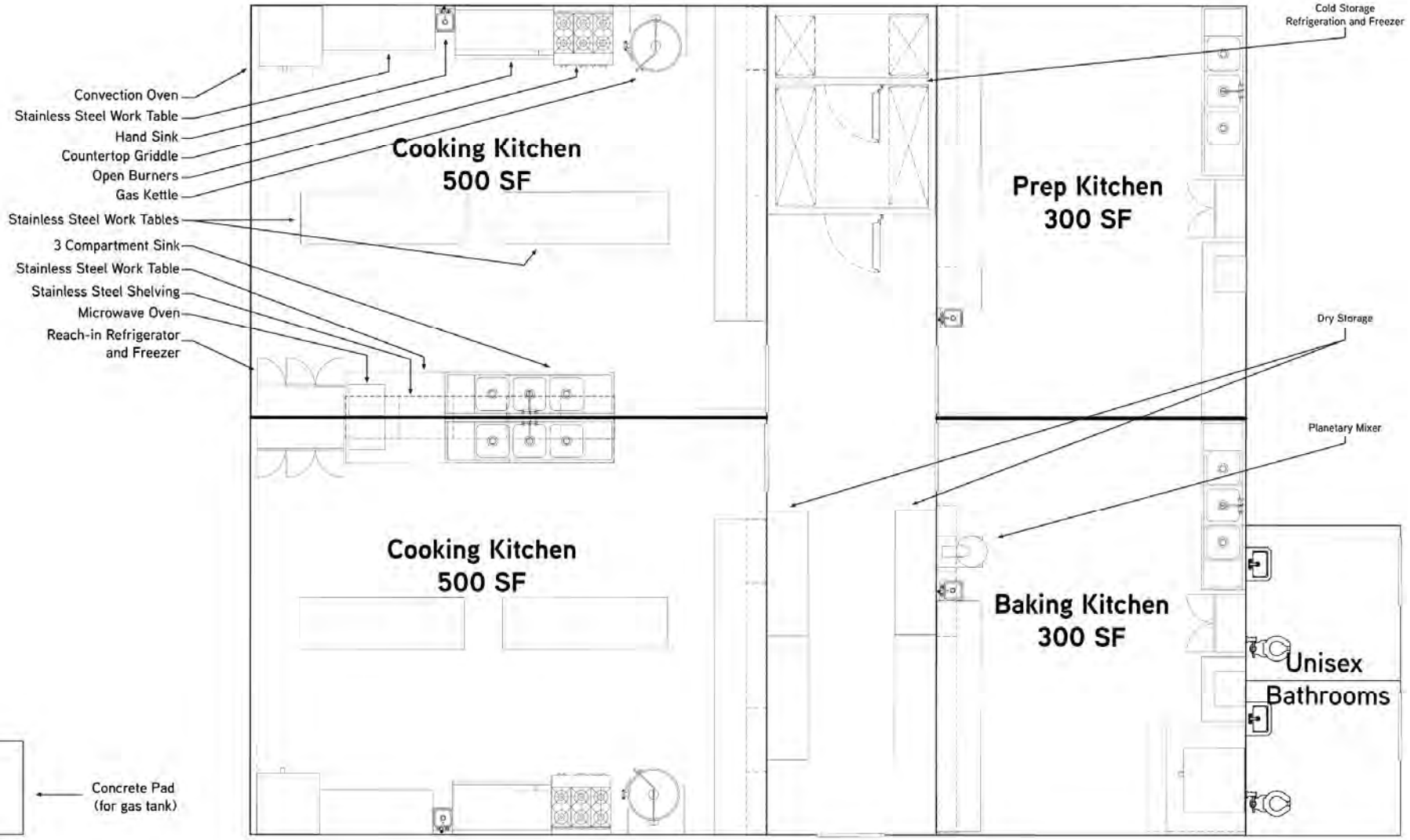
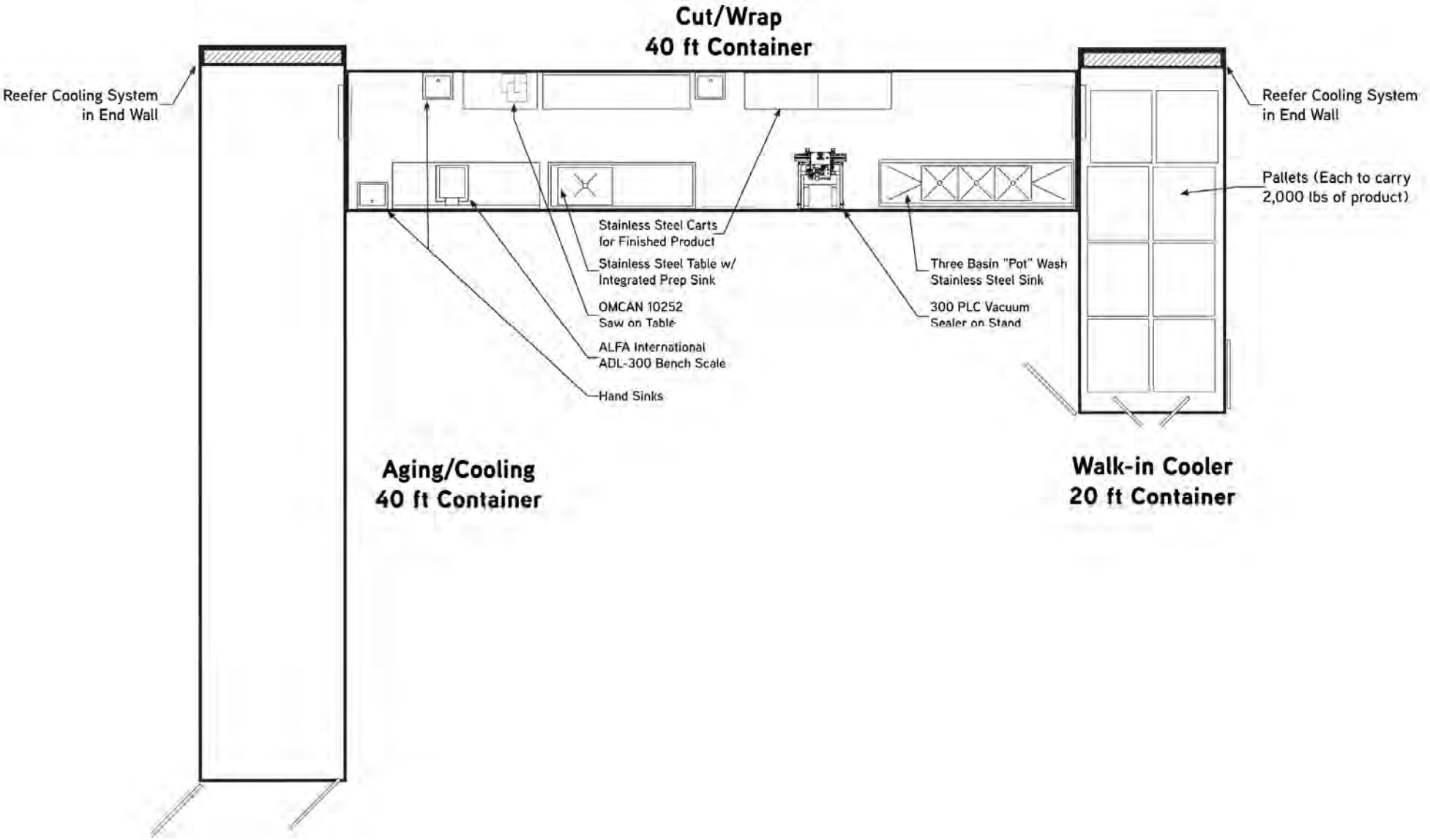

Convection Oven
Stainless Steel Work Table
Hand Sink
Countertop Griddle
Open Burners
Gas Kettle
Stainless Steel Work Tables
3 Compartment Sink
Stainless Steel Work Table
Stainless Steel Shelving
Microwave Oven
Reach-in Refrigerator and Freezer
Cooking Kitchen
500 SF
Cooking Kitchen
500 SF
Prep Kitchen
300 SF
Baking Kitchen
300 SF
Cold Storage
Refrigeration and Freezer
Dry Storage
Planetary Mixer
Unisex
Bathrooms
Concrete Pad
(for gas tank)


Cut/Wrap
40 ft Container
Reefer Cooling System
in End Wall
Stainless Steel Carts
for Finished Product
Stainless Steel Table w/
Integrated Prep Sink
OMCAN 10252
Saw on Table
ALFA International
ADL-300 Bench Scale
Hand Sinks
Three Basin "Pot" Wash
Stainless Steel Sink
300 PLC Vacuum
Sealer on Stand
Reefer Cooling System
in End Wall
Pallets (Each to carry
2,000 lbs of product)
Aging/Cooling
40 ft Container
Walk-in Cooler
20 ft Container

Estimated Expense and Revenue

Expenses	Use	Rate	Total with Estimated Operations	Monthly Total (rounded up)
All Gas Powered Equipment	455,000 BTU/hour[1] or 4.97 gal/hour	$9.00/gal	$357.84 for 8 hours/day[2]	$ 10,800.00
Total Electricity Costs	24 hrs/7 days a week	$0.30/kw/hr	5,000 kw/hr	$1,500.00
Total Water Costs	----	----	----	$400.00
KVCP Facility Manager	1 full-time employee	$50,000.00/year		$4,200.00
TOTAL				**$ 16,900.00**

Revenues	Use	Rate	Total with Half of the Estimated # of Users	Total with 4 hours of Operation/per kitchen/per day	Monthly Total (rounded up)
Revenue from Dry Storage	12 months	$80.00/month	$ 560.00		$ 600.00
Revenue from Cold Storage	12 months	$100.00/month	$ 700.00		$ 700.00
Revenue from Frozen Storage	12 months	$100.00/month	$ 700.00		$ 700.00
Estimated Number of Users	15				
Usage Fee	4 kitchens	$60.00/hour		$ 960.00	$ 20,200.00
Membership Fee	15 members	$100/user			$ 1,500.00
TOTAL					**$ 23,700.00**

[1]Assumes all gas-powered equipment uses 65,000 BTU/hour
[2]Assumes gas-powered equipment will be in operation for half of the time the kitchen is open

Demolition of Old Vacuum Cooling Warehouse

- Hazardous material handling (lead paint and asbestos)
- Removal and disposal
- Estimated cost = $450,000

Infrastructure

Improvements	Estimated Cost
Site Demolition and Erosion Control	$2,900.00
Site Work	$357,200.00
Utilities – Water	$37,800.00
Utilities – Sewer	$83,900.00
Utilities – Drainage	$23,800.00
Electricity (for underground conduit infrastructure)	$80,000.00
Propane gas (construction of concrete pad and associated piping to the building)	$50,000.00
TOTAL	$**635,600.00**

Estimated Building Costs

Planning, Permitting and Site Work		
Planning and Permitting	$	100,000.00
Demolition	$	450,000.00
Infrastructure	$	635,600.00
TOTAL	**$**	**1,185,600.00**
Option 1 - Concrete Building		
Design	$	200,000.00
Construction	$	420,000.00
Commercial Kitchen Equipment	$	600,000.00
TOTAL OPTION 1	**$**	**2,405,600.00**
Option 2 - Pre-Engineered Modular Kitchen		
Design	$	100,000.00
Furnished and installed onsite with kitchen equipment	$	700,000.00
TOTAL OPTION 2	**$**	**1,985,600.00**

Permits/Schedule

- Phase I
  - DOA confirms conceptual design, programming for master plan improvements, and full design
  - Would also include civil site work design, architectural design and agency coordination
  - Permits required **(estimated completion = 2 – 3 years)**:
    - HRS Chapter 343 compliance (which would require an Environmental Assessment)
    - Plan Approval (at 60% design)
    - NPDES and Building Permit (at 90% design)
    - IWS Permit and DCAB review (at 100% design)
- Phase II
  - **Construction and demolition = 1 – 2 years**

Compliance with FSMA

- **FSMA's Preventative Controls for Human Food Rule**
  - KVCP facility must be registered with the FDA
    - According to Section 415 of the Food, Drug, & Cosmetic Act (FD&C Act)
    - Renewal of registration occurs every other year
  - Requires a food safety plan to be in place

Requirements for Users of the Kitchen

1. **Proof of Citizenship** (Hawai‘i State ID; Birth Certificate; Naturalization Records; Alien Registration Card; U.S. or Foreign Passport)
2. **Proof of Residence** (Driver’s License/State ID; Recent Postmarked Mail; Rental Agreement/Utility Bill)
3. **General Excise Tax License** (To apply for this see Form BB-1 State of Hawai‘i Basic Business Application)
4. **Taxpayer Identification Number** (Social Security Number of Federal EIN)
5. **TB Clearance** (For any/all persons handling food)
6. **General Business Liability Insurance Policy** (with at least $1,000,000.00 minimum coverage – the KVCP would need to be listed on policy as an additional insured)
7. **ServSafe Food Handlers Certification** (As mandated by the Department of Health, it requires at least one employee present at every food establishment during normal hours to have a formal food handlers training level certification)
8. **Temporary or Permanent Food License/Permit** (Issued by the Department of Health – Sanitation Division)

Facility Manager

- Minimum Qualifications:
  - PSA Grower Training Course completion
  - FSPCA Preventive Controls for Human Food Course completion
  - ServSafe Food Manager Certification
  - Agricultural/farming experience (minimum of five years)
  - Business management experience (minimum of five years)

Facility Manager (cont.)

- Primary Responsibilities:
  - Bookkeeping to include billings, accounting, banking, etc.
  - FDA registration renewal and audit preparation
  - Drafting and enforcement of the facility's Food Safety Plan
  - Record-keeping (vacuum cooling and refrigeration usage, commercial kitchen usage, repairs/maintenance, equipment cleaning, etc.)
  - Scheduling of commercial kitchen usage (and vacuum cooling, if needed)
  - Pest control services (contracting and scheduling routine services)
  - Equipment and facility repairs and maintenance (contracting and scheduling routine maintenance services and repairs when necessary)
  - Membership management and solicitation
  - Grant-writing for facility and/or co-op development

Post-Slaughter Facility

- Hawai‘i Island Meat Cooperative’s (HIMC) Post-Slaughter Facility
  - Carcasses will be transported from HIMC’s Mobile Slaughterhouse to the Post-Slaughter Facility (via refrigerated box truck)
  - Facility will “chill-cut-wrap”: carcasses are cut down to market-size pieces, packaged/wrapped and then chilled in a refrigerator unit
- Two (2) 40’ x 8’ units
  - One for processing and cutting
  - One for refrigeration
- Fully managed by HIMC
  - Two employees operating the facility
  - Non-members are allowed to use

ATTACHMENT:
Meeting Handout

Food Safety Law and Your Farm

What is the Food Safety Modernization Act (FSMA)?

The Food Safety Modernization Act (FSMA) gives the U.S. Food and Drug Administration (FDA) authority to regulate food from farm to fork, which enables the FDA to better protect the public by strengthening the food safety system. FSMA was signed into law on January 4, 2011 and represents the nation's largest overhaul of the federal food safety laws since 1938. The goal is to prevent foodborne outbreaks before they occur by taking proactive measures. FSMA has created seven (7) new federal rules that address produce, human food, animal food, transportation, and imported food.

What is the Produce Safety Rule (PSR)?

The Produce Safety Rule is part of FSMA and establishes science-based minimum standards for the safe **growing, harvesting, packing, and holding of fruits and vegetables** grown for human consumption. As of January 26, 2016, this rule is in effect and compliance dates for some parts of the rule are already underway, with full compliance for many farms starting in January 2018.

Many farm operations will be impacted by at least part of the FSMA Produce Safety Rule, even farm operations that are very small. The Hawaii State Department of Agriculture (HDOA) and University of Hawaii (UH) Cooperative Extension encourage all who may be affected by this rule to educate themselves about FSMA. Compliance dates, exemptions, and more information on the rule can be viewed on the HDOA website at http://www.hifarmsafe.org/.

Do I Need to Comply?

To help determine whether your farm operation is covered under this new rule, please visit https://uidaho.co1.qualtrics.com/jfe/form/SV_8D1ucSlEeq749AF and go through an anonymous self-guided decision tool provided by the University of Idaho. If you know you are covered by this rule, please contact HDOA for more information.

What is the Hawaii Department of Agriculture's role?

The HDOA, through an FDA grant, is working to understand the scope of produce grown in Hawaii that is covered by the Produce Safety Rule. The goal of this grant is to implement an integrated food-safety program that will prevent or significantly reduce the likelihood of a foodborne illness through standardized and consistent implementation of the Produce Safety Rule (PSR).

Throughout this year and the next several years, HDOA and grant partner, UH Cooperative Extension, will be working together to provide **outreach, education, and technical assistance** to the produce industry to help them comply with the Produce Safety Rule.

We encourage you to access HDOA's new FSMA Produce Safety website: http://www.hifarmsafe.org/. Work has also begun identifying and developing supplemental instructional materials, videos, and Hawaii-specific communications to assist farm operations in implementing practices for the safe growing, harvesting, packing, and holding of produce covered by the rule.

What is the University of Hawaii Cooperative Extension's Role?

UH Cooperative Extension, in partnership with HDOA, is working to meet the education, outreach and technical assistance needs of the Hawaii produce industry. Funding through this collaboration will enable Extension to deliver FDA approved Produce Safety Alliance courses at a significantly reduced cost and conduct voluntary on-farm readiness reviews with farm operations prior to inspection.

Need Produce Safety Rule Accredited Training?

The FSMA Produce Safety Rule requires that one representative from each farm receive training accredited by the FDA. Below are training information and curricula that meet FDA requirements.

Training

Produce Safety Alliance (PSA) training is the only standardized national training program approved by FDA to prepare produce operations in meeting the regulatory requirements in FSMA Produce Safety Rule. Trained and certified staff from HDOA and grant partner UH Cooperative Extension are providing Produce Safety Alliance training courses statewide this fall and winter. This eight (8) hour, one-day Grower Training Course will cover key areas and requirements of the Produce Safety Rule including:

1. Introduction to Produce Safety
2. Worker Health, Hygiene, and Training
3. Soil Amendments
4. Wildlife, Domesticated Animals, and Land Use
5. Agricultural Water
6. Postharvest Handling and Sanitation
7. How to Develop a Farm Food Safety Plan

Please check the HDOA and/or UH Extension websites for future Hawaii training dates. Additional training can be found throughout the United States. Please visit the Produce Safety Alliance website at www.producesafetyalliance.cornell.edu/

For more information on training requirements, dates, location, cost, and registration please go to http://www.hifarmsafe.org/ or contact Luisa F. Castro at luisac@hawaii.edu.

Whom Do I Contact?

HDOA: Please contact HDOA for assistance with education, training, regulations, and compliance.

Department of Agriculture
STATE OF HAWAII

HDOA Questions:
http://www.hifarmsafe.org/

Luisa F. Castro, PhD
FSMA Program Manager
luisac@hawaii.edu
(808) 974-4130

UH Cooperative Extension: Please contact UH Cooperative Extension for assistance with education, training, and technical assistance.

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Appendix E

WORCESTER REGIONAL FOOD HUB

3/4/2016

COMMERCIAL KITCHEN PROFITABILITY

Nicholas Comei, Thomas Danko,
Ashley Rae Nistler, and Michael Vaitkunas

Advisors: Dr. Robert Traver and Dr. Jian Zou

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

Submitted By:

_____

Nicholas Comei

Thomas Danko

Ashley Rae Nistler

Michael Vaitkunas

Date: March 4th, 2016

Advisors: Dr. Robert Traver and Dr. Jian Zou

Sponsor: Stuart Loosemore, Worcester Regional Chamber of Commerce

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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.

ACKNOWLEDGEMENTS

In completing our Interactive Qualifying Project (IQP), we were assisted and advised by many who deserve recognition. The success of this project would not have been possible without their support, guidance, and enthusiasm.

We would especially like to express our gratitude to Stuart Loosemore, General Counsel and Director of Government Affairs and Public Policy of Worcester Regional Chamber of Commerce, and Brian Monteverd, Food Hub Coordinator of the Regional Environmental Council of Central Massachusetts. We would also like to extend further gratitude to all of those we interviewed who directly and indirectly impacted our research, development, and recommendations for our IQP.

We would like to thank Professors Robert Traver and Jian Zou for advising our project. Their counsel was instrumental to our success. We also thank Worcester Polytechnic Institute for giving us this opportunity.

Many others, including classmates, also contributed to and shaped our project. Their critiques, comments, and suggestions inspired us to improve our work. For this, we thank all those who helped us complete our assignment.

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

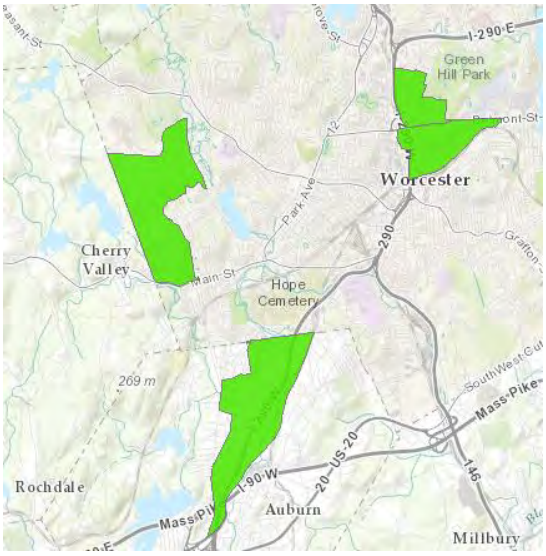

Figure 1: Food Deserts in Worcester
(Ver Ploeg & Breneman, 2015)

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).

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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

Appendix F

PACIFIC GATEWAY CENTER

CULINARY BUSINESS INCUBATOR FACILITY

723-C Umi Street
Honolulu, Hawaii 96819
PH: (808) 851-7000
Fax: (808) 851-7007

The Mission of the Pacific Gateway Center is to help immigrants, refugees and low-income residents of Hawaii gain access to opportunities and services through the building of skills that lead to self-sufficiency while respecting the integrity of diverse cultural heritages. Pacific Gateway Center's values include: Food, Diversity, Spirit of Aloha, Humor, Creativity, Integrity, Mutual Respect, and Teamwork.

Pacific Gateway Center's "Culinary Business Incubator" officially opened in 2000 and is designed to assist ALL Hawaii residential entrepreneurs interested in operating a catering business, lunchwagon, bakery, or other food service related business. The facility features 12 State of Hawaii Health Department certified kitchens including baking, food prep, and full kitchen spaces available at reasonable hourly rental rates. Please see attached rate sheet for varying options for usage.

Hours of Kitchen Operations

Mon-Sun & Holidays: 5:30am-10pm

P.V. offset elec

Closed: Thanksgiving, Christmas and New Year's Day

Office Hours

Mon-Fri: 8am-4pm (Varying lunch hour. Please call ahead to schedule tour and additional information)

PACIFIC GATEWAY CENTER

Licensed Commercial Kitchen **REQUIREMENTS**: (Each Person and/or Company must obtain and keep current all of the following prior to use of any kitchen. Please keep and check off as you complete these items, and turn in as one package)

- **Intake/Enrollment Forms** (Background Information)
- **Citizenship** (Hawaii State ID; Birth Certificate; Naturalization Records; Alien Registration Card; U.S or Foreign Passport) I of
- **Proof of Residence** (Driver's License/State ID; Recent Postmarked Mail; Rental Agreement/Utility Bill) I of
- **Verification of Family Income** (Pay Stubs; Recent Tax Records; Social Security Income; Public Assistance Records; Work Compensation/Disability.)
- **General Excise Tax License** (To apply for this see form Hawaii BB-1 Hawaii Department of Taxation) 830 Punchbowl St #126 Honolulu, HI 96813-5094 Tel: (808) 587-1540http://www.state.hi.us/tax/2010/bb1packet.pdf
- **Taxpayer** Identification Number (Social Security Number or Federal EIN-www.irs.gov) Although a FEIN is not required, we do encourage the use of one for business purposes in place of your personal SSN)
- **TB Clearance** (For any/all persons handling food) *Lanakila Health Center*- 1700 Lanakila Avenue Hon, HI 96817 Ph.: (808) 832-5738 hawaii.gov/health/family-child-health
- **General Business Liability Insurance Policy** (with at least $1,000,000.00 minimum coverage- Pacific Gateway Center must be listed on policy as an additional insured. The Culinary Business Incubator and all of its equipment are also additionally privately insured.) Recommendations: Mutual Underwriters 808-532-2888 ext.132- Brendon Chun; Jerry Hay Inc. 808-521-1841- Steve Miyataki
- **Food Handlers Education Certification.** As mandated by the Department of Health, requires at least one employee present at every food establishment during normal hours to have a formal food handlers training level certification. To register for free classes at the Dept. of Health – Sanitation Branch, contact: Dennis Loo at DOH at 808.859.0264 or register online: http://health.hawaii.gov/san/food-safety-education/
- **Temporary or Permanent FOOD LICENSE/PERMIT** (issued by the Department of Health- Sanitation Division at 99-945 Halawa Valley Street, Aiea, HI 96701 (808)-586-8000 or visit: http://health.hawaii.gov/san/

PACIFIC GATEWAY CENTER

CULINARY BUSINESS INCUBATOR INTAKE/ENROLLMENT FORM

Date of Application: _____

Primary Applicant Name: 1. _____ _____ _____
Last First Middle

Authorized User (optional): 2. _____ _____ _____
Last First Middle

Business Name: _____

Type of Business: _____

Taxpayer Identification Number (SSN or FEIN): _____

General Excise Tax License Number: _____

Home/Business Address: _____

Contact: _____ _____ _____
Home Work Cell/Other Email Address

Choose a Term for Kitchen Use:

- o One-Time User
- o Temporary Establishment Permit User (TFE)
- o Annual Permit User (1 year contract)

Type of Kitchen Interested In:

- o Prep-Kitchen
- o Baking Kitchen
- o Full Kitchen

Check if any of the following apply to you:

- o Immigrant
- o Refugee
- o Low-Income

PACIFIC GATEWAY CENTER

Although we offer services to every resident of Hawaii, **The Culinary Business Incubator** is a project designed to directly target support services for the low to moderate incomes of small businesses. Please help us by providing the information below.

Gross Annual Income:

- o $_____
- o Unemployed
- o Retired

Are you on Public Assistance?

- o Yes
- o No

Marital Status: _____

Number of Children: _____

Residency Status:

- o U.S Citizen
- o Permanent Resident
- o Other _____

The above information is true and correct to the best of my knowledge.

Primary Applicant Signature: _____ Date: _____

Authorized User: _____ Date: _____

NOTES: _____

_____

723-C UMI STREET HONOLULU, HAWAII 96819 TEL (808) 851-7000 – FAX (808) 851-7007

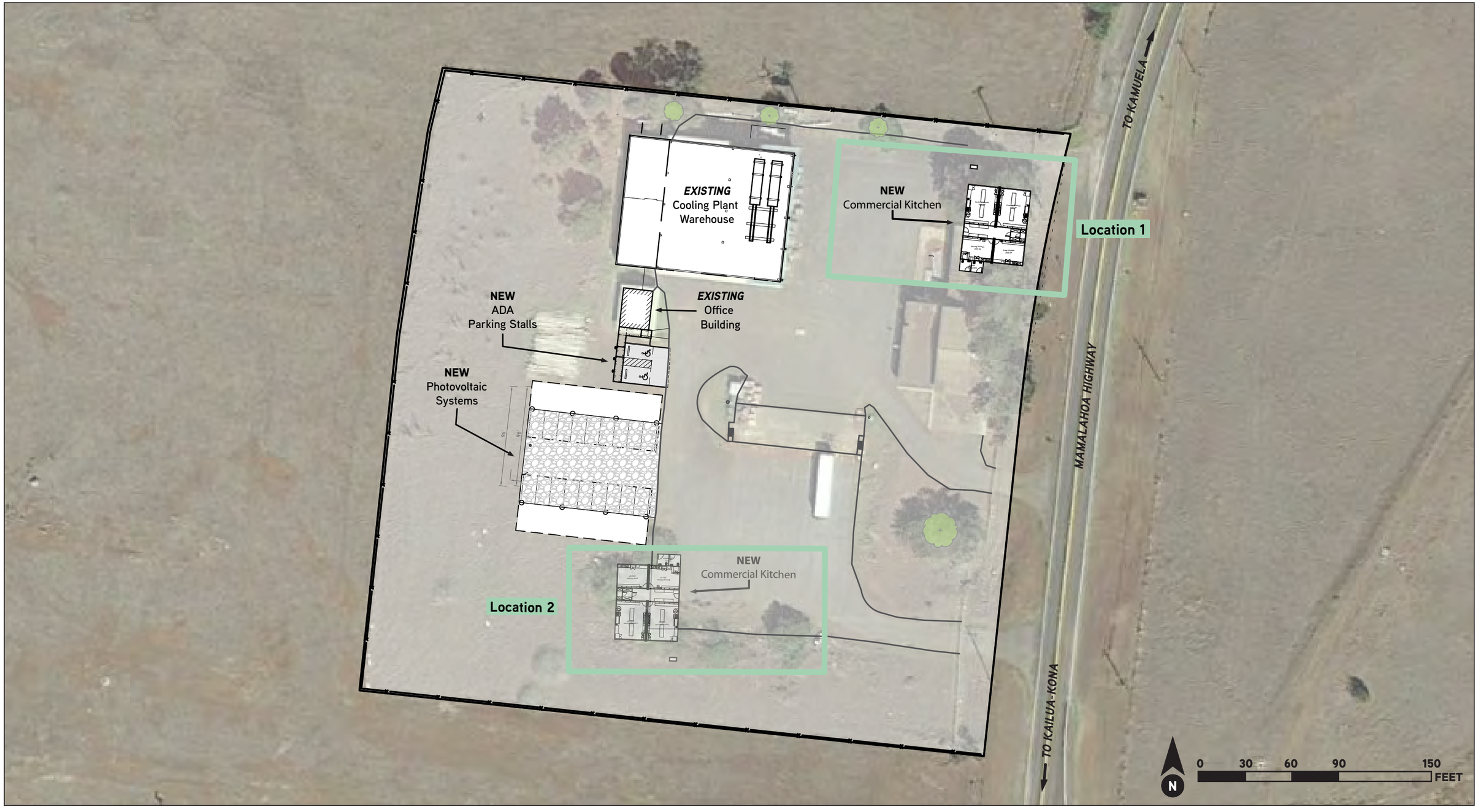
Pacific Gateway Center
Culinary Buiness Incubator - Usage Rates
Effective 06/01/2016

ONE-TIME USER (FULL KITCHEN)		
Max Hrs./Month	**Hourly**	**Deposit**
1-5 hrs	$55.00/hr.	$300.00
6-10 hrs	$45.00/hr.	$300.00
More than 10 hrs	$40.00/hr.	$300.00
FULL KITCHEN AREA RATES		
Minimum 5 hours	$38.50/hr.	$500.00
6-15	$33.00/hr.	$500.00
16-30	$27.50/hr.	$500.00
31-50	$22.00/hr.	$500.00
51 or more	$18.70/hr.	$500.00
ONE TIME USER (BAKING/PREP)		
1-5 hrs	$40.00/hr.	$200.00
6-10 hrs.	$36.00/hr.	$200.00
More than 10 hours	$30.00/hr.	$200.00
BAKING & PREP AREA RATES		
Minimum 5 hours	$38.50/hr.	$300.00
6-11	$33.00hr.	$300.00
12-20	$27.50/hr.	$300.00
21-30	$22.00/hr.	$300.00
31 or more	$18.70/hr.	$300.00

STORAGE AREA	MONTHLY RATE	ADDITIONAL STORAGE
Refridgerator	$100.00	$80.00
Freezer	$100.00	$80.00
Dry Storage	$80.00	$60.00

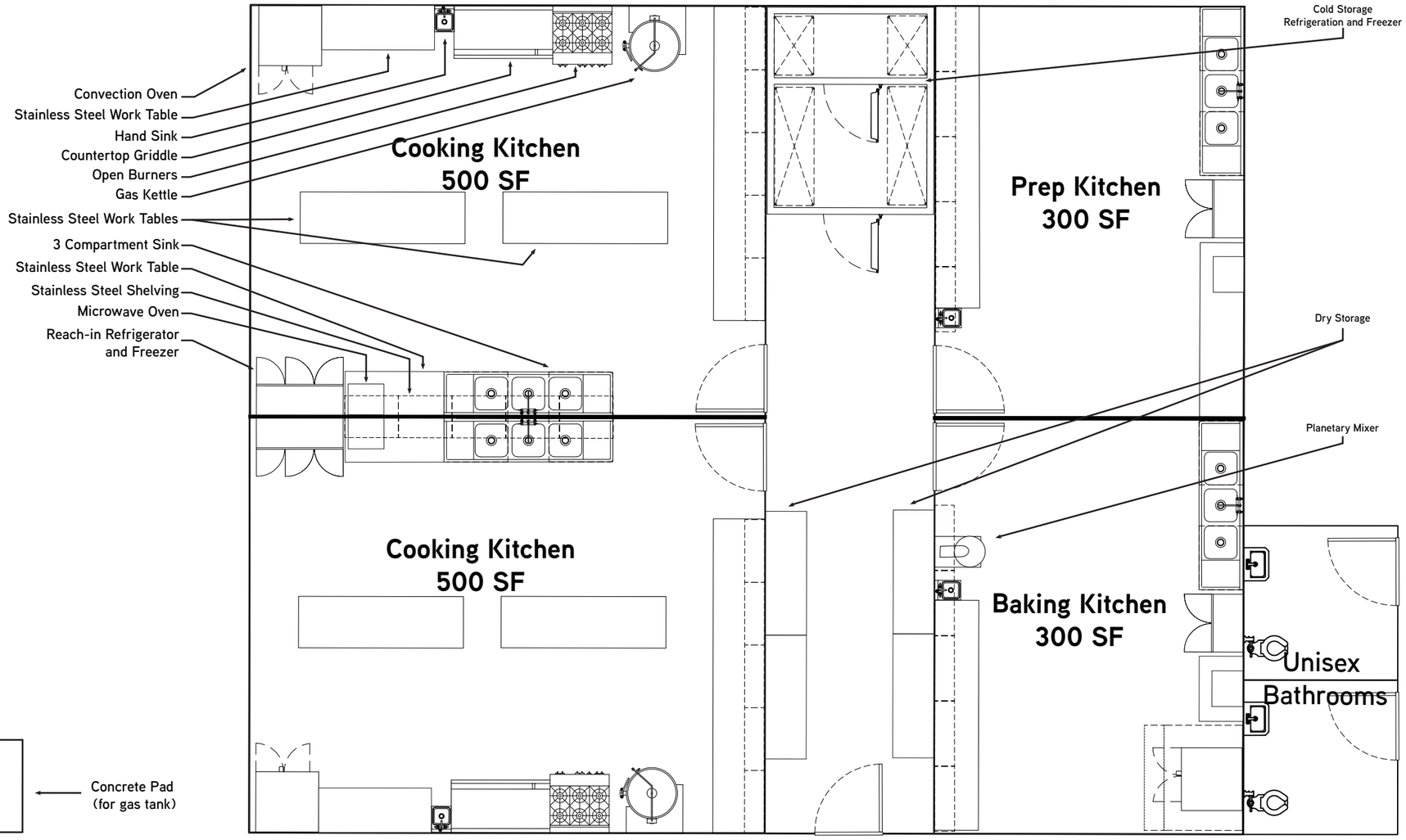
Per Hourly

Appendix G



State of Hawai'i
Department of Agriculture
Kamuela Post-Harvest Facility/Food Hub Feasibility Study

Conceptual Site Plan



Commercial Kitchen Conceptual Layout

Appendix H

SSFM INTERNATIONAL, INC 1/23/2018
Civil Estimate
Kamuela Vacuum Cooling Plant

ITEM DESCRIPTION	QUANTITY		UNIT COST	SUBTOTAL	Notes
	NUMBER	UNIT			
SITE DEMOLITION AND EROSION CONTROL					
Demolish Exist. Gravel/AC Pav't.	1,500	SF	$ 1.25	$ 1,875.00	For new commercial kitchen
Silt Fence	350	LF	$ 1.50	$ 525.00	around entire site
Construction Entrance	1	EA	$ 500.00	$ 500.00	
				$ 2,900.00	
SITE WORK					
Embankment	50	CY	$ 30.00	$ 1,500.00	Estimate/assumption
Excavation	50	CY	$ 50.00	$ 2,500.00	Estimate/assumption
Structural Fill	170	CY	$ 50.00	$ 8,500.00	for under comm kitchen; assumed 3' depth
Cold Planing	5,500	SY	$ 15.00	$ 82,500.00	3" cold plane
AC Pavement (C&C Mix IV)	950	TON	$ 250.00	$ 237,500.00	new parking + repaving of lot (3")
Aggregate Base Course	26	CY	$ 180.00	$ 4,666.67	reconstruct area above leach field (6")
Traffic Control	1	EA	$ 20,000.00	$ 20,000.00	for connection to Mamalahoa
				$ 357,166.67	
UTILITIES					
DRAINAGE					
New 4" PVC Drainline	300	LF	$ 22.00	$ 6,600.00	downspouts to drywell
New 6" PVC Drainline	100	LF	$ 22.00	$ 2,200.00	in case inlet to drywell needed
Shallow Drywell	1	EA	$ 15,000.00	$ 15,000.00	Unclear what existing drainage system is like; assumed only taking care of new impervious surface
				$ 23,800.00	
WATER					
New Copper Waterline	90	LF	$ 38.00	$ 3,420.00	service lateral (unknown if offsite waterline improvements are needed)
Reduced pressure backflow device	2	EA	$ 2,000.00	$ 4,000.00	assumed 1 for fire, 1 for water
Hose Bibb	3	EA	$ 250.00	$ 750.00	
New 6" Fireline	90	LF	$ 200.00	$ 18,000.00	
FH	1	EA	$ 8,000.00	$ 8,000.00	
1" Water Meter and Box	1	EA	$ 3,000.00	$ 3,000.00	
				$ 37,770.00	

SSFM INTERNATIONAL, INC 1/23/2018
Civil Estimate
Kamuela Vacuum Cooling Plant

ITEM DESCRIPTION	QUANTITY		UNIT COST	SUBTOTAL	Notes
	NUMBER	UNIT			
SEWER					
New 4" PVC Sewerline	500	LF	$ 26.00	$ 13,000.00	building to leach field
Cleanout to Grade	3	EA	$ 200.00	$ 600.00	
Leach Field (6" of crushed aggregate)	1,400	SF	$ 12.00	$ 16,800.00	sewer calcs in folder
Distribution Box	1	EA	$ 100.00	$ 100.00	
Inspection Pipe	4	EA	$ 50.00	$ 200.00	
H20 Infiltrator Chamber	385	LF	$ 120.00	$ 46,200.00	traffic-rated (assumed to be under parking lot)
1,250 Gals. Septic Tank	1	EA	$ 7,000.00	$ 7,000.00	sewer calcs in folder
Grease Interceptor	1	EA	$ 4,500.00	$ 4,500.00	
				$ 88,400.00	
				$ 510,036.67	
			15% Contingency	$ 76,505.50	
			Total	**$ 586,542.17**	

KAMUELA VACUUM COOLING PLANT
CIVIL COST ESTIMATE
LIST OF ASSUMPTIONS

Assumptions/Constraints (Dimensions pulled off of 181031 KVCP Site Plan and Kitchen.pdf)

- Resurfacing of existing parking lot: 48,500 sf
- No civil work for Existing Cooling Plant Warehouse
- No civil work for New Post Slaughter Facility
- No topographic survey
- New Commercial Kitchen (4 kitchens): 1,500 sf
    - 3 sinks + 1 hand washing sink (service sink)
    - Hose bibs
    - 2 bathrooms (1 water closet + 1 urinal + 2 lavatories each)

Site Demolition and Erosion Control

- Demolish Exist. Gravel/AC Pavement
    - For new commercial kitchen
- Silt Fence
    - Assumed for perimeter of commercial kitchen and slaughter facility
- Construction Entrance
    - Only assumed one, unless project is phased or there is more than 1 entrance/exit

Site Work

- Embankment and Excavation
    - No topographic survey (elevation) so amount of grading is not known at this time and quantity is included as a place holder. This quantity shall be refined when topographic survey received.
- Structural Fill
    - Assumed needed for new commercial kitchen at 3' overexcavation depth. This can be confirmed when geotechnical investigation is done.
- Cold Planing
    - Remove top 3" of existing asphalt parking lot. This quantity and conditions can be confirmed when geotechnical investigation and civil observations are done.
- AC Pavement
    - Repaving of existing parking lot at 3". This quantity can be confirmed when a geotechnical investigation is done and a pavement recommendation report is received.
- Aggregate Base Course
    - Assuming the leach field goes under the parking lot, the entire pavement section will need to be removed (rather than just resurfacing). Therefore, base course will need to be put back after the leach field is installed
    - This quantity (depth of aggregate base course) can be confirmed when a geotechnical investigation is done and a pavement recommendation report is received.
- Traffic Control
    - Assumed for any work at driveway connection needed along Mamalahoa Highway

Utilities – Drainage

- 4” PVC Drainline
    - Typical drain pipe sizing for downspout connections. Sizing can be confirmed when architectural plans are available.
- 6” PVC Drainline
    - Typical drain pipe sizing for inlet to drywell applications. Sizing can be confirmed as plans develop and drainage calculations are performed.
- Shallow Drywell
    - Unless there is a preference to use deep drywells, shallow drywells have been assumed. Drainage calculations have not been performed
    - Looking at the aerial view, it is unclear if any drainage system currently exists and where the water flows. Therefore, a provision for 1 additional drywell has been added as a placeholder in the event that any drainage or flooding issues need to be addressed as design progresses.

Utilities – Water

- New Copper Waterline
    - Assumed new 1” copper lateral and meter off of main line to new commercial kitchen (not much price difference between 1” or 2”). Unknown if there is an existing lateral and meter to be re-used
- Hose Bibbs
    - Assumed external hose bibbs, 1 on each side of building, except on road side where there is just landscaping
- Fireline
    - Assumed new fireline and fire hydrant off of main line to new commercial kitchen fire protection. Sizing not known at this time until design develops and fire requirements are known. Cost assumes 6” fire line.
- Backflow Prevention Devices
    - Assumed separate backflow prevention devices. This is an assumption.

Water Calcs

FIXTURE TYPE (General Public Use)	**NO. OF FIXTURES**	**W.S.F.U. PER FIXTURE**	**TOTAL W.S.F.U.**	**D.F.U. PER FIXTURE**	**TOTAL D.F.U.**
Water Closet, 1.6GPF Gravity Tank, General Public Use	2	2.5	5	4	8
Urinal, Flush Tank	2	3	6	4	8
Lavatory, single	4	1	4	1	4
Floor Drain	0	0	0	2	0
Janitor Hose Bibb (additional)	0	1	0	0	0
Kitchen Sink	12	1.5	18	2	24
Dishwasher, domestic	4	1.5	6	2	8

Service Sink or Mop Basin	4	3	12	3	12
Hose Bibb	4	2.5	10	0	0
Drinking Fountain	1	0.5	0.5	0.5	0.5
		TOTAL	61.5		64.5
WSFU = Water Supply Fixture Units DFU = Drainage Fixture Units (for sewer, see below)					

PEAK FLOW REQUIREMENTS FOR NEW WATER METER

	Fixture Units (FU)	**Gallons Per Minute (GPM)**	**Gallons Per Day (GPD)**
Domestic - Peak Public Demand	61.5	34	**1020**

50 GPM = 1" meter

Utilities – Sewer

- 4" PVC Sewerline
  - Typical size for commercial sewer. Sizing will be developed as design progresses
- Cleanout to Grade
  - For any bends in the sewerline. This is an assumption and placeholder as routing of sewerline and leach field are not known.
- Leach Field
  - Includes area of aggregate and any filter fabric as needed (see sewer calcs below for area)
  - A low percolation rate was assumed. Percolation rate can be confirmed during the geotechnical investigation. The percolation rate impacts square footage (and subsequently number of chambers needed).
  - Distribution Box and Inspection Pipe are typical parts of the leach field system
- H20 chamber
  - Since topography is not known, and the leach field needs to go in a flat area, it was assumed that the leach field will go in the parking lot. Therefore, chambers need to be traffic rated (typically 3-4x more costly than non-traffic rated chambers).
- Septic Tank
  - See calculations below

Sewer Calcs

Design Reference/s:

(a) HAR 11-62 dated March, 21, 2016

Wastewater Flow:		**Remarks**
Design Flow, DFU	65	
Design Flow, gpm	32.5	2DFU = 1GPM
Total Design Flow Rate, gpd	975	assumed at 30 min. per day

Septic Tank Sizing:		
Required Vol. (Proposed), gal	1218.75	*(a)* See 11-62.33.5; Use **1250 gal** Septic Tank

Absorption Area:		
Percolation Rate (min/in)	60	Assumed
Required absorption area (sf per 200 gal):	330	*(a)* Appendix D - Tables III
Calculated Required absorption area (sf):	1608.75	
Total Required absorption area (sf):	1335.26	w/ 17% reduction factor per **071108 Memo**

Infiltration Bed Dimensions:		**Remarks**
No. of Rows:	5	
No. of Chambers:	12	
Chamber width (in):	34	from below
Chamber Length (in):	75	from below
Infiltration bed width (ft):	18.17	6" spacing between chambers, 12" space at ends per "Infiltrator" details
Infiltration bed length (ft):	77	per *(a)11-62-34.f.3.A*-max. of 100'; 12" beyond chambers per "Infiltrator" details
Actual infiltration area (sf):	**1398.83**	

Appendix I

Kamuela Vacuum Cooling Cooperative. Ltd.
Statement of Revenues and Expenses
Income Tax Basis
Twelve Month Comparison Ended May 31, 2013

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Revenue													
Vacuum Cooling Service	$ 5,783.63	$ 4,712.73	$ 5,546.95	$ 5,023.53	$ 6,023.02	$ 5,643.66	$ 4,998.23	$ 5,344.20	$ 4,747.70	$ 5,319.73	$ 5,758.03	$ 4,553.46	$ 63,454.87
NonVacuum Cooling Service	2,047.88	1,488.98	1,270.93	1,712.75	1,422.61	1,110.32	1,168.82	1,004.24	982.09	1,265.26	1,539.60	1,020.44	16,033.92
Pallet Charges	285.00	261.00	351.75	127.75	243.50	283.50	279.00	271.50	321.00	238.50	301.50	249.00	3,213.00
Total Revenue	$ 8,116.51	$ 6,462.71	$ 7,169.63	$ 6,864.03	$ 7,689.13	$ 7,037.48	$ 6,446.05	$ 6,619.94	$ 6,050.79	$ 6,823.49	$ 7,599.13	$ 5,822.90	$ 82,701.79
Cost of Goods Sold													
Total Cost of Goods Sold													
Gross Profit	$ 8,116.51	$ 6,462.71	$ 7,169.63	$ 6,864.03	$ 7,689.13	$ 7,037.48	$ 6,446.05	$ 6,619.94	$ 6,050.79	$ 6,823.49	$ 7,599.13	$ 5,822.90	$ 82,701.79
Operating Expenses													
Accounting	0.00	600.00	400.00	400.00	0.00	800.00	400.00	400.00	400.00	400.00	400.00	400.00	4,600.00
Bank Charges	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Depreciation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8,083.47	8,083.47
Insurance	0.00	360.00	0.00	0.00	360.00	0.00	0.00	743.00	0.00	0.00	371.00	0.00	1,834.00
Bookkeeping Service	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	400.00	400.00	5,800.00
Office Expense	44.00	0.00	0.00	360.39	0.00	0.00	0.00	45.00	0.00	0.00	0.00	59.72	509.11
Propane	0.00	0.00	0.00	432.87	623.89	217.38	582.23	556.64	367.73	537.69	431.88	473.54	4,223.85
Rent	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	2,327.04
Repair&Maint-VacCooling Unit	762.49	5,528.63	197.92	0.00	0.00	405.72	197.92	2,328.89	0.00	197.92	0.00	0.00	9,619.49
Repairs&Maint-Others	696.83	250.54	0.00	216.75	0.00	104.16	0.00	118.75	45.84	304.64	0.00	155.47	1,892.98
Taxes-Other	0.00	70.00	1,761.86	0.00	0.00	0.00	0.00	0.00	1,761.85	0.00	0.00	0.00	3,593.71
Utilities	4,893.64	4,661.37	3,895.03	4,129.57	3,981.74	4,212.02	3,505.60	3,460.42	3,230.15	3,690.69	3,878.65	4,014.12	47,553.00
Warehouse Supplies	0.00	0.00	0.00	0.00	0.00	37.47	0.00	0.00	37.96	0.00	0.00	0.00	75.43
Total Operating Expenses	$ 7,090.88	$ 12,164.46	$ 6,948.73	$ 6,233.50	$ 5,659.55	$ 6,473.67	$ 5,379.67	$ 8,346.62	$ 6,537.45	$ 5,824.86	$ 5,675.45	$ 13,780.24	$ 90,115.08
Operating Income (L...	$ 1,025.63	$ -5,701.75	$ 220.90	$ 630.53	$ 2,029.58	$ 563.81	$ 1,066.38	$ -1,726.68	$ -486.66	$ 998.63	$ 1,923.68	$ -7,957.34	$ -7,413.29
Other Income													
Interest Income	$ 36.31	$ 36.66	$ 41.55	$ 44.64	$ 36.81	$ 36.73	$ 51.37	$ 45.11	$ 47.64	$ 48.27	$ 50.35	$ 55.82	$ 531.26
User Fee	60.00	60.00	55.00	65.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	800.00
R&M Handling Fee	275.43	224.43	264.15	239.23	286.82	268.76	238.03	254.50	0.00	253.33	254.44	462.70	3,021.82
Total Other Income	$ 371.74	$ 321.09	$ 360.70	$ 348.87	$ 393.63	$ 375.49	$ 359.40	$ 369.61	$ 117.64	$ 371.60	$ 374.79	$ 588.52	$ 4,353.08
Other Expenses													
Federal Income Tax	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	733.00	733.00
Penalties	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	7.00	7.00
Total Other Expenses	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 733.00	$ 740.00
Income (Loss) Before...	$ 1,397.37	$ -5,380.66	$ 581.60	$ 979.40	$ 2,423.21	$ 939.30	$ 1,425.78	$ -1,357.07	$ -369.02	$ 1,370.23	$ 2,298.47	$ -8,101.82	$ -3,800.21
Net Income (Loss)	$ 1,397.37	$ -5,380.66	$ 581.60	$ 979.40	$ 2,423.21	$ 939.30	$ 1,425.78	$ -1,357.07	$ -369.02	$ 1,370.23	$ 2,298.47	$ -8,101.82	$ -3,800.21

Kamuela Vacuum Cooling Cooperative. Ltd.
Statement of Revenues and Expenses
Income Tax Basis
Twelve Month Comparison Ended May 31, 2014

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Revenue													
Vacuum Cooling Service	$ 5,705.57	$ 5,891.99	$ 6,510.02	$ 5,258.95	$ 6,590.46	$ 4,970.00	$ 5,799.71	$ 6,095.99	$ 4,713.57	$ 5,582.76	$ 6,087.61	$ 5,604.43	$ 68,812.06
NonVacuum Cooling Service	1,648.16	1,535.08	1,068.87	834.20	1,261.34	786.65	736.96	855.04	892.01	1,203.23	1,141.25	716.57	12,879.36
Pallet Charges	463.50	315.00	408.00	358.00	521.00	438.50	518.50	508.00	563.00	450.00	465.00	389.00	5,397.50
Total Revenue	$ 7,818.23	$ 7,742.07	$ 7,986.89	$ 6,451.15	$ 8,372.80	$ 6,195.15	$ 7,055.17	$ 7,459.03	$ 6,168.58	$ 7,235.99	$ 7,693.86	$ 6,710.00	$ 86,888.92
Cost of Goods Sold													
Total Cost of Goods Sold													
Gross Profit	$ 7,818.23	$ 7,742.07	$ 7,986.89	$ 6,451.15	$ 8,372.80	$ 6,195.15	$ 7,055.17	$ 7,459.03	$ 6,168.58	$ 7,235.99	$ 7,693.86	$ 6,710.00	$ 86,888.92
Operating Expenses													
Accounting	600.00	400.00	400.00	800.00	400.00	400.00	0.00	800.00	0.00	800.00	400.00	400.00	5,400.00
Depreciation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,618.14	2,618.14
Insurance	0.00	371.00	0.00	0.00	371.00	0.00	0.00	766.00	0.00	0.00	381.00	0.00	1,889.00
Bookkeeping Service	350.00	750.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	4,600.00
Office Expense	54.00	46.00	113.52	0.00	0.00	46.00	12.00	0.00	0.00	298.75	1,919.27	0.00	2,489.54
Propane	515.20	498.91	473.54	431.88	579.35	476.42	434.76	593.95	436.04	239.98	574.20	479.97	5,734.20
Rent	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	193.92	2,327.04
Repair&Maint-VacCooling Unit	197.92	0.00	4,264.92	0.00	0.00	3,490.42	0.00	381.52	0.00	0.00	773.12	0.00	9,107.90
Repairs&Maint-Others	174.64	250.17	197.92	122.54	1,191.19	91.65	197.92	0.00	332.45	18.09	71.00	52.53	2,700.10
Taxes-Other	0.00	0.00	1,916.61	0.00	0.00	0.00	0.00	0.00	1,916.60	0.00	0.00	0.00	3,833.21
Utilities	4,465.79	4,198.59	4,253.26	4,245.50	4,154.84	4,152.17	3,732.10	4,065.91	3,519.90	4,041.93	3,803.53	4,076.00	48,709.52
Warehouse Supplies	0.00	58.27	28.00	0.00	0.00	0.00	0.00	0.00	0.00	30.34	0.00	0.00	116.61
Total Operating Expenses	$ 6,551.47	$ 6,766.86	$ 12,191.69	$ 6,143.84	$ 7,240.30	$ 9,200.58	$ 4,920.70	$ 7,151.30	$ 6,748.91	$ 5,973.01	$ 6,466.04	$ 8,170.56	$ 89,525.26
Operating Income (Loss)	$ 1,266.76	$ 975.21	$ -4,204.80	$ 307.31	$ 1,132.50	$ -3,005.43	$ 2,134.47	$ 307.73	$ -580.33	$ 1,262.98	$ -772.18	$ -1,460.56	$ -2,636.34
Other Income													
Interest Income	$ 68.99	$ 70.86	$ 89.24	$ 96.82	$ 90.81	$ 105.38	$ 95.54	$ 97.08	$ 86.19	$ 91.10	$ 84.42	$ 75.92	$ 1,052.35
User Fee	70.00	70.00	70.00	70.00	70.00	65.00	70.00	70.00	70.00	70.00	70.00	65.00	830.00
R&M Handling Fee	271.77	280.59	310.02	250.45	313.85	236.68	276.20	347.28	283.90	346.03	365.95	318.41	3,601.13
Total Other Income	$ 410.76	$ 421.45	$ 469.26	$ 417.27	$ 474.66	$ 407.06	$ 441.74	$ 514.36	$ 440.09	$ 507.13	$ 520.37	$ 459.33	$ 5,483.48
Other Expenses													
Total Other Expenses	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
Income (Loss) Before In...	$ 1,677.52	$ 1,396.66	$ -3,735.54	$ 724.58	$ 1,607.16	$ -2,598.37	$ 2,576.21	$ 822.09	$ -140.24	$ 1,770.11	$ -251.81	$ -1,001.23	$ 2,847.14
Net Income (Loss)	$ 1,677.52	$ 1,396.66	$ -3,735.54	$ 724.58	$ 1,607.16	$ -2,598.37	$ 2,576.21	$ 822.09	$ -140.24	$ 1,770.11	$ -251.81	$ -1,001.23	$ 2,847.14

Kamuela Vacuum Cooling Cooperative. Ltd.
Statement of Revenues and Expenses
Income Tax Basis
Twelve Month Comparison Ended May 31, 2015

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Revenue													
Vacuum Cooling Service	$ 6,200.01	$ 7,129.00	$ 5,815.56	$ 6,296.55	$ 5,351.03	$ 5,273.22	$ 6,245.85	$ 5,692.60	$ 5,640.42	$ 5,909.92	$ 6,371.63	$ 6,691.99	$ 72,617.78
NonVacuum Cooling Service	1,094.21	1,597.60	1,077.62	863.93	915.79	901.81	889.67	745.06	946.10	1,510.16	1,398.36	1,418.74	13,359.05
Pallet Charges	454.50	470.50	480.00	453.00	424.00	447.50	469.50	440.50	478.00	513.00	554.00	518.00	5,702.50
Total Revenue	$ 7,748.72	$ 9,197.10	$ 7,373.18	$ 7,613.48	$ 6,690.82	$ 6,622.53	$ 7,605.02	$ 6,878.16	$ 7,064.52	$ 7,933.08	$ 8,323.99	$ 8,628.73	$ 91,679.33
Cost of Goods Sold													
Total Cost of Goods Sold													
Gross Profit	$ 7,748.72	$ 9,197.10	$ 7,373.18	$ 7,613.48	$ 6,690.82	$ 6,622.53	$ 7,605.02	$ 6,878.16	$ 7,064.52	$ 7,933.08	$ 8,323.99	$ 8,628.73	$ 91,679.33
Operating Expenses													
Accounting	400.00	650.00	800.00	400.00	400.00	400.00	400.00	800.00	400.00	400.00	400.00	400.00	5,850.00
Bad Debt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.10	0.00	86.10
Depreciation	109.09	109.09	109.09	109.09	109.09	109.09	109.09	109.09	109.09	109.09	109.09	34,663.11	35,863.10
Insurance	0.00	381.00	0.00	0.00	381.00	0.00	0.00	787.00	0.00	393.00	0.00	0.00	1,942.00
Bookkeeping Service	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	4,200.00
Office Expense	58.00	49.00	0.00	0.00	0.00	49.00	0.00	307.33	0.00	0.00	49.00	0.00	512.33
Propane	458.14	709.06	417.20	436.02	621.16	505.10	571.18	358.45	527.86	571.16	553.17	755.82	6,484.32
Rent	193.92	363.39	212.75	212.75	212.75	212.75	212.75	212.75	212.75	212.75	212.75	212.75	2,684.81
Repair&Maint-VacCooling Unit	330.12	0.00	0.00	0.00	626.37	0.00	0.00	197.92	0.00	930.07	0.00	0.00	2,084.48
Repairs&Maint-Others	218.17	0.00	0.00	0.00	197.92	177.08	0.00	0.00	0.00	16.66	0.00	2,376.63	2,986.46
Taxes-Other	0.00	0.00	1,981.82	0.00	0.00	0.00	0.00	0.00	1,981.81	0.00	0.00	0.00	3,963.63
Utilities	4,199.80	4,654.51	4,785.75	3,952.49	4,323.55	3,675.87	3,213.63	3,280.34	3,414.78	3,245.48	3,327.04	3,470.85	45,544.09
Warehouse Supplies	0.00	0.00	0.00	0.00	0.00	95.34	0.00	0.00	44.90	20.25	0.00	0.00	160.49
Total Operating Expenses	$ 6,317.24	$ 7,266.05	$ 8,656.61	$ 5,460.35	$ 7,221.84	$ 5,574.23	$ 4,856.65	$ 6,402.88	$ 7,041.19	$ 6,248.46	$ 5,087.15	$ 42,229.16	$ 112,361.81
Operating Income (Loss)	$ 1,431.48	$ 1,931.05	$ -1,283.43	$ 2,153.13	$ -531.02	$ 1,048.30	$ 2,748.37	$ 475.28	$ 23.33	$ 1,684.62	$ 3,236.84	$ -33,600.43	$ -20,682.48
Other Income													
Interest Income	$ 19.97	$ -4.00	$ 31.83	$ 25.43	$ 24.40	$ 24.67	$ 28.45	$ 21.71	$ 24.42	$ 27.51	$ 11.00	$ 3.13	$ 238.52
User Fee	70.00	70.00	70.00	70.00	65.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	835.00
R&M Handling Fee	369.23	444.95	353.37	352.80	315.84	311.31	356.71	321.02	331.78	382.37	396.93	413.27	4,349.58
Other Income	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,443.00	0.00	0.00%	0.00	1,443.00
Total Other Income	$ 459.20	$ 510.95	$ 455.20	$ 448.23	$ 405.24	$ 405.98	$ 455.16	$ 412.73	$ 1,869.20	$ 479.88	$ 477.93	$ 486.40	$ 6,866.10
Other Expenses													
Total Other Expenses	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
Income (Loss) Before In...	$ 1,890.68	$ 2,442.00	$ -828.23	$ 2,601.36	$ -125.78	$ 1,454.28	$ 3,203.53	$ 888.01	$ 1,892.53	$ 2,164.50	$ 3,714.77	$ -33,114.03	$ -13,816.38
Net Income (Loss)	$ 1,890.68	$ 2,442.00	$ -828.23	$ 2,601.36	$ -125.78	$ 1,454.28	$ 3,203.53	$ 888.01	$ 1,892.53	$ 2,164.50	$ 3,714.77	$ -33,114.03	$ -13,816.38

Kamuela Vacuum Cooling Cooperative, Ltd.
Monthly Comparison of Revenues and Expenses
Income Tax Basis
For the year ended May 31, 2016

	6/30/15	7/31/15	8/31/15	9/30/15	10/31/15	11/30/15	12/31/15	1/31/16	2/29/16	3/31/16	4/30/16	5/31/16	Total
REVENUES													
Vacuum Cooling Service ($)	6,428	6,152	4,384	3,340	4,410	4,604	2,985	4,315	4,590	5,184	5,156	5,484	57,032
Non Vacuum Cooling Service	1,265	1,043	918	519	861	940	1,895	969	1,162	1,353	1,526	1,275	13,726
Pallet Charges	604	504	464	480	500	454	536	446	450	498	468	512	5,916
Total Revenues	**8,297**	**7,699**	**5,766**	**4,339**	**5,771**	**5,998**	**5,416**	**5,730**	**6,202**	**7,035**	**7,150**	**7,271**	**76,674**
OPERATING EXPENSES													
Utilities	3,833	4,087	3,681	3,343	3,160	3,058	2,652	2,816	2,662	2,658	2,901	3,049	37,900
Professional Fees	400	700	400	400	400	400	400	400	400	400	400	800	5,500
Propane	479	538	392	361	280	396	443	348	420	413	620	347	5,037
Depreciation	-	-	-	-	-	-	-	-	-	-	-	4,360	4,360
Bookkeeping Service	350	350	350	350	350	350	350	300	350	350	350	350	4,150
Real Property Tax	-	-	1,936	-	-	-	-	-	1,936	-	-	-	3,872
Repairs and Maintenance - Other	-	463	-	229	185	56	198	873	198	-	-	916	3,118
Rent and Lease Expense	213	213	213	213	213	213	213	213	213	-	213	213	2,343
Insurance	-	393	-	-	393	-	-	812	-	-	404	-	2,002
Repairs and Maintenance - VacCooling Unit	-	-	-	799	-	-	-	-	-	-	-	-	799
Office	113	2	66	-	-	49	244	-	-	115	-	-	589
Warehouse Supplies	-	-	170	94	-	-	-	104	-	-	-	-	368
License and Permits	-	-	-	-	-	-	-	-	-	90	-	-	90
Total Operating Expenses	**5,388**	**6,746**	**7,208**	**5,789**	**4,981**	**4,522**	**4,500**	**5,866**	**6,179**	**4,026**	**4,888**	**10,035**	**70,128**
OPERATING INCOME (LOSS)	**2,909**	**953**	**(1,442)**	**(1,450)**	**790**	**1,476**	**916**	**(136)**	**23**	**3,009**	**2,262**	**(2,764)**	**6,546**
OTHER INCOME (EXPENSES)													
R&M Handling Fee	391	363	270	194	267	283	268	266	301	340	349	348	3,640
Gain (Loss) on Sale of Asset	-	-	-	-	-	-	-	-	-	-	-	2,000	2,000
Other Income	-	-	727	-	-	-	-	100	-	-	-	-	827
User Fee	70	70	70	70	70	65	65	65	65	70	70	70	820
Interest Income	10	10	13	18	3	3	7	3	3	7	15	18	110
Total Other Income (Expenses)	**471**	**443**	**1,080**	**282**	**340**	**351**	**340**	**434**	**369**	**417**	**434**	**2,436**	**7,397**
INCOME (LOSS) BEFORE INCOME TAXES	**3,380**	**1,396**	**(362)**	**(1,168)**	**1,130**	**1,827**	**1,256**	**298**	**392**	**3,426**	**2,696**	**(328)**	**13,943**
INCOME TAXES													
Total Income Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-
NET INCOME (LOSS) ($)	**3,380**	**1,396**	**(362)**	**(1,168)**	**1,130**	**1,827**	**1,256**	**298**	**392**	**3,426**	**2,696**	**(328)**	**13,943**

See Accountant's Compilation Report

Kamuela Vacuum Cooling Cooperative, Ltd.
Quarterly Comparison of Revenues and Expenses
Income Tax Basis
For the year ended ended May 31, 2017

	8/31/16	11/30/16	2/28/17	5/31/17	Total
REVENUES					
Vacuum Cooling Service	$ 15,459	$ 12,135	$ 4,544	$ 7,094	$ 39,232
Non Vacuum Cooling Service	3,078	1,913	1,899	2,948	9,838
Pallet Charges	1,454	1,428	1,333	1,419	5,634
Total Revenues	**19,991**	**15,476**	**7,776**	**11,461**	**54,704**
OPERATING EXPENSES					
Utilities	9,791	8,866	7,452	8,183	34,292
Depreciation	2,585	2,585	2,585	2,584	10,339
Professional Fees	1,979	750	900	900	4,529
Propane	1,310	837	631	1,527	4,305
Repairs and Maintenance - VacCooling Unit	3,871	-	196	-	4,067
Bookkeeping Service	1,050	1,050	1,000	900	4,000
Real Property Tax	1,977	-	1,977	-	3,954
Rent and Lease Expense	639	638	638	638	2,553
Repairs and Maintenance - Other	987	-	496	862	2,345
Insurance	404	404	836	416	2,060
Warehouse Supplies	20	111	165	-	296
Office	117	47	3	49	216
Total Operating Expenses	**24,730**	**15,288**	**16,879**	**16,059**	**72,956**
OPERATING INCOME (LOSS)	**(4,739)**	**188**	**(9,103)**	**(4,598)**	**(18,252)**
OTHER INCOME (EXPENSES)					
R&M Handling Fee	949	712	343	535	2,539
Gain (Loss) on Sale of Asset	2,000	-	-	-	2,000
User Fee	185	195	180	195	755
Interest Income	94	126	141	168	529
Penalty Fees	-	150	-	-	150
Total Other Income (Expenses)	**3,228**	**1,183**	**664**	**898**	**5,973**
INCOME (LOSS) BEFORE INCOME TAXES	**(1,511)**	**1,371**	**(8,439)**	**(3,700)**	**(12,279)**
INCOME TAXES					
Total Income Taxes	-	-	-	-	-
NET INCOME (LOSS)	**$ (1,511)**	**$ 1,371**	**$ (8,439)**	**$ (3,700)**	**$ (12,279)**

See Accountant's Disclaimer
See Accompanying Notes

Kamuela Vacuum Cooling Cooperative, Ltd.
Supplementary Quarterly Comparison of Revenues and Expenses
Income Tax Basis
For the year ended ended May 31, 2018

	Quarter Ended 8/31/17	Quarter Ended 11/30/17	Quarter Ended 2/28/18	Quarter Ended 5/31/18	Total
REVENUES					
Vacuum Cooling Service	$ 5,832	$ 4,867	$ 5,653	$ 7,008	$ 23,360
Non Vacuum Cooling Service	3,440	3,198	2,924	4,781	14,343
Pallet Charges	1,372	1,234	1,306	1,296	5,208
Total Revenues	**10,644**	**9,299**	**9,883**	**13,085**	**42,911**
OPERATING EXPENSES					
Utilities	8,046	8,898	7,924	9,595	34,463
Depreciation	1,550	1,551	1,551	1,551	6,203
Professional Fees	1,734	900	937	1,875	5,446
Repairs and Maintenance - Other	-	376	2,258	2,685	5,319
Real Property Tax	2,024	-	2,024	-	4,048
Bookkeeping Service	900	900	900	900	3,600
Propane	934	436	659	589	2,618
Rent and Lease Expense	639	638	638	638	2,553
Insurance	416	416	909	453	2,194
Office	425	134	79	30	668
Repairs and Maintenance - VacCooling Unit	-	-	-	436	436
Warehouse Supplies	-	40	-	-	40
Total Operating Expenses	**16,668**	**14,289**	**17,879**	**18,752**	**67,588**
OPERATING INCOME (LOSS)	**(6,024)**	**(4,990)**	**(7,996)**	**(5,667)**	**(24,677)**
OTHER INCOME (EXPENSES)					
R&M Handling Fee	509	445	464	651	2,069
User Fee	200	190	185	175	750
Interest Income	149	139	166	157	611
Dock Fee	-	50	50	50	150
Total Other Income (Expenses)	**858**	**824**	**865**	**1,033**	**3,580**
INCOME (LOSS) BEFORE INCOME TAXES	**(5,166)**	**(4,166)**	**(7,131)**	**(4,634)**	**(21,097)**
INCOME TAXES					
Total Income Taxes	-	-	-	-	-
NET INCOME (LOSS)	**$ (5,166)**	**$ (4,166)**	**$ (7,131)**	**$ (4,634)**	**$ (21,097)**

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