

FOOD SECURITY IN ALASKA: ASSISTING THE ALASKA FOOD
POLICY COUNCIL TO MEET THEIR STRATEGIC PLAN GOALS THROUGH THE
USE OF GIS MAPPING TECHNOLOGY

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FOOD SECURITY IN ALASKA: ASSISTING THE ALASKA FOOD POLICY COUNCIL
TO MEET THEIR STRATEGIC PLAN GOALS
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PROJECT

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Abstract

The Alaska Food Policy Council (AFPC) was established to examine how the Alaska food system functions, and to provide ideas and recommendations for improving access to healthy, affordable, culturally appropriate foods for all the state's citizens. At the start of this project, AFPC did not have a resource tool that allows for the mapping of gaps, projects, initiatives, and strengths of the Alaska food system. Thus, this project focused on developing such a tool to assist AFPC with meeting their strategic plan goals, i.e., promoting the affordability, safety, accessibility and infrastructure of the Alaska food system. Secondary analysis of data relating to AFPC goals was conducted, and associated information was plotted using a GIS mapping tool. The creation of the map introduces a visual tool which can assist in providing an overall picture of the gaps and strengths identified in Alaska's food system. This project can be used as a starting point for the future development of a real-time web-based GIS map that AFPC and other stakeholders can use to support recommendations to the state on food security related issues.

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Chapter 1 Introduction to Food Security

The World Health Organization (WHO) defines food security as existing when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (WHO, 2013). Food *insecurity* has become a term heralding crisis at the individual, community and national levels. Most commonly, the phrase food security has been used by government organizations, non-profits, and academics to describe, monitor, analyze and intervene in a food system that has not met the needs of the world's population for sufficient food that is culturally appropriate, affordable, accessible, and nutritious (Bastain & Conenev, 2013). Food insecurity is not a problem experienced only in developing countries or areas experiencing public health emergencies. For example, the United States Department of Agriculture (USDA) reports that for fiscal year (FY) 2012 approximately 46.6 million people, living in 22.3 million U.S. households, were participants in the Supplemental Nutrition Assistance Program (SNAP), on average per month (USDA, 2013). This translates to approximately 14.6% of the total U.S. population.

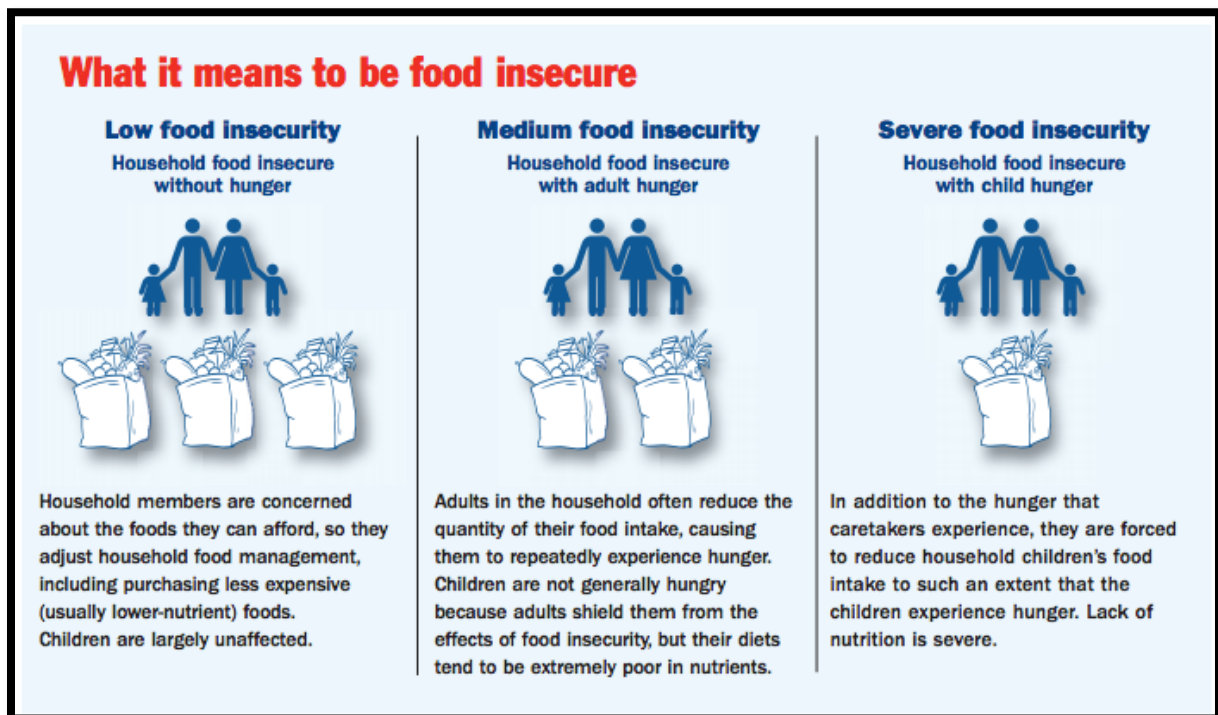


Figure 1. What it means to be food insecure (Children's Health Watch, 2015).

1.1 Food Security and Health

Food insecurity is associated with negative health consequences for affected populations. Children of food insecure households have a higher risk of suffering from poor cognitive and emotional development, school absenteeism, and undernourishment. In adults, depression, anemia, hypertension, and diabetes were identified as negative health outcomes (Chilton & Rose, 2009). Both children and adults of food insecure households are also more likely to be obese, partially due to the affordability of processed foods that are often high in fats and sugars (Seligman, Laraia & Kushel, 2010). Several studies have shown that diets of food insecure individuals are typically composed of very low intakes of fruits, vegetables, and milk products, thus increasing the risk of nutritional inadequacies in protein, vitamin A, thiamin, riboflavin, vitamin B-6, folate, vitamin B-12, magnesium, phosphorus, and zinc (McIntyre, 2003). Adults in lower income households have higher rates of diet-related chronic disease such as heart disease, diabetes and cancer, and food insecure females have been found to be almost three times more likely to be obese than their food-secure counterparts, demonstrating the effects of food insecurity on food consumption patterns (Adams et al., 2003.)

Stress is widely known to be prevalent in low-income households. Low-income individuals and families are more likely to experience stress related to financial worries, emotional pressures, lack of reliable transportation, poor housing, violence, and substance abuse. Stress can interfere with hormonal and metabolic processes resulting in weight gain by shifting the way fat is stored in the body. Chronic stress can trigger anxiety and depression (Barrington, Ceballos, Bishop, MacGregor & Beresford, 2012). In low-income families, the behavior of skipping or limiting food consumption to stretch the budget is a common practice. Several studies have indicated that often low-income mothers will typically give up their own food to ensure that their children do not go hungry. However, these constant cycles of “feast or famine” can also lead to negative metabolic changes and associated poor health outcomes.

A study published in the *Journal of Nutrition* suggests that the risk of chronic disease is negatively correlated with an individual’s access to healthy food choices. For example, low-income families often purchase foods that can feed more and last longer, but these foods

are often higher in fat, sugar, and sodium, which can contribute to the development of obesity, hypertension and diabetes (Selgman, Laraia, & Kushel, 2010). Processed foods are cheaper and can be purchased in bulk, making them a more affordable option. However, the high amounts of sodium in processed foods can lead to hypertension; sugars and carbohydrates can lead to obesity; cholesterol can contribute to heart disease; and low fiber contents have been linked to colon cancer.

1.2 Food Insecurity in Alaska

There are three primary components of food security: food availability, food accessibility, and food utilization (Ingram, 2011). *Food availability* is a concept that deals with the supply side of food, such as food production, stock levels of food, and how food is traded. *Food accessibility* (comprised of affordability, allocation, and preference) is critical to understand because of the misconception that since the nation has stockpiles of food items, grocery stores, and food producing farms, that nobody should be hungry. In reality an adequate national food supply does not guarantee everyone is fed, due to barriers such as affordability. This is especially true in low-income households that have limited funds for food once living expenses are paid. *Food utilization* encompasses how the human body and mind make the most of the food consumed, and includes issues surrounding food safety, nutrition, and social value. If any of these three components of food security are weak or missing, the risk of food insecurity and the associated adverse effects increases.

Across the State of Alaska, and indeed across the nation, perhaps no one understands food insecurity better than those who are eligible for the Supplemental Nutrition Assistance Program (SNAP). Individuals and families who are eligible for SNAP benefits have little to no income, and because the amount of SNAP benefits is determined based on need, available income, housing expenses, and household size, not everyone receives the same amount (Table 1). Therefore, is it not uncommon for SNAP recipients to also utilize local food banks to meet their monthly food needs. The 2012 Food Bank of Alaska annual report states that 105,000 Alaskans are food insecure, which represents an increase of 15% compared to prior year data (Food Bank of Alaska, 2013). While the Alaska Department of Labor reported that Alaska's unemployment rate has been lower than the national unemployment rate for 52

consecutive months, the Food Bank of Alaska has seen an increase in the amount of individuals and families served in an effort to supplement household food budgets. According to the State of Alaska Department of Health and Social Services (DHSS, 2013) food insecurity is a significant and growing problem in the state. The number of SNAP recipients in Alaska has nearly doubled since fiscal year (FY) 2008, while the total population of the state increased by only 6% (US Census Bureau, 2015). Data collected by the USDA for FY 2008, document that Alaska had 56,977 food stamp participants compared to 91,298 participants for FY 2012 (USDA, 2013).

Table 1. Alaska SNAP eligibility and maximum benefit amounts.

Household Size	Gross Income	Net Limit	Household Size	Urban	Rural I	Rural II
1	\$1580	\$1215	1	\$227	\$290	\$353
2	\$2130	\$1639	2	\$417	\$532	\$648
3	\$2681	\$2062	3	\$598	\$762	\$928
4	\$3231	\$2485	4	\$759	\$968	\$1178
5	\$3781	\$2909	5	\$902	\$1150	\$1399
6	\$4332	\$3332	6	\$1082	\$1380	\$1679
7	\$4882	\$3755	7	\$1196	\$1525	\$1856
8	\$5432	\$4179	8	\$1367	\$1743	\$2121
Each Additional	+\$551	+\$424	Each Additional	+\$171	+\$218	+\$265

The significant rise in SNAP participation is not limited to Alaska; it has been a national trend since late 2008. The USDA attributes some of this increase to the passing of the 2008 Farm Bill which focused efforts on outreach and improved access to food benefits. The rise has also been partially attributed to the economic downturn and the rise in unemployment claims (USDA, 2013).

The recent tide of interest in food security and the potential resultant population health consequences of food insecurity have led to the passing of several bills and regulations

in support of making Alaska more food secure. Further, the Alaska Food Policy Council (AFPC) was created in May 2010, to assist in providing support for food policy development and advocacy, and is an independent non-profit organization with members representing different aspects of the food system in Alaska (AFPC, 2013a). The role of a state food policy council is often to examine how the state and/or local food system functions, then to provide ideas and recommendations for improving access to healthy, affordable, culturally appropriate foods for all the state's citizens (AFPC, 2013). This is accomplished by advocating for policy changes at the local, state and federal level, and by educating the public about food systems. One policy supported by AFPC, Alaska Statute 36.15.050, took effect in March 2013 and requires institutions receiving state money to purchase local agriculture products when the price is within 7% of comparable products from outside Alaska. On July 2, 2013, then Alaska Governor Sean Parnell signed legislation calling for the creation of the Alaska Food Resource Working Group (AFRWG), under Administrative Order 265, with the goal of building Alaska's food economy. The purpose of the administrative order was to establish a state agency work group focused on recommending policies and measures to increase the production, purchase and consumption of local wild seafood and farm products. Members of the AFPC Board are part of this workgroup.

1.3 Challenges to Alaska's Food Security

There are several limiting factors to be overcome or modified when it comes to food production and distribution in Alaska, including climate, availability of arable land, transport costs and infrastructure, processing capacity and storage. Further, the specific challenges associated with the limiting factors can vary widely across the state, especially when comparing urban and rural Alaska. For example, with respect to food storage in rural Alaska, warming temperatures are causing meat stored in traditional ways underground to thaw too quickly, which can result in foodborne illnesses and a loss of food caches relied upon by families and small communities in the winter months (Brubaker, Berner, Chavan & Warren, 2011). Whereas in more urban areas of Alaska, food storage concerns center not on rising temperatures, but the funding and coordination to procure and maintain adequate provisions for thousands of people should importation be disrupted in an emergency.

A review of the literature supports the notion that Alaska currently lacks the infrastructure necessary for sustainable self-sufficiency in production, processing and storage. According a report published by the Crossroads Resource Center, only 3%-5% of the agricultural products consumed in Alaska are actually produced in-state (Meter & Goldenberg, 2014). Challenges include an expansive state with multiple areas that are not road accessible; significant upfront costs associated with the purchase of breeding stock; added cost of feed and hay during winter months; State and Federal policies that are often cumbersome and too expensive for small scale producers; a current lack of cooperative buying groups for commercial fish; and low interest in locally marketing commercial fish (Meter & Goldenberg, 2014).

A report commissioned by the Rasmuson Foundation, entitled *Food Security and Local Food Production in Alaska*, presents information on the status, challenges, and opportunities relating to Alaska's food network (Donovan and Snyder, 2013). There are several key findings of the report, discussing food security in Alaska, food production, public health, and food system activities and funding that can be tied to the identified goals of AFPC. For example, in Alaska, the greatest number of food insecure individuals reside in Anchorage and the surrounding areas, but the prevalence of food insecurity is greatest in rural¹ regions of the state (23.4%), compared to urban regions at 12% (Donovan & Snyder, 2013). Limitations to farming in Alaska include lack of capital for farm investment; capacity constraints; lack of distribution systems for moving local food to mainstream markets; and limited research, formal and informal education, and training programs for marketing local foods. Climate change is having an impact on rural Alaska community food security, including effects on food storage cellars, changing moose migration patterns, and disappearance of important species. In a report released by Crossroads Resource Center in July 2014, the researchers reference how food security efforts have a history of failing in Alaska:

¹ Alaska Department of Labor defines rural as having a population of less than 50,000.

“While Alaskans have long grown food for themselves, local agriculture has failed to realize the potential many had hoped it would attain. Early initiatives to become self-sufficient for food floundered. Larger efforts to develop agriculture settlements have failed to meet their founders’ hopes. State funds to promote farm production have often spiraled into mismanagement. Some of the State’s best farmland is now developed into urban area.”
(Meter and Goldenburg, 2014)

Even with the many challenges to a strong Alaska food system, much good work is taking place across the state. The Cooperative Extension Service supports over forty rural community initiatives to integrate community gardens with the economies and cultures of Alaska (Loring & Gerlach, 2010). The Delta Junction region has started a growing tradition of working with food crops and cereal grains such as barely, canola, wheat, and flax with livestock systems based on bison, elk, and yak as an alternative to the cattle/swine/corn complex (Loring & Gerlach, 2010). Joint funding provided at the state and federal level helps to support local and national food security policies. A few notable examples include the Alaska Farmer’s Market Quest Card Program, which allows for food stamp benefits to be used at farmer’s markets; the Summer Food Service Program provides free food for children when school is not in session; AFPC mini grants have provided cars and sleds for food hauling, gardening supplies, canvas shelter, critical repair to food storage structures, and heaters for food distribution; and the Alaska Native Tribal Health Consortium (ANTHC), through a grant from the USDA Food Nutrition Service, offers a nutritional food assistance program for federally recognized tribes called the Food Distribution Program on Indian Reservations (FDPIR). Although there are no Indian reservations in Alaska, save Metlakatla, FDPIR can still be administered by federally recognized tribes in Alaska.

Southeast Alaska is particularly engaged in efforts to improve the food security of Alaska residents. An effort called the Fruiting Plants Program was started by the Southeast Soil and Water Conservation District, and distributed 700 fruiting plants to rural southeast communities who do not have access to nurseries or retailers. A like-minded initiative called Grow Southeast promotes self-reliant communities and increases the production of healthy

local food through programs such as the wild food gathering program, community gardens, and agricultural production. A 2014 Southeast conference project included a seven minute video which showcases the growing body of Southeast Alaskan residents, communities and organizations that are dedicated to invigorating the local food system with locally cultivated and wild harvested foods. And the goal of the 2014 Southeast Alaska-specific Farm and Fish to School Conference was to promote the formation of a network of local food producers, school business managers, cooks and educators; improve health outcomes; strengthen economies; and reinforce cultural and traditional place-based practices. The above examples provide just a glimpse of the broad food security activities occurring across the state, and highlight the need for a consistent method of documenting such work so that groups may find opportunities to promote synergy, coordination, and cross-pollination; researchers may evaluate the impacts of food-related activities; and decision-makers can craft informed policies that build upon existing efforts.

Chapter 2: Introduction to GIS

2.1 GIS and Public Health

A Geographical Information System (GIS) is a system of hardware and software used for storage, management, retrieval, manipulation, analysis modeling, and mapping of geographical data (Aimone, Perumal, & Cole, 2013). Components can be relatively straightforward to use by non-experts and allow for the presentation of findings in a visual manner that can be easily interpreted across disciplines. A review of the literature presents evidence of the historical use of GIS by the field of epidemiology. However, in general, the field of public health is only in the infancy stage of GIS use (Bhatt & Joshi, 2012). For instance, epidemiologists have used maps historically to show associations between locations and incidence of disease. An increase in the use of GIS in the field of public health is partly due to improvements in data management, specifically the ability to link and edit health, social and environmental data. Geographical Information Systems also provide a visualization tool through the use of techniques such as animations to present disease patterns; and spatial analysis is a way that GIS can quickly show a disease progression or “what if” scenarios. Similar to the humanistic approach in psychology, public health also seeks to understand the total environment of an individual in order to understand the individual. Geographical Information System technology has the capability to capture the physical, social, and economic environment of individuals (Bhatt and Joshi, 2012). Visualization of the spatial distribution and patterns of disease provides public health officials, policy makers and other stakeholders a powerful tool to help them better understand the etiology of a disease, educate the public, and enhance decision making abilities. Using the integrated approach of GIS mapping in the field of public health can also support disease surveillance and control at all levels, from local to national. Spatial data plus ecological and epidemiological data combined offers the greatest analysis of variables that factor into disease transmission. Figure 2 provides an example of the use of GIS mapping and disease monitoring by the World Health Organization during the Ebola outbreak of 2014.

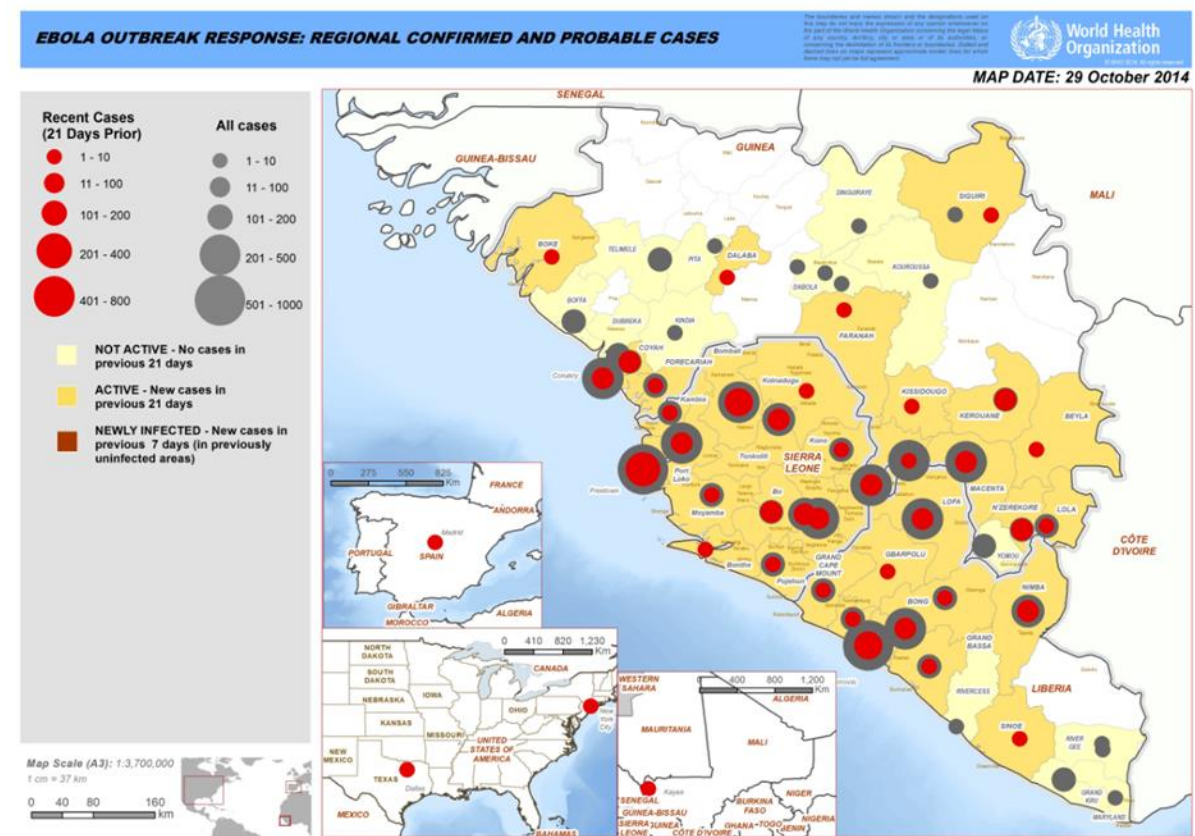


Figure 2. World Health Organization GIS mapping of Ebola outbreak (WHO, 2014).

Numerous public health researchers and programs have used GIS in disease prediction and monitoring. Geographical Information Systems have been employed for combating major diseases in Africa such as HIV, malaria and tuberculosis due to the spatial modeling capacity offered – specifically, the spatial variation of disease, and its relationship to environmental factors and the healthcare system (Tanser & Le Suerer, 2002). For example, researchers studying malaria have used the known association of malaria outbreaks and proximity to water bodies to develop a GIS map that captures socioeconomic data as well as quantitative and qualitative information on health facilities, with the overall goal of helping to reduce malaria rates and assist in the design and implementation of strategic malaria control measures in identified hotspots (Qayum, Arya, Kumar & Lynn, 2015).

Researchers have also developed a web-based, geographically enabled, dengue integral surveillance system (Dengue-GIS) for the nation-wide collection, integration,

analysis, and reporting of geo-referenced epidemiologic and control intervention data, with the hope that this type of map will be expanded to other infectious and chronic disease monitoring (Hernandez-Avila et.al., 2013).

The use of GIS in public health also continues to expand beyond disease monitoring. In North Carolina a partnership between state government, university, and local health departments developed a GIS system which provided health department personnel with the skills and resources required to use sophisticated information systems that address spatial dimensions of public health practice. The project helped to incorporate GIS technology into daily operations, resulting in improved time and cost efficiency (Miranda et al., 2005). Other research has applied GIS as a strategy to improve spatial planning of public health services, with the goal of improving the effectiveness of public health interventions and the use of financial and human resources (Polo, Acosta, Ferreira, & Dias, 2015).

With the increase of GIS not only in public health, but across many other disciplines, it is understandable how GIS could also be applicable to issues of food security. In one example, a GIS-based approach was developed by researchers for the identification of vulnerabilities and the measurement of risks associated with food systems contaminated with biological agents. ArcGIS provided a means to visualize the results which allowed decision makers to quickly determine the potential impact of the contamination (Beni, Villeneuve, LeBlanc, & Delaquis, 2011).

With respect to food production, GIS has been used to monitor and manage soil resources for optimal agricultural development (Kasthuri Thilagam & Sirasamy, 2013). In one instance, GIS was used to measure the land potential for urban agriculture in four suburban neighborhoods in Waterloo, Ontario (Port & Moos, 2014). Other studies have applied GIS in the assessment of food access (e.g., measuring the distance and concentration of food outlets relative to where people live). In King County, Washington GIS was used as a new way to identify and explore food deserts, specifically examining physical and economic access to supermarkets for five low-income groups in the area (Jiao, Moudon, Ulmer, Hurvits, & Drewnowski, 2012). Another study not only examined the distance from home to store, but also incorporated race, sex, travel mode, food prices and availability of healthful foods. The goal was to use GIS in future research to link store choice to specific

food purchases and health outcomes as well as for refining place-based strategies for improving access to healthful foods (Hillier, Smith, Cannuscio, Karpyn & Glanz (2015).

In California, GIS data were aggregated from 68 low-income neighborhoods with the objective to determine what conditions were affecting obesity rates. The map was used to inform program planning, nutrition education, community participation, investment of resources, and stakeholder involvement in order to increase accessibility of healthy food choices in low-income neighborhoods (Ghiradelli, Quinn, & Foerster, 2010). Due to the numerous capabilities that GIS technology provides, creating a food map to assist the AFPC to focus on food accessibility, infrastructure, safety, sustainability, and engagement provided not only the basis for this project, but a platform for future research of Alaska's food system.

There are many GIS software programs on the market to choose from to create a map. ArcGIS was the program selected to create the food map for this project. The selection was made due primarily to existing licensure to the University of Alaska Anchorage, making it readily accessible to staff and students. Even more importantly, it is also the program of choice for most mapping courses available within the University system and by GIS professionals. ArcGIS provided the infrastructure needed to make the map, and it allows for the eventual sharing of the map openly through the AFPC webpage and/or other websites. ArcGIS includes ArcReader, which allows one to view and query maps created with other ArcGIS programs, and ArcGIS for desktop which is licensed in three levels: *basic*, which allows for the viewing of spatial data, creation of layered maps, and the ability to perform simple spatial analysis; *standard*, which includes more advanced tools for manipulation of shapefiles and geodatabases; and *advanced*, which includes capabilities for data manipulation, editing, and analysis.

2.2 GIS and Food Mapping

Use of GIS mapping as a tool for formulating and answering questions pertaining to food security has increased substantially over the past decade (CLF, 2014). The University of Maryland through The Center for a Livable Future (CLF, 2014), for example, has been developing a food system mapping tool and database to examine the current landscape of Maryland's food system from farm to plate, and to inform activities aimed at strengthening

that system. Their map includes farms producing food, processors, distributors, retail outlets and institutions like schools and hospitals (Figure 3). The food system map is multidimensional, utilizing GIS technology that enables layered displays of graphically linked data, and integrating a variety of database resources. New data sets are continually added to the database, and will be added to the website in the phased approach (CLF, 2013).

The CLF project provides information that will help people better understand their local food system and how it works; and inform local non-governmental organization (NGO) and government agency research and program activities that are working to improve the local food system for consumers and producers, including creating markets for local farmers.

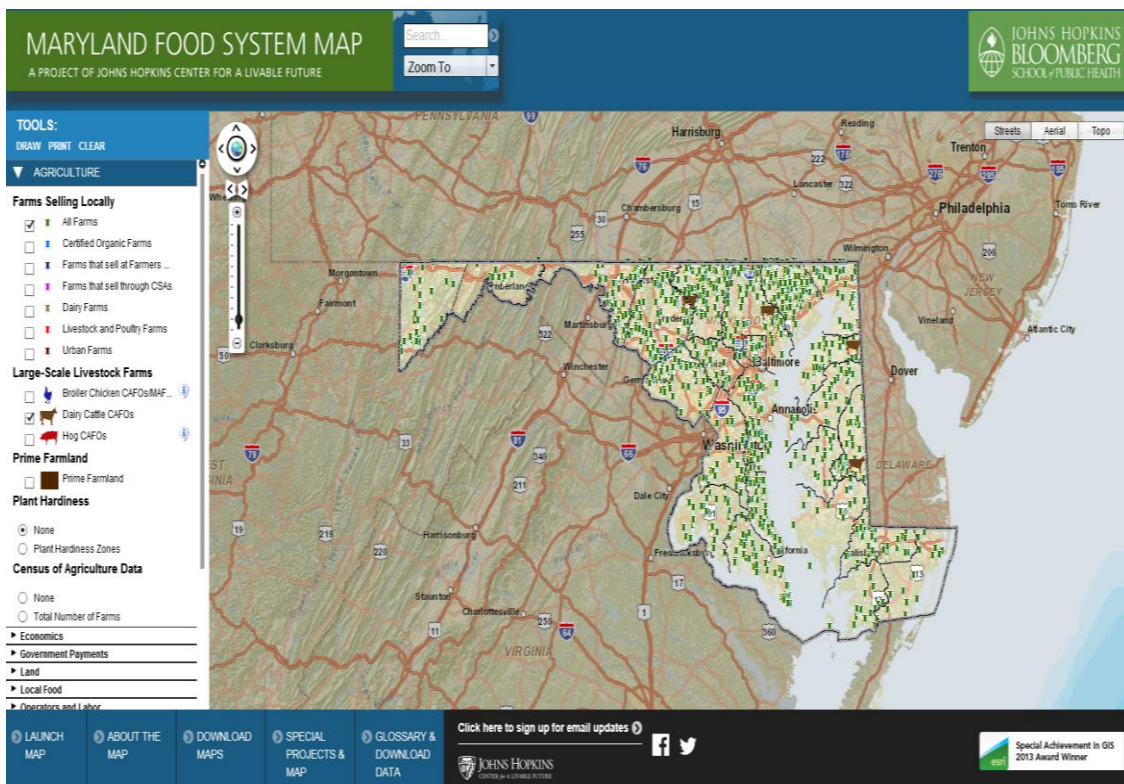


Figure 3. Screenshot of the Maryland Food System Map (CLF, 2013).

Chapter 3 Goals, Aims, and Objectives

The goal of the practicum project was to create a decision support tool to help facilitate the strengthening of Alaska's food system and decrease food insecurity. Specifically, the project intended to assist the AFPC in meeting their strategic plan goals and objectives relating to food security in Alaska (Appendix A). A conceptual framework for the project is presented in Figure 4.

There were two specific aims of the project:

1. Create a GIS map that systematically catalogs food systems data, and is searchable, manipulable, and updateable.
2. Demonstrate how the GIS map can be used as a resource to help meet the goals outlined in the AFPC strategic plan.

The associated objectives were to:

1. Quantify community garden space per capita in Alaska communities.
2. Determine availability of food related educational and training opportunities in the state and their locations.
3. Investigate the emergency food preparedness levels of Alaska communities in high risk disaster areas.
4. Determine if similar levels of funding support are being offered toward both rural and urban food production efforts in Alaska.
5. Determine if elected officials are engaged in food-related issues in Alaska.

The project objectives were developed to demonstrate example applications of the map for supporting the strategic plan goals drafted by the AFPC:

AFPC Goal (1): *All Alaskans have access to affordable, healthy (preferably local) foods.*

Community gardens are a popular avenue by which communities can help grow their food systems and increase access to fresh foods. In rural areas of Alaska, populations are often cut off from the road system, which drastically limits access to affordable, healthy fruits and vegetables. If community garden locations can be captured and plotted on a map, the total square feet of garden space can be analyzed to determine the per capita garden space of each community. Once this information is known, AFPC (or other interested entities) could identify areas where there are no gardens, or limited gardens, and assist in directing funds to these communities to expand and support community gardening.

AFPC Goal (2): *Alaska's food related industries have a strong workforce and operate in a supportive business environment.*

To help support this goal, it was important to examine what role or influence Alaska's post-secondary institutions play in creating future food system workers and entrepreneurs, or if there are course offerings that provide continuing education for those already in food-related industries. If local post-secondary institutions are not providing food-related courses of study, it may be reasonable to conclude that there is a substantial weakness in mechanisms to develop Alaska's food systems workforce. If course and degree data are collected and plotted on a map, the visual representation of any weaknesses could assist those who make relevant policy, funding, and curriculum decisions for post-secondary institutions.

AFPC Goal (3): *Food is safe, protected and supplies are secure throughout Alaska.*

Emergency plans are one of the best ways to ensure that population needs are met in case of a disaster. Alaska is separated from the Continental United States, guaranteeing that immediate relief efforts from the federal government after an emergency or disaster will be delayed. It is important that local boroughs/municipalities have plans in place to feed their populations should a disaster occur. By collecting data relating to emergency preparedness plans and seeking to determine if there is a food plan in place, this project will be able to assist the AFPC with concentrating efforts on making sure that food is safe, protected, and secure in the most vulnerable locations throughout Alaska.

AFPC Goal (4): *Alaska's food system is more sustainable.*

While all of the goals of the objectives of the project can play a role in increasing the sustainability of Alaska's food system, the particular objective in mind for this is to look at how food related grants are being dispersed throughout Alaska. Specifically if more funds are being directed to urban areas of the state vs. rural. AFPC will be able to focus sustainability efforts and initiatives in areas of the state where a lack of funding is seen based on the data represented in on this project map.

Goal (5): *Alaskans are engaged in their food system.*

The stated project objective of determining if elected officials are involved in and/or supportive of food-related issues will help to further AFPC's goal by determining how engaged Alaska leaders are in their food system. Data collected on the number of food-related bills drafted and the voting records of elected officials could be used in such activities as lobbying efforts and the development of public education campaigns designed to increase engagement and participation around the state.

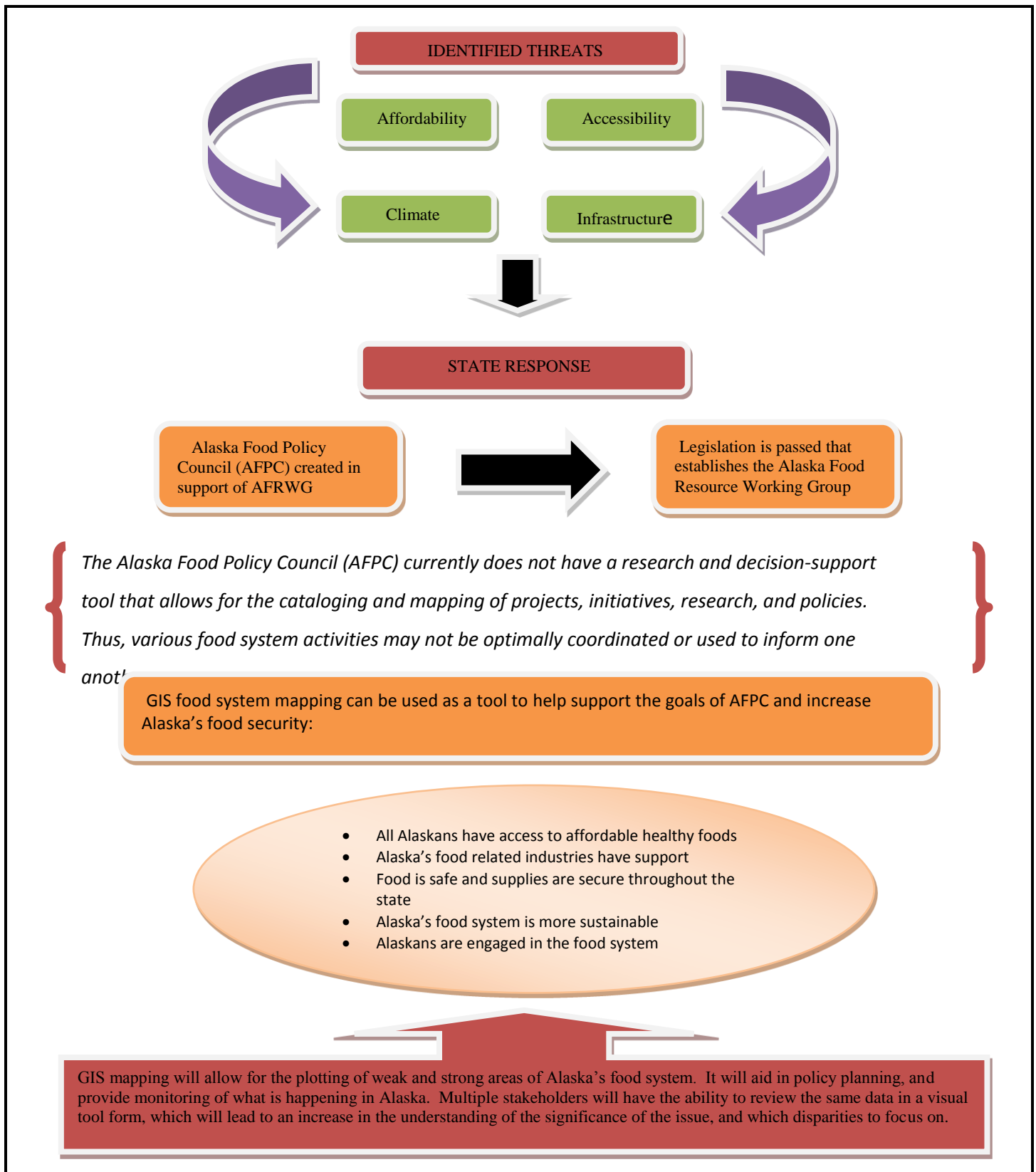


Figure 4. Project conceptual framework.

Chapter 4 Activities and Methods

4.1 Community Garden Data

Objective (1) sought to characterize which Alaska communities have the greatest area of community garden space per capita. The target region included communities in Alaska with known community gardens and the measurements included the total square feet of community garden sites and community population. Secondary data identifying community garden locations in the State of Alaska were gathered from sources such as the State of Alaska Department of Natural Resources, the University of Alaska Fairbanks Cooperative Extension website, as well as performing a simple Google search. Verification that the community garden was still active was obtained by using contact information provided on the Cooperative Extension website (Appendix B). Once verification of location was obtained, the measuring tool available in ArcGIS was used to measure the total land space made available for the community garden plots. If ArcGIS was not able to produce a satellite image of the garden location, Google Earth was used which also provides a measuring tool.

Once the measurements of community garden square feet were obtained, a layer of population (Appendix E) was created using US Census information and the populations were then divided by the respective garden space measurements in order to calculate the square feet of garden land per capita. A CSV file (Appendix D) was developed using Microsoft Excel which allowed for uploading of the data into ArcGIS online to easily plot the garden locations. Bookmarks (Appendix D) were then created in ArcGIS, which allows for immediate visualization of each garden with the capability to use the measuring and zoom in and zoom out features.

4.2 Post-Secondary Data

Objective (2) sought to address the extent to which Alaska educational institutions offer training and degree programs specific to food-related industries. The names of post-secondary institutions identified by the U.S. Department of Education as eligible to receive federal loans and grants were obtained. After the schools were identified, course offerings and degree/certificate information was reviewed by examining the school websites under the “course catalogs”, “academics” or “degree

programs” tabs. The data were categorized into tiers for plotting. Tier 1 consisted of degrees/certificates/courses which specifically have the term “food” in their title, while Tier 2 consisted of degrees/certificates/courses which can reasonably be considered applicable to food infrastructure (i.e., business courses emphasizing “entrepreneurship”; courses with the terms “agriculture”, “farming”, “gardening”, “horticulture”, or “fisheries”; engineering courses specific to the designing or construction of agriculture/farming/fishery infrastructure.) Once the data were sorted and categorized, a CSV file was created in Microsoft Excel and uploaded into the map. A symbol was selected to identify each institution on the map offering courses relating to food.

4.3 Emergency Preparedness Data

Several areas in Alaska are identified as “high risk” for disasters and are required to file emergency preparedness plans with the Federal Emergency Management Agency (FEMA) in order to receive emergency-related grants. Objective (3) sought to determine if community level emergency food preparedness plans were in place in Alaska communities that are identified as high risk areas. A contact with the Alaska Division of Homeland Security and Emergency Management provided the list of locales required to file emergency management plans.

Table 2. Alaska cities, municipalities, and boroughs required to file emergency plans.

Municipality of Anchorage	City of Bethel	Bristol Bay Borough
City of Cordova	City of Craig	Denali Borough
City of Dillingham	Fairbanks N.S. Borough	City of Fairbanks
City of Houston	City and Borough of Juneau	Kenai Borough
Ketchikan Gateway Borough	City of Ketchikan	City of Kodiak
Matanuska Susitna Borough	City of North Pole	North Slope Borough
Petersburg Borough	City of Seward	City and Borough of Sitka
City of Unalaska	City of Whittier	City and Borough of Yakutat

After the areas were identified, the plans of each community were extracted from the local government websites, most often under “Emergency Services” or a search of the term “Emergency Preparedness”, and then reviewed specifically looking for plan language addressing food storage, food availability, food amounts, and any other food related information. A CSV file was created using Microsoft Excel and the areas were assigned a specific symbol and plotted on the map.

4.4 Food Related Grant Data

Objective (4) sought to determine if there is a difference in the frequency and/or amount of financial and/or supportive resources provided to rural versus urban areas of the state. Focusing on food sustainability, grant award data were examined from three major grantors in Alaska: the Alaska Department of Natural Resources (DNR), the United States Department of Agriculture (USDA), and the Rasmuson Foundation for years 2012, 2013, and 2014. Award data were obtained through fiscal information located on the websites of each grantor. In order to map the best visual of food related information, it was decided that DNR and USDA information would be blended. The rationale behind the decision to examine only DNR/USDA grants was due to the reasoning that DNR is the agency most likely to award food-related grants that best match the data sought for this project. When examining the grant awards from each entity, projects were selected for plotting based on the use of language such as “food”, “garden”, “agriculture”, “farm”, “greenhouse”, “hydroponics”, “cooking”, “fish”, “policy”, “markets”, “Alaska grown”, “kitchen”, “barn”, and “farmer’s market.” These terms were the most prevalent when extracting food-related grant awards. This specific information was selected in order to determine if there is a difference in the frequency and/or the amount of financial resources provided by the State Department of Natural Resources/United States Department of Agriculture and The Rasmuson Foundation. The addresses of each recipient on the award lists were used to create a CSV file using Microsoft Excel which allowed for a map layer to be created. The address provided was specific to the location where an award was received and plotted on the map. For example, an award received by the Anchorage School District for a project at Chugiak High School would be plotted using the address of Chugiak High School in Eagle River, Alaska and not the Anchorage School District main address. Being able to plot specific

recipient locations will help to create a visual of where efforts are occurring and where efforts may be lacking. The data were categorized and then given a specific map symbol which indicates the grantor and the year the award was received. Clicking on a symbol also provides information on the dollar amount awarded, as well as the name of the specific food-related project/initiative that the funds were used to support.

4.5 Legislative Data

To determine the level of engagement Alaskans have in their food system, one of the best places to look is at the support provided at the legislative level. Thus, objective (4) sought to determine if elected officials are knowledgeable and/or supportive of food related issues in Alaska. Searches were conducted using information and databases provided by the State Legislative Information Office (LIO). Specifically, BASIS² was used to search for bills using the terms “food”, “agriculture”, “farm”, “fishing”, and “hunting” (Figure 5). Legislators are elected on the basis of their political views, and their ability to fund programs and create policies. Therefore, reviewing the voting records and bill sponsorship totals of state legislators for the years 2012, 2013, and 2014 could help to demonstrate an awareness and/or support of food security related issues.

² BASIS is an online searchable database provided by the State of Alaska Legislative Information Office and can be accessed at <http://www.legis.state.ak.us/basis/start.asp>

The Alaska State Legislature

HOME SENATE HOUSE BILLS & LAWS SEARCHES MEDIA CENTER PUBLICATIONS GET STARTED

29th Legislature(2015-2016)
Alaska State 29th Legislature
BASIS

SEARCH Display ?

Basis Navigation
Bills
Legislators
Committees
Session
Session Laws
Tools
Archive

Search

In the Bill Action Status Inquiry System

Research bill histories and subjects by entering a bill number (hb1, sjr5) or subject (oil exploration) in the search box and clicking the "Display" button.

Receive email updates on the status of specified bills.

Find information on bills, committee or floor schedules, minutes or journals, and legislative members.

Listen to committee hearings or floor sessions (via Gavel to Gavel).

Contact Legislators.

New in the 29th

Check out our brand new website.

We now have historical legislator information all the way back to statehood. Not exactly new, but it wasn't properly featured when it was new.
Admin Code and Statutes have been revised to not use the infobases

- Bills
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 - [Awaiting Action](#)
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 - [Passed Legislation](#)
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 - [Sponsor Summary](#)
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- Legislators
 - [Member Information](#)
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 - [Minutes and Audio](#)
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- Session
 - [House and Senate Calendars](#)
 - [Journal Text Display](#)
- Session Laws
 - [2015](#)
 - [2016](#)
 - [2015-2016](#)
- Tools
 - [Statute Information Retrieval System \(SIRS\)](#)
 - [Bill Tracking Management Facility \(BTMF\)](#)
 - [Executive Orders Current](#)
 - [Executive Orders Archive](#)
 - [Gavel to Gavel](#)
- Archive
 - [The 29th Legislature \(2015-2016\)](#)
 - [The 28th Legislature \(2013-2014\)](#)
 - [The 27th Legislature \(2011-2012\)](#)
 - [The 26th Legislature \(2009-2010\)](#)
 - [The 25th Legislature \(2007-2008\)](#)

Figure 5. Online access portal to the BASIS database.

The bills were extracted and the voting of each legislator was reviewed and documented on an Excel spreadsheet. The total of bill sponsorships related to food security was also tallied and reviewed. The data were then plotted on the map using specific symbols which identified the name of the legislator and the location of their district. Separate symbols were given to those legislators who Chair or Co-Chair committees, which is beneficial to know when seeking funding or seeking to pass legislation.

Chapter 5 Results and Discussion

5.1. AFPC Goal (1): All Alaskans have access to affordable, healthy (preferably local) foods.

Which Alaska communities have the greatest square footage of community garden space per capita?

While, initially, each of the individual garden plots in a community garden were intended to be measured, this was found to be unrealistic due to the quality of images available for remote Alaska locations. Instead, the area of land that was located and identified as the whole community garden space was measured.

Based on the estimated measurements of the community garden locations available in ArcGIS and Google Earth, Wrangell emerged as the leader in the State when it comes to land utilized per capita for community garden space, followed by Houston, Kenai, and Craig, with Anchorage coming in last place (Figure 6). It should be noted that while Wrangell at this time may be using the greatest area of land per capita for a community garden, research indicated that the town of Sitka appears to have the greatest amount of support from community members for garden efforts. Sitka has a dedicated website and Facebook page highlighting garden events and farmers markets. They also have developed the “Sitka Local Food Network” and the “Sitka Community Garden Education Center” which further promote the community dedication to gardening and food sustainability efforts. The University of Alaska Fairbanks also provides strong support for gardening efforts by maintaining community garden contact information through the Cooperative Extension network, and Anchorage leads all communities with respect to having the greatest number of gardens developed; and plans from both private and public organizations have been discussed to develop even more.

The community garden space information could be used in several ways by AFPC and other organizations. For example, the data could be used as justification for community garden funding in grant proposals; as a demonstration of need when communicating with policy-makers; in the identification of food systems study sites; by

individuals making relocation or business development decisions; or in community food assessments. However applied, improved insights into community gardening across the state can be helpful to efforts pertaining to strengthening the Alaska food system and improving food security through increased access to affordable, healthy, local foods.

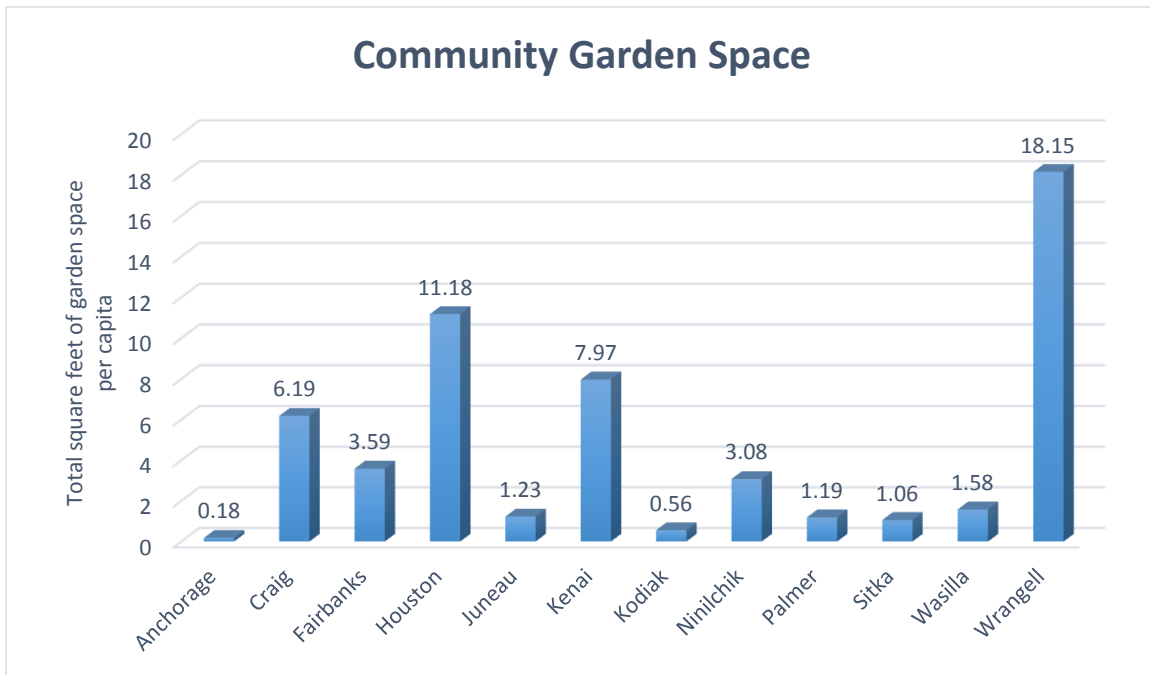


Figure 6. Per capita land use for community gardens.

5.2 AFPC Goal (2): Alaska’s food related industries have a strong workforce and operate in supportive business environments.

To what extent do Alaska post-secondary institutions offer training and degree programs specific to food-related issues?

Course catalogs and websites provided a picture into the food-related offerings of the State’s post-secondary institutions. While there were numerous courses and degrees that were or could be food-related, such as business, entrepreneurship, sciences, environmental studies, marine biology, fisheries, engineering and nutrition (Table 3 and Appendix F), there were only three courses that had the word “food” explicitly in the title

or description: *Food Production Manager, Volume Food Production, and Food Security and Nutrition*.³ The review suggests that the state's post-secondary educational institutions do not place a significant, concerted emphasis on the Alaska food system. Possible reasons could include a lack of funding necessary to develop a food system-related degree program, or lack of a champion to initiate such a program. Nonetheless, given that Alaska has roughly fifteen million acres of suitable soil for farming⁴ but a small agricultural community, a thriving seafood industry, several active organizations focused on improving food security and strengthening the food system, and yet significant levels of food insecurity and a high rate of food importation, increasing the amount of food system and security educational opportunities would make sense; and could create numerous opportunities for our state food system.

After reviewing twenty three post-secondary institutions it was surprising to see such a scarce amount of food-specific course offerings. One trend that was noticed was the substantial number of course offerings relating to environmental studies, ocean and port engineering, environmental policies, fisheries, natural resource management, wildlife biology, marine biology, nutrition, arctic engineering, business administration, and public administration. This is significant because each of these courses of study could easily and logically implement an aspect of food security in their curriculum, whether relating to food supply or food infrastructure. An increase in food-related education could expand our state infrastructure and possibly enable the Alaska brand to move to a more profitable worldwide market. The first obstacle in expanding Alaska's food system is the lack of people knowledgeable and skilled in what it takes to build and maintain a state food system. Our post-secondary institutions can help bridge that weakness by delivering quality food-related courses and degree opportunities to their students.

³ Two courses are in the culinary program at AVTEC and one is in the MPH program at UAA.

⁴ www.agclassroom.org

Table 3. Post-secondary institutions and course/degree/certificate offerings relating to food security.

<i>INSTITUTION</i>	<i>COURSES</i>	<i>DEGREES/CERTIFICATES</i>
<i>Alaska Bible College</i> <i>Alaska Career College</i> <i>Alaska Christian College</i> <i>Alaska Pacific University</i> <i>AVTEC</i> <i>Charter College</i> <i>Illsagvik College</i> <i>University of Alaska (Kenai Peninsula College, Kodiak College, Matanuska-Susitna College, Prince Williams Sound Community College)</i> <i>University of Fairbanks (Bristol Bay Campus, Kuskokwim Campus, Northwest Campus, Interior-Aleutians Campus, Community and Technical College)</i> <i>University of Alaska Southeast (Ketchikan Campus, Juneau Campus, Sitka Campus)</i> <i>Wayland Baptist University (Anchorage Campus, Fairbanks Campus)</i> <i>Alaska Technical College</i> <i>Amundsen Educational Center</i>	Business Accounting, Tropical Ecology, Environmental Ethics, Earth Materials, Conservation Biology, Environmental Law, Climate Change, Fish Habitat Models, Fish Population Dynamics, Advanced Marine Mammal Biology, Federal Government Contracting, Entrepreneurship, Intro to Environmental Studies, SerV Safe Food Production Manager, Volume Food Production, Purchasing and Inventory, Refrigeration, Principles of Economics, Accounting, Financial Management, Introduction to Earth Sciences, Academic Writing for the Natural and Social Sciences,	Business Accounting Business Administration & Management, Environmental Sciences, Earth Sciences, Marine Biology, Certificate in Eco League Water Resource Management, Sustainability Studies, Environmental Policy, Math for Environmental Science, Hospitality Management, Small Business Management, Geographic Information Systems, Heavy Duty Transportation, Industrial Safety, Logistics and Supply Chain Operation, Refrigeration and Heating Technology, Culinary Arts, Construction Management, Dietetics, Engineering, Environment and Society, GeoMatics, Geological Sciences, Health Sciences, Natural Sciences, Civil Engineering, Nutrition, Public Health, Arctic Engineering, Global Supply Chain, Project Management, Coastal, Ocean and Port Engineering, Environmental Regulation and Permitting, Renewable Resources, Fisheries, Natural Resource Management, Rural Development, Wildlife Biology and Conservation, Rural Nutrition Services, Northern Studies, Environmental Policies, Sustainable Energy, Public Administration

5.3 Community Level Emergency Plans with Food Preparedness Content

Are community-level emergency food preparedness plans in place in Alaska communities that have been identified as high risk disaster areas?

The State of Alaska Division of Emergency Management is tasked with writing and implementing a statewide emergency plan but it is often the responsibility of individual boroughs and municipalities to ensure the development of community-specific plans. The overall objective of an emergency plan is for a state, community, or individual to be prepared for a natural or manmade disaster. The lack of an emergency plan can result in multiple casualties, the spread of disease due to unsanitary conditions, hunger, human chaos which can lead to violence, and/or difficulty organizing and rebuilding. According to the *2010 Alaska All-Hazard Mitigation Plan*, the state is at risk for flooding, erosion, wild land fires, avalanches, volcanoes, earthquakes, tsunamis, severe weather, and ground failure. Several areas of the state are identified by FEMA as “high-risk” areas and are therefore required to file emergency preparedness plans in order to be eligible for any FEMA funding (Figure 21).



Figure 7. State-required emergency plan locations.

The individual community plans reviewed followed the template provided by FEMA for drafting emergency plans. Of these plans, when addressing food the typical language stated the following:

“Emergency Support Function #6 – Mass Care, Emergency Assistance, Temporary Housing, and Human Services Annex

Feeding: Provides feeding services at fixed sites and distribution sites and through mobile feeding units. Feeding services may include hot or shelf-stable meals, infant formula, baby food, snacks, beverages, and food packages, as well as diverse dietary meals (e.g., low sodium, low fat, vegetarian/vegan, halal, kosher). Emergency support function #6 works in concert with emergency support function #11 and local, state, and tribal governments; NGOs; and the private sector to acquire, prepare, cook and/or distribute food and food supplies. Additional support may include the provision of technical assistance for the development of state feeding plans”

While each emergency plan did have a paragraph addressing which member of the response team is responsible for obtaining and distributing food at congregate sites during a disaster, not a single plan mentioned having an emergency community food cache available. In fact, the only mention of an emergency food cache was a press release detailing a contract between the Municipality of Anchorage and a local Veteran owned company from March 2014, outlining plans to build an emergency food cache that would have the capacity to feed 40,000 residents for 7 days (Appendix F). According to the latest data from the U.S. Census Bureau, Anchorage has a current population of over 300,000. The amount needed versus the amount of food planned for storage is grossly underestimated. The Alaska State Emergency Operations plan emphasizes that due to Alaska’s remoteness and disconnect from the rest of the Continental United States, Alaska residents can expect to be “on their own” for up to 72 hours following an interruption in food transport. Smaller rural communities who are further separated from the main hubs of Anchorage or Fairbanks will likely experience even greater delays before they receive state or federal assistance. Having adequate amounts of food stored to feed communities after a disaster should be a focal point in planning, regardless of a community’s FEMA risk status. Emergency food plans and storage can play a huge role

when it comes to meeting the needs of vulnerable populations such as children and the elderly, as well as decreasing the potential health consequences in those with unique dietary intake needs due to medical conditions such as diabetes.

5.4 Urban vs. Rural Grant Awards

Is there a difference in the frequency and/or amount of financial resources provided to urban vs. rural areas of the state?

The amount of the financial awards provided by the DNR/USDA and the Rasmuson Foundation for years 2012-2014 were totaled and then divided into urban vs. rural awards for comparison. The data demonstrated that over three-quarters of award money went to urban projects while the remaining less than one quarter funded rural projects (Figure 8).

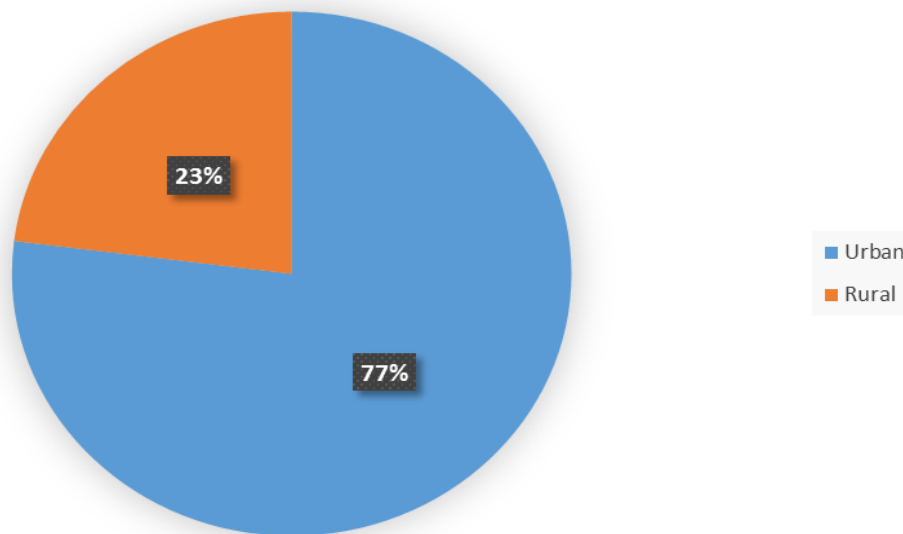


Figure 8. Percent of grants directed to urban and rural locations in Alaska.

A breakdown of dollar amounts into the categories of award years and award source revealed that combined, DNR and USDA awarded \$672,260 total for years 2012-2014.⁵ The Rasmuson Foundation contributed a total of \$1,407,859 for years 2012-2014.⁶

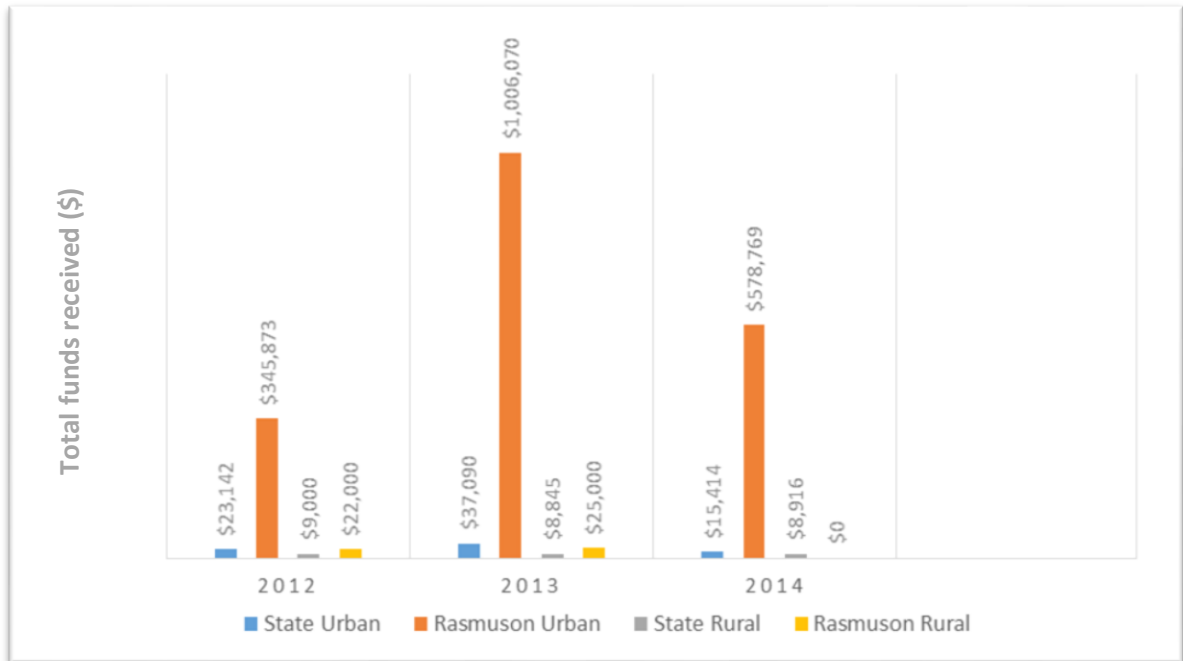


Figure 9. Grant award totals 2012-2014.

Having a visual of where funds are being awarded in the State can help AFPC in their efforts to make Alaska's food system more sustainable by identifying and working with communities that may not have the experience or know-how when it comes to grant writing, yet have the desire to start a community garden or food-related project. Some of the projects funded by the Rasmuson Foundation include \$135,000 to Bread Line, Inc. in Fairbanks for the renovation of their food distribution building; \$24,455 to the Wasilla Area Senior Inc. for the purchase of a vehicle for the Meals on Wheels program; \$25,000 to Alaska Pacific University Palmer Campus for the creation of a master plan for the Kellogg farm campus; and \$25,000 to Alaska Gateway School District for a community

⁵ \$32,142 (2012), \$45,935 (2013) and \$594,183 (2014)

⁶ \$367,873 (2012), \$1,031,070 (2013) and \$8916 (2014)

greenhouse in Tok. The DNR provided \$738 for the Fish to Preschool program in Emmonak; \$1500 to Fairbanks Economic Development to create a tour of farms; \$2250 to the Northwest Arctic Borough School District for a community garden; and \$2000 to the Homer Farmers Market for their “promoting food by example project”. After finishing the review of grant awards it was apparent that there has been a lot of support for community garden development, farmers markets, and farm-to-table/farm-to-school type activities. Relatively little funding has been directed into rural areas to enhance food accessibility. Outside of providing funds to develop community gardens in rural areas, the lack of awards for rural infrastructure was also an identified gap.

One apparent persistent challenge is the fact that many grant funds are not guaranteed to continue following the conclusion of the award period, which can lead to the discontinuation of an initiative that was beneficial but otherwise unable to independently support itself. For instance, salad bars offered in some school lunchrooms may be popular upon initiation, but are then dropped the following year due to a lack of funding. This practicum project not only identified a need to direct additional funding to rural areas, but also to strengthen new funding proposals by incorporating plans for long-term financial sustainability. Such long-term planning strategies will also be important to organizations or individuals who are contemplating the start-up or expansion of a food-related business in Alaska. Pairing this understanding with knowledge of the types of projects likely to be funded and the locations most in need of funding, the AFPC will be well-equipped to provide guidance to the relevant outside parties interested in helping to make Alaska’s food system more sustainable.⁷

5.5 AFPC Goal: Alaskans are engaged in their food system.

Does the political record of current state legislators demonstrate an awareness or support of food security related issues for the period 2011-2014?

⁷ It is recognized that the continuous reliance on grants and subsidies may not be considered “sustainable” nor “self-sufficient.” However, the availability of such supports improve the ability of farmers to weather various unpredictable challenges (e.g., changes in fuel prices; crop failure; workforce declines; equipment loss, etc.) and expand operations, as well as the ability of new farmers to start a business, thus contributing to the expansion and strengthening of a more sustainable food system.

The Alaska Legislative body is comprised of sixty elected officials. The Alaska Senate has a total membership of twenty, making it the smallest *upper* house legislative chamber in the United States. Alaska Senators serve four year terms, and are not subjected to term limits. The Alaska House of Representatives has a total membership of forty, making it the smallest *lower* house legislative chamber in the United States. Alaska Representatives serve two year terms, and are also not subjected to term limits. One of the many ways to increase food security awareness and activities in Alaska is to gain the support of the legislature. It is they who create the laws, oversee spending, and answer to the public. A typical legislative session usually runs during an annual timeframe of late January to mid-April. During this time, elected officials focus on creating and passing bills that are important to their respective districts and the State as a whole. While many Legislators may have a particular interest in one field over another (e.g., corrections, child welfare, resource development), it is important to recognize those that have supported food-related bills in order to begin to understand how engaged Alaska decision-makers are in their food system, as well as to identify food system allies.

A comparison of the membership rolls of the 27th (2011/2012) and 28th (2013/2014) legislature against the 29th (2015/2016) legislature showed that 38 legislators (64%) have served through all three sessions (Figure 10).⁸

⁸ Chenault, Coghill, Costello, Edgemon, Egan, Ellis, MacKinnon (Fairclough), Foster, Gara, Gardner, Giessell, Gruenberg, Guttenberg, Hawker, Herron, Hoffman, Hughes, Johnson, Kawasaki, Keller, Lynn, McGuire, Meyer, Millett, Munoz, Neuman, Olson, Olson, Pruitt, Saddler, Seaton, Stedman, Stevens, Stoltze, T. Wilson, Thompson, Tuck, Wielechowski

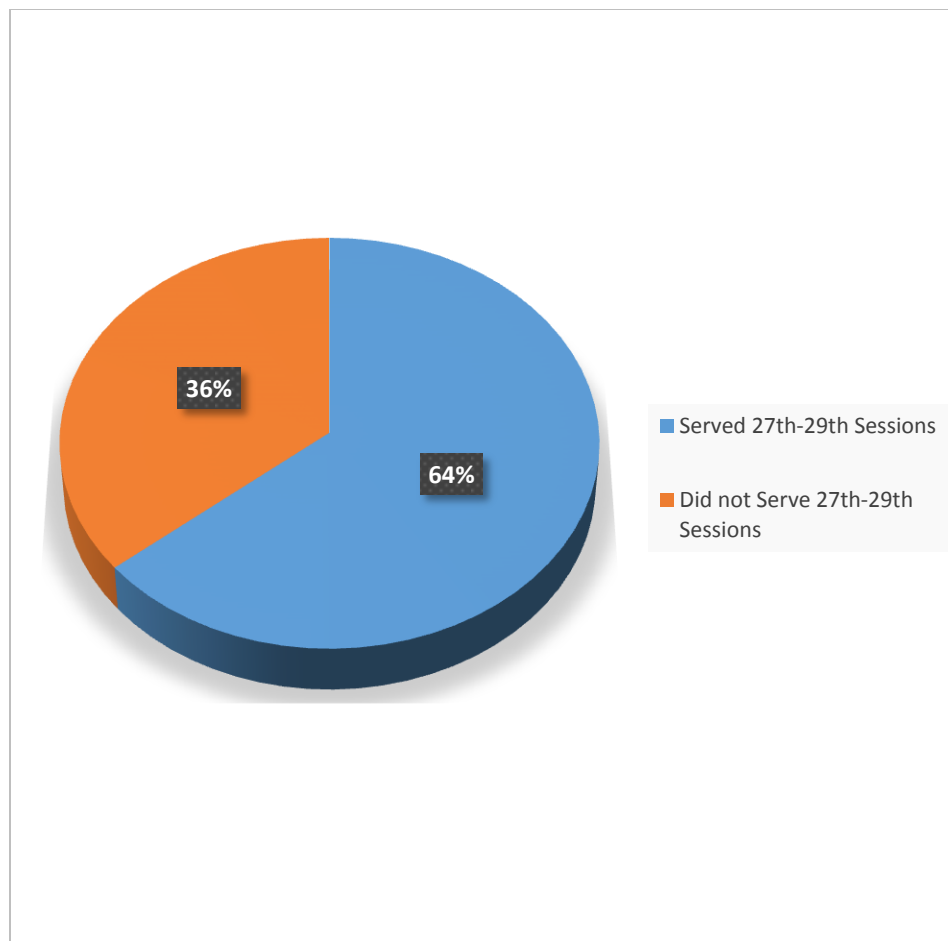


Figure 10. Percentage of legislators serving legislative sessions from 2011-2014.

Upon examination of the sponsorship of food related bills, it was revealed that twelve elected officials have sponsored at least two such bills. The second highest category of sponsored bills was zero (11 officials),⁹ followed by categories in the order of one, three, four, five, six, seven, eight, nine, and ten bills sponsored.

⁹ Seven are newly elected officials who, at the time of this project, had not yet served a term. Four are returning legislators.

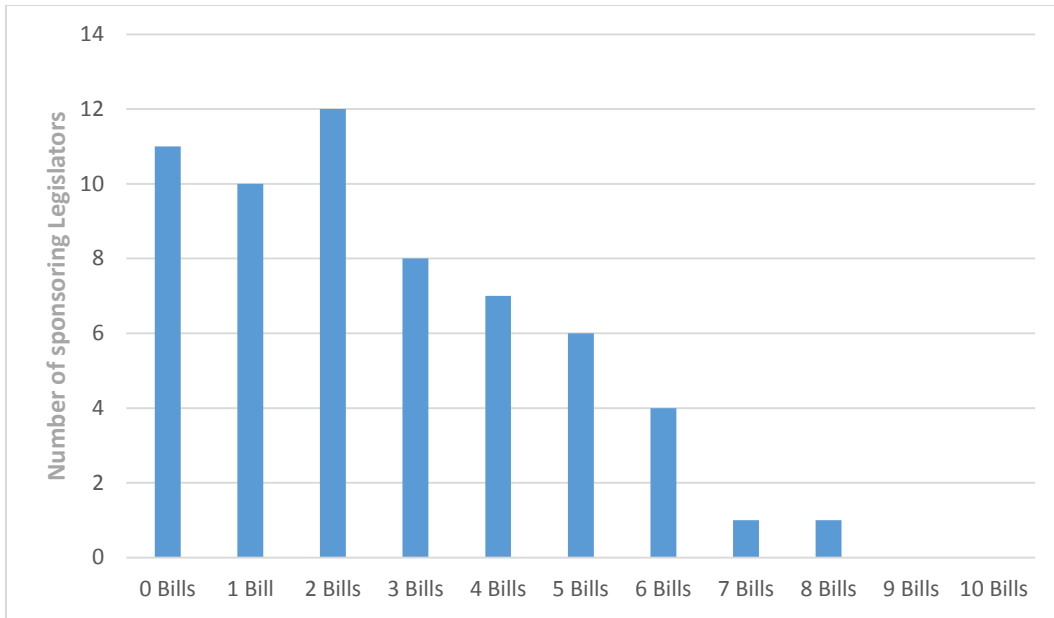


Figure 11. Food-related bills sponsored by Legislators during the 27th-29th sessions.

The greatest number of food-related bills was authored by Representative Craig Johnson, who sponsored eight bills,¹⁰ and Representative Max Gruenberg who sponsored seven bills.¹¹

After reviewing the food-related bills¹², the number of bills that passed and the number of bills that did not was recorded and totaled. The tallies reveal that during the 27th legislative session there were 12 sponsored bills relating to food. Of those twelve bills, six were stalled¹³ and six were passed¹⁴. During the 28th legislative session there were 11 sponsored bills relating to food. Of those 11 bills, five were stalled¹⁵ and seven bills were passed¹⁶ (Figure 12). While this project does not look back far enough to determine if this modest increase in the percentage of passed legislation is a hopeful trend, the numbers do help to illustrate that food-related issues are indeed moving across the congressional floor.

¹⁰ Representative Johnson is a republican serving house district 24

¹¹ Representative Gruenberg is a democrat service house district 16

¹² See Appendix C: Food Related Bills

¹³ HCR 24, HB 191, HB 202, HJR 8, HB 99, HJR 10

¹⁴ HCR 18, HB 97, HB 60, HB 18, HB 93, HB 132

¹⁵ SB 158, HB 380, HB 207, SB 61, HB 121

¹⁶ HB 71, HB 40, HB 231, SB 140, HJR 5, HCR 1

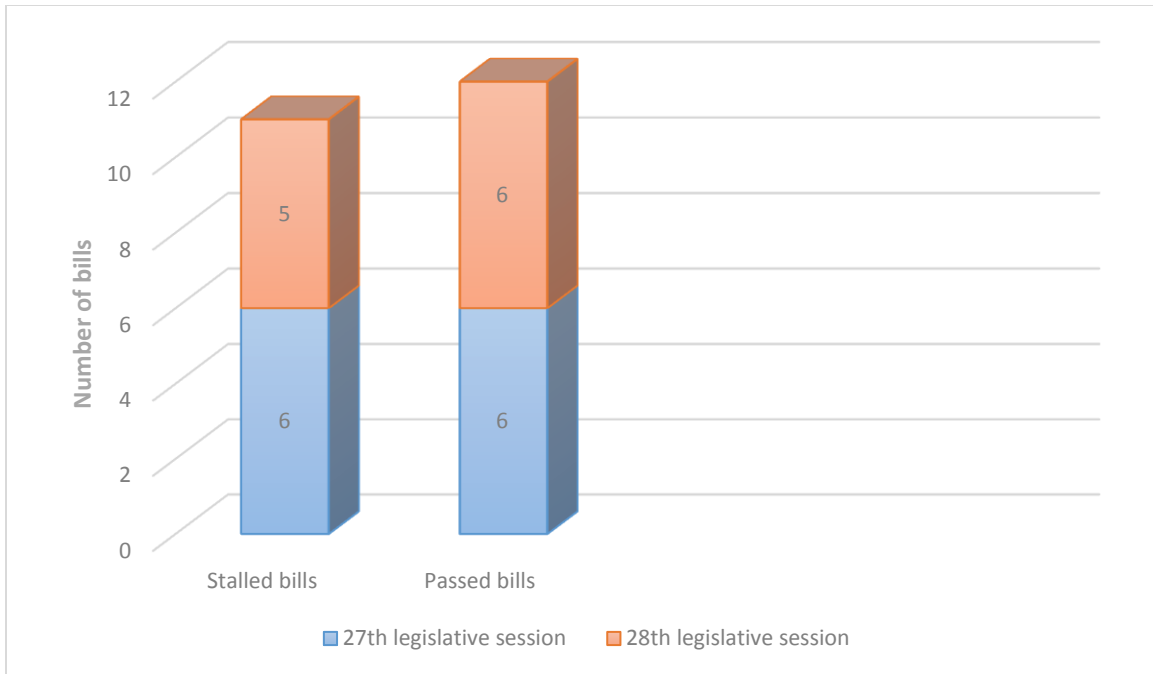


Figure 12. Number of stalled and passed food-related legislation in the 27th and 28th legislative sessions.

Chapter 6 Strengths and Limitations

There were many strengths and limitations associated with the research questions addressed in project. With respect to the community gardens inquiry, the relative lack of available data on community garden locations was not expected. While contact information was provided through the Cooperative Extension, there are numerous places in Alaska, especially rural Alaska, where street names and addresses simply do not exist. When reached for garden location information, contacts provided responses such as:

“The Craig Garden is up on Water Tower Rd across from the pool.”

“The Kasaan garden is next to City Hall.”

“The Hollis Garden is between the school and library.”

“The Thorne Bay garden is next to the library by City Hall.”

“No one has street names out here....”

Even using the satellite capabilities of Google Earth and ArcGIS, it was often nearly impossible to locate structures. Where there was a street name provided, the building number was not, so a best estimate had to be made based on a conglomeration of information from Google images and websites such as Facebook, or old newspaper stories discussing the opening of the garden, as the article would shed the most light on the location. However, as frustrating as the data collection was when it came to community gardens, an absolute strength was how eager those contacted were to share any information they could about their local gardens. There seemed to be a genuine excitement for community gardening.

Conversely, the data pertaining to food-related education at post-secondary institutions was readily available, which provided a great strength to this project. However, what was not taken into consideration during the review of multiple 2014/2015 catalogs, was that some courses may only be offered every other year, or may be offered inconsistently. For example, if a food-related course was offered every other year, beginning in the 2013/2014 academic year, it may not have been identified through a

search of a 2014/2015 catalog. Another limitation may be in how courses were counted or excluded as being food-related. For consistency, the same terms were used when reviewing school course offerings and legislative bills, which could have overlooked some relevant courses or included marginally or conditionally relevant courses. For example, counting a business course in entrepreneurship as a food-related course might be a stretch if the course is never used to develop a food-related business; whereas searching food-related legislation with the same key words may provide a hit on a bill that sought to give tax credits for the creation of food-related businesses. The food-related course data may indeed be too broad, so a future project could look at narrowing down and weeding out courses in order to strengthen this particular layer of information.

The biggest challenge associated with gathering the emergency preparedness data was making contact with a FEMA representative. Phone calls, emails, and voicemails were all tools deployed in an effort to gather community information on Alaska. After about two weeks of trying at the federal level, the information was successfully obtained by the helpful staff within the State of Alaska Division of Homeland Security and Emergency Management. Within a few hours, a list was generated identifying which Alaska communities were identified by FEMA as “high risk” and were required to file an emergency plan.

The work addressing the research question pertaining to food project funding started easily, but soon became difficult. Data from the Rasmuson Foundation was easily obtained, as it is posted to their website and clearly categorized. However, as with the efforts to obtain emergency preparedness information, gathering data from the federal government on food project funding was again a challenge, and it was the State of Alaska who filled the role in getting the federal data for this project. Because federal money was provided in grants to the DNR for food-related activities, the data collection became easier as the state agency was able to provide listings of the projects/activities which were funded with federal monies. Once the list was obtained for all grantees, the way the funds were distributed was able to be seen through the creation of the map layer relating to funded projects/initiatives/activities. The map layer successfully provided a visual of the amount of monies sent to urban vs. rural areas of the state, which is helpful in

identifying areas that are weak in food security-related projects so efforts can be funded to strengthen these areas.

Gathering data on food-related legislation was relatively easy given the availability of the online portal provided by the LIO. The portal is a tool which provides current and historical data for all legislative sessions held in the state. Voting records, bill searches, sponsors, and contact information of all current legislators and their staff are made publically available. The staff at the LIO was also very accommodating and provided tips for performing research. One challenge with using the portal was going back and forth between the old portal and the new portal. They were conveniently located on the same tabular page, but it was confusing and awkward at first. Once navigating the portal was mastered, the amount of data available was substantial. It was all organized and categorized by session years and a bill could be searched for either by clicking on a category such as “Health and Social Service” or typing in a specific keyword such as “agriculture.” Again, once the data were reviewed and categorized, a map layer was able to be created and a visual provided.

Having no prior GIS experience meant that additional time to learn mapping skills was required. ArcGIS Desktop was downloaded and a map was started, however it was ArcGIS online that proved easier to use and navigate. Creating CSV files and uploading them into the ArcGIS online project was a simple two-step process. In ArcGIS Desktop, the steps for developing a map seemed to be more complicated to ultimately get the same result as using the online version. That being said, however, the map from the online version could be exported to the desktop version and manipulated as needed.

The biggest strength of this project materialized with the challenge that came hand in hand with learning a new software program, and that was how much information and support was provided through the learning phase. Having guest access to “sit in” on a current GIS course offered online through the UAA Public Health Program was a huge benefit. Being able to read the questions, review the handouts, practice the exercises, follow the discussions of students enrolled in the course, and ask questions if needed all contributed to the overall understanding and application of ArcGIS. Although the term “expert” is far from an adequate description of the confidence level associated with

mapping this project, there was a moderate level of comfort and a substantial increase in confidence thanks to the support offered.

Chapter 7 Conclusions

By continuing to develop an easy-to-use statewide GIS map that integrates food system activity data with other population information (e.g., demographics and future work consisting of general health data), users will be able to pinpoint and categorize food system information to help answer questions pertaining to, for example, food access, food system education, resource allocation, and policy impacts. Multiple stakeholders will have the ability to review the same data, in a visual form which will increase understanding of the issues surrounding food security such as availability, production, processing capacity, and infrastructure, while prioritizing food-related projects and initiatives. Further, AFPC may find that the map could aid in the identification of future goals and objectives and be used by AFPC and others to justify proposed policies and funding requests. With a clearer understanding of where food security-related activities are occurring or lacking in the state, AFPC may be better equipped to address their strategic plan goals and objectives; coordinate efforts between AFPC working groups; and develop and prioritize additional strategic research questions and policy recommendations.

Decision-support tools such as an interactive food system map could contribute to a strengthened and sustainable organization better equipped to secure additional funding for future projects and initiatives. Lastly, as the map will be publically available, it can be used by policy makers, advocates, legislative staff, non-profits, and researchers to coordinate activities and reduce duplication of efforts to improve Alaska's food security.

Chapter 8 Recommendations

Prior to this project, AFPC did not have a research and decision-support tool that allowed for the cataloging and mapping of Alaska food system projects, initiatives, research, and policies. Thus, various food system activities may not be optimally coordinated or used to inform one another. There are several specific recommendations based on the results of this project:

The AFPC currently has several work groups developing strategies to improve Alaska's Food System: board development, finance/fundraising, communications, and key initiatives/policy work groups. It is recommended that AFPC create a subcommittee within the communications work group, which will eventually be responsible for the maintenance and continued building of Alaska's food system map. Committee members can become frustrated if they are not carefully chartered with relevant tasks and deadlines. Therefore, when recruiting for membership to the map subcommittee, it would be wise to select members who possess the skills and experience needed to successfully launch and maintain the mapping project. In lieu of an entire committee focused on the map, it could be feasible to have one or two members of the communications work group mentoring a graduate student(s) who will develop his/her own set of questions that he/she would like to answer by using Alaska's Food Map in support of their thesis or project. In doing so, AFPC will, in essence, have a continuous cycle of hands-on assistance in map maintenance by pairing with UAA graduate programs for student project placements. Every new project could answer a new set of public health/food-related questions that can lead to new legislative pushes for funding of food projects and initiatives, evaluation of existing programs, and development of evidence-based education programs, for example.

Strategic planning is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and stakeholders are working towards a common goal, establish agreement around intended outcomes and provide an overall picture of where an agency or group is and where they are going (Routley, Phaal, Anthanassopoulou & Probert, 2013). AFPC should continue to use the information available on Alaska's Food Map when developing their future strategic plan goals and objectives. With a clearer understanding of where food security-related activities are occurring or lacking in the

state, AFPC may be better equipped to address their strategic plan goals and objectives; coordinate efforts between AFPC working groups; and develop and prioritize additional strategic research questions and policy recommendations.

Finally, in order to continue building the Alaska Food Map, there are a few more steps to consider, which could in themselves be future MPH projects. Additional layers to consider adding to the map include plotting locations around the state where SNAP participants can use their benefits (e.g., stores, farmers markets). This type of information could be helpful across disciplines (e.g., to a social worker or public assistance caseworker for use with developing family self-sufficiency plans with clients). A layer which provides a visual of obesity rates in cities/boroughs across the state could be useful when planning obesity prevention activities, especially if the map can provide analysis showing a potential relationship between obesity rates and issues such as food accessibility, or if a relationship exists between obesity rates and the number of SNAP participants living in a given area. Currently, another MPH student is adding to this map for her own MPH practicum project, and a few examples of what she will be plotting is road availability for food transportation, and potential land available for food production. This map is currently at the concept phase of development, and this project, paired with the subsequent work building upon it, will provide excellent support and justification for further funding. From increasing food security efforts in Alaska, to highlighting weaknesses in our food system, this map is a necessary tool for reaching the primary goal of food security, making sure that all people at all times have access to safe and healthy food choices.

Appendix A: Alaska Food Policy Council Strategic Plan



Alaska Food Policy Council

Strategic Plan

January 12, 2012

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The Alaska Food Policy Council Strategic Plan was funded in part by the Centers for Disease Control and Prevention (CDC), Cooperative Agreement Award No. 3U58DP001955-01S2. The contents of this report are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

All photos from Agnew::Beck Consulting, unless noted.

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Food Policy in Alaska

Alaska's Food System

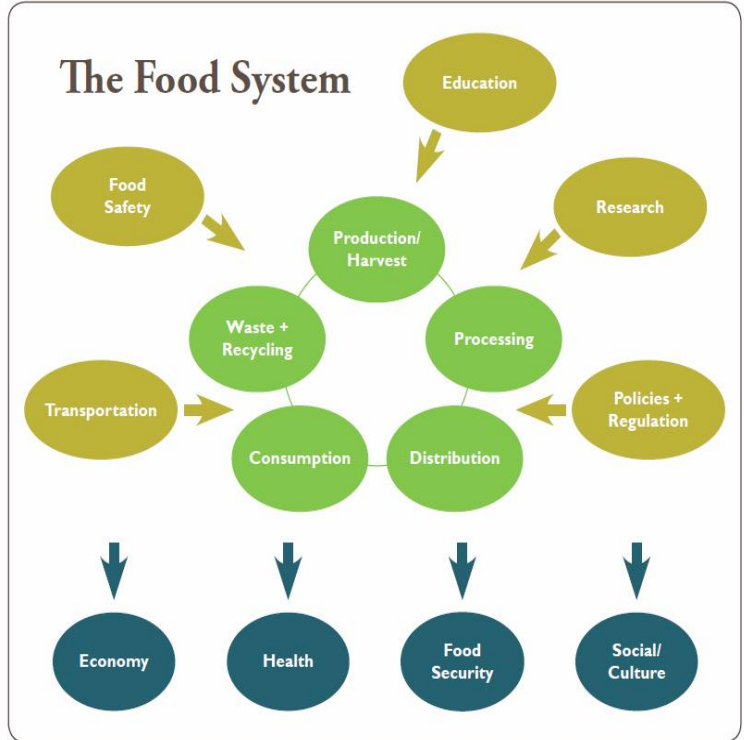
Food is an integral part of any society and is closely related to public health, economic and social well-being, local self-reliance, and sustainability. A food system includes a set of activities related to food production, processing, distribution, consumption, and waste management, as well as the associated policies, regulatory institutions, and activities.

Alaska's food system has a significant impact on our economy, health and security. A USDA report shows that in 2007 Alaskans spent \$1.5 billion on retail food expenditures; however, it is estimated that less than five percent of the food consumed by Alaskans is produced in-state. The State of Alaska Department of Health and Social Services reports that 66 percent of Alaska's adult population is either overweight or obese and four of the top 10 leading causes of death in Alaska, cancer, heart disease, stroke, and diabetes, are diet-related. Many Alaskans do not have enough food to eat. In 2009, the USDA reported that 13 percent of Alaskans were uncertain of having, or unable to acquire enough food for all household members because they had insufficient money or other resources for food. These facts alone point to the urgency and need to improve Alaska's food system for today and future generations of Alaska residents.



Photo: Laura Minski, Anchorage, AK





The Alaska Food Policy Council (AFPC or Council)

Food policy councils (FPCs) are a way to bring together the broader spectrum of stakeholders within the local food system, and to coordinate and empower their individual efforts to improve the system. The role of an FPC is often to examine how the state and/or local food system functions, then to provide ideas and recommendations for improving access to healthy, affordable, culturally appropriate foods for all of the state's citizens. A FPC accomplishes this by advocating for policy changes at the local, state and federal level, and by educating the public about food systems.

The Alaska Food Policy Council (AFPC) is an independent organization with members representing different aspects of the food system. Proposed in early 2010, the Council is open to anyone interested in improving Alaska's food systems. Initial meetings included approximately 80 individuals interested in forming a food policy council; they represented federal and state agencies, tribal entities, university programs, farmers, fisheries, and food systems businesses. Today, over 100 agencies and individuals participate in the AFPC. Participation ranges from e-newsletter recipients to active roles on issue-specific committees. A governing board of 11 representatives has been established and will work to identify key issues, set broad strategic direction and priorities for the Council, oversee strategic plan implementation, and perform other Council management duties. AFPC's intent is to provide recommendations and information to agencies, businesses, organizations, and individual consumers, with well-developed comprehensive policies that improve Alaska's food systems.



The AFPC Strategic Plan

AFPC Vision

Healthy, secure food systems that feed all Alaskans.

AFPC Core Values

We value...

- Alaska grown, harvested, caught and made
- health
- community
- self-reliance
- interdependence
- justice
- stability and security
- sustainability
- safety
- prosperity

AFPC Mission

The AFPC improves our food systems for the benefit of all Alaskans.

This document represents the Alaska Food Policy Council's Strategic Plan. A planning team comprised of 24 members of the Alaska Food Policy Council developed the plan over the course of a two-day planning meeting in Anchorage, Alaska, on August 1st and 2nd, 2011. The strategic plan defines AFPC's vision for Alaska's food systems by defining broadly desired long-term improvements or goals in five key focus areas including: access; economic development; safety, security and protection; sustainability; and public engagement. For each focus area the plan provides a clear set of objectives for measuring progress on broad goals, a set of strategies for how to make that change happen and a set of priority strategies the AFPC will focus on for the next three years (2012-2015). The priority strategies were developed through a group ranking process using an agreed upon set of criteria. The criteria were as follows:

- Will the strategy have an impact at the local level?
- Is the strategy specific and measurable?
- Does the strategy have a clear leader?
- Does the strategy fit within our three-year timeframe?
- Is the strategy achievable and practical?
- Is the strategy a food policy strategy?
- Is the strategy clear of conflict or opposition?
- Does the strategy have a likely person, organization or group that can work on it?

The strategic plan will act as a guide for the AFPC board, staff and membership and is meant to direct, unify and strengthen membership activities. As such, the AFPC governing board, with the support of the full membership can revise and modify the plan to better meet Alaska's food systems' needs. The key components of the plan and how they are defined is outlined below.

Vision

What is the AFPCs desired future state: 10, 15, 20 years from now?

Core Values

What is important to the AFPC? How does the Council identify itself?

Mission

What does the AFPC do and who do they serve?

Goals, Objectives + Strategies

- Goals – What long-term improvements or changes does the AFPC hope to achieve?
- Objectives – What does the AFPC hope to accomplish or impact with their goals and strategies? What will be the measureable change?

What is the three-year target? NOTE: While developing this strategic plan, the AFPC recognized the challenges regarding a lack of baseline data for setting measurable objectives for the strategic plan. As such, objectives identified in this current version of the strategic plan included broader based objectives. As the data are made available, measurable targets will be incorporated into the plan.

- Strategies – How will AFPC achieve three-year objectives and make progress on their goals?

Priority Strategies, 2012-2015

Of the many strategies outlined in this plan, which strategies will AFPC focus on over the next three years? NOTE: These strategies are listed in the framed box below and were decided through a ranking and voting process during the August strategic planning meeting.

AFPC Priority Strategies 2012-2015:	Working toward our goals and three-year objectives:
Develop, strengthen and expand the school-based programs and policies that educate about and provide healthy, local foods to schools (e.g., Farm to School Program, Agriculture in the Classroom, traditional foods in schools, school gardens).	<p>Goal 1: All Alaskans have access to affordable, healthy (preferably local) foods.</p> <p>Objective 1c: Increase the number of Alaska schools participating in local, healthy, and traditional food procurement.</p>
Strengthen enforcement language in the Local Agricultural and Fisheries Products Preference Statute (AS 36.15.050), also known as the “Seven Percent” statute and Procurement Preference for State Agricultural and Fisheries Products (Sec. 29.71.040).	<p>Goal 1: All Alaskans have access to affordable, healthy (preferably local) foods.</p> <p>Objective 1d: Increase the number of Alaska institutions (e.g., hospitals, government agencies) participating in local, healthy, and traditional food procurement.</p>
Advocate and participate in the development of community level and comprehensive statewide emergency food preparedness plan(s).	<p>Goal 3: Food is safe, protected and supplies are secure throughout Alaska.</p> <p>Objective 3b: Improve the emergency food preparedness of our communities and regions.</p>
Develop AFPC’s role as research aggregator and resource.	<p>Goal 5: Alaskans are engaged in our food system.</p> <p>Objective 5a: Improve the body of research that will inform and support Alaska food policy efforts.</p>
Identify and support existing local food system leaders, projects, events and activities that support Alaska’s food system.	<p>Goal 5: Alaskans are engaged in our food system.</p> <p>Objective 5b: Increase the number of food advocates among the public that support healthy food initiatives and policy changes.</p>

Goals, Objectives + Strategies

(**denotes 3-year priorities)

Goal 1: All Alaskans have access to affordable, healthy (preferably local) foods.

Objective 1a: Increase access, availability and affordability of local foods to end consumers.

- Strategy 1: Help develop policy and regulation to encourage farmers markets and CSA/CSFs to accept food stamps and WIC/ EBT.
- Strategy 2: Explore incentives to assist low-income residents to purchase healthy food.
- Strategy 3: Promote alternative food-buying options (such as co-ops).

Objective 1b: Increase the number of organizations with traditional, customary, historic food-gathering leave policies.

- Strategy 1: Educate Alaskan employers about the benefits of supporting traditional, customary and historic food gathering activities, either through a personal leave policy or designated leave time (paid or unpaid).

Objective 1c: Increase the number of Alaska schools participating in local, healthy, and traditional food procurement.

- **Strategy 1: Develop, strengthen and expand the school-based programs and policies that educate about and provide healthy, local foods to schools (e.g., Farm to School Program, Agriculture in the Classroom, traditional foods in schools, school gardens).
- Strategy 2: Promote implementation of State nutrition standards.
- Strategy 3: Promote a state funded reimbursement for schools taking part in the federal Free and Reduced Price School Breakfast and Lunch Program, and the Fresh Fruit and Vegetable Program.

Objective 1d: Increase the number of Alaska institutions (e.g., hospitals, government agencies) participating in local, healthy, and traditional food procurement.

- **Strategy 1: Strengthen enforcement language in the Local Agricultural and Fisheries Products Preference Statute (AS 36.15.050), also known as the “Seven Percent” statute and Procurement Preference for State Agricultural and Fisheries Products (Sec. 29.71.040).

Objective 2a: Increase the number of Alaskans that take part in food-related educational and degree programs.

- Strategy 1: Promote food system- related education and training programs.
- Strategy 2: Promote policies that offer student loan forgiveness in food-related business.

Objective 2b: Increase support for food-related business development in Alaska.

- Strategy 1: Advocate for small business food-related policies and incentives.

Goal 2: Alaska's food-related industries have a strong workforce and operate in a supportive business environment.



Objective 3a: Increase the number of Alaskans that participate in food safety and protection training and education programs.

- Strategy 1: Facilitate connection among food safety participants to provide necessary food safety training opportunities as needed in Alaska (e.g. canning, retail food HACCP).

Objective 3b: Improve the emergency food preparedness of our communities and regions.

- **Strategy 1: Advocate and participate in the development of community level and comprehensive statewide emergency food preparedness plan(s).
- Strategy 2: Increase awareness of the need for food storage.

Goal 3: Food is safe, protected and supplies are secure throughout Alaska.

Goal 4: Alaska's food system is more sustainable.

Objective 4a: Expand and protect food production capacity.

- Strategy 1: Advocate for fiscal and planning policies that protect the viability of land and water for agricultural production, wild food and seafood harvesting.
- Strategy 2: Ensure that producers have adequate access to capital, technical assistance, or other necessary resources to support increased food production in Alaska.

Objective 4b: Improve the distribution system for getting Alaska food products from producer to end user (consumers, retailers, food service businesses, schools, etc.).

- Strategy 1: Advocate for support to Alaska producers so that they can maximize production of inputs as well as food products.
- Strategy 2: Promote online opportunities to connect consumers, producers and institutional buyers.
- Strategy 3: Encourage cooperatives among food producers so they can more easily meet the demands of larger distributors, better meet wholesale orders, and provide a professional marketing front.

Objective 4c: Expand access to home and business food processing and storage.

- Strategy 1: Connect household consumers to the resources they need to do at-home food processing and storage (e.g. information, skills, and facilities).
- Strategy 2: Promote development and use of community commercial kitchens for small business or value-added food processing.

Objective 4d: Increase Alaska food marketing.

- Strategy 1: Educate Alaskans about the benefits of purchasing Alaska food products.
- Strategy 2: Encourage commodity marketing among food producers.
- Strategy 3: Build a marketing relationship between seafood (e.g., ASMI) and agriculture (e.g., Alaska Grown).

Objective 4e: Reduce waste from food, food packaging and agriculture.

- Strategy 1: Educate communities on waste management best practices.
- Strategy 2: Encourage businesses to use waste products.
- Strategy 3: Help channel locally produced food that is edible but nonsalable to the food assistance network.

Objective 5a: Improve the body of research that will inform and support Alaska food policy efforts.

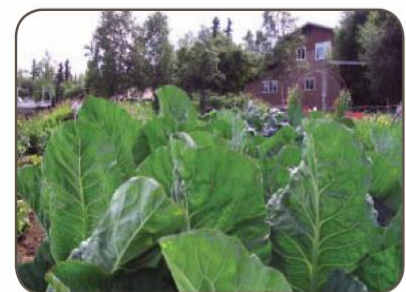
- **Strategy 1: Develop AFPC role as research aggregator and resource.

Objective 5b: Increase the number of food advocates among the public that support local food system initiatives and policy changes that are aligned with AFPC core values.

- **Strategy 1: Identify and support existing local food system leaders, projects, events and activities.

Objective 5c: Increase the opportunities for advocates of healthy food initiatives and educators about healthy food to be heard by policy makers and the public.

Goal 5: Alaskans are engaged in our food system.



Alaska Food Policy Council 2012 Strategic Plan

Prepared for the Alaska Food Policy Council by
Agnew::Beck Consulting

Appendix B: Extension Office Contact Information for Community Gardens

There are also a number of helpful publications available through the UAF Extension website. For more information, visit the www.uaf.edu/ces or call 1-877-520-5211.

If you wish to visit some of the community gardens in your area, contact your local Extension office for locations of known gardens.

Anchorage	907-786-6300
Delta Junction	907-895-4215
Eielson	907-377-4130
Kenai Peninsula	907-262-5824
Kodiak	907-486-0441
Juneau	907-796-6221
Mat-Su/Copper River	907-745-3360
Northwest (Nome)	907-443-2320
Sitka	907-747-9440
Tanana (Fairbanks)	907-474-1530
Thorne Bay	907-828-3207
Yukon-Kuskokwim	907-543-4564

Appendix C: Food Related Legislation 2011-2014

28th LEGISLATIVE SESSION (2013-2014)

(Passed Bills)

BILL: HB 71

BILL VERSION: FCCS HB 71

CURRENT STATUS: CHAPTER 2 SLA 14

SPONSOR(S): REPRESENTATIVE(S) HUGHES, Gara, Costello, Holmes, Austerman, Pruitt, Foster, Edgmon, Munoz, Herron, Chenault, Johnson, Gattis, Feige, P.Wilson, Hawker, Kreiss-Tomkins, Gruenberg, Tuck, Drummond, LeDoux, Stoltze, Josephson, Tarr, Saddler
SENATOR(S) Olson, Ellis, Egan

SHORT TITLE: AK REGIONAL ECONOMIC ASSISTANCE PROGRAM

STATUS DATE: 03/25/14

TITLE: "An Act relating to a vessel-based commercial fisheries limited entry system for the Bering Sea hair crab fishery; requiring the Commercial Fisheries Entry Commission to report biennially on the vessel-based limited entry fisheries system for the Bering Sea hair crab fishery; establishing the Alaska regional economic assistance program; requiring the Department of Commerce, Community, and Economic Development to compile an annual report to the legislature regarding statewide and regional economic development projects and regional development organizations; and providing for an effective date."

BILL: HB 40

BILL VERSION: CSHB 40(CRA) AM S

CURRENT STATUS: CHAPTER 66 SLA 13

SPONSOR(S): REPRESENTATIVE(S) HUGHES, Herron, Thompson, Isaacson, Olson, Kerttula, Johnson, Austerman, Reinbold, Keller, Gara, Lynn, Tarr, Gruenberg, Chenault, Feige, Seaton, Tuck

SHORT TITLE: MUNICIPAL TAX EXEMPTION: FARM STRUCTURES

STATUS DATE: 06/28/13

TITLE: "An Act establishing a municipal tax exemption for certain farm structures."

BILL: HB 231

SHORT TITLE: CATTLE BRAND REGISTRATION

BILL VERSION:

CURRENT STATUS: CHAPTER 66 SLA 14

STATUS DATE: 07/08/14

SPONSOR(S): REPRESENTATIVE(S) CHENAULT, Johnson

TITLE: "An Act eliminating the Department of Revenue's duty to register cattle brands."

BILL: SB 140

SHORT TITLE: AIDEA: ARCTIC DEVELOPMENT PROGRAM/FUND

BILL VERSION: HCS CSSB 140(FIN) AM H(REENGROSSED)

CURRENT STATUS: CHAPTER 93 SLA 14

STATUS DATE: 07/16/14

SPONSOR(S): SENATOR(S) MCGUIRE
REPRESENTATIVE(S) Herron, Drummond, LeDoux

TITLE: "An Act creating the Arctic infrastructure development program and fund in the Alaska Industrial Development and Export Authority; and relating to dividends from the Alaska Industrial Development and Export Authority."

BILL: HJR 5

SHORT TITLE: OPPOSE GENETICALLY ENGINEERED SALMON

BILL VERSION: CSHJR 5(FSH)

CURRENT STATUS: LEGIS RESOLVE 6

STATUS DATE: 04/15/13

SPONSOR(S): REPRESENTATIVE(S) TARR, Kawasaki, Austerman, Reinbold, Tuck, Kerttula, Kreiss-Tomkins, Nageak, Gara, P.Wilson, Edgmon, Foster, Herron, Gruenberg, LeDoux, Olson, Josephson, Millett, Holmes, Drummond, Isaacson, Johnson, Munoz, Chenault, Higgins, T.Wilson, Gattis, Costello, Hughes, Pruitt, Thompson, Lynn, Neuman, Feige
SENATOR(S) Wielechowski, Micciche, Ellis, Gardner, Egan, Dyson, McGuire, Coghill, Giessel, Fairclough, Hoffman, Stedman, Meyer, Bishop, Stevens, Olson, French

TITLE: Opposing the United States Food and Drug Administration's preliminary finding relating to genetically engineered salmon; urging further examination of genetically engineered salmon; opposing AquaBounty's petition to produce genetically engineered salmon; and proposing, if AquaBounty's petition is approved, that its product should be labeled as "genetically modified."

BILL: HCR 1**SHORT TITLE:** STATE FOOD RESOURCE DEVELOPMENT GROUP**BILL VERSION:** CSHCR 1(EDT)**CURRENT STATUS:** LEGIS RESOLVE 1**STATUS DATE:** 06/28/13**SPONSOR(S):** REPRESENTATIVE(S) STOLTZE, Hughes, Gattis, Keller, Neuman, Thompson, Herron, Costello, Millett, Isaacson, Tuck, Tarr, Kerttula, Kreiss-Tomkins, Drummond, Munoz, Foster, P.Wilson, Seaton, Feige, Chenault, T.Wilson, Johnson, Kawasaki, LeDoux, Pruitt, Saddler**SENATOR(S)** Bishop, McGuire, Dyson, Micciche, Kelly, Ellis, Stevens, Dunleavy, Meyer, Egan**TITLE:** Relating to the establishment and operation of a state food resource development working group.28TH LEGISLATIVE SESSION (2013-2014)

(Stalled Bills)

BILL: SB 158**SHORT TITLE:** LABEL GENETICALLY MODIFIED FOOD**BILL VERSION:****CURRENT STATUS:** (S) RES**STATUS DATE:** 02/05/14**SPONSOR(S):** SENATOR(S) WIELECHOWSKI**TITLE:** "An Act relating to the labeling of food; relating to the misbranding of food; requiring labeling of food produced with genetic engineering; and providing for an effective date."**BILL:** HB 380**SHORT TITLE:** WIC SUPPLEMENTAL FOOD PROGRAM VENDOR**BILL VERSION:****CURRENT STATUS:** (H) FIN**STATUS DATE:** 04/11/14**SPONSOR(S):** COMMUNITY & REGIONAL AFFAIRS**TITLE:** "An Act relating to the selection by the Department of Health and Social Services of vendors under the federal Special Supplemental Food Program for Women, Infants, and Children."

BILL: HB 207

SHORT TITLE: AGRICULTURE; AGRICULTURAL LOANS

BILL VERSION:

CURRENT STATUS: (H) RES

STATUS DATE: 04/12/13

THEN FIN

SPONSOR(S): REPRESENTATIVE(S) FEIGE

TITLE: "An Act establishing the Board of Agriculture, Conservation, and Development; transferring the powers and duties of the Natural Resource Conservation and Development Board to the Board of Agriculture, Conservation, and Development; transferring to the Department of Commerce, Community, and Economic Development the authority to approve loans from the agricultural revolving loan fund; terminating the Natural Resource Conservation and Development Board; and providing for an effective date."

BILL: SB 61

SHORT TITLE: COMMERCIAL FISHING & AGRICULTURE BANK

BILL VERSION:

CURRENT STATUS: (S) RLS

STATUS DATE: 02/07/14

SPONSOR(S): SENATOR(S) COGHILL, Ellis

TITLE: "An Act relating to the board, loans, records, and lobbying contracts of the Alaska Commercial Fishing and Agriculture Bank; and providing for an effective date."

BILL: HB 121

SHORT TITLE: COMMERCIAL FISHING & AGRICULTURE BANK

BILL VERSION: CSHB 121(FIN)

CURRENT STATUS: CHAPTER 112 SLA 14

STATUS DATE: 08/04/14

SPONSOR(S): REPRESENTATIVE(S) FEIGE

TITLE: "An Act relating to the examinations, board, loans, and records of the Alaska Commercial Fishing and Agriculture Bank; and providing for an effective date."

27TH LEGISLATIVE SESSION (2011-2012)

(Passed Bills)

BILL: HCR 18
BILL VERSION: CSHCR 18(FSH) AM
CURRENT STATUS: LEGIS RESOLVE 36
SPONSOR(S): FISHERIES

SHORT TITLE: COMMERCIAL FISHERIES PROGRAMS
STATUS DATE: 08/08/12

TITLE: Relating to an examination of fisheries-related programs to facilitate the entry of young Alaskans into commercial fisheries careers and to collaboration with the University of Alaska fisheries, seafood, and maritime initiative.

BILL: HB 97
BILL VERSION:
CURRENT STATUS: CHAPTER 3 SLA 11
SPONSOR(S): REPRESENTATIVE(S) JOHNSON, Stoltze, Gruenberg, Kerttula, Feige, Austerman, Gara

SHORT TITLE: EXTEND INVASIVE PLANTS LAW
STATUS DATE: 04/22/11

TITLE: "An Act extending a provision relating to noxious weeds, invasive plants, and agricultural pest management and education; providing for an effective date by repealing the effective date of sec. 2, ch. 102, SLA 2008; and providing for an effective date."

BILL: HB 60
BILL VERSION:
CURRENT STATUS: CHAPTER 56 SLA 12
SPONSOR(S): REPRESENTATIVE(S) SEATON, Gruenberg
 SENATOR(S) McGuire, Stedman, Egan, Menard, Ellis, Wagoner, Stevens, Dyson

SHORT TITLE: GEODUCK AQUATIC FARMING/SEED TRANSFER
STATUS DATE: 06/06/12

TITLE: "An Act relating to aquatic farm permitting involving geoducks and to geoduck seed transfers between certified hatcheries and aquatic farms."

BILL: HB 18**SHORT TITLE:** ALASKA PUBLIC GARDENS DAY**BILL VERSION:** CSHB 18(STA) AM**CURRENT STATUS:** CHAPTER 16 SLA 11**STATUS DATE:** 05/27/11**SPONSOR(S):** REPRESENTATIVE(S) KERTTULA, Gruenberg, Petersen, Seaton, Guttenberg, Holmes, Tuck**TITLE:** "An Act establishing Alaska Public Gardens Day on the Saturday immediately preceding Memorial Day each year."**BILL:** HB 93**SHORT TITLE:** SCHOOL GARDENS, GREENHOUSES,
AND FARMS**BILL VERSION:****CURRENT STATUS:** (H) FIN**STATUS DATE:** 02/28/11**SPONSOR(S):** REPRESENTATIVE(S) GUTTENBERG, Kerttula, Kawasaki, Neuman, Costello**TITLE:** "An Act relating to school gardens, greenhouses, and farms."**BILL:** HB 132**SHORT TITLE:** FUNDING FOR SCHOOL MEALS**BILL VERSION:****CURRENT STATUS:** (H) FIN**STATUS DATE:** 02/16/11**SPONSOR(S):** REPRESENTATIVE(S) MUNOZ, Seaton, Herron, Kerttula, Tuck, Petersen, Kawasaki, Gara**TITLE:** "An Act providing for funding for school lunch and breakfast."27TH LEGISLATIVE SESSION (2011-2012)

(Stalled Bills)

BILL: HCR 24

BILL VERSION: CSHCR 24(FIN)

CURRENT STATUS: (S) SUP CAL 4/15

SPONSOR(S): REPRESENTATIVE(S) STOLTZE, Neuman, Costello, Thompson, Fairclough, Munoz, Lynn, Kerttula, Pruitt, Dick, T.Wilson, Keller, Johnson, Herron, Foster, Austerman, Chenault, P.Wilson, Tuck, Gara, Hawker, Johansen, Petersen, Joule, Saddler, Seaton, Doogan, Guttenberg, Feige, Edgmon, Millett, Olson, Gruenberg, Holmes
SENATOR(S) Menard, Thomas

SHORT TITLE: STATE FOOD RESOURCE DEVELOPMENT GROUP

STATUS DATE: 04/15/12

TITLE: Relating to the establishment and operation of a state food resource development working group.

BILL: HB 191

BILL VERSION:

CURRENT STATUS: (H) RES

THEN FIN

SPONSOR(S): REPRESENTATIVE(S) THOMPSON BY REQUEST, Kerttula, Tuck, Lynn, Dick, Miller, T.Wilson, Munoz

SHORT TITLE: DEPARTMENT OF AGRICULTURE AND FOOD

STATUS DATE: 04/07/11

TITLE: "An Act establishing a state department of agriculture and food and relating to its powers and duties; relating to the powers and duties of the Department of Environmental Conservation and the Department of Natural Resources; and providing for an effective date."

BILL: HB 202

BILL VERSION:

CURRENT STATUS: (H) L&C

THEN RES

SPONSOR(S): REPRESENTATIVE(S) T.WILSON, Dick

SHORT TITLE: SALES OF FOOD BY PRODUCERS TO CONSUMERS

STATUS DATE: 03/23/11

TITLE: "An Act relating to the sale of food products by the producer to the consumer."

BILL: HJR 8

SHORT TITLE: OPPOSE GENETICALLY ENGINEERED SALMON

BILL VERSION:

CURRENT STATUS: (H) RLS

STATUS DATE: 03/18/11

SPONSOR(S): REPRESENTATIVE(S) KAWASAKI, Miller, P.Wilson, Kerttula, Thompson, Gara, Seaton, Austerman, Herron

TITLE: Urging the United States Food and Drug Administration to deny an application to sell genetically engineered salmon in the United States; urging compliance with the provision of P.L. 110-85 (Food and Drug Administration Amendments Act of 2007) that requires the Commissioner of Food and Drugs to consult with the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration regarding a report on environmental risks associated with genetically engineered seafood products; and urging that product labeling requirements include the words "Genetically Modified" prominently displayed on the front of the package if the application is approved by the United States Food and Drug Administration.

BILL: HB 99

SHORT TITLE: LABEL FARMED & GENETICALLY MODIFIED FISH

BILL VERSION:

CURRENT STATUS: (H) FSH

STATUS DATE: 01/18/11

THEN L&C

SPONSOR(S): REPRESENTATIVE(S) MILLER, Kawasaki, Kerttula

TITLE: "An Act relating to labeling of farmed fish and genetically modified fish."

BILL: HJR 10

SHORT TITLE: OCEAN ACIDIFICATION RESEARCH

BILL VERSION:

CURRENT STATUS: (H) RES

STATUS DATE: 02/27/12

SPONSOR(S): REPRESENTATIVE(S) KERTTULA, Miller, Thompson

TITLE: Supporting expanded research concerning the detrimental effects of ocean acidification.

Appendix D: Glossary of Basic GIS terms

Attribute - A characteristic of a geographic feature, typically stored in tabular format and linked to the feature in a relational database. The attributes of a well-represented point might include an identification number, address, and type.

Base Layer - A primary layer for spatial reference, upon which other layers are built. Examples of a base layer typically used are either the parcels, or street centerlines.

Buffer - A zone of a specified distance around a feature.

Computer Aided Design (CAD) - An automated system for the design, drafting and display of graphically oriented information.

Coordinate - An x,y location in a Cartesian coordinate system or an x,y,z coordinate in a three dimensional system. Coordinates represent locations on the Earth's surface relative to other locations.

Database - A logical collection of interrelated information, managed and stored as a unit. A GIS database includes data about the spatial location and shape of geographic features recorded as points, lines, and polygons as well as their attributes.

Digital Elevation Model (DEM) - Terrain elevation data provided in digital form.

Digitize - To encode map features as x,y coordinates in digital form. Lines are traced to define their shapes. This can be accomplished either manually or by use of a scanner.

Geocode - The process of identifying a location by one or more attributes from a base layer.

Geographic Information System (GIS) - An organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information.

Global Positioning System (GPS) - A satellite based device that records x,y,z coordinates and other data. Ground locations are calculated by signals from satellites orbiting the Earth. GPS devices can be taken into the field to record data while walking, driving, or flying.

Layer - A logical set of thematic data described and stored in a map library. Layers act as digital transparencies that can be laid atop one another for viewing or spatial analysis.

Line - Lines represent geographic features too narrow to be displayed as an area at a given scale, such as contours, street centerlines, or streams.

Metadata - Information about a data set. It may include the source of the data; its creation date and format; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard.

Ortho Imagery - Aerial photographs that have been rectified to produce an accurate image of the Earth by removing tilt and relief displacements, which occurred when the photo was taken.

Point - A single x,y coordinate that represents a geographic feature too small to be displayed as a line or area at that scale.

Polygon - A multisided figure that represents area on a map. Polygons have attributes that describe the geographic feature they represent.

Scale - The ratio or relationship between a distance or area on a map and the corresponding distance or area on the ground.

Spatial Analysis - The process of modeling, examining, and interpreting model results. Spatial analysis is useful for evaluating suitability and capability, for estimating and predicting, and for interpreting and understanding.

Structured Query Language (SQL) - A syntax for defining and manipulating data from a relational database. Developed by IBM in the 1970s, it has become an industry standard for query languages in most relational database management systems.

Theme - An ArcView theme stores map features as primary features (such as arcs, nodes, polygons, and points) and secondary features such as tics, map extent, links, and annotation. A theme usually represents a single geographic layer, such as soils, roads, or land use.

Appendix E: Community Garden Maps

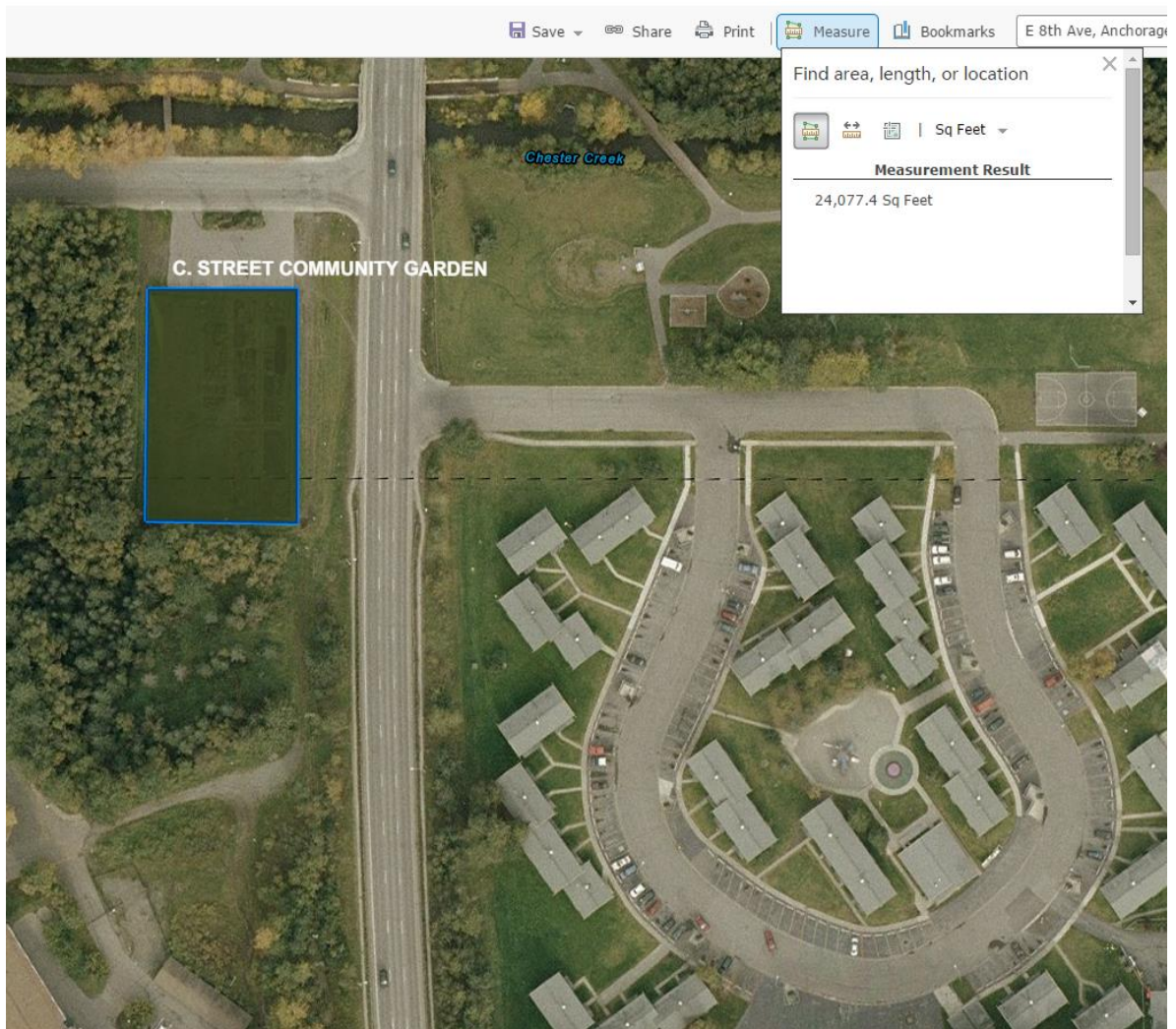


Figure A. C Street community gardens, Anchorage, Alaska.

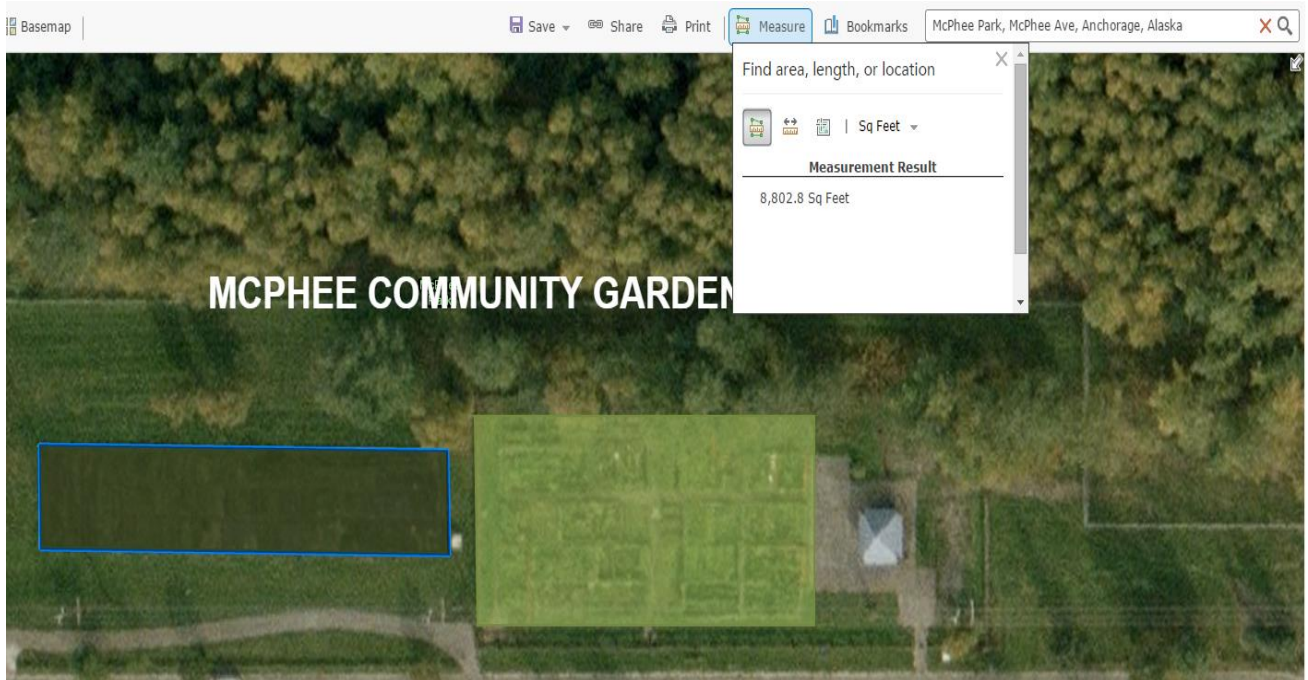


Figure B. McPhee community garden tract 1, Anchorage, Alaska.

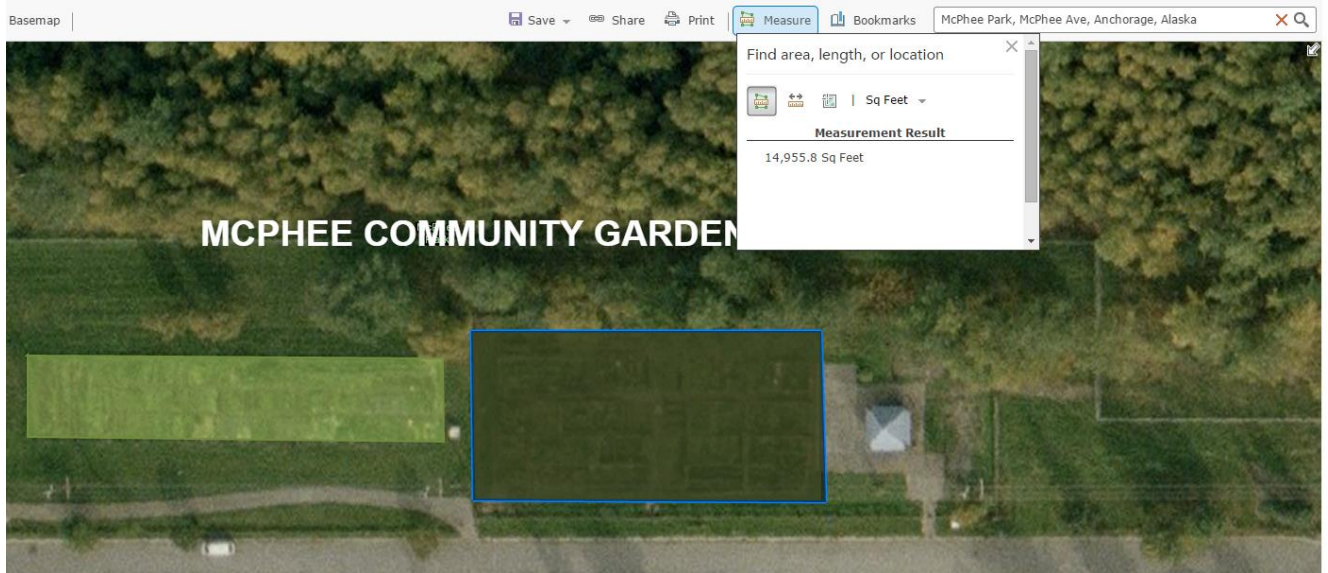


Figure C. McPhee community garden tract 2, Anchorage, Alaska.

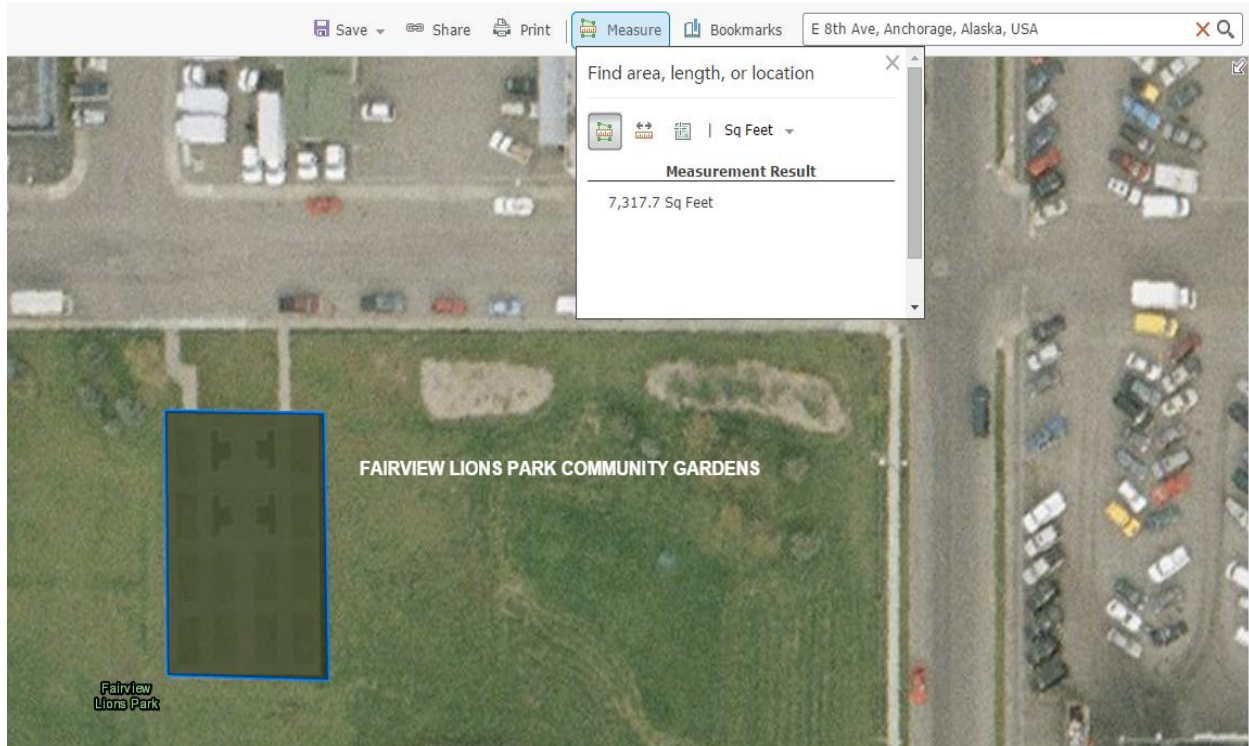


Figure D. Fairview Lions community garden, Anchorage, Alaska.

Anchorage Community Garden Total Sqft: 55,153.7

Total Population: 300,950



Figure E. Juneau community garden, Juneau, Alaska.

Juneau Community Garden Total Sqft: 40,236.4

Total Population: 32,660

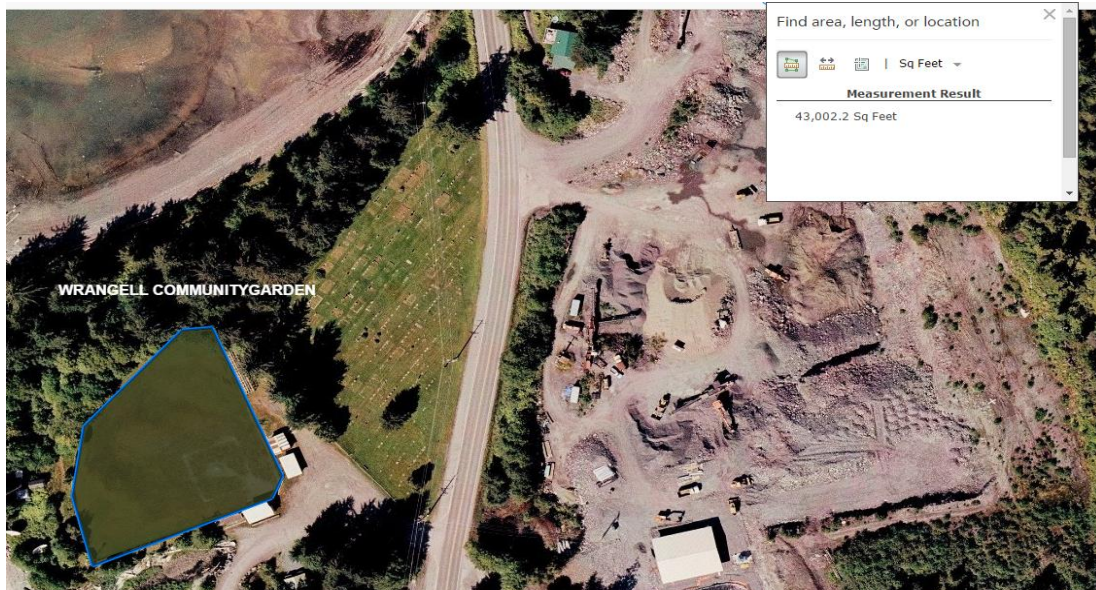


Figure F. Wrangell community garden, Wrangell, Alaska.

Wrangell Community Garden Total Sqft: 43,002.2

Total Population: 2369

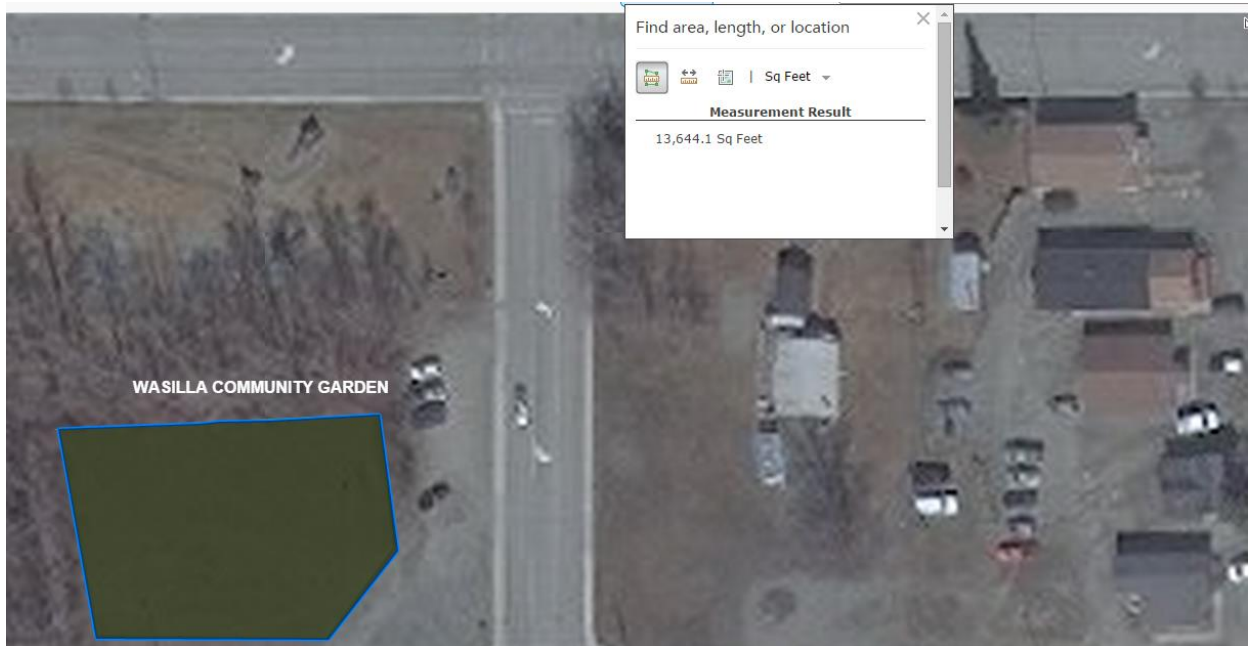


Figure G. Wasilla community garden, Wasilla, Alaska.

Total Community Garden Sqft: 13,644.1

Population: 8,621

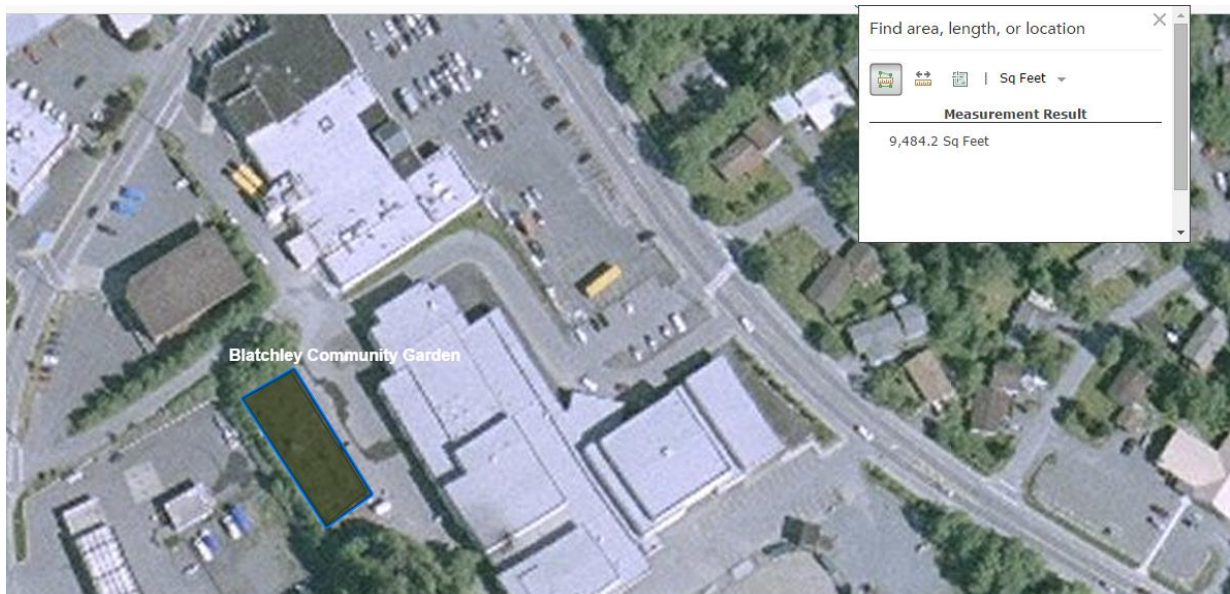


Figure H. Blatchley community garden, Sitka, Alaska.

Total Community Garden Sqft: 9484.2

Total Population: 8,881



Figure I. Kenai community garden, Kenai, Alaska.

Total Community Garden Sqft.: 56,622.4

Total Population: 7,100

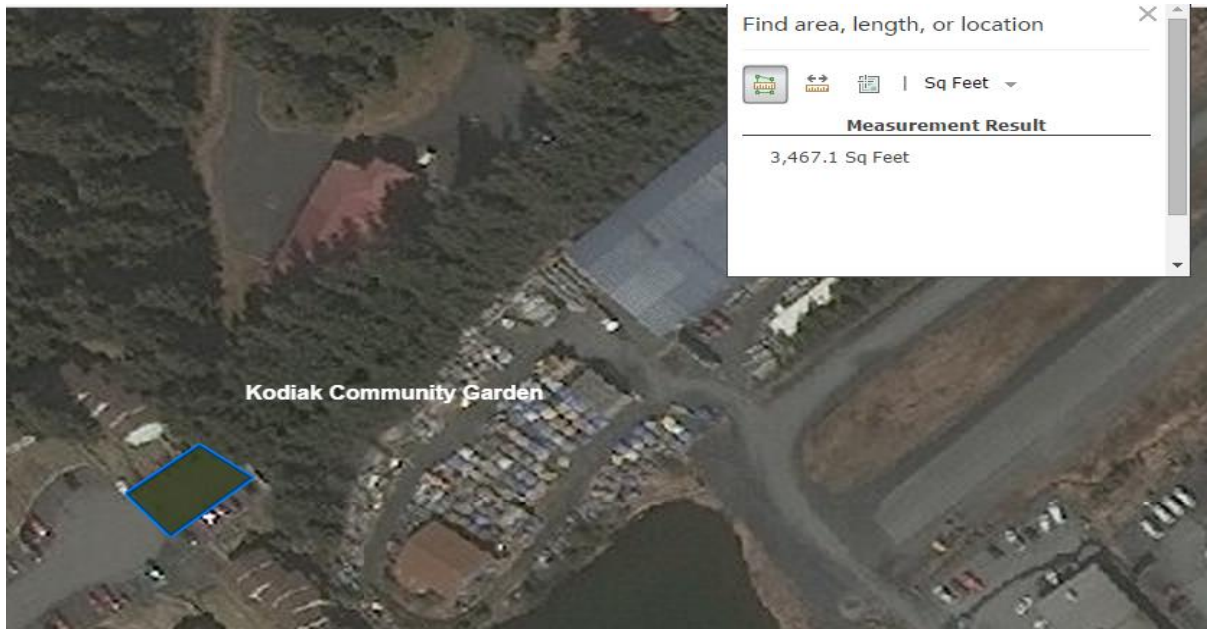


Figure J. Kodiak community garden, Kodiak, Alaska.

Total Community Garden Sqft: 3,467

Total Population: 6,130



Figure K. Fairbanks community garden, Fairbanks, Alaska.

Total Community Garden Sqft: 115,892.2

Total Population: 32,324

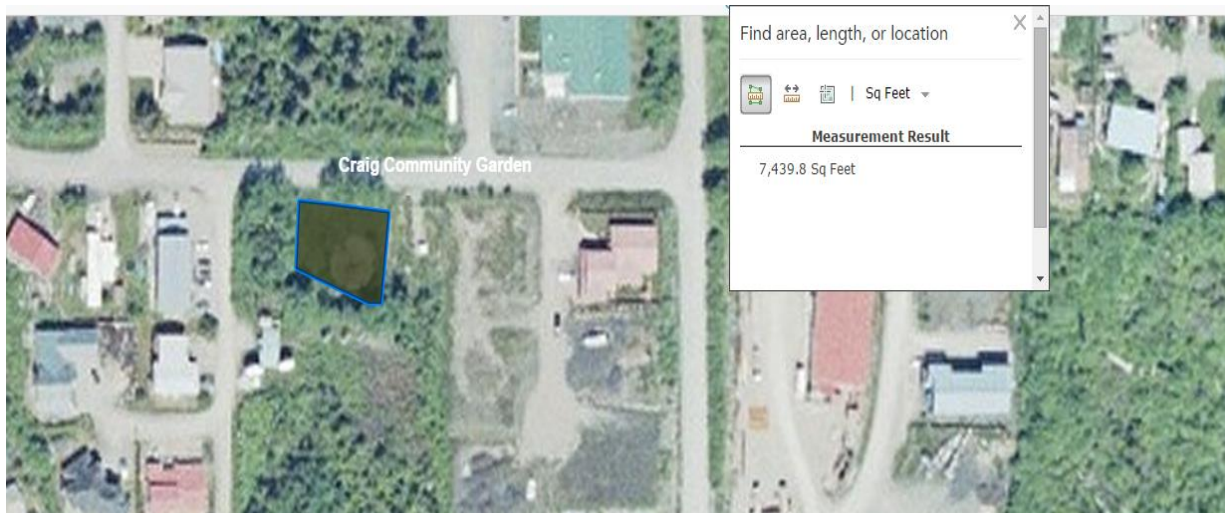


Figure L. Craig community garden, Craig, Alaska.

Total Community Garden Sqft: 7,439.8

Total Population: 1,201

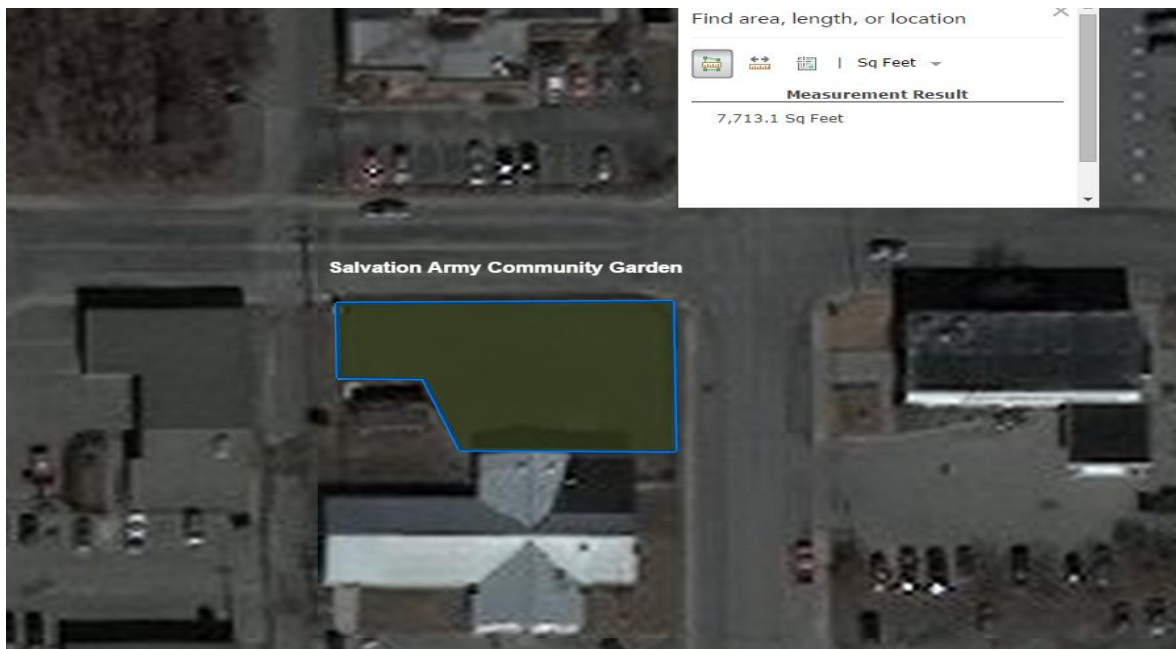


Figure M. Salvation Army community garden, Palmer, Alaska.

Total Community Garden Sqft: 7,713.1

Total Population: 6,461

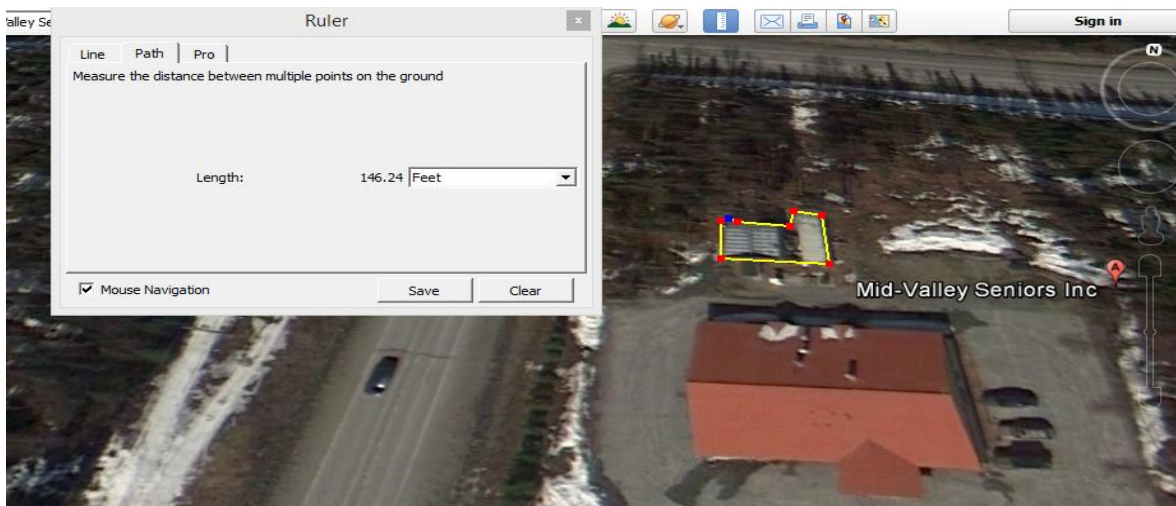


Figure N. Mid-Valley community garden, Houston, Alaska.

Total Community Garden Sqft: 21,386

Total Population: 1,912



Figure O. Ninilchik community garden, Ninilchik, Alaska.

Total Community Garden Sqft: 2,722.1

Total Population: 883

<i>Contracting</i>			
<i>Financial Management</i>		X	
<i>Fish Habitat Models</i>			
<i>Fish Population Dynamics</i>			
<i>Fisheries</i>		X	
<i>Food Security and Nutrition</i>			
<i>Geographic Information Systems</i>	X	X	
<i>Geological Sciences</i>		X	
<i>GeoMatics</i>		X	
<i>Global Supply Chain</i>		X	
<i>Health Sciences</i>		X	X

	University of Alaska, Fairbanks	PWSCC	UAF Bristol Bay	UAF Kuskokwim	UA Northwest Campus	UAF Interior- Aleutians	UAF Community and Technical College	UAS Ketchikan	University of Alaska Southeast Juneau Campus
Accounting	X		X	X			X	X	X
Advanced Marine Mammal Biology	X								
Arctic Engineering			X						
Business Accounting	X		X	X				X	X
Business Administration and Management	X	X					X	X	X
Certificate in Eco League Water Resource Management									
Civil Engineering	X		X						
Climate Change Coastal, Ocean and Port Engineering									X
Cold Climate Construction									
Conservation Biology	X								X
Construction Management							X		
Culinary Arts	X		X				X		
Dietetics	X	X	X						
Earth Materials					X				
Earth Sciences	X				X				X
Engineering	X								
Entrepreneurship Environment and Society Environment Regulation and Permitting									
Environmental Ethics					X				
Environmental Law Environmental Policies									
Environmental Policy									
Environmental Science			X						X
Federal Government Contracting	X								
Financial Management	X								X
Fish Habitat Models	X						X		
Fish Population Dynamics	X						X		
Fisheries	X						X		
Food Security and Nutrition									
Geographic Information Systems	X								
Geological Sciences	X	X	X						X

<i>GeoMatics</i>				
<i>Global Supply Chain</i>				
<i>Health Sciences</i>	X	X		
<i>Heavy Duty</i>				
<i>Transportation</i>				
<i>Hospitality</i>				
<i>Management</i>				
<i>Intro to Earth</i>	X		X	X
<i>Sciences</i>				
<i>Intro to</i>	X			X
<i>Environmental</i>				
<i>Studies</i>				
<i>Logistics and Supply</i>				
<i>Chain Operation</i>				
<i>Marine Biology</i>	X			
<i>Natural Resource</i>	X			
<i>Management</i>				
<i>Natural Sciences</i>	X			
<i>Northern Studies</i>	X			
<i>Nutrition</i>	X	X	X	X

	<i>University of Alaska Southeast Sitka Campus</i>	<i>Wayland Baptist, Anchorage</i>	<i>Wayland Baptist, Fairbanks</i>	<i>University of Alaska Southeast Juneau Campus</i>
<i>Accounting</i>	X	X	X	X
<i>Advanced Marine Mammal Biology</i>				
<i>Arctic Engineering</i>				
<i>Business Accounting</i>	X	X	X	X
<i>Business Administration and Management</i>	X	X	X	X
<i>Certificate in Eco League Water Resource Management</i>				
<i>Civil Engineering</i>				
<i>Climate Change</i>	X			X
<i>Coastal, Ocean and Port Engineering</i>				
<i>Cold Climate Construction</i>				
<i>Conservation Biology</i>	X			X
<i>Construction Management</i>				
<i>Culinary Arts</i>				
<i>Dietetics</i>				
<i>Earth Materials</i>	X			
<i>Earth Sciences</i>	X	X	X	X
<i>Engineering</i>				
<i>Entrepreneurship</i>				
<i>Environment and Society</i>				
<i>Environment Regulation and Permitting</i>				
<i>Environmental Ethics</i>				
<i>Environmental Law</i>				
<i>Environmental Policies</i>				
<i>Environmental Policy</i>				
<i>Environmental Science</i>	X			X
<i>Federal Government Contracting</i>				

	University of Alaska Southeast Sitka Campus	Wayland Baptist, Anchorage	Wayland Baptist, Fairbanks	University of Alaska Southeast Juneau Campus
Financial Management				X
Fish Habitat Models				
Fish Population				
Dynamics				
Fisheries				
Food Security and				
Nutrition				
Geographic				
Information Systems				
Geological Sciences	X			X
GeoMatics				
Global Supply Chain				
Health Sciences	X			
Heavy Duty				
Transportation				
Hospitality				
Management				
Intro to Earth Sciences	X			X
Intro to Environmental	X			X
Studies				
Logistics and Supply				
Chain Operation				
Marine Biology	X			
Natural Resource				
Management				
Natural Sciences				
Northern Studies				
Nutrition	X			X
Organic Gardening				
Principles of Economics	X			
Project Management	X			
Public Administration	X			
Public Health				
Purchasing and				
Inventory				
Refrigeration				
Refrigeration and				
Heating Technology				
Renewable Resources				
Rural Development				
Rural Nutrition Services				
SerVsafe Food				
Production				
Small Business				X
Management				
Sustainability Studies				
Sustainable Energy				
Tropical Ecology				
Volume Food				
Production				
Wildlife Biology and				
Conservation				

Appendix G: Department of Military and Veterans Affairs 2014 Emergency Food Cache Press Release



For Immediate Release
Contact: Jeremy Zidek, (907) 428-7077

March 18, 2014

Supplier Selected to Provide State Emergency Food Cache

Purchase of Emergency Food Products for the State of Alaska to Provide Food Security during Disasters

ANCHORAGE, AK -- The Department of Military and Veterans Affairs has issued an intent to award to VF Grace, an Anchorage-based veteran-owned company, for the Purchase of Emergency Food Products. The Request For Proposal (RFP) #2014-0900-2302 solicited proposals to provide 40,000 Alaskans with emergency meals for seven days. The food items are shelf stable for 25 years, easy to prepare and consume, and have the capability to be stored in unheated, temporary shelters with minimal or no degradation of product or packaging. VF Grace's proposal identified freeze-dried Mountain House foods at a cost of \$1.24 million.

"We are happy to have identified a vendor that will be able to meet our shelf stable food requirements," said Michael O'Hare, Deputy Director of the Division of Homeland Security and Emergency Management. "Now that we have identified the food items and the storage requirements, the next step in the process is to locate storage options within the state."

Orders for emergency food will not be placed until appropriate storage facilities have been identified. At this time, the state plans to store one-half of the food in Southcentral Alaska and one-half of the food in the Fairbanks North Star Borough.

The intended contract will allow the state to reorder food items used during an emergency or to support a developing or on-going emergency situation. The state has one year to place an order for emergency food with VF Grace.

###

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