

## Freshwater Coast Food Hub Feasibility Study

**Freshwater Coast Community Foundation  
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*The Freshwater Coast Food Hub Feasibility Study is a project of the Freshwater Coast Community Foundation, in South Carolina, and Clemson University Cooperative Extension Service.*

## Table of Contents

<b>I.</b>	<b>INTRODUCTION</b>	
A.	Purpose.....	3
B.	The Study Area.....	3
C.	Demographics.....	4
<b>II.</b>	<b>ASSESSMENT</b>	
A.	Current and Potential Supply of Produce.....	4
B.	Current Market Trends Nationwide.....	4
C.	Background of the Local Produce Industry.....	5
D.	Profile of Existing Market Channels .....	5
<b>III.</b>	<b>EVALUATING THE ECONOMIC FEASIBILITY OF THE FACILITY</b>	
A.	Selecting the Product Mix.....	6-7
B.	The Food Shed and Kitchen Facilities-Technical Feasibility.....	7-8
C.	Labor Requirements.....	8
D.	Operating Statements.....	9-10
E.	Returns.....	11-12
F.	Sensitivity Analysis.....	12-13
<b>IV.</b>	<b>ECONOMIC IMPACT TO THE REGION</b> .....	15
<b>V.</b>	<b>SUMMARY</b> .....	15
<b>VI.</b>	<b>SURVEY GIVEN TO LOCAL GROWERS</b> .....	16
<b>VII.</b>	<b>BIBLIOGRAPHY</b> .....	17
<b>VIII.</b>	<b>ENDNOTES</b> .....	18

## **I. INTRODUCTION**

### **A. Purpose**

The purpose of this study is to increase the sustainability of the local food network in the Starr-Iva area of Anderson County and Abbeville and McCormick Counties. The study is conducted to increase the size of the market in these areas, which will in turn increase the local food movement. With an increase in the local food movement, the local food system in the area will become more sustainable. For this study, local food is defined as roughly within a 50-mile radius of Abbeville.

A possible way to help the local food network would be to have a community food shed that can wash, pack, and store fruits and vegetables. Another name for this shed is food hub. Food hubs aggregate, store, and distribute locally grown crops. An advantage of a food shed is that it allows the grower to focus more on the production of the crops and less on the marketing and sales. The facility would provide growers with a place that would wash, pack, and cool their products, then resell the product. By doing this, the product gains more value. This process could be accomplished by establishing a cooperative between the local producers, consumers, restaurants, and institutions. Farmers must work together to know what to grow based on what others are growing. Centralizing the local products through this cooperative could also allow consumers to know what is being produced and when it will be ready to buy. This cooperative can help strengthen the market for locally grown foods in the area.

Along with the food shed there could be a kitchen that farmers would use to cook, process, and add value to their products. The kitchen would be a separate facility from the food shed, but both would be on the same site. This kitchen could also raise awareness for the local foods in the area.

Preliminary investigations done for other areas in the state conducted by Clemson University Cooperative Extension Service in the past have shown that food hubs and local kitchen facilities can greatly enhance the local food market. This could spark interest in expanding the area's production of crops.

According to the 2012 U.S. Census of Agriculture, there were approximately 667 farms in Abbeville and McCormick Counties with about 16,000 acres of harvested cropland. Compared to the 2007 U.S. Census of Agriculture, the number of farms in the area was 645 with approximately 15,132 acres of harvested cropland. Even though the number of farms and acreage went up from 2007 to 2012, the value of the farms has remained mostly the same. This fact indicates that many of the farms are used for "lifestyle farming."

The food shed facility for local foods serving the area could possibly:

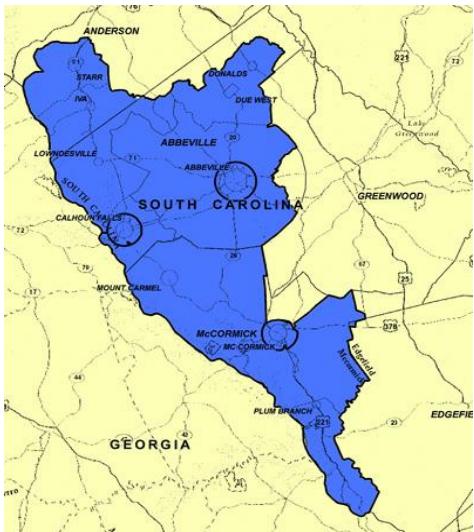
1. Bring new channels for marketing fresh produce by the growth in supply of produce crops.
2. Increase the diversity of the mix of products sold within the area.
3. Increase production.
4. Offer new opportunities for employment in the area.
5. Create new income to the merchants in the area.
6. Increase the awareness of consuming healthier food options

### **B. The Study Area**

The study area is the area known as the Freshwater Coast, which is all of Abbeville and McCormick Counties along with the Starr-Iva area in southern Anderson County. The U.S. Census Bureau has estimated the population of Abbeville County in 2014 to be 24,965. For McCormick County the population for 2014 is estimated to be 9,846. The combined population of the Starr-Iva area is approximately 1,444. Added all together, the population of the Freshwater Coast is 36,255. South Carolina's population in 2014 was 4.832 million.

The Freshwater Coast is a small, rural area that can produce certain commodities. The area has the available resources, natural and labor, to provide products for a better local food network. The map below shows the Freshwater Coast as the blue area.

## C. Demographics



The towns in the Freshwater Coast are rather poor compared to other places throughout the state. Both Abbeville and McCormick Counties have a per capita income below the state average. Abbeville County's per capita income for the years 2009-2013 was \$18,134. McCormick's per capita income for the same span was \$22,150. The state's per capita income was \$23,943. As of March 2015, Abbeville County's unemployment rate is 7% and McCormick County's unemployment rate is 7.5%. Both of these percentages are above South Carolina's unemployment rate of 6.2%. These unemployment rates are also higher than nearby counties' unemployment rates. Greenwood County has an unemployment rate of 6.7%, whereas Edgefield County has 6.2%, and Saluda County has 5.6%. These statistics indicate that people with lower incomes consume fewer fruits and vegetables than people in higher income groups. Abbeville County is in the bottom five of all the 46 counties in South Carolina in having access to healthy food. Abbeville County has high obesity and diabetic rates among its population compared to other parts of the state. The area's lack of a local food network is negatively impacting the health of the citizens that live there.

## II. ASSESSMENT

### A. Current and Potential Supply of Produce

The area's system of crop and produce production includes 429 farms with about 16,083 acres of cultivated land. These acres do not make up much of South Carolina's total cropland or total farms. As of 2012, South Carolina recorded a total of 16,853 crop farms with 1,634,706 acres of harvested cropland. The farms in Abbeville and McCormick Counties account for only 2.5% of South Carolina's total crop and produce farms. The acres of harvested cropland in the area are only about 1% of the total in South Carolina. The goal of implementing a food shed is to increase the crop and produce farms from 2.5% to 3.5% of South Carolina's total.

**Table 1: Agricultural Characteristics of the Freshwater Coast as of 2012**

	Abbeville County	McCormick County	Total	% of South Carolina
Number of Total Farms	574	93	667	2.6%
Land in Farms	92,047 acres	30,043 acres	122,090 acres	2.5%
Crop Farms	380	49	429	2.5%
Harvested Crop Land	13,621 acres	2,462 acres	16,083 acres	1%
Average Size of Farm	160 acres	323 acres	N/A	SC Average: 197 acres

There may be small farmers in the Freshwater Coast area that do not have the capability to wash and pack their products. The food shed would especially help these types of farmers.

### B. Current Market Trends Nationwide

The market for fresh produce and vegetables in the United States is one that shows growing domestic demand. This increased consumption has made production for these commodities increase. From 1990 to 2007 the production of fresh fruits went up 7% while production of fresh vegetables went up 36%. Also, revenues from the wholesale fruit and vegetable industry in the U.S. were \$71 billion in 2010, up from \$63 billion in 2007. With the recent trending movement of consuming local foods, it seems the demand for fresh fruits and vegetables will continue to climb, causing an even

greater demand. The produce market in the United States is one that has become globalized. Imports and exports of produce have both increased from the period of 1990-2007.

The local food movement has rapidly increased throughout the United States in the last 10 years. Food being defined as local is sometimes hard to quantify because its origin could be the county, region, or state. The movement has seen grocery stores, restaurants, schools, and other institutions begin to buy more local foods. In 2010 a survey done by the National Restaurant Association found that chefs ranked local foods as the number one popular trend for their menus. The increased awareness of people wanting to know the source of their food has been a contributing factor to the local food movement. There has also been more emphasis on eating healthier foods in response to America's increased obesity rate. More reasons why people want to buy local foods are that local foods are fresher, buying them supports the local economy, and the taste is better than non-local food.

The target market size on the consumer side for the food shed is estimated at about 1,800 people. This estimate is calculated using the total population of the Freshwater Coast, which is about 36,000. It is assumed that about 5% of people living in the Freshwater Coast will buy locally grown produce from the food shed.

### **C. Background of the Local Produce Industry**

Produce that is locally grown can be a valuable source of income to local farmers. Farmers in the Freshwater Coast area have three basic options for markets:

1. Sell to the Abbeville County Farmer's Market
2. Sell to the State Farmer's Market in Columbia
3. Sell directly to local customers

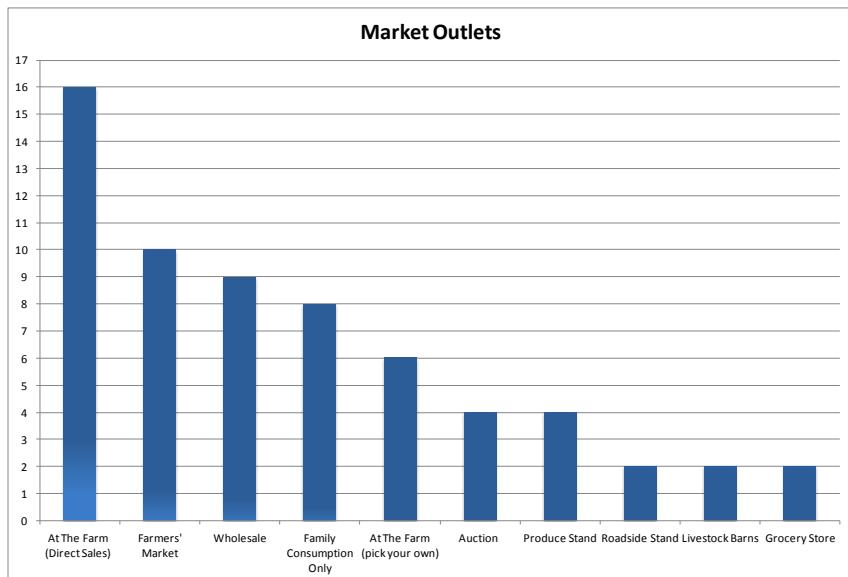
The local food movement in the Freshwater Coast is not as active as it is in other parts of the country. As mentioned before, this may be because of the low income in the area. The demand for local food has not been high on the restaurants' side. Many of the restaurants in the area do not buy food from local producers. Big food distributors such as U.S. Foods and Sysco are where most restaurants get their food. This could be a barrier to the local food hub. Reliance on food distributors and being tied to related contracts may not allow restaurants to buy much of the local vegetables and produce from the packing facility. Getting the restaurants involved will help grow the local food network in the area. More restaurants that use locally grown products in their food menu means that more local residents can consume the products that are grown in the Freshwater Coast.

Also, if local restaurants become potential buyers from the food shed, the facility could already have the particular restaurant's order ready to be picked up or delivered. For example, in the walk-in refrigerator or wherever the produce is being stored in the food shed, certain areas would be sectioned off by labels, signs, etc. to contain each particular restaurant's order.

A possible outcome of the increased local food movement through the food shed could be the branding of products grown in the Freshwater Coast. This brand could make the demand for the local products grow more. Local customers would be loyal to this brand because they would know the story behind the product they are buying and they will more than likely know who grows that product. The branding of the local products would create new business opportunities for the producers of the area.

### **D. Profile of Existing Market Channels**

Based on a survey taken by the Clemson Extension and the Freshwater Coast Community Foundation, local producers rely heavily on direct sales at the farm and in the Abbeville Farmers' Market. Another take away from the survey is that a lot of farmers use their products for family consumption. The local producers rely on the Abbeville Farmers' Market to market their crops. The full potential of the area has possibly not been realized because producers either do not grow enough to sell to bigger markets or they do not have a way to get their product to these bigger markets. See Figure 1 below for the responses from local producers on where they sell their products.



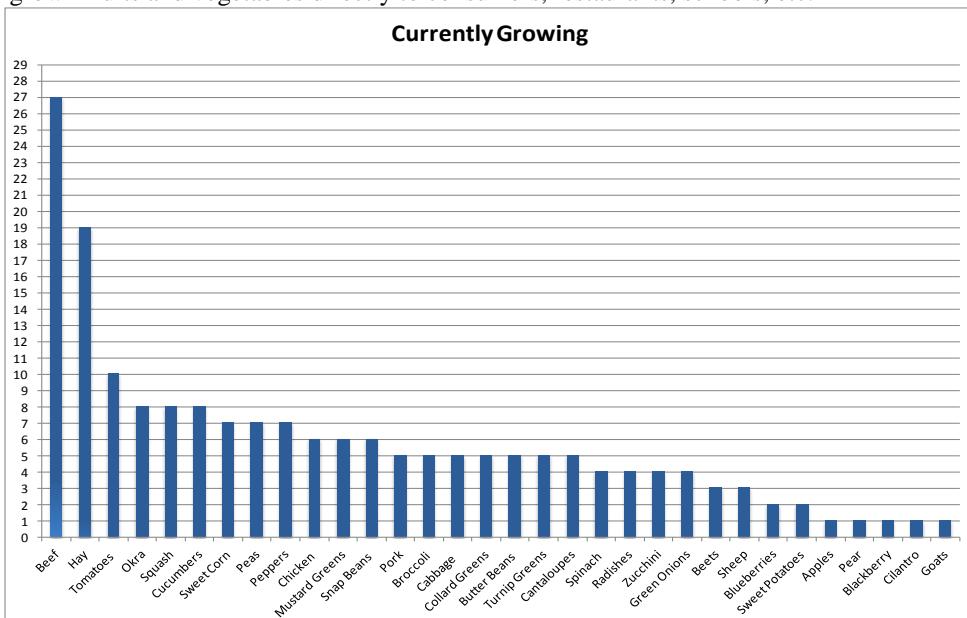
**Figure 1:Market Outlets from Freshwater Coast Community Growers**

The existing Abbeville Farmer's Market takes place in downtown Abbeville in the Livery Stable. Producers bring their fresh produce and vegetables to sell at the market. It is open from June-October on Thursdays from 4:00pm-8:00pm and Fridays from 7:00am-Noon.

### **III. EVALUATING THE ECONOMIC FEASIBILITY OF THE FOOD SHED/LOCAL FOOD KITCHEN**

#### **A. Selecting the Product Mix**

There are numerous, seasonal fresh market crops that are produced in the Freshwater Coast area. The mix of crops would benefit the food shed. According to the survey done by Clemson Extension and FCCF, growers listed the following crops that they are growing: tomatoes, okra, peppers, squash, sweet corn, cucumbers, broccoli, cabbage, spinach, collard greens, butter beans, mustard greens, peas, radishes, zucchini, snap beans, turnip greens, cantaloupes, green onions, beets, blueberries, sweet potatoes, apples, pears, blackberries, and cilantro. Figure2 below shows the responses on what local farmers are growing. With a wide variety like this, the food shed would be very successful because it could provide all kinds of locally grown fruits and vegetables directly to consumers, restaurants, schools, etc.



**Figure 2: Currently Grown Products in the Freshwater Coast**

The food shed must be able to accommodate all the varieties of fruits and vegetables that could potentially come through the facility. This includes storing different fruits and vegetables at different temperatures and humidity. Each product coming into the food shed will have a different life span. To accommodate the different temperatures that will be needed, the refrigerated zones will need to have sections marked off with panels that can be set at different temperatures and humidity. Table 2 below describes the temperature, relative humidity, and lifespan for the crops that are listed above.

**Table 2: Storage Characteristics of Different Fruits and Vegetables**

Product	Temperature	Relative Humidity	Lifespan
Tomato	55-60°F	85-90%	4-6 Days
Okra	50°F	85-90%	2-3 Days
Peppers	50°F	85-90%	4-6 Days
Squash	50°F	85-90%	4-6 Days
Sweet Corn	32-36°F	95-100%	1-2 Days
Cucumbers	50°F	85-90%	2-4 Days
Broccoli	32-36°F	95-100%	1-2 Days
Cabbage	32-36°F	95-100%	7+ Days
Spinach	32-36°F	95-100%	4-6 Days
Collard Greens	32-36°F	95-100%	7+ Days
Butter Beans	50°F	85-90%	7+ Days
Mustard Greens	32-36°F	95-100%	7+ Days
Peas	32-36°F	95-100%	7+ Days
Radishes	32-36°F	90-95%	7+ Days
Zucchini	50°F	85-90%	2-4 Days
Snap Beans	50°F	85-90%	7+ Days
Turnip Greens	32-36°F	95-100%	7+ Days
Cantaloupes	40°F	90-95%	7+ Days
Green Onions	32-36°F	95-100%	7+ Days
Beets	32-36°F	95-100%	7+ Days
Blueberries	32-36°F	90-95%	4-6 Days
Sweet Potatoes	65-70°F	85-90%	7+ Days
Apples	32-36°F	90-95%	7+ Days
Pears	32-36°F	90-95%	4-6 Days
Blackberries	32-36°F	90-95%	4-6 Days
Cilantro	32°F	95-100%	7+ Days

An adequate supply of the products must be generated for the food shed to succeed. This supply includes what is already produced in the area and more. To accomplish this important supply, local producers must be willing to grow more of the crops that are needed. The optimal volume is an assumption based on the demand for the locally grown commodities. The target market size mentioned earlier in the study was used in the calculation to find the optimal volume. The optimal volume was found to be 115,613 total pounds a year.

Other facilities that are similar to proposed food shed only allow farmers who are certified in Good Agricultural Practices (GAP) to use the facility. GAP is a certification that comes from the USDA. Having every farmer that uses the facility as GAP certified makes sure that the fruits and vegetables are being handled the right way and in the same way. For example, a farmer who is not GAP certified could possibly contaminate the machines. This would be an issue if the next farmer who uses the facility performs GAP.

## **B. The Food Shed/Kitchen Facility-Technical Feasibility**

The food shed facility will be simple for construction. It is basically like a mobile home, but open on the inside. The size of the building in this study is 1,000 square feet. It will have a walk-in refrigerator where produce can be stored and cooled, as well as a space to package the fruits and vegetables. The food shed will have two large stainless steel tubs with faucets that will be used to wash the products. The food shed will be constructed like the building in the picture below. The picture is a food shed constructed in the Charleston, South Carolina area. The food shed for this feasibility study will be about twice as big as the 500 square feet one shown in the picture.



The kitchen will be constructed like the food shed, being 1,000 square feet. The building would be similar to the one shown below, which is a local food kitchen in Charleston, South Carolina. Based on this project done in Charleston, the cost of construction is predicted to be \$50,000. This kitchen will have sinks, an industrial refrigerator, ovens, a dishwasher, canner, and kitchen supplies. The kitchen could become USDA certified, which would allow farmers who use the facility to sell their cooked produce anywhere. A farmer cannot simply walk up to the facility and use it. First, a farmer must be trained by taking a class offered by the local organization to learn the exact process of using the facility. Once a farmer takes the class, he or she is free to use the facility. The farmer must notify the manager of the facility and make an appointment when he or she wants to use the kitchen. This appointment system prevents two or more farmers trying to use the facility at one time. When no one is using the kitchen, the power can be turned off, saving money off the utility bills. When an appointment is made the facility manager can turn on the power.

Ideally, the location of the facility needs to be in a central to all local producers. A central location is important to consumers who are buying products from the food shed as well. The location also needs to be accessible to a primary transportation route for delivery purposes, such as Hwy 28 or Hwy 72. An adequate supply of clean water would be needed near the facility as well. Access to basic utilities like electricity and natural gas would be needed too.

All growers that use the kitchen and the food shed would pay a flat rate, like a membership fee that would cover the cost of operating the two facilities. On top of the membership fee, there could also be a per hour service fee to cover the time that a farmer uses the kitchen.

The fee would only be about 5 or 6 dollars. Under this model, the food shed directly buys the product from the farmer at a wholesale price and then tries to make a profit by selling it at retail price. With this way of sales, the facility cleans and packs the produce with its own workers. No matter which facility farmers use, they must be members of the cooperative.



A possible outcome of the facility could be a website that lets consumers, restaurant owners, etc. know what is being produced and/or what is coming through the food shed. A website would allow buyers to know when the locally grown produce is available to buy, as well as what local farmers are currently growing.

The facility could have a refrigerated truck that would be used to deliver products to restaurants and other facilities that buy the locally grown produce. If buyers choose not to use the truck, then they are free to provide their own transportation. If the truck is used for delivery, a fee will be added to the person or company receiving the products.

Permits would be required for both the packing and washing part of the facility and the kitchen since the handling of food is involved. Building permits would also be required for the construction of the facilities.

As far as supplies go, as long as growers are producing year in and year out the food shed will be fine. As mentioned above, farmers in the area will have to grow more for the food shed to achieve its greatest potential. Research done with similar facilities has shown that farmers will grow more.

### **C. Labor Requirements**

There will be different labor requirements in the operation of the facilities. The shed will have people receiving, washing, sorting, and packing the produce. The workers must be knowledgeable in regards to produce packing methods, grading, and defects of the different products coming into the facility as well as the different characteristics of each fruit and vegetable received. These details involve the storage temperature, storage humidity, and produce lifespan. Workers must know how to carefully handle the produce so as not to spoil it. For the kitchen, the only labor cost is that of the manager. The farmers who use it would provide the labor themselves.

#### **D. Operating Statements**

Direct costs to operate the food shed and kitchen facilities are expected to be \$58,414.39. The cost of buying the produce crops at wholesale price, which is \$45,174.39, takes up about 77% of the total operating costs. Other direct costs include water, heating, cooling, maintenance, and supplies for both the kitchen and the food shed. These costs total to \$6,940. Packing, hauling, and marketing costs are predicted to be \$6,300. The last part of the direct costs is labor, which is expected to be \$26,869.44. Please see tables below for cost details.

**Table 3: Direct Costs (Pounds and Price/lb)**

TOMATOES	36560	\$0.44
BELL PEPPERS	12180	\$0.43
SQUASH	8041	\$0.43
SWEET CORN	16459	\$0.18
CUCUMBERS	11365	\$0.22
BROCCOLI	10857	\$0.95
COLLARD GREENS	1023	\$0.50
SPINACH	3669	\$0.85
CABBAGE	15459	\$0.24
KITCHEN-WATER AND SEWER		\$480.00
KITCHEN-HEAT & COOLING		\$1,800.00
KITCHEN-FUEL, OIL, REPAIRS AND MAINTENANCE		\$300.00
KITCHEN-SUPPLIES		\$500.00
KITCHEN-LICENSE & INSPECTION		\$600.00
FOODSHED-WATER AND SEWER		\$360.00
FOODSHED-COOLING		\$2,400.00
FOODSHED-SUPPLIES		\$500.00
PACKING (SLEEVE, BOX)		\$1.00
LABELS & STICKERS		\$0.15
HAULING		\$3,000.00
MARKETING		\$1,000.00
<b>TOTAL</b>		<b>\$58,414.39</b>

The total cost of equipment for both the kitchen and the food shed is expected to be \$114,500.

**Table 4: Equipment Cost**

REFRIGERATED TRUCK	\$80,000.00
FOOD SHED-TANK FOR WASHING (2)	\$180.00
PUSH CART	\$100.00
KITCHEN-CANNER	\$400.00
KITCHEN-Oven	\$3,500.00
KITCHEN-REFRIGERATOR	\$2,500.00
FOOD SHED-STORAGE REFRIGERATOR)	\$9,000.00
FOOD SHED- FAUCETS FOR TANK	\$400.00
KITCHEN-Drainboard for sink	\$100.00
KITCHEN-SINK	\$300.00

KITCHEN-Heavy Duty Range	\$1,400.00
KITCHEN-Ice Machine	\$750.00
KITCHEN-Tables (5)	\$1,320.00
KITCHEN-Fryer	\$785.00
KITCHEN-Shelving Sets (5)	\$2,105.00
KITCHEN-Dishwasher	\$3,000.00
KITCHEN-RACKS	\$250.00
KITCHEN-POTS	\$160.00
KITCHEN SUPPLIES	\$100.00
KITCHEN-SCALE	\$150.00
KITCHEN-HOOD	\$7,000.00
COMPUTER & PRINTER	\$1,000.00
<b>TOTAL</b>	<b>\$114,500.00</b>

Construction of the kitchen and the packing shed, wiring, and electrical panels is expected to total \$35,500

**Table 5: Building Costs**

KITCHEN-CONSTRUCTION	\$25,000.00
FOOD SHED-CONSTRUCTION	\$7,000.00
GRAVEL PARKING LOT	\$2,000.00
WIRING/LIGHTING	\$1,000.00
ELECTRICAL PANEL	\$500.00
<b>TOTAL</b>	<b>\$35,500</b>

Taxes, insurance, record keeping, internet, and phone services should total \$9,750.

**Table 6: Overhead Costs**

TAXES AND INSURANCE	\$2,000.00
PERMITS	\$250.00
GENERAL / INVENTORY INSURANCE	\$400.00
ADVERTISING (MAILINGS & FLYERS)	\$250.00
RECORD KEEPING	\$900.00
SUBSCRIPTIONS, TRADE SHOWS, TOURS	\$400.00
SUPPLIES	\$300.00
PRODUCT LIABILITY INSURANCE	\$1,000.00
OTHERS (DEPOSITS, FEES)	\$500.00
INTERNET SERVICE	\$550.00
HEALTH INSURANCE	\$1,500.00
TELEPHONE & TV (CABLE & SATELLITE)	\$500.00
CELLULAR	\$500.00
PROFESSIONAL SERVICES	\$500.00
OTHERS (TRAINING, HIRING, SETUPS)	\$200.00
<b>TOTAL</b>	<b>\$9,750.00</b>

The startup costs include the cost of equipment, building, overhead, and land. The total startup cost for the food shed and kitchen is estimated at \$189,750.

### **E. Returns**

Table 7 shows the projected prices and costs per crop bought and sold by the food shed. The retail and wholesale prices were found via the USDA and the South Carolina State Farmers' Market in Columbia. The average margin is 62%, with the highest being 85% for sweet corn and the lowest being 27% for cabbage.

**Table 7: Price and Cost of Crops**

Crop	Unit	Price	Cost	Gross Profit	% Gross Margin
Tomatoes	LBS	\$1.39	\$0.44	\$0.95	68%
Bell Peppers	LBS	\$0.99	\$0.43	\$0.56	56%
Yellow Squash	LBS	\$1.19	\$0.43	\$0.76	64%
Sweet Corn	LBS	\$1.22	\$0.18	\$1.04	85%
Cucumbers	LBS	\$1.30	\$0.22	\$1.08	83%
Broccoli	LBS	\$1.77	\$0.95	\$0.82	46%
Collard Greens	LBS	\$1.32	\$0.50	\$0.82	62%
Spinach	LBS	\$2.56	\$0.85	\$1.71	67%
Cabbage	LBS	\$0.33	\$0.24	\$0.09	27%
Average:62%					

The table below shows the profits for each crop. As the tables show, all of the crops are around the breakeven point. The total net profit added together for all crops is \$32,264.61. The projected profits do not take into account the revenue that will be earned from the cooperative membership fee. This is projected as an annual fee of \$100. An estimated 20-30 growers will be a part of the cooperative. The revenue from membership fees could be anywhere from \$2,000 to \$3,000 per year.

**Table 8: Profitability of Each Crop**

Crop	Total Revenue	Total Cost	Total Profit	Unit Profit (per LB)
Tomatoes	\$50,818.40	\$40,837.83	\$9,980.57	\$0.27
Bell Peppers	\$12,058.20	\$11,150.62	\$907.58	\$0.07
Yellow Squash	\$9,569.19	\$8,118.51	\$1,450.68	\$0.18
Sweet Corn	\$20,116.15	\$12,760.26	\$7,355.89	\$0.45
Cucumbers	\$14,774.93	\$9,696.60	\$5,078.33	\$0.45
Broccoli	\$19,326.05	\$19,251.41	\$74.64	\$0.01
Collard Greens	\$1,349.92	\$1,168.82	\$181.10	\$0.18
Spinach	\$9,393.49	\$7,694.09	\$1,699.40	\$0.46
<u>Cabbage</u>	<u>\$8,996.03</u>	<u>\$3,429.61</u>	<u>\$5,566.42</u>	<u>\$0.36</u>
<b>Totals</b>	<b>\$146,372.36</b>	<b>\$114,107.75</b>	<b>\$32,264.61</b>	

**Table 9: Breakeven Price for each Product**

Crop	Price (per LB)	Crop	Price (per LB)
<b>Tomatoes</b>	\$1.12	<b>Broccoli</b>	\$1.77
<b>Bell Peppers</b>	\$0.92	<b>Collard Greens</b>	\$1.14
<b>Yellow Squash</b>	\$1.01	<b>Spinach</b>	\$2.10
<b>Sweet Corn</b>	\$0.78	<b>Cabbage</b>	\$0.22
<b>Cucumbers</b>	\$0.85		

The table below shows the capital requirements, revenues, total cost, total profit, profit margin, payback period, income, and ROI for 6 different investments. As mentioned before, the startup capital is \$189,750. This capital is found in row 3: "All But OP. Expenses." This investment covers all the startup costs but none of the operating costs. To cover all of the costs associated with the kitchen and food shed, the investment would be \$275,033.83. This amount is found in the last row: "All +12 mo. OP. Expenses." According to the table, the best Return on Investment is if everything is borrowed except land and overhead expenses. The cost of the land and overhead will be \$39,750. The amount required for equipment, buildings, and 12 month operating expenses would be \$235,283.83.

**Table 10: Capital Requirements**

	TOTAL INVESTMENT	REVENUES	TOTAL COST	TOTAL PROFIT	PROFIT MARGIN	PAYBACK	RESIDUAL INCOME	ROI
LAND +OVHD., ONLY (LOO)	\$39,750	\$146,372	\$117,519	\$28,853	19%	1.4 years	\$27,263	73%
LOO +12 mo. OP. EXPENSES	\$125,034	\$146,372	\$114,108	\$32,265	22%	3.9 years	\$27,263	26%
ALL BUT OP. EXPENSES	<b>\$189,750</b>	\$146,372	\$110,019	\$36,353	25%	5.2 years	\$28,763	19%
ALL +3 mo. OP. EXPENSES	\$211,071	\$146,372	\$109,166	\$37,206	25%	5.7 years	\$28,763	18%
ALL +6 mo. OP. EXPENSES	\$232,392	\$146,372	\$108,313	\$38,059	26%	6.1 years	\$28,763	16%
ALL +12 mo. OP. EXPENSES	\$275,034	\$146,372	\$106,608	\$39,765	27%	6.9 years	\$28,763	14%

There are a few different ways to go about receiving loans and grants to fund this project. The U.S. Small Business Administration (SBA) offers a general small business loan through their 7a Loan Program. Since this project would be based in a rural county, financial help can come by the USDA's Rural Micro-Entrepreneur Assistant Program. It is vital that non-profit organizations such as the Freshwater Coast Community Foundation or higher learning institutions like Clemson University and its extension program are utilized when seeking help through the USDA or the SBA. Different loan programs will have different conditions and requirements. There are organizations such as the Clemson Extension Service and the local Small Business Development Center that can be consulted when going through the loan process.

#### **F. Sensitivity Analysis**

A sensitivity analysis was done to determine how profits would be affected with changes to the selling price of each crop.. The different scenarios for the selling price changes of 10% and 20% (+/-) are shown in the tables below. Obviously the profits of the food shed depend largely on the wholesale prices per pound.

**Table 10: 20% decrease in Price**

Crop	Price	Total Revenue	Total Cost	Total Profit	Unit Profit (per LB)
Tomatoes	\$1.11	\$40,581.60	\$40,837.83	(\$256.23)	(\$0.01)
Bell Peppers	\$0.79	\$9,622.20	\$11,150.62	(\$1,528.42)	(\$0.13)
Yellow Squash	\$0.95	\$7,639.27	\$8,118.51	(\$479.24)	(\$0.06)
Sweet Corn	\$0.98	\$16,129.49	\$12,760.26	\$3,369.23	\$0.20
Cucumbers	\$1.04	\$11,819.95	\$9,696.60	\$2,123.35	\$0.19
Broccoli	\$1.35	\$15,373.98	\$19,251.41	(\$3,877.43)	(\$0.36)
Collard Greens	\$1.06	\$1,084.03	\$1,168.82	(\$84.79)	(\$0.08)
Spinach	\$2.05	\$7,522.13	\$7,694.09	(\$171.96)	(\$0.05)
<u>Cabbage</u>	<u>\$0.46</u>	<u>\$7,110.99</u>	<u>\$3,429.61</u>	<u>\$3,681.38</u>	<u>\$0.24</u>
<b>TOTAL</b>		<b>\$116,883.64</b>	<b>\$114,107.75</b>	<b>\$2,775.89</b>	

**Table 11: 10% decrease in Price**

Crop	Price	Total Revenue	Total Cost	Total Profit	Unit Profit (per LB)
Tomatoes	\$1.25	\$45,700.00	\$40,837.83	\$4,862.17	\$0.13
Bell Peppers	\$0.89	\$10,840.20	\$11,150.62	(\$310.42)	(\$0.03)
Yellow Squash	\$1.07	\$8,604.23	\$8,118.51	\$485.72	\$0.06
Sweet Corn	\$1.10	\$18,104.53	\$12,760.26	\$5,344.27	\$0.32
Cucumbers	\$1.17	\$13,297.44	\$9,696.60	\$3,600.84	\$0.32
Broccoli	\$1.59	\$17,295.73	\$19,251.41	(\$1,955.68)	(\$0.18)
Collard Greens	\$1.19	\$1,216.97	\$1,168.82	\$48.15	\$0.05
Spinach	\$2.30	\$8,439.47	\$7,694.09	\$745.38	\$0.20
<u>Cabbage</u>	<u>\$0.52</u>	<u>\$8,038.51</u>	<u>\$3,429.61</u>	<u>\$4,608.90</u>	<u>\$0.30</u>
<b>TOTAL</b>		<b>\$131,537.08</b>	<b>\$114,107.75</b>	<b>\$17,429.33</b>	

**Table 12: 10% increase in Price**

Crop	Price	Total Revenue	Total Cost	Total Profit	Unit Profit (per LB)
Tomatoes	\$1.53	\$55,936.80	\$40,837.83	\$15,098.97	\$0.41
Bell Peppers	\$1.09	\$13,276.20	\$11,150.62	\$2,125.58	\$0.17
Yellow Squash	\$1.31	\$10,534.15	\$8,118.51	\$2,415.64	\$0.30
Sweet Corn	\$1.34	\$22,054.61	\$12,760.26	\$9,294.35	\$0.56
Cucumbers	\$1.43	\$16,252.43	\$9,696.60	\$6,555.83	\$0.58
Broccoli	\$1.95	\$21,139.23	\$19,251.41	\$1,887.82	\$0.17
Collard Greens	\$1.45	\$1,482.87	\$1,168.82	\$314.05	\$0.31
Spinach	\$2.82	\$10,347.52	\$7,694.09	\$2,653.43	\$0.72
<u>Cabbage</u>	<u>\$0.64</u>	<u>\$9,893.55</u>	<u>\$3,429.61</u>	<u>\$6,463.94</u>	<u>\$0.42</u>
<b>TOTAL</b>		<b>\$160,917.36</b>	<b>\$114,107.75</b>	<b>\$46,809.61</b>	

**Table 13: 20% increase in Price**

Crop	Price	Total Revenue	Total Cost	Total Profit	Unit Profit (per LB)
Tomatoes	\$1.67	\$61,055.20	\$40,837.83	\$20,217.37	\$0.55
Bell Peppers	\$1.19	\$14,494.20	\$11,150.62	\$3,343.58	\$0.27
Yellow Squash	\$1.43	\$11,499.11	\$8,118.51	\$3,380.60	\$0.42
Sweet Corn	\$1.47	\$24,194.24	\$12,760.26	\$11,433.98	\$0.69
Cucumbers	\$1.56	\$17,729.92	\$9,696.60	\$8,033.32	\$0.71
Broccoli	\$2.12	\$23,060.98	\$19,251.41	\$3,809.57	\$0.35
Collard Greens	\$1.58	\$1,615.81	\$1,168.82	\$446.99	\$0.44
Spinach	\$3.07	\$11,264.85	\$7,694.09	\$3,570.76	\$0.97
<u>Cabbage</u>	<u>\$0.70</u>	<u>\$10,821.07</u>	<u>\$3,429.61</u>	<u>\$7,391.46</u>	<u>\$0.48</u>
<b>TOTAL</b>		<b>\$175,735.38</b>	<b>\$114,107.75</b>	<b>\$61,627.63</b>	

**Table 14: Total Expenses and Net Profit**

OPERATING EXPENSES			ACRE		Cost/Acre		Total
DIRECT OPERATING COSTS>>>>>>>>>>>>>>>>>>>>>>>>>>>>					\$5,019.38		\$45,174.39
TOMATOES			ACRE		\$1,787.38		\$16,086.40
BELL PEPPERS			ACRE		\$586.40		\$5,277.59
SQUASH			ACRE		\$384.20		\$3,457.77
SWEET CORN			ACRE		\$329.17		\$2,962.56
CUCUMBERS			ACRE		\$277.82		\$2,500.37
BROCCOLI			ACRE		\$1,146.05		\$10,314.47
COLLARD GREENS			ACRE		\$56.81		\$511.33
SPINACH			ACRE		\$346.55		\$3,118.93
CABBAGE			ACRE		\$105.00		\$944.96
OTHER DIRECT COSTS>>>>>>>>>>>>>>>>>>>>>>>>>>					\$3,756.60		\$33,809.44
LABOR			ACRE		\$2,985.49		\$26,869.44
KITCHEN-WATER AND SEWER			ACRE		\$53.33		\$480.00
KITCHEN-HEAT & COOLING			ACRE		\$200.00		\$1,800.00
KITCHEN-FUEL, OIL, REPAIRS AND MAINTENANCE			ACRE		\$33.33		\$300.00
KITCHEN-SUPPLIES			ACRE		\$55.56		\$500.00
KITCHEN-LICENSE & INSPECTION			ACRE		\$66.67		\$600.00
FOODSHED-WATER AND SEWER			ACRE		\$40.00		\$360.00
FOODSHED-COOLING			ACRE		\$266.67		\$2,400.00
FOODSHED-SUPPLIES			ACRE		\$55.56		\$500.00
OTHERS			ACRE		\$0.00		\$0.00
OTHERS			ACRE		\$0.00		\$0.00
OTHERS			ACRE		\$0.00		\$0.00
PACKING, STORAGE & MKT COSTS>>>>>>>>>>>>>>>>>					\$700.00		\$6,300.00
PACKING (SLEEVE, BOX)			ACRE		\$222.22		\$2,000.00
LABELS & STICKERS			ACRE		\$33.33		\$300.00
HAULING			ACRE		\$333.33		\$3,000.00
MARKETING			ACRE		\$111.11		\$1,000.00
OTHERS			ACRE		\$0.00		\$0.00
OTHERS			ACRE		\$0.00		\$0.00
				TOTAL OP. EXPENSES :		\$9,475.98	\$85,283.83
	INTEREST RATE :	4%		OPERATING PROFIT : per ACRE		\$6,787.61	\$61,088.53
CAPITAL COSTS >>>>>>>>>>>>>>>>>>>>>>>					\$833.33		\$7,500.00
INTEREST ON INITIAL INVENTORY	0 months		ACRE		\$0.00		\$0.00
INTEREST ON WORKING CAPITAL	0 months		ACRE		\$0.00		\$0.00
INTEREST ON EQUIPMENT / FURNITURE / ...			ACRE		\$636.11		\$5,725.00
INTEREST ON BUILDINGS AND ASSETS			ACRE		\$197.22		\$1,775.00
OVERHEAD & OWNERSHIP COSTS >>>>>>>>>>>>>>>>>>					\$2,369.32		\$21,323.92
BUSINESS EXPENSES			ACRE		\$666.67		\$6,000.00
ADMINISTRATIVE EXPENSES			ACRE		\$416.67		\$3,750.00
PERSONAL EXPENSES			ACRE		\$0.00		\$0.00
LABOR: MANAGEMENT & ADMINISTRATIVE			ACRE		\$0.00		\$0.00
DEPRECIATION: MACHINERY & EQUIPMENT			ACRE		\$1,030.92		\$9,278.25
DEPRECIATION: BUILDING & OTHERS			ACRE		\$255.07		\$2,295.67
				TOTAL FIXED EXPENSES :		\$3,202.66	\$28,823.92
				TOTAL EXPENSES :		\$12,678.64	\$114,107.75
				NET PROFIT : per ACRE		\$3,584.96	\$32,264.61

#### **IV. ECONOMIC IMPACT TO THE REGION**

A food shed and kitchen facility in the area will increase the economic well-being of the Freshwater Coast. The local food network will become more sustainable through both facilities because more local consumers will buy the products grown in the area. People in the Freshwater Coast will benefit from the greater supply of local foods. In turn, money from local consumers will stay in the area, going to the local producers who grew the products going to be washed and packaged at the food shed and cooked in the kitchen. There will not be any harmful environmental impacts to the area because of the small sizes of the kitchen and the food shed.

#### **V. SUMMARY**

With interest from growers in the area, the food shed and kitchen can succeed in increasing the production of fresh produce. This increase in production will in turn grow the local food movement in the Freshwater Coast. A central food hub, such as the proposed project, can be an efficient place to pack and wash any commodity produced in the area. The kitchen will also make more people aware of the advantages of eating local foods.

Evidence suggests that if a cooperative is established and farmers work together, sufficient quantities of the locally grown products will become available to make the food shed profitable. The food shed and kitchen facilities would be a great addition to the area's existing agriculture.

Using all of the assumptions in the study, it appears the food shed and kitchen facilities can be feasible and profitable. The financial analysis shows there are profits of \$32,264.61. As shown in the sensitivity analysis, this number can change depending on the prices of the products that are sold.

The project has the ability to succeed and be profitable if there is interest from local producers. Federal and state grants should be looked into to support this project. The project should not be judged based on the first year, however. Time will be necessary for grower's confidence to expand to plant more crops. The same can be said for the local consumers. If the project is given time, the local food network in the Freshwater Coast will become more sustainable.

## VI. Survey given to growers in the Freshwater Coast



Name: \_\_\_\_\_  
 Email: \_\_\_\_\_ Phone: \_\_\_\_\_

**Are you a "Certified South Carolina" Grower:**  Yes  No

**Please, tell us what crops (or livestock) are currently growing (raising) at your farm:**

**Crop Acres** \_\_\_\_\_ **Livestock Acres** \_\_\_\_\_

- |                                       |                                      |                                      |                                    |                                |
|---------------------------------------|--------------------------------------|--------------------------------------|------------------------------------|--------------------------------|
| <input type="radio"/> Snap Beans      | <input type="radio"/> Butter Beans   | <input type="radio"/> Broccoli       | <input type="radio"/> Beets        | <input type="radio"/> Cabbage  |
| <input type="radio"/> Cantaloupes     | <input type="radio"/> Cilantro       | <input type="radio"/> Cucumbers      | <input type="radio"/> Green Onions | <input type="radio"/> Leeks    |
| <input type="radio"/> Collard Greens  | <input type="radio"/> Mustard Greens | <input type="radio"/> Turnip Greens  | <input type="radio"/> Okra         | <input type="radio"/> Parsley  |
| <input type="radio"/> Peanuts (Green) | <input type="radio"/> Peas           | <input type="radio"/> Peppers        | <input type="radio"/> Radishes     | <input type="radio"/> Spinach  |
| <input type="radio"/> Squash          | <input type="radio"/> Sweet Corn     | <input type="radio"/> Sweet Potatoes | <input type="radio"/> Tomatoes     | <input type="radio"/> Zucchini |
| <input type="radio"/> Beef            | <input type="radio"/> Chicken        | <input type="radio"/> Turkey         | <input type="radio"/> Dairy        | <input type="radio"/> Hay      |
| <input type="radio"/> _____           | <input type="radio"/> _____          | <input type="radio"/> _____          | <input type="radio"/> _____        | <input type="radio"/> _____    |
| <input type="radio"/> _____           | <input type="radio"/> _____          | <input type="radio"/> _____          | <input type="radio"/> _____        | <input type="radio"/> _____    |

**Please, tell us what crops (or livestock) that would you like to add to your farm:**

**Crop Acres** \_\_\_\_\_ **Livestock Acres** \_\_\_\_\_

- |                             |                             |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <input type="radio"/> _____ |
| <input type="radio"/> _____ |
| <input type="radio"/> _____ |

**Please, tell us what type of educational programs and/or extension specialists that would help grow your farm business if they become available:**

- |   |   |  |
|---|---|--|
| <input type="radio"/> How to Grow Organic Crops     | <input type="radio"/> Sustainable Small Farming | <input type="radio"/> Master Gardener            |
| <input type="radio"/> Organic Beef Production       | <input type="radio"/> Drip Irrigation           | <input type="radio"/> Center Pivot Irrigation    |
| <input type="radio"/> Pasture Management            | <input type="radio"/> Cover Cropping            | <input type="radio"/> Farm to School             |
| <input type="radio"/> Pests, Disease and Weeds      | <input type="radio"/> Youth in Farming          | <input type="radio"/> Backyard Poultry           |
| <input type="radio"/> Local Food Cooking            | <input type="radio"/> Farm Recordkeeping        | <input type="radio"/> Farm Production Costs      |
| <input type="radio"/> Computer Literacy for Growers | <input type="radio"/> Growing Exotic Livestock  | <input type="radio"/> Farmers' Market Strategies |
| <input type="radio"/> _____                         | <input type="radio"/> _____                     | <input type="radio"/> _____                      |
| <input type="radio"/> _____                         | <input type="radio"/> _____                     | <input type="radio"/> _____                      |

**Please, tell us which market outlets you have been selling your products through:**

- |   |                                       |  |
|---|---------------------------------------|--|
| <input type="radio"/> At the farm (pick-your-own) | <input type="radio"/> Roadside Stands | <input type="radio"/> Farmers' Market          |
| <input type="radio"/> At the farm (CSA)           | <input type="radio"/> Produce Stands  | <input type="radio"/> Wholesale                |
| <input type="radio"/> At the farm (direct sales)  | <input type="radio"/> Grocery Stores  | <input type="radio"/> Family Consumption, Only |

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## Freshwater Coast Food Hub Feasibility Study

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Clemson University Cooperative Extension Service offers its programs to people of all ages regardless, of race, color, sex, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.

On behalf the Project Team, we would like to thank all of the people who collaborated to this project with their expertise and support.

### **Authors**

**Cody White**, Clemson University

**Will Ferreira**, FCCF-Clemson University Cooperative Extension Service Alliance

### **Collaborations**

**Joe McNinch**, Clemson University

**Sally Caldwell**, Erskine College

**Harry Crissy**, Clemson University Cooperative Extension Service.

**Lance Tade**, West Carolina Rural Telephone Cooperative