Towards a Solano County Local Food System

- A FEASIBILITY STUDY OF PROPOSED SOLANO COMMUNITY FOOD CENTERS AND NEXT STEPS TO SUPPORT A LOCAL FOOD ECONOMY –

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Executive Summary

This feasibility study set out to explore the potential for small-scale, consumer-driven food businesses or food centers sourced by local farmers to be established in each of Solano County’s seven cities (Vallejo, Fairfield, Suisun City, Dixon, Rio Vista, Vacaville, and Benicia). An initial assessment of the local food system broadened the scope of this study. We aim to provide a better understanding of Solano’s local food economy and a complete needs assessment of small- and medium-scale Solano farmers that addresses their current access to markets with an emphasis on direct-to-consumer (DTC) markets and future market opportunities.

Previous studies of Solano County already highlighted that effective local food system developments need to focus on strengthening collaborations with existing supply-chain stakeholders and invest in infrastructure. During the planning phase, we thoroughly reviewed the existing literature, described visible trends in existing data, collected additional data, and engaged stakeholders and partners in creating a vision of a sustainable local food system that expands consumer access to locally-produced raw and value-added food products and addresses distribution challenges within Solano County.

This study incorporates the following objectives proposed by Sustainable Solano:

Objective 1: Analyze relevant studies and academic literature on local food systems, food hubs, and food incubators.

Objective 2: Assess the supply of local food from Solano County small farms using existing data sources.

Objective 3: Collect detailed quantitative and qualitative data on small farms in Solano County and establish interest in future collaborations.

Objective 4: Analyze existing small-scale transportation, distribution, and marketing systems in Solano County (CSAs, buying clubs, charity food systems, institutional buyers, other business activities, etc.) and assess how to build upon current infrastructure.

Objective 5: Study successful regional food hubs and related business models and identify best practices and determinants of success for a unique Solano-based model.

Objective 6: Assess the potential demand for locally produced and prepared food in Solano County.

Solano’s agricultural sales have consistently increased over the last decade. We detect similar trends for DTC sales. Despite this and the fact that a variety of specialty crops and other food products are produced within Solano County, sales are significantly lower than in neighboring Yolo County. Moreover, while Solano was on par with average DTC sales per farm in Yolo County in 1992, Yolo County has since seen an increase in average DTC per farm of 454 percent. Solano County experienced a growth of 100 percent over the same time period. These increases point to a remarkable growth potential for these distribution channels. However, to put these numbers in perspective, even in Yolo County, DTC sales account for less than 2 percent of total sales and only 15 percent of farms participate in these marketing and distribution channels.
We further detect worrisome demographic trends for farmers in Solano County. Only 41 percent of all farming operations in Solano County reported generating positive cash income (in 2012) and the average age of principal operators continues to increase (60.8 in 2012), suggesting that it is critically important to rethink agriculture in an integrated local food systems approach that maintains and strengthens Solano County’s agricultural roots and attracts new talent.

Small farmers participating in our primary data collection and analyses shared a number of challenges related to marketing their products. For instance, many pointed out that while farmers markets offer a great way to connect with customers, fees can be prohibitive and additional transportation and time costs limit the use of this marketing and distribution channel. Overall, we identified three primary challenges and potential focus areas for assistance moving forward:

1. Need for more resources and opportunities to market to local customers,
2. Assistance with distribution of their produce and products,
3. Raising public awareness about local food production and its benefits.

Finally, when analyzing demand for locally produced food in Solano County, we find that a farm-to-fork culture like the one thriving in Sacramento and the Bay Area seems largely underdeveloped. A pilot model that implemented key features of the proposed small-scale, consumer-driven businesses revealed serious challenges when trying to market products directly to Solano County consumers.

Based on these key findings, we suggest a strategic focus on supporting collaboration among small- and medium-scale farmers and providing services that strengthen market access. Considered initiatives should include coordinated outreach, education and marketing efforts that raise awareness of local food and issues faced by farmers. These efforts cannot only increase appreciation of local farmers, they will also directly and indirectly increase demand for locally produced foods within Solano County. We identified the Capay Valley Farm Shop and Fresh Approach as viable models to be followed and discuss advantages of forming a farmer cooperative that vertically integrates towards consumers.

In summary, we identified a limited interest and underdeveloped opportunities for small farmers to sell within the county and a relatively low consumer demand for local, value-added products at this point and conclude that the implementation of the originally proposed food centers is not feasible. Instead, we suggest moving forward with the development of a more comprehensive strategic plan. We discuss possible directions Sustainable Solano could pursue, highlight potential benefits and introduce important cost considerations. Finally, we highlight that the successful implementation of Sustainable Solano’s vision critically depends on educating the community and engaging various stakeholders.

**Background**

Local food sales continue to increase across the country. Local foods can be purchased at grocery stores; found in prepared meals at schools, institutions, and restaurants; or be purchased directly from local farmers. The USDA defines local food sales as including both direct-to-consumer sales and sales through intermediaries, and both of these categories seem to be growing (Low et al. 2015). However, little is known about what drives this increased interest in local food systems and how it impacts local economies. Existing studies are narrow in their geographic and market scope, and researchers have yet to agree on a standard way to conduct these analyses, including modeling assumptions and appropriate data to use.
What are the opportunity costs of producing and marketing foods locally, and how are they incorporated into economic modeling? How do we define local foods and how do we identify locally grown or produced products in existing data sources or collect additional data?

When interpreting existing studies, further questions arise: Are local food systems good for both urban centers and rural communities? Are potential economic benefits of expanding local food systems evenly distributed, or can we identify clear winners and losers within communities?

While the current literature suggests market potential and increased demand for locally-produced foods, it is not clear what consumers and stakeholders are looking for when they engage in local food systems. A primary challenge in this context is the fact that a uniform and widely accepted definition of ‘local’ currently does not exist. Each study therefore needs to define its own use of the term in the context of commonly used definitions, and we follow this approach here.

A Project Definition of Local

The growth of the local food movement in the United States is likely consumer driven and rooted in the environmental, community food security, and slow food movements (Guptill, et al., 2002). It is buoyed by increasing consumer concern about understanding the sources and processing of their food (Martinez, et al., 2010). Although federal and state standards have been developed for other food designations like Organic, Humane, and Fair Trade, to date, there is no comprehensive definition of local food.

Both local and regional food systems are referred to as place-specific clusters of agricultural producers, consumers and institutions that are engaged in producing, processing, distributing, and selling foods. The distinction between local and regional food systems is unclear in the existing literature, and these terms are often used interchangeably.

The 2008 Farm Act defines local foods as those produced in “the locality or region in which the final product is marketed, so that the total distance that the product is transported is less than 400 miles from the origin of the product; or the State in which the product is produced” (Consolidated Farm and Rural Development Act of 2008). Local food retailers often develop their own definitions of local to promote these products in their stores. The Davis and Sacramento Food Co-ops define local as products grown or made within 100 miles of the Co-op.²

To some consumers, local food is better defined by local ownership or by direct-to-consumer/direct-to-retailer sales. Others may define “localness” by the natural, organic, and other specialty characteristics of the product (USDA, 2015). One advantage of locally-grown designations is that they provide profitable differentiation strategies without the upfront investment of organically-grown and similar certifications (James, et al., 2009).

For this project, we define local as being grown and produced within Solano County. This will allow us to utilize US Census data as well as County crop reports to assess local production. When referring to distribution, we will focus on DTC sales as these measures are currently used to estimate local production and sales (USDA, 2015). Complete information on the value of intermediated sales of local products is not

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The Local Food Economy of Solano County

Solano County is located in the Northeast corner of the Bay Area midway between San Francisco and Sacramento, and is home to rolling hillsides, waterfronts, and fertile farmland. Its boundaries were established on February 18, 1850 by the first elected legislature of the territory of California, making Solano County one of the original 27 counties. Solano County’s population is 436,023 as reported by the U.S census, with more than 75 percent living in three of the seven cities in the county: Vallejo, Fairfield (the county seat and administrative center) and Vacaville. In 2017, the median household income was $69,227 (higher than for the U.S. and California overall), and Solano County is considered economically and ethnically diverse. Its mild climate not only makes it an attractive place to live, Solano County remains one of the most fertile agricultural regions in the country. While declining, 64 percent of the land and water area of Solano County is dedicated to agriculture, producing over 80 different commodities. It is the most agriculturally diverse of the nine counties that make up the Bay Area region. However, it is also the most underfunded in terms of foundation and grant support (Irvine Foundation, 2016).3 The gross value of Solano County’s agricultural production continues to increase and measured $362,822,000 in 2018, partly a result of increased values in animal production and field crops due to drought conditions in California. Solano County’s top crop is walnuts, followed by nursery products and almonds.

In taking a closer look at the local food economy of Solano County, we begin with an analysis of farms and farm output. In addition to national trends, we add California statistics, and compare Solano County to neighboring Yolo County. Yolo County and its local food system has been assessed in other studies (Hardesty, et al., 2016; SACOG, 2015) and can serve as a case study for increased local distribution. Differences and similarities between Solano and Yolo Counties can lead to a better understanding of the challenges and opportunities in promoting a local food system.

Farm Output and Sales

Total agricultural or farm sales have continued to increase at the national and county levels from 1997 to 2012. U.S. farms sold nearly $395 billion in agricultural products in 2012, and California is the state with the largest agricultural sales ($42.6 billion or 10.8 percent of all U.S. sales). Yolo County’s sales initially

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3 The Irvine Foundation reports that Solano County remained the most under-resourced of all Bay Area counties in terms of foundation investment. Investments amount to $3 per capita as compared to $1119 per capita in the San Francisco region.
decreased but have increased and are outpacing the growth in California sales as well as national trends starting in 2002. Solano’s increase in total sales has been steady but continues to be significantly below Yolo’s sales. In 2012, Solano County farms sold $307 million in agricultural products as compared to $561 million or close to double the amount sold in Yolo County. Solano’s agricultural sales amount to about 7 percent of total California sales.

**FIGURE 2: TOTAL AGRICULTURAL SALES**

Since 1992, average farm size, as measured in acres per farm, has decreased nationally from 491 acres to 431. California and Yolo County experienced similar downward trends in that time. Contrary to these trends, average farm size in Solano County increased from 400 to 473 acres over the period, potentially a result of small decreases in the total number of farms coupled with increases in the total number of acres dedicated to farming in the county.

**FIGURE 3: AVERAGE FARM SIZE**
When looking at average sales per farm, we detect an increase nationally, statewide, and in Yolo and Solano Counties between 1992 and 2012. Solano County seems to have experienced less fluctuations in farm sales throughout the measured period compared to California overall. They have consistently increased from $133,000 in 1992 to $357,000 in 2012, an increase of 168 percent, but fall well below Yolo County’s sales.

Focusing on sales through just one marketing channel, direct-to-consumer sales (DTC sales), we see similar trends. DTC sales include farm stands, U-picks, Community Supported Agriculture boxes (CSA), and farmers markets.

It is worth pointing out that prior to 2007, organic sales were included in DTC sales which led to a larger percentage in 1997 and 2002 at the county level and explains the more pronounced drop for both Yolo and Solano County in 2007. Both Solano and Yolo County produce a relatively high percentage of organic
commodities to satisfy strong consumer preferences for organic foods in California and beyond. After organic sales were separated from DTC sales, we can see that Yolo County and Solano County had increasing DTC sales compared to the California average. However, DTC sales only make up a very small percentage of overall sales as illustrated in Figure 6.

**FIGURE 6: DTC SALES AS PERCENTAGE OF TOTAL SALES**

Here again, we see the effect of the change in calculating DTC sales (exclusion of organic sales in 2007). These relatively small percentages overall are explained by the fact that despite observed upward trends, a relatively small number of farms market foods locally. In 2012, only 163,675 farms or 7.8 percent of U.S. farms were marketing foods locally, defined as conducting either DTC or intermediated sales of food for human consumption. Of these farms, 70 percent used only DTC marketing channels. Nevertheless, Solano County’s percentages are slightly above national and California averages, and this difference has increased. While not as pronounced as for Yolo County, Solano seems to experience the highest increases in DTC sales as compared to overall sales in the last time period available in the US Census data.

**FIGURE 7: PERCENTAGE OF FARMS WITH DTC SALES**

Overall, more farms participate in DTC sales in California than nationally, and for both Solano County and Yolo County, we see slightly larger percentages, with more farms participating. Yolo County experienced
a large increase in 1997, followed by a decrease and a renewed increasing trend. Solano’s trend does not mirror that of Yolo county, but Solano had almost the same percentage of farms (13 percent) participating in 2012.

**FIGURE 8: TOTAL NUMBER OF FARMS AND FARMS WITH DIRECT SALES IN SOLANO COUNTY**

Looking more closely at the number of farms, as well as the total number of farms that participate in DTC sales in Solano County, the above figure indicates some fluctuations in these numbers. There is a modest growth from 88 to 110 DTC farms over the 20 years captured, and larger fluctuations in the total number of farms peaking at 986 in 1997. These fluctuations might also account for the low percentage of DTC farms in 1997, where we saw a drop from 88 on average to 70 farms.4

**FIGURE 9: AVERAGE DTC SALES PER FARM**

4 The way the Census counts farms might be slightly misleading as they are defined as “any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year.” Only 462 of the reported 860 farms here are operating full time. See [https://www.nass.usda.gov/AgCensus/](https://www.nass.usda.gov/AgCensus/) for further information.
Average DTC sales per farm were nearly $25,000 in 2012 in Solano County, and almost doubled when compared to 1992 levels. These averages are greater than statewide and national averages for DTC sales per farm. Solano’s 1992 average DTC sales were on par with Yolo County’s, but since then, Solano has significantly trailed behind Yolo County, whose DTC sales increased by 454 percent over the same period. Nationally, most farms that sell directly to consumers (85 percent) are small, with a gross annual income of less than $75,000, and three quarters had annual direct sales of less than $5,000 in 2012. Total sales by these smaller farms only represent 13 percent of total dollars spent on local food. Larger farms (those with a gross annual income of $350,000 and above), make up just 5 percent of the total farms that sold products locally in 2012. However, they represented 67 percent of all local food sales in the U.S. These mid-scale and larger farms are more likely to sell locally through intermediaries like distributors or food hubs, rather than selling directly to consumers (Low et al, 2015).

Farm Demographics

Table 1 presents additional farm demographics for Solano County reported in the U. S. census. The vast majority of farms in the county are far below the threshold for a small farm. Nearly half of the county’s farms have agricultural sales under $10,000, and 70 percent have sales under $50,000. Only 41 percent of principal operators reported positive net cash income for their operations. This explains why 46 percent of principal farm operators in Solano had a primary occupation other than farming in 2012, and half worked some days off the farm during that year. Most principal operators are male, and in 2012, only 24 percent of principal operators were women, an increase from 2007, when only 18 percent were women.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Sales Under $50,000</td>
<td>601</td>
<td>70%</td>
</tr>
<tr>
<td>Agricultural Sales under $10,000</td>
<td>403</td>
<td>47%</td>
</tr>
<tr>
<td>Lived on their farm</td>
<td>674</td>
<td>78%</td>
</tr>
<tr>
<td>Had internet access</td>
<td>706</td>
<td>82%</td>
</tr>
<tr>
<td>Worked some days off the farm</td>
<td>429</td>
<td>50%</td>
</tr>
<tr>
<td>Had a primary occupation other than farming</td>
<td>398</td>
<td>46%</td>
</tr>
<tr>
<td>Had positive net cash income for the operation</td>
<td>349</td>
<td>41%</td>
</tr>
<tr>
<td>Male principal operator</td>
<td>653</td>
<td>76%</td>
</tr>
<tr>
<td>Female principal operator</td>
<td>207</td>
<td>24%</td>
</tr>
</tbody>
</table>

5 These numbers were derived combining US Census data and Agricultural Resource Management Survey (ARMS) data. This analysis is not available at the county level and we will look at Farm Demographics reported at the county level more generally instead.
Principal operators in Solano are also older with decades of experience, on average. The average age of principal operators in 2012 was 60.8 years, up from 58.5 in 2007, and principal operators had an average of 23.8 years of on-farm work experience.⁶

**TABLE 2: AGE AND TENURE OF SOLANO COUNTY FARMERS**

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average years on any farm</td>
<td>23.8</td>
<td></td>
</tr>
<tr>
<td>Average age</td>
<td>60.8</td>
<td>58.5</td>
</tr>
</tbody>
</table>

These numbers seem concerning when thinking about future agriculture in Solano County. At the same time, however, agriculture might provide a lot of future opportunities, including opportunities for well-trained college graduates. An estimated 57,900 high-skilled job openings in the food, agriculture, renewable natural resources, and environment fields are added annually in the United States (USDA, 2015).⁷ In thinking about agriculture and farm work in an integrated food systems approach, Solano County could maintain and strengthen its agricultural focus and attract young talent.

**Crop Production**

In order to paint a better picture of which crops are grown in Solano County, we utilized the Solano County Crop Report published by the Agricultural Commissioner. The detailed numbers reported here use the 2016 data.⁸

Solano County’s agricultural production was valued at $347,172,000. This represents a decrease from 2015 values by 1.9 percent. Ongoing effects of the drought as well as lower meat prices contributed to reduced values in animal production and field crops and might explain this overall drop.

**FIGURE 10: TOTAL CROP ACREAGE ACROSS TIME**

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⁶ As previously mentioned, the way the Census counts farms might be slightly misleading. Only 462 of the reported 860 farms here are operating full time. This might be a more reasonable estimate of number of farms in operation.


⁸ We used the 2016 crop report here as we completed this analysis before the 2017 crop report became available. The trends reported did not change. In our later disaggregated analysis, we do use the most recent data.
Acreage seems to stay relatively stable over time and the majority of acres are planted with field crops or used in animal production.

**FIGURE 11: DETAILED ACREAGE FOR LOWER ACREAGE CROPS**

While planted on less acres, we see an increase in the amount of acres planted with fruit and nut crops in recent years. Vegetable crop acreage also increased in 2014 but has plateaued since then.

**FIGURE 12: PERCENTAGE OF TOTAL AGRICULTURAL VALUE**

We observe significant variations in the value of crop categories over the years. The most significant increase is observed in the value of fruit and nut crops which might explain the increased allocation of acreage. Fruit and nut trees are considered high value crops.
The top three crops for 2016 were walnuts with an increase in value of 18.2 percent to $44,822,000, followed by nursery products at $39,754,000 and an increase in value of 5.6 percent, and almonds with the largest increase (52.2 percent to $35,917,000). Tomatoes on the other hand fell from first to fourth rank losing 19.7 percent of their value. Alfalfa, cattle and calves and wheat also dropped in ranking and value, while wine grapes, sunflower (seed) and sheep and lambs rose. For 2016, unlike prior years, value calculations for sheep and lambs included feeder lamb weight gain while maintained in pasture, contributing to the increase in value.

TABLE 3: RANKING OF CROPS BY AGRICULTURAL VALUE

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing Tomatoes</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Nursery Products</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Walnuts</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cattle &amp; Calves</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Wine Grapes</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Sunflower Seed - Certified</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almonds</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sheep &amp; Lamb</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat -Irrigated</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
In terms of the type of farms operating in Solano County, of the 860 farms that the Agricultural Commissioner serves, 41 are registered as organic farms, amounting to 2,009 acres total used for organic production. Organic farmers produce an assortment of crops on these acres including: berries, herbs, fruits, vegetables, microgreens, nuts, cut flowers, and olive oil. In addition, on 5,002 acres organic ryegrass is grown or these acres are used as pastureland and rangeland. Organic eggs and poultry were also produced in Solano County.

In order to sell their products at farmers markets directly to consumers, farmers must obtain a Certified Producers Certificate from the Agricultural Commissioner. This certificate needs to be obtained in the county where the produce was grown. Thirty-four certificates were issued to producers in 2016, and six farmers markets were certified by the Agricultural Commissioner to market local and regional produce in Solano County.

The Food Retail Environment in Solano County

Solano County is home to a variety of food retailers. These include warehouse stores like Costco (3 stores) and Sam’s club (1 store), supercenters like Walmart (8 stores) and Target (3 stores), national grocery chains like Safeway (8 stores), discount stores like WinCo (1 store) and Grocery Outlet (4 stores), smaller regional chains like Nugget Markets (1 store) and Lucky (2 stores), independent grocery stores, and convenience and liquor stores. Figure 14 maps retail stores in Solano County as of 2013. The approximately 40 stores are largely concentrated in the cities of Dixon, Vacaville, Fairfield, and Vallejo, with a few existing outside of those areas.

**FIGURE 14: MAP OF SOLANO COUNTY GROCERY STORES (2013)**
In the same year, 45 percent of Solano County residents lived farther than 1 mile (urban) or 10 miles (rural) from a supermarket, supercenter, grocery store, or other source of fresh food. Furthermore, many of these stores do not offer fresh produce. A 2016 survey found that only 41 percent of county food retailers sell fresh fruits or vegetables. According to public health officials, 67 percent of Solano County residents are overweight or obese partially a result of unhealthy shopping habits. For instance, at store checkouts, 90 percent of food items are sugary items such as candy, energy bars, chips and cookies, and 60 percent of beverages available at stores are sugar sweetened. In response to these statistics and the lack of fresh fruits and vegetables at many of the county’s stores, Vibe Solano (an initiative within Solano Public Health) began “Healthy Stores for a Healthy Community”, a project in which corner store owners received assistance with removing food advertisements, positioning healthy food options in highly visible parts of the store and providing promotional signage. By 2018, nine stores had completed healthy store makeovers: five in Vallejo, and one each in Benicia, Fairfield, Dixon and Suisun.

The Restaurant Industry and Food Service Sector in Solano County

Despite their proximity to neighboring counties with more developed local food systems (Sonoma, Davis, Sacramento), restaurants and food service managers in Solano County have been slow to adopt the “farm-to-table” trend. This is potentially a result of farmers’ lack of visibility among restaurants and food service decision-makers, and lack of knowledge and a weak demand for locally produced foods overall. It might be challenging for individual farmers to establish these relationships. There is currently no option for consolidating and bundling Solano-grown products together that would make it easier for businesses to purchase farm output. There are, however, a number of businesses that seem interested and even enthusiastic about procuring, preparing, and selling local foods. For instance, Backdoor Bistro, a restaurant in Vacaville, features a variety of products from surrounding farms on its menus and hosts monthly prix-fixe winemaker dinners, which highlight both a local winemaker and seasonal ingredients. Two other restaurants which try to source local ingredients are Mankas Steakhouse, located in unincorporated Solano, outside Fairfield among vineyards and farms, and Dawson’s Bar and Grill, a casual eatery in Dixon. Also in Dixon is Barn & Pantry, a retail shop which showcases local produce, eggs, cheese, meats, honey, body-care products, coffee, and more. They also offer Homestead Education Classes such as bread-making, cheese-making, etc. League of Chefs in Vallejo offers take-out lunch items, a few retail items made by other culinarians (bread, coffee, confections), and catering services. They would like to source more local ingredients but might need help identifying and establishing supply relationships.

Cottage Food Operators and Caterers

On September 21, 2012, the California Homemade Food Act (AB-1616) was signed into law by Governor Jerry Brown and became effective on January 1, 2013. This law allowed Cottage Food Operators (CFOs) to acquire a license and legally prepare certain foods in private homes and sell them to the public. Allowable foods are essentially non-potentially hazardous foods (those that are shelf-stable, not requiring
refrigeration), including baked goods, nut/spice mixes, dried fruit, dried pasta, honey, roasted coffee, dehydrated vegetables and more. Within Solano County, there are two types of Cottage Food licenses: direct sales only (Class A), and indirect sales (i.e. wholesale) with or without direct sales (Class B). Annual fees for these licenses are $98 (Class A) and $322 (Class B). The license limits CFOs to $50K in gross annual sales. Solano County has 62 active Class A Cottage Food Operators, and 11 Class B Operators, with the majority of them producing cookies, cakes, sweets and other baked goods. Within the 62 Class A CFOs, 56 are businesses, and 6 licenses are held by schools for school gardens. Two Solano farms hold a Class A CFO license: Glashoff Farms, which grows primarily berries and other fruit, and Lockewood Acres, which produces a variety of produce and other farm goods.

In July 2017, Solano County also began issuing catering licenses that have additional regulatory requirements including using a licensed, commercial kitchen and more advanced training for staff. The cost for a catering license is $405, and it needs to be renewed annually. Solano County has 12 individual/private businesses registered as caterers, with four located outside Solano County. Any caterer from outside the County who wants to cater in Solano also needs to apply and pay for this license.11 Caterers in Solano County can use any licensed, commercial kitchen (i.e. other restaurants, community centers) as long as the facility is willing to rent to caterers and will allow Environmental Health personnel to inspect the premises. The main issue is typically the limited capacity of cooler space and other coordination issues around safely holding a potentially large volume of food produced and distributed by two different businesses. Restaurants currently in business who want to begin catering do not need to apply for the catering license as they are subject to even stricter regulations and hold a catering license by right.

The New Homemade Food Operations Act (AB 626)

In 2017, Assembly member Eduardo Garcia introduced Assembly Bill 626 (AB 626), the Homemade Food Operations Act. The goal of this bill is “to reclaim cooking as a means of economic empowerment for the people who need it the most.” Currently in California, food can be sold via two channels: 1) through commercial, licensed food facilities (e.g. restaurants) and 2) through the Cottage Food Act (AB 1616 – Gatto, 2012) which allows non-perishable food to be produced in home kitchens. The issues which Garcia identified with these 2 channels are primarily economic: commercial kitchens are expensive to rent (and require insurance, business licenses and possibly catering licenses), and due to the limited products allowed and restrictions on distribution within the Cottage Food Act, it is difficult to earn a substantial income. As a result, many home cooks are operating under the table. According to an analysis of online communities by C.O.O.K. (Creating Opportunities, Opening Kitchens) Alliance, a sponsor of AB 626, approximately 50,000 home cooks are already selling their food in California. It is likely that most of these home cooks are operating without access to food safety guidelines, resources and education. The proposed benefits of AB 626 are:

1. Economic Empowerment of underrepresented minorities (such as women, immigrants and people of color);
2. Public Health and Food Access through regulating private kitchens and cooks currently not covered by regulation, and increasing access to healthy prepared food in underserved areas; and
3. Protecting Vulnerable Communities to allow currently illegally operating actors to operate legally.

11 However, personnel at Environmental health would like to reduce this particular fee, because caterers are typically licensed in a neighboring county.
AB 626 amends part of the Health and Safety Code to define a new Microenterprise Home Kitchen Operation category that requires food to be cooked, served or delivered within a specific time period, production of no more than 30 meals per day or 60 meals per week, and no more than $50K in gross annual sales, among others. These operations are neither catering nor Cottage Food operations and are not allowed to conduct indirect sales (AB 626, 2018).

AB 626 signed into law in September 2018, and beginning in January 2019, California’s 58 counties have the chance to opt in. Once counties opt in, home cooking will become legalized in those areas. According to an Environmental Health Supervisor at Solano County Department of Resource Management’s Environmental Health Division, Solano County has opposed AB 626, and they do not intend to opt in, or allow home cooking in unincorporated areas of Solano. In addition, no cities have their own Environmental Health division in Solano County, making the County the enforcing agency. If a city wants to opt in, they need to meet with the County, discuss the terms and write a joint ordinance. Furthermore, currently only one entity can collect fees for the establishment of a Microenterprise Home Kitchen Operation. Since there is no city business license required for this new Operation (and hence, no business license fees will be collected), cities don’t have a financial incentive to opt in.

At this point, it is not very likely that Solano County will move forward with AB 626 as the Board of Supervisors would need to approve the opt-in.

The Direct-to-Consumer Food Industry in Solano County

Direct-to-Consumer (DTC) sales of local food in Solano County are supported by farmers markets, Community Supported Agriculture (CSA) programs, farm stands and on-farm shops. 2018, Solano County was home to eight certified farmers markets, three of which were hosted by Kaiser. They are located in five of its seven cities: Benicia, Fairfield, Rio Vista, Vacaville, and Vallejo. Kaiser Permanente also hosts three farmers markets at its hospitals in Fairfield, Vacaville, and Vallejo. Three of these eight markets are year-round (Kaiser Fairfield, Kaiser Vallejo, and downtown Vallejo), and the rest are seasonal, running from spring through fall. Eight different farms in the region (three of which are Solano-based) have CSA programs and deliver to Vallejo, Vacaville, Fairfield and Benicia. The CSAs provide prepared meals as well as fresh produce, eggs, meat, honey, dairy, and seafood throughout the county. The most popular CSA programs in Solano County belong to Eatwell Farm, who distributes to approximately 61 subscribers per week (21 in Dixon, 16 in Vacaville, 13 in Vallejo, and 11 in Fairfield). It also delivers fruits (10-14 pounds) for 14 weeks between spring and fall to around 50 subscribers. Cloverleaf Farm also has a farm stand, select U-pick dates, and sells to a few restaurants and food services in the area. Another Solano farm, Shooting Star, had a CSA program, but closed its doors in 2017. This farm is currently changing ownership.

The CSA programs around the county are largely operating independently and sometimes in parallel, serving the same cities. In September 2017, Sustainable Solano consolidated four different CSAs under

12 The Supervisor noted that several flaws currently exist in the language of the bill. For instance, a “meal” is not clearly defined, and if a current Cottage Food Operator wanted to convert to a Microenterprise Home Kitchen Operation (yet continue to produce baked goods for instance), there are no guidelines for how many baked goods constitute a ‘meal’. The Supervisor further noted that lawyers are currently working on edits to the bill, to clarify these and other points.

13 An agreement reached between the County and city entities before the law was issued would have enabled Solano’s Environmental Health Division to allow cities to obtain a portion of the required fee.
one roof in Benicia: Terra Firma Farm, Real Food Bay Area, Real Good Fish and Tara Firma Farm. As a result, all farms have seen an increase in sales, with two farms’ subscription rates increasing 100 percent over the past year.

We identified seven farm stands or on-farm shops in the County, mostly within Pleasants Valley and Suisun Valley agricultural areas: Robledo’s, Brazelton Ranch, Be Love Farm, Soul Food Farm, Cal Yee Farms, Saechao Family Farm, and Larry’s Produce. About half of these operate year-round. Products vary from seasonal stone fruit and citrus (Brazelton Ranch) to more diverse offerings such as olive oil, produce, eggs (Be Love Farm), and a shop with dried fruit and nuts sourced from elsewhere (Cal Yee). Solano County had one U-pick stand (Erickson Ranch), but it closed last year and now sells solely prepared foods (jams, preserves) from the fruit they grow.

Food Assistance in Solano County

According to the US Census, 13 percent of Solano’s population (57,910 residents) live at or below federal poverty levels. Average monthly benefits for individuals in the Supplemental Nutrition Assistance Program (SNAP) were $125.43 in 2018. Using these numbers, we estimate that total food assistance spending in Solano County is more than $87 million a year. Yet, small farmers do not seem to participate in these channels and do not donate any surplus or take advantage of funding available to secure a fresh, local food supply to the county’s low-income population. Most of the offered foods come from large grocery stores supported by limited funding available for these programs. This means that the funding for these programs largely leaves the local Solano County economy.

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and its Farmers’ Market Nutrition Program (FMNP) are available in the county as well. These programs are managed by Solano Public Health and Social Services. Understandably, the agency’s main goal is to reach and enroll as many as possible eligible families and individuals. Establishing local supply relationships has not been a priority but opportunities exist to inform local farms about these distributions channels and establish a focused program to ensure local farm participation in these programs.

One opportunity for small local farmers to serve these populations is through California’s Market Match program. It supplements consumers’ purchasing power by matching customers’ federal nutrition assistance benefits, like CalFresh and WIC, at farmers markets. In addition, California Women, Infants, and Children (WIC) agencies distributed more than $2.4 million in WIC Farmers’ Market Nutrition Program (FMNP) checks that may only be spent on fruits, vegetables, or fresh herbs at certified farmers markets.

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14 See [https://www.census.gov/quickfacts/fact/table/solanocounty/california/PST045217](https://www.census.gov/quickfacts/fact/table/solanocounty/california/PST045217) and [https://fns-prod.azureedge.net/sites/default/files/pd/34SNAPmonthly.pdf](https://fns-prod.azureedge.net/sites/default/files/pd/34SNAPmonthly.pdf) for these and additional statistics.

15 We were not able to obtain an official number, but we used population estimates as well as average benefits received to estimate this total amount.
Only 68 percent were redeemed in 2014, however.\textsuperscript{16} We found very little information about the level of participation in this program within the county. None of the Solano farmers seem trained or authorized to accept WIC Fruit and Vegetable Checks (FVCs) for fresh fruits and vegetables and the program is managed by different agencies that are not located within the county. For instance, the Ecology Center (located in Berkeley) manages the Market Match distribution at Fairfield, Vallejo and Vacaville markets. Only the Benicia farmers market program is managed by the Benicia Main Street Association. Formal reporting of the level of economic activities in these programs at these markets seems to not be in place but according to informal reports from the Ecology Center and Benicia Main Street Association, annual Market Match distribution did not exceed $20,000 combined for all the participating farmers markets in the county (2017).

Existing Studies: Supply of Locally Produced Food

In addition to reviewing exiting data sources about local production and learning about the local food economy, we reviewed a number of existing reports and studies about local food systems. We summarize information about food hubs established nationwide, and briefly discuss existing estimates of the potential economic impact of strengthening local food systems in the Sacramento region as well as in Solano County.

Food Hubs and Values-based Supply Chains

Food hub enterprises have grown nationwide—since 2006-07, the number of food hubs has increased by 288 percent. Food hubs can provide much-needed infrastructure, information on and assistance with navigating complicated regulatory requirements. They can also aggregate products for distribution to wholesale markets (Cheng, et al., 2011; Day-Farnsworth, et al., 2009), effectively acting as wholesale packers and distributers, marketing and branding channels, and even retailers. Finally, they can significantly reduce knowledge constraints regarding regulatory practices and licensing, marketing, and distribution that currently pose a serious barrier to entry for local food entrepreneurs.

In addition to removing or lessening capital and informational barriers to entry, services offered by food hubs provide users with a number of potential benefits and synergies. These include access to higher prices, access to a wider array of markets, reduced economic uncertainty, and increased market power. Further, food hubs that work directly with farmers can help them improve their farming skills and knowledge, build professional and community relationships, start a CSA, and join or establish a multi-farm CSA (Lerman, et al., 2015).

\textsuperscript{16} Information included in California Specialty Crop Grant abstract Increasing Specialty Crop Consumption through Increased WIC Farmers’ Market Nutrition Program Check Redemption available at: https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/pdfs/2015SCBGP_ProjectAbstracts.pdf.
Food hubs have diverse business models, as they respond to the needs of local producers, consumers, and communities. Nearly 40 percent of food hubs provide locally sourced food commodities to consumers, while another 29 percent cater exclusively to business and institutional buyers. The remainder operate as a hybrid, catering to both businesses/institutions and consumers. Table 4 summarizes their legal status and business type.

**TABLE 4: SUMMARY OF FOOD HUBS IN THE U.S.**

<table>
<thead>
<tr>
<th>Legal status</th>
<th>Farm to business/ institution</th>
<th>Farm to consumer</th>
<th>Hybrid: business/ institution and consumer</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative</td>
<td>18</td>
<td>25</td>
<td>18</td>
<td>61</td>
</tr>
<tr>
<td>Nonprofit</td>
<td>23</td>
<td>43</td>
<td>21</td>
<td>87</td>
</tr>
<tr>
<td>Privately held business</td>
<td>39</td>
<td>41</td>
<td>43</td>
<td>123</td>
</tr>
<tr>
<td>Other*</td>
<td>7</td>
<td>10</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>87</td>
<td>119</td>
<td>96</td>
<td>302</td>
</tr>
</tbody>
</table>

*Incorporated, publicly and privately held corporations, and informally organized.


Despite this growth and interest in food hubs as a crucial building block of local food systems, many fail after just a few years of operation. We will return to the topic of food hubs and discuss approaches that seem most relevant to this project in more detail in later sections of this report.

**Potential Economic Impact on the Solano Region**

Re-localized food systems where local food is aggregated and distributed by a central entity, such as those created by food hubs, contribute to improved economic development. Empirical research suggests that such systems can reduce unemployment, increase tax revenue, stimulate rural economies, improve economic security, strengthen regional branding, foster and retain local businesses, and improve quality of life and public health, among other things (Lerman, et al., 2015). While this research supports the economic benefit of re-localized food systems, the current literature makes it difficult to draw conclusions that are more specific to the economic impact of local foods systems. Data necessary to conduct economic impact analyses are costly to obtain, locally-produced foods are not easily identified, researchers have yet to agree on a standard way of accounting for the opportunity costs involved when local foods are produced and purchased, and a standard set of economic modeling assumptions has not emerged. Existing studies have a narrow geographic and market scope, and most of the literature seems to focus on farms. Here, we summarize one study that despite these limitations can provide insights into how marketing of local foods can create new jobs and contribute to the economic development of this community.

Agricultural Impact Associates (2017) estimated the economic impact of agriculture in Solano County, focusing on the contributions of food production, local processing, employment, and economic multiplier effects. Researchers modeled the impact using IMPLAN, an economic-impact-analysis software. IMPLAN estimates three levels of economic impact related to local food marketing: *direct, indirect, and induced*. 
Direct effects result from expenditures by those immediately involved in the economic activity of interest, which in this analysis are Solano producers. Ripple effects occur from these generated sales. They can be defined as indirect effects, i.e. producers purchasing inputs from other industries within the region to produce commodities or value-added products, and induced effects, i.e. households spending their income generated in the production of goods and services within the region. These expenditures can include consumption of food, clothing, health care, as well as restaurant visits, recreational activities and use of other services.

**TABLE 5: ECONOMIC EFFECTS OF SOLANO COUNTY FARM PRODUCTION IN 2015**

<table>
<thead>
<tr>
<th>FARM PRODUCTION SECTOR</th>
<th>DIRECT</th>
<th>INDIRECT</th>
<th>INDUCED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals and animal products</td>
<td>$93.5</td>
<td>$14.6</td>
<td>$10.4</td>
<td>$118.5</td>
</tr>
<tr>
<td>Tree nut farming</td>
<td>$70.7</td>
<td>$12.8</td>
<td>$18.9</td>
<td>$102.4</td>
</tr>
<tr>
<td>Vegetable farming</td>
<td>$74.2</td>
<td>$10.5</td>
<td>$16.6</td>
<td>$101.4</td>
</tr>
<tr>
<td>All other crop farming</td>
<td>$43.0</td>
<td>$10.8</td>
<td>$9.9</td>
<td>$63.7</td>
</tr>
<tr>
<td>Support activities for agriculture</td>
<td>$33.6</td>
<td>$1.0</td>
<td>$10.2</td>
<td>$44.9</td>
</tr>
<tr>
<td>Fruit farming</td>
<td>$30.4</td>
<td>$5.2</td>
<td>$7.7</td>
<td>$43.2</td>
</tr>
<tr>
<td>Greenhouse, nursery &amp; floriculture</td>
<td>$30.5</td>
<td>$3.5</td>
<td>$6.8</td>
<td>$40.9</td>
</tr>
<tr>
<td>Grain farming</td>
<td>$6.7</td>
<td>$2.3</td>
<td>$0.7</td>
<td>$9.7</td>
</tr>
<tr>
<td>Oilseed farming</td>
<td>$4.0</td>
<td>$1.1</td>
<td>$0.6</td>
<td>$5.6</td>
</tr>
<tr>
<td>Forestry &amp; forest products</td>
<td>$0.4</td>
<td>$0.2</td>
<td>$0.2</td>
<td>$0.8</td>
</tr>
<tr>
<td><strong>TOTAL ECONOMIC OUTPUT:</strong></td>
<td><strong>$387.0</strong></td>
<td><strong>$62.0</strong></td>
<td><strong>$82.0</strong></td>
<td><strong>$531.0</strong></td>
</tr>
</tbody>
</table>

**Employment Effect (# Jobs)**

| TOTAL EMPLOYMENT:                  | 2,988 | 762     | 704     | 4,454   |

Source: Agricultural Impact Associates, 2017
Notes: Dollar values are in $millions. Figures come from IMPLAN, annual Crop and Livestock Reports, and U.S. Bureau of Economic Analysis. Not all columns and rows add due to rounding.

Table 5 presents the direct, indirect, and induced effects of Solano County farm production in the year 2015. Directly, Solano County farm production was valued at $354 million in 2015, up from $233.5 million a decade prior. It created $387 million in economic output and employed 2,988 people. That includes not only those growing and harvesting crops but those in sales, marketing, and other roles. Multiplier effects

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**IMPLAN:**
- IMPLAN is an economic-impact-analysis software using an input-output model that measures the direct, indirect and induced economic impacts of sales in one industry over a user-defined region.
- It is currently used by academia, government and industry.

(IMPLAN, 2017)
result in agricultural production generating $62 million and $82 million in indirect and induced effects, respectively, for a total economic output of $531 million. These same multiplier effects result in agricultural production generating a total of 4,454 jobs in the county.

Value-added food and beverage processing is one of the largest industries in Solano County, with production totaling $1.9 billion in 2015. While it contributes significantly to the local economy, many of the benefits accrue outside the county. This is because nearly all of the raw inputs used in production of food and beverages in Solano comes from outside the county, and the majority of the agricultural output produced in the county is exported outside the county for consumption and production elsewhere. Local manufacturing and processing would allow the county to capture a greater portion of this multibillion-dollar industry. Nonetheless, locally-sourced, value-added food processing is directly responsible for $72.1 million in economic activity in Solano County, with ripple effects adding another $14.5 million in output. It directly employs 159 people who, through their spending in the county, support an additional 96 jobs.

**TABLE 6: ECONOMIC EFFECTS OF LOCALLY SOURCED, VALUE-ADDED FOOD PROCESSING IN 2015**

<table>
<thead>
<tr>
<th>FOOD MANUFACTURING SECTOR</th>
<th>DIRECT</th>
<th>INDIRECT</th>
<th>INDUCED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canned/bottled fruits &amp; vegetables</td>
<td>$32.2</td>
<td>$4.7</td>
<td>$2.7</td>
<td>$39.6</td>
</tr>
<tr>
<td>Wineries</td>
<td>$14.2</td>
<td>$1.6</td>
<td>$1.4</td>
<td>$17.2</td>
</tr>
<tr>
<td>Processed meat products</td>
<td>$14.8</td>
<td>$0.9</td>
<td>$0.7</td>
<td>$16.5</td>
</tr>
<tr>
<td>Miscellaneous other products</td>
<td>$10.8</td>
<td>$1.1</td>
<td>$1.3</td>
<td>$13.2</td>
</tr>
<tr>
<td>TOTAL ECONOMIC OUTPUT:</td>
<td>$72.1</td>
<td>$8.3</td>
<td>$6.2</td>
<td>$86.5</td>
</tr>
</tbody>
</table>

**Employment Effect (# Jobs)**

<table>
<thead>
<tr>
<th></th>
<th>DIRECT</th>
<th>INDIRECT</th>
<th>INDUCED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL EMPLOYMENT:</td>
<td>159</td>
<td>49</td>
<td>47</td>
<td>255</td>
</tr>
</tbody>
</table>

Source: Agricultural Impact Associates, 2017

Notes: Numbers were derived using IMPLAN reported by the U.S. Bureau of Economic Analysis. Not all columns and rows add up to totals as all reported numbers are rounded to one decimal point.

A study conducted in 2016 by UC Davis’ Co-operative Extension team measured the economic impact of local food marketing in the Sacramento Region (El Dorado, Placer, Sacramento and Yolo counties) (Hardesty, et al., 2016) and found similar benefits to the local economy. Producers that marketed their products directly within the Sacramento region each averaged $164,631 annually in sales, while sales for local producers who were not engaged in direct marketing in the region averaged $568,105. This large difference indicates that the majority of farms and businesses involved in the local food system are small operations. Only 30 percent of their DTC sales were generated in the Sacramento Region, however, while sixty-five percent were generated in the Bay Area, and five percent in other parts of the state or outside of California. The same picture emerges for the wholesale distribution channel. Seventy-three percent of direct marketers also sold through wholesale channels, but most of their sales activity is the Bay area. Overall, their largest revenue channel was distributors with 30 percent of total sales, followed by farmers.
markets (16 percent), Community Supported Agriculture (14 percent), grocers (13 percent), and farm stands (9 percent).

Interestingly, annual production and marketing expenses of producers who were engaged in regional markets averaged $155,235 in 2013. Expenses of producers who were not, averaged $214,486. This might point to potential cost advantages from engaging in local markets. Some of those differences might be explained by the finding that 89 percent of the inputs used by the region’s direct marketers were purchased within the region, while only 45 percent of the inputs used by other producers were purchased within the region.

All of these differences resulted in a regional output multiplier for the direct marketers of 1.86 and a multiplier of 1.42 for producers who were not involved in direct marketing. This multiplier includes $0.41 as the estimated indirect effect from the additional demand for inputs from other industry sectors that supply the Sacramento Region direct marketers. It also includes $0.45, or the induced effect which is generated by household spending within the Sacramento Region by the direct marketers, their employees and their suppliers’ owners and employees. In other words, for every dollar of sales, Sacramento Region direct marketers are generating almost twice as much economic activity within the region, as compared to producers who are not involved in direct marketing. The total output multiplier of 1.86 is relatively high as compared to other industries in the region competing for resources. These range from 1.61 for auto dealers to 1.77 for building material and garden supply retailers. In addition, the direct marketers have a job effect of 31.8, compared to 10.5 for the producers who were not involved in direct marketing. This means, that for every $1 million of output they produce, the direct marketers are generating a total of 31.8 jobs within the Sacramento Region, while producers not engaged in direct marketing only generate 10.5 jobs. The difference is partially due to the fact that hired labor expenses comprised 54 percent of the direct marketers’ operating expenses, compared to only 25 percent for the other producers.

Finally, the study also created a scenario in which grocery stores in the Sacramento Region increased their purchases of produce grown by the region’s direct marketers from an estimated $4.6 million to $5.6 million, with a matching decrease in their purchases of produce grown by producers who are not engaged in direct marketing. Because grocers purchase produce from distributors, the region’s direct marketers would increase their sales by $700,000. The resulting net economic impact is an additional $1.3 million of output within the Sacramento region, including 22.3 jobs.

Existing Studies: Demand and Willingness to Pay for Local Food

Understanding who buys local food and why supplements our analysis of local agricultural supply. Consumer trends have already shaped public policies and programs aimed to support local and regional food systems. Studies of consumers’ willingness to pay (WTP) for local food can provide insights into whether higher prices for local foods will provide a sufficient incentive to sell food locally, either through a DTC outlet or through intermediaries such as specialty grocery stores.

A number of studies have documented consumers’ preferences and willingness to pay for locally produced food. Figures 15 and 16 display estimates from both national and regional studies of the price premiums that consumers are willing to pay for locally produced foods. These are measured as a percent of the base price that consumers are willing to pay for these food items (USDA, 2015; Martinez, et al., 2010).
In both graphs, estimates vary greatly, ranging from approximately five percent for Blackberry jam with the “Ohio Proud” or “Kentucky Proud” labels to over 80 percent for apples from Vermont. Even within the same product category, there can be significant variation. A national study estimated that consumers are willing to pay less than ten percent over the base price for local apples, while studies in Vermont and Colorado found consumers are willing to pay premiums of 80 and 60 percent, respectively. Such variation makes it difficult to approximate the magnitude of a potential premium with precision, though it is
reasonable to conclude that consumers are likely willing to pay a higher price for locally produced foods in the Sacramento region.

In consumer surveys, the desire to support local businesses and perceptions of superior quality and freshness of local foods are cited as the main reasons that consumers are willing to pay a premium for locally produced foods (Martinez, et al., 2010). Consumers who are willing to pay more placed higher importance on quality (Brown, 2003; Carpio, et al., 2009), nutrition (Loureiro, et al., 2002), the environment (Brown, 2003), and helping farmers in their state (Carpio, et al., 2009). Trends in consumer preferences towards ready-to-eat and complex (processed) ingredients also imply that value-added products are likely to extract a higher WTP from consumers (Okrent, et al., 2016).

The USDA’s Economic Research Service (2018) used the National Household Food Acquisition and Purchase Survey to look at the impact of DTC outlets and fruit and vegetable spending by households. The study found that households that patronized DTC outlets had increased demand for fresh produce compared to those that did not, measured via an increased willingness to pay using econometric models. Furthermore, households that purchased directly often purchased a larger quantity or more variety of fruits and vegetables than those that did not, but the increased total household expenditure that also occurs could partially reflect price difference between DTC and non-direct retail outlets (USDA-ERS, 2018).

The existing literature offers mixed results on the relationship between consumer demographics and their preferences for local foods. Some studies indicate that surveyed farmers market patrons are predominantly female (Mayes, 2013) and that buying local produce was more of a preference among white families (Racine, et al., 2013). A study of Michigan consumers finds that farmers markets tend to be patronized by consumers that are predominately white and middle to upper class (Colasanti, et al., 2010). It is not clear how representative these studies are of overall preferences and market potential. Reported price premiums and consumer interest in local foods will vary by region. In a national study, survey respondents who live in the Northeast seem most likely to shop farm-to-consumer venues at least weekly (Blanck, et al., 2011). Rural-urban differences may also exist but are not consistently reported to trend in one direction. Two studies in North Carolina found that local buying behavior was more pronounced in rural areas (Racine, et al., 2013)(Racine et al., 2013; McGuirt et al., 2014), partly due to price savings. On the other hand, a study conducted in Albuquerque, New Mexico, found that consumers living in urbanized areas have stronger preferences for “non-conventional” (local or organic) produce (Holmes, et al., 2012).

Finally, in addition to demand and purchases by the end consumer, it is important to consider institutional demand for local foods. Restaurants provide a channel for local food to reach consumers in this context. After all, restaurants like Chez Panisse and Chefs like Alice Waters contributed significantly to the current trend towards local food purchases. While small gourmet restaurants might be more inclined to purchase local foods, larger restaurants might be interested as well if barriers to increasing the prevalence of local sourcing—inadequate availability, inconvenience, and lack of knowledge about where to purchase local food or what is available locally—can be effectively addressed. Availability of local ingredients through regular food distributors may be an important consideration here. In Alabama, where 51 percent of restaurants reported sourcing local ingredients, 70 percent of those purchased locally obtained food through their distributors, while about half bought from farmers markets and 40 percent bought directly from farmers (Reynolds, et al., 2012).
Institutions such as hospitals, colleges, and universities have expressed interest in using locally produced food in food service. In a national survey, roughly six percent of hospitals had a local food buying program and other sustainability practices. Some noted that the programs were instituted in response to the American Dietetic Association’s statement on sustainability (Huang, et al., 2011). Additionally, non-profit groups, such as Health Care Without Harm, encourage hospitals to source local food to support the environment and the health of patients and staff (USDA, 2015).

School districts may contribute most significantly to the demand for local food. The Farm to School Program established by the Healthy Hunger-free Kids Act of 2010 encourages districts to procure local foods. More than 4 in 10 public school districts surveyed by the ERS reported participating in farm to school activities during the 2011-2012 and 2012-13 school years. Of these districts, 83 percent served at least some local food in school meals during the 2011-2012 school year. Figure 17 summarizes distribution channels for locally procured foods (USDA ERS, 2015).

**FIGURE 17: LOCAL FOOD SOURCES FOR SCHOOL DISTRICTS PARTICIPATING IN FARM TO SCHOOL**

Other Farm to School activities included the promotion of local foods through themed or branded promotions such as Harvest of the Month (42 percent), taste tests of local foods (38 percent), edible school gardens (31 percent), and field trips to farms (30 percent) (USDA, 2015). In California, California Thursdays, a collaboration between the Center for Ecoliteracy and a network of public-school districts further encourages serving healthy, freshly prepared school meals from California. The network includes 71 public school districts across the state with more than 2,900 schools, 1.85 million students, and 11,600 nutrition service staff. Collectively, districts in the Network serve over 309 million school meals each year. In addition, they provide recipes and other educational material which further stimulates demand at home (Center for Ecoliteracy, 2017).
In general, the top food categories sourced locally were fruits and vegetables, cited by over three quarters of farm to school districts. Milk (37 percent), baked goods (22 percent), and other types of dairy products (18 percent) were also among the top food categories sourced locally. Nearly two-thirds of school districts that participate in farm to school activities purchase local foods through a distributor. This might be an indication that existing distributors are increasingly able to make local foods available to districts interested in providing them in school meals. About 4 in 10 districts that had farm to school activities (44 percent) obtained food directly from producers, on the other hand (USDA, 2015). Without more precise specifications of local foods and actual procurement data, it is hard to say what the current demand for local foods is in this sector, and what role cost considerations in these purchases play. It is unlikely that schools and institutions are willing to pay price premiums for local produce or locally sourced ingredients if they cannot communicate this added value to their consumers and solicit direct or indirect additional payments.

Additional Project Data

Building on these general findings, this study further assesses the current landscape of food production and the potential demand for local foods with a special emphasis on identifying needs for additional support in Solano County. Our additional data collected and described here includes disaggregated data on individual farms provided by the county. We further conducted surveys targeting small and medium size farmers, as well as in-person interviews and a focus group meeting to better understand their production methods, DTC sales, and overall challenges in accessing local markets. A collaboration with the Sacramento Natural Foods Co-op further gives us access to purchase scanner data that allows us to look at the market potential for value-added locally produced foods such as preserves and baked goods. While this food coop is not located in the county, our results can provide an upper bound for the interest and willingness to pay of consumers in urban centers in Solano County, or highlight additional retail opportunities outside the county. It further can inform the development of a co-op in Solano County. Finally, following our original vision included in our proposal, we conducted an order and food delivery pilot in Solano County to collect detailed cost data and receive feedback from interested consumers within the county.

Interest and Need Assessment of Small Farmers in Solano County

A sustainable local food system starts with an assessment of the foods grown and produced in Solano County. Painting a more complete picture of interest and potential participation of local farmers in the local economy is the primary focus of our data collection. While we already provided an overview of aggregated farmer data available for Solano County, here we want to take a closer look at farm production, currently explored distribution channels and needs for additional support. We are primarily focusing on small and medium size farmers in our additional data collection. Solano County has strong agricultural roots as described earlier, and larger operations are more likely to have well established distribution channels and a limited interest in exploring local marketing opportunities.
Disaggregated Certified Producer Certificate and Pesticide Report Data

Solano County provided us with disaggregated farm data from both its pesticide reports and certified producer certificates for 2017 and 2018. The pesticide reports included 401 farms. For each included farm, the pesticide report includes data on the farm’s location and size as well as the commodities produced. We grouped farms into three groups based on the number of acres, with the bottom third of farms being categorized as small, the middle third as medium-scale, and the top third as large. The smallest one third of farms have a median size of only 15 acres, compared to 100 for the medium farms and 1,601 acres for the largest third of farms. Contrary to popular belief that large farms tend to be monocultures, we found that the median number of commodities grown is largest for the largest one third of farms. The median number of crops grown for large farms is 15 compared to only one being the median number for small farms in the county.

<table>
<thead>
<tr>
<th>Table 7: Solano County Farms: Summary Statistics From Pesticide Permit Reports</th>
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<tbody>
<tr>
<td>Farm Stats</td>
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<tr>
<td>Average Farm Size (Acres)</td>
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<tr>
<td>Median Farm Size (Acres)</td>
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<tr>
<td>Avg Number of Commodities Grown</td>
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<td>Median Number of Commodities Grown</td>
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Table 8 details the specific crops grown by farms in each size category. Only four crops produced by small farms are exclusive to small farms, whereas a large number of crops grown by the largest farms are not produced by small and medium farms.

<table>
<thead>
<tr>
<th>Table 8: Type of Crops Grown and Commodities Produced - Pesticide Permit Reports</th>
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<tbody>
<tr>
<td>SMALL (BOTTOM 33%)</td>
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<td>ALFALFA</td>
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<td>ALMOND</td>
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<td>APPLE</td>
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<td>APRICOT</td>
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<tr>
<td>ASPARAGUS SEED</td>
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<tr>
<td>AVOCADO</td>
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<tr>
<td>BLACKBERRY</td>
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<tr>
<td>BOYSENBERRY</td>
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<tr>
<td>BROCCOLI</td>
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<tr>
<td>CABBAGE</td>
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<tr>
<td>CHERRY</td>
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<td>CHRISTMAS TREE</td>
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<td>CITRUS</td>
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<td>CUCUMBER</td>
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<td>FIG</td>
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<tr>
<td>GRAPE</td>
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<td>GRAPE, WINE</td>
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<td>HOPS</td>
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<td>KIWI</td>
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<td>MELON</td>
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<td>N-GRNHS TRANSPL</td>
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<td>N-OUTDR PLANTS</td>
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<td>NECTARINE</td>
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<td>OLIVE</td>
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<tr>
<td>ORANGE</td>
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<td>OT-VINE</td>
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<td>PEACH</td>
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<td>PEPPER FRUITNG</td>
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<td>PEPPER SPICE</td>
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<td>PERSIMMON</td>
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<td>PISTACHIO</td>
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<td>PLUM</td>
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<td>PLUOT</td>
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<td>POMEGRANATE</td>
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<td>PRUNE</td>
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<td>PUMPKIN</td>
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<tr>
<td>RANGELAND</td>
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<tr>
<td>RASPBERRY</td>
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<tr>
<td>STONE FRUIT</td>
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<tr>
<td>STRAWBERRY</td>
</tr>
<tr>
<td>TOMATO</td>
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<tr>
<td>TURF/SOD</td>
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<tr>
<td>VEGETABLE SEED</td>
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<tr>
<td>WALNUT</td>
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<tr>
<td>WATERMELON</td>
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<td>WHEAT</td>
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<tr>
<th>MELON SEED</th>
<th>SQUASH</th>
<th>PEPPER FRUITING</th>
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<tbody>
<tr>
<td>N-GRNHS PLANT</td>
<td>SQUASH, WINTER</td>
<td>PEPPER SPICE</td>
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<tr>
<td>N-OUTDR PLANTS</td>
<td>STONE FRUIT</td>
<td>PEPPER SPICE SD</td>
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<td>NECTARINE</td>
<td>STRAWBERRY</td>
<td>PISTACHIO</td>
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<tr>
<td>OAT</td>
<td>TOMATO</td>
<td>PLUM</td>
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<tr>
<td>OAT FOR/FOD</td>
<td>TURF/SOD</td>
<td>POMEGRANATE</td>
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<tr>
<td>OLIVE</td>
<td>UNCULED NON-AG</td>
<td>POTATO</td>
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<td>PEACH</td>
<td>VEGETABLE</td>
<td>PRUNE</td>
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<td>PEAR</td>
<td>WALNUT</td>
<td>PUMPKIN</td>
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<td>PEAS</td>
<td>WATERMELON</td>
<td>PUMPKIN SEED</td>
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<td>PEPPER FRUIT SD</td>
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<td>RANGELAND</td>
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<td>PEPPER FRUITING</td>
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<td>RECREATION AREA</td>
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<td>PEPPER SPICE</td>
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<td>RESEARCH COMMOD</td>
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<td>PEPPER SPICE SD</td>
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<td>RYEGRAS FOR/FOD</td>
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<td>PISTACHIO</td>
<td></td>
<td>SQUASH</td>
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<td>PLUM</td>
<td></td>
<td>SQUASH SEED</td>
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<tr>
<td>POMEGRANATE</td>
<td></td>
<td>SQUASH, SUMMER</td>
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<tr>
<td>POTATO</td>
<td></td>
<td>SQUASH, WINTER</td>
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<tr>
<td>PRUNE</td>
<td></td>
<td>STRAWBERRY</td>
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31
The 2018 and 2017 certified producer certificates (CPC) provide data for 34 farms certified to sell goods at farmers markets. They include the commodities grown, amount of each commodity grown, harvest season, and the counties in which the farmer is authorized to sell at the farmers market, among other things. The median number of commodities grown per farm in 2018 was 32, much larger than the median number of crops grown by farms included in the pest report. On average, farms who are certified to sell goods at Solano farmers markets are authorized to sell at farmers markets in roughly 4.5 counties. The median output of these farms was 43 tons in 2018.

**TABLE 9: SOLANO COUNTY FARM SIZE AND COMMODITY TYPES**

<table>
<thead>
<tr>
<th>Farm Stats</th>
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</table>
| Average Number of commodities grown per Farm   | 86  
| Median Number of Commodities Grown Per Farm    | 32  
| Average Number of Counties Authorized for sale at Farmers Markets | 4.475  
| Median Number of Counties Authorized for sale at Farmers Markets | 3.5  
| Average output of Farms (includes only those who reported in tons or lbs.) | 8,147 tons  
| Median output of Farms (includes only those who reported in tons or lbs.) | 43 tons  

Farmer Interviews and Additionally Collected Survey Data

We further reached out to small and medium size farmers in the county directly to ask them to participate in our survey of famers. Our list compiled with the help of the Solano County Agriculture Department, as well as all other sources available, included 90 farms.

Farmer Surveys

In order to collect more detailed farm information and calibrate interest in participation, we developed a detailed survey. We decided to conduct these surveys in person based on the experiences of the county and other researchers and expected relatively low response rates of surveying farmers electronically and via mail, especially on the heels of already established surveys conducted by the U.S. Census and the county. These person-to-person contacts allowed us to explain the goal of our project and establish relationships with farmers establishing initial trust.
In order to collect more detailed farm information and calibrate interest in participation, we developed a detailed survey. We decided to conduct these surveys in person based on the experiences of the county and other researchers and expected relatively low response rates of surveying farmers electronically and via mail, especially on the heels of already established surveys conducted by the U.S. Census and the county. These person-to-person contacts allowed us to explain the goal of our project and establish relationships with farmers establishing initial trust. We needed this opportunity to ensure that farmers were willing to provide us with detailed data regarding their operations. The survey was designed to gather information on production methods, crops produced, sales, revenue, DTC sales, marketing practices, and any challenges faced by the farmers getting their products to market.

**FIGURE 18: FARM SIZE**

We were able to contact 60 small and medium size farmers in Solano County based on farm addresses. After an initial contact, we visited farmers at their farms. We were able to complete 14 surveys during interviews but had informative conversations with several more farmers we contacted. Here, we will only present aggregate results to protect the identity and privacy of the farmers that provided information to us.

Twelve of the fourteen farmers responding to our survey questions considered themselves small farmers. Only one of the farms was larger than 200 acres, with the largest farm surveyed being 3,700 acres. The farmers had a range of experience, with five having fewer than ten years of experience and six having twenty or more years of experience farming.

The majority of the farmers interviewed (64 percent) own their farms and do not lease their land under an easement. The legal structure of 80 percent of the farms is single ownership. Nearly 30 percent of the farmers have employment outside of their farms, and a majority of the farmers employ people to help on the farm either part of the year or full time.

In terms of production practices, nearly two-thirds of the farmers irrigate their cropland. While many declined to respond as to the source of their water, 43 percent rely on surface water while 21 percent use groundwater. Those who do not have wells have water provided by the Solano Irrigation District (SID).
One-fifth of the farms use renewable energy to power their farms with a mix of wind and solar. Half of the farms completely follow organic practices, with another 30 percent following some organic practices. Despite this, only 36 percent are certified organic.

Nearly all of the farmers surveyed (86 percent) sell their products through DTC channels. These include CSAs (21 percent) in the greater Sacramento and Bay Area Regions, roadside stands (21 percent), farmers markets (43 percent), you-pick operations (7 percent), and on-farm stores (36 percent). Those who sell at farmers markets do so at markets from San Francisco to Sacramento and everywhere in between. Much of the DTC activity takes place in the spring and summer.
Several farmers declined or were unable to provide revenue and expense figures. Of those who did, four had annual revenues less than or equal to $50,000, while only one had revenue exceeding $200,000. Expenses largely mirrored revenue, with three farms having annual expenses equal to or greater than revenue in 2017.

**FIGURE 21: 2017 FARM EXPENSES**

The farmers we surveyed face a number of challenges, many of which relate to marketing their products and getting them to market. Farmers markets provide an opportune way to connect with customers, but fees are often prohibitive. Driving traffic to farm stands and other self-run shops is difficult. While several of the farmers interviewed previously made use of Solano Grown’s website to sell their goods, selling via their own websites is difficult and expensive. Even when farmers are able get their goods to consumers, they face difficulty with pricing. Often, consumers do not value the goods at prices that are profitable to farmers, thinking that they should be getting a low price by purchasing directly from the farmers. Farmers also face longer term challenges like climate change and uncertainty about consumers changing preferences. These factors make it difficult to plan investments in equipment and new crops or animals. Even when farmers are able get their goods to consumers, they face difficulty with pricing. Often, consumers do not value the goods at prices that are profitable to farmers, thinking that they should be getting a low price by purchasing directly from the farmers. Farmers also face longer term challenges like climate change and uncertainty about consumers changing preferences. These factors make it difficult to plan investments in equipment and new crops or animals.

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18 Solano Grown was a non-profit organizing operating an online marketplace in Solano County for small farms and business. It includes a weekly pick-up point located at the Solano Community College in Fairfield and will be discussed in more detail at a later point of this study.
While some farmers we surveyed followed organic practices, they were not certified accordingly. Farmers noted that certification is both expensive and time consuming. Additionally, many failed to certify because their customers do not care whether or not they are certified. Since they are small operations selling locally, they have opportunities to directly communicate with their customers about their production methods that larger farms selling outside the county may not.

**Informal Interviews**

While some farmers declined to be interviewed formally, here we are summarizing what these farms shared despite declining to participate in the survey.

These farmers fell into two groups:

1. Farmers who were suspicious about the project and the data collection. Two farmers declined to be interviewed because they felt they were already required to submit too much information “to the government”. Both cited the “excessive data collection” associated with the Agricultural Census (they just finished the latest round of surveys), annual County Crop report, and the data Solano County requires for various permits (e.g. certified producer).
2. Farmers who felt that they were not interested in this project. Most of these farmers already had well-established relationships and access to markets, although not necessarily local markets. One of them was a large-scale rancher who sells lamb to a local high-end meat retailer; the second provided stone fruits to high-end restaurants in Napa and San Francisco. Both farmers were at capacity and expressed an opinion that Solano County, being the poorest of the nine Bay Area counties, would not be able to match the premium pricing they currently get through their distribution channels.

**Farmer Focus Group Meeting**

On October 18, 2018, Sustainable Solano organized a meeting at Be Love Farm to update Solano farmers on our progress to date on a local food system, gauge interest in connecting farmers to institutions, and collect feedback from them on how to strengthen the agricultural infrastructure in Solano County so they can successfully participate in a local food system. The meeting was open to all Solano County farmers, but we reached out to the farmers that answered our survey to ensure they could come. 12 farmers attended and shared the following challenges/issues (which our USDA working team also found, from interviews with farmers over the summer):

1. Farmers need more resources for marketing to local customers/communities,
2. Logistics and distribution of food products is a challenge, and
3. Public awareness and education about local food production in surrounding communities is very weak.

Farmers further felt it would be useful to have a virtual platform/app or other system so that they could know each other’s inventory and offered goods, with the purpose of supplementing each other’s CSA boxes, farm stands, etc.

The meeting included a presentation by Dru Rivers of Full Belly Farm. She discussed the history of Capay Valley, how Capay Valley Farm Shop (currently structured as an S Corp) started, and how it now functions to support farmers. Capay Valley Farm Shop takes a 15 percent margin on sales to support the staff and
operations; in return, they offer refrigeration for storage, a truck for rent, and other services for farmers. Relationships with customers are very important and sometimes are the cause of the clients purchasing higher priced goods from Capay Valley instead of from a larger distributor.

Christina Oatfield from the Sustainable Economies Law Center also gave a short presentation during which she explained differences between various legal structures. This was very informative, especially for farmers who are interested in exploring forming a co-op.

When asked about selling to institutions (restaurants, hospitals, etc.), four farmers expressed interest. We are currently exploring getting local foods into the guest/staff cafeteria at Kaiser Permanente in Vallejo.

The farmers also agreed that a previously-established brand, Solano Grown could be used to reintroduce local production and serve as an umbrella brand for their farms and products.

Additional Information Shared by Select Farms during Follow-up Interviews

In order to gain further insight into existing distribution channels currently utilized by farms in Solano County, we conducted informal follow-up interviews with Eatwell, Terra Firma, Solano Mushroom Farm, and the Food Bank of Contra Costa and Solano Counties.

Eatwell Farm in Dixon has one of the most successful Solano-based CSA programs. They distribute between 450-550 CSA boxes total per week, along with some wholesale business. However, a large share of their produce is sold outside of County lines. Once per week, they take one truck into San Francisco for restaurant deliveries and distribution to Good Eggs. For CSA deliveries they take trucks out on five routes: two trucks on Wednesdays (one to San Francisco, the other to Davis, Sacramento and down the East Bay), two trucks on Thursdays (again, Sacramento and San Francisco), and one truck on Saturdays, which delivers to the Ferry Building in San Francisco.

Terra Firma Farms is another larger operation based in Winters, CA, but they also utilize farmland in Solano County. Terra Firma distributes CSA boxes to consumers and also sells to restaurants and distributors. Deliveries take place five days a week with occasional deliveries on Sundays. They have two trucks which traverse roughly the same routes as Eatwell (Sacramento and Davis on one side, as well as the East Bay and San Francisco). Their capacity is greater, and they deliver to more restaurants, retailers, and wholesalers. They require a $150 minimum order from a restaurant or retailer for delivery and CSA deliveries happen three days a week, with the biggest concentration on Wednesday, when two trucks deliver to a total of 30 different drop points in the East Bay, North Bay, and San Francisco.

Solano Mushroom Farm is based in Vacaville, CA and sells through farmers markets; however, all markets in which they participate are outside Solano County. The owner has one large van; she meets her workers at a pre-determined location, off-loads products into each worker’s own personal vehicle, and then everyone branches out to respective farmers markets. One vehicle per market is used for transportation. Their market locations are Berkeley (Tuesdays, Saturdays), San Rafael (Thursdays, Sundays), Pleasanton, Oakland and Davis (all on Saturdays), and Sacramento (Sundays).

The Food Bank of Contra Costa and Solano generally get food from farmer donations, via the CA Association of Food Bank system, and the Feeding America system. If a farmer in the area had excess tonnage, they could try to work out transport via a third-party transport agreement, but these options are underutilized at the moment. None of these deliveries or distribution channels could generate
additional income for farmers as they would be considered a donation. Perishability does play a major role in what they could accept as they do not always have the capacity to hold or store products. They run two warehouses, one in Concord, CA (Contra Costa County), and the other in Fairfield (Solano County). The Concord facility has little storage, and food moves through it quickly. Food travels North through Solano, then goes back. The Fairfield location is used as a location for dispatch, and also overflow. The Food Bank is currently at capacity with both trucks and floor space at warehouses for storage, and they are looking for more trucks and space.

They might be able to serve as an additional distribution channel for local produce and products if they would know which farmers are interested and connect farmers with one of their existing agencies that they work with. A possibility especially for food waste reduction is the Grocery Recovery Program.

The primary function of this program is to increase food distribution directly to agencies, keeping the carbon footprint low and eliminating the middle food bank warehouse. Here, there is a possibility to supplement the current model with smaller transportation businesses that would transport hundreds of pounds of product via direct connection to the end user. The Food Bank cannot operate in that space due to high volumes. A current example in Contra Costa, White Pony Express, with the mission “to help eliminate hunger and poverty in Contra Costa County by delivering the abundance all around us to those in need” might serve as an example. Through transport of surplus food from grocers, retailers, restaurants, etc. to agencies, they reach underserved populations directly. White Pony Express relies on hundreds of volunteers to accomplish this mission.

The Food Bank furthermore started a mapping project five years ago. Food Forest maps where wild trees, bushes, etc. (often on abandoned properties) are found and products can be gleaned. While this produce couldn’t go to institutional customers due to regulations and requirements, gleaning could provide additional local produce to underserved communities.

A Pilot Study or Meal Subscription Experiment

To more directly address the feasibility of the proposed food centers, Cultivate Community Food Co-op and Sustainable Solano conducted a pilot program between August 13 and September 18, 2018. This program was supported by Solano Public Health. Locally-grown produce and regionally-sourced meat, eggs and fish were used to prepare locally-cooked meals for consumers in the Benicia/Vallejo area. Consumers were also able to purchase produce directly from the participating farms. The program was set up as a subscription model that home delivered orders for six weeks.

The primary goal of this pilot was a detailed data collection regarding operating cost of a food center or network. This collected data provides insights into the opportunities and challenges that exist in providing locally produced and processed foods to a larger segment of Solano County’s consumers as envisioned in the project proposal.
Two farmers and one chef participated in the pilot. Meal options and food items and prices were posted online using an already-established Co-op website.\textsuperscript{19} Co-op members were able to purchase items and have them delivered to their homes once a week free of charge.

In addition to the quantitative data collected throughout, consumer surveys provided in-depth information on consumer sentiment and valuation of specific aspects of the offered service. Cultivate Community Food Co-op also sent surveys to those Co-op members who chose not to participate to gather insights into their reasons not to participate. The data collected can be broken into 3 categories:

- Production data (including food preparation data)
- Additional Logistics
- Consumer data

\textbf{Producer Data}

The farmers participating in the food network offered a total of 64 distinct items for sale to Co-op consumers and were able to fulfill 99.6 percent of all orders placed. During the pilot, volunteer labor and the commercial kitchen were used to reduce costs to Co-op consumers. The estimated costs for these services are $0.55 per order for labor, $0.15 per order for labels, and 0.15 to $2 per order for packaging. With an average order value of $33.71, this would have added an average of 2.4 to 8.3 percent to the cost of each order.

The labor involved on the farmers’ side to produce and package the goods sold was not tracked as part of this pilot. However, volunteer IT labor needed to set up and administer the online store to display the items the farmers offered for sale amounted to 32 hours total for the project. This does not include any time to develop and install the online store as an existing store was utilized.

\textbf{Food Preparation Data}

A total of 96 meals were prepared, sold, and delivered to consumers’ homes as part of the 6-week effort. The cost of each meal ranged from $11.33 to $15.45 with price varying depending on the cost of ingredients. The average cost per meal was $13.94. Each week one vegetarian and one meat entrée were offered along with side dishes and salads.

The chefs prepared the meals in the Dan Foley Cultural Center commercial kitchen located in Vallejo. The facility was rented for 16 hours per week for six weeks. The chefs donated pans, utensils, and other equipment needed for meal preparation as well as most of the condiments and minor ingredients. The rest of the food was sourced locally from organic farmers whenever possible.

A complete breakout of the cost and labor details for each week of the project is attached in Appendix C. The totals for each category of expenditure for the entire effort are:

- Kitchen rental (including utilities) and labor - $4,224.00
- Labor - $2,883.26
- Equipment purchases (packaging and cleaning supplies, storage) - $424.04

\textsuperscript{19} Please see \url{http://www.cultivatecommunityfood.coop/oscommerce-2.3.3/catalog/} for further detail.
Meal ingredient purchases - $1,265.44

Additional Logistics

The pilot required transport of bulk produce from the farms to a central kitchen (inbound route) twice per week followed by transport of individual consumer orders from the central kitchen to the consumers’ residences once per week (outbound route). A professional driver provided the van and fuel needed for the inbound route and volunteer drivers staffed the outbound route using their own vehicles. Volunteers were also utilized to break the bulk orders into individual consumer orders at the commercial kitchen.

The inbound route logged a total of 926 miles of travel throughout the six weeks of the food network trial. The route logged 19.68 hours of travel time along with 6.29 hours of loading and unloading time. The cost of drivers, vehicles, insurance, and fuel averaged $46.21 per hour. Cars used an 85 percent ethanol fuel blend to lower the carbon footprint and support a market for America’s farmers.

Notably, vehicle capacity was underutilized for all inbound trips. Total capacity of the vehicle was 57.7 cubic feet, of which 10 cubic feet was chilled capacity for perishable goods. Volumes transported ranged from 2 cubic feet per trip to 11 cubic feet with a mean of 6 cubic feet. Chilled capacity utilization ranged from 15 percent to 100 percent each trip with overall capacity utilization ranging from 4 to 19 percent.

During this pilot, non-recycled packaging was used for inbound transport. These included nine cardboard 12-count egg cartons, two 375 milliliter glass bottles, one four-ounce glass jar, two eight-ounce glass jars, four 8”x12” paper bags, 108 9”x12” plastic bags, 16 plastic pint produce baskets, two plastic sandwich bags, three plastic quart jugs, 22 produce twist ties, and seven 20”x7”x11.5” waxed cardboard boxes. In addition to the non-recycled packaging, nine waxed cardboard boxes were used and recycled. These were the only containers that were allowed to be reused for food transport.

The packaging used for the inbound leg was reutilized for transport of the goods to the end consumer. Some additional packaging was needed for the outbound leg, including 98 large biodegradable clamshell containers, 78 small biodegradable clamshell containers, eight 9”x12” plastic bags, 26 13”x16” paper grocery bags, eight 9.5”x13” paper grocery bags, and 230 labels.

For the outbound portion of the logistics network, drivers logged 139.4 miles. Driving time to deliver purchased items from the kitchen to individual consumers homes amounted to 25.87 hours with an additional 12.53 hours spend packaging, labeling, loading, and unloading orders. Chilled transport capacity for vehicles used for deliveries totaled 15 cubic feet. Prepared meals were transported chilled, so utilization for the outbound leg was greater than for the inbound portion. Chilled capacity utilization ranged from 45 percent to 100 percent, with a mean of 78 percent. Un-chilled volumes transported were minimal and ranged from 1 to 10 cubic feet per trip.

For the outbound portion of the logistics network, IT labor hours were needed to prepare delivery route maps for the drivers, to generate packaging instructions for the kitchen volunteers preparing the final consumer orders for delivery, and to post meal descriptions and photos on the online store to make them available for purchase by the consumers. Total volunteer IT labor for these tasks amounted to 18 hours.
Consumer Data

To identify interested consumers, staff sent a solicitation e-mail to 84 Cultivate Community Food Co-op households on July 7th, 2018. Of these, 30 households responded to express interest. The estimated capacity for the project was 25 households, but all 30 households were given the opportunity to participate. Seventeen ultimately participated in the project by placing an order via the online store. We saw some fluctuations in the number of orders per week:

- Week 1: 14 households ($664.94 in sales)
- Week 2: 11 households ($442.69 in sales)
- Week 3: 14 households ($519.20 in sales)
- Week 4: 7 households ($248.80 in sales)
- Week 5: 10 households ($308.54 in sales)
- Week 6: 9 households ($293.08 in sales)

A total of 249 order fulfillment transactions were successfully completed where consumers received the item they ordered (or an acceptable substitute) in the quantities they desired. One transaction was not able to be filled due to unavailability of the item ordered. These were orders for 52 different items, resulting in an 81.25 percent ratio of items purchased to items offered. The most popular item based only number of orders placed was Rainbow Chard, based on dollar sales, it was the CSA Family Size Farm Box. A complete list of items sold, quantity sold, and price paid is provided in the table below.

**TABLE 10: FOOD NETWORK PILOT SALES**

<table>
<thead>
<tr>
<th>Item Sold</th>
<th>Price per Unit</th>
<th>Unit of Measure</th>
<th>Number of Units Ordered</th>
<th>Total Price Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaheim Peppers</td>
<td>$6.18</td>
<td>1 Pound</td>
<td>2</td>
<td>$12.36</td>
</tr>
<tr>
<td>Basil 1 Bunch</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>6</td>
<td>$15.48</td>
</tr>
<tr>
<td>Bell Peppers</td>
<td>$5.15</td>
<td>1 Pound</td>
<td>9</td>
<td>$46.35</td>
</tr>
<tr>
<td>CA Bay Leaves</td>
<td>$8.24</td>
<td>1 Ounce</td>
<td>2</td>
<td>$16.48</td>
</tr>
<tr>
<td>Cabbage, 1 head Green Savoy &quot;Famosa&quot;</td>
<td>$2.58</td>
<td>1 Head</td>
<td>3</td>
<td>$7.74</td>
</tr>
<tr>
<td>Chard, 1 bunch Rainbow &quot;Bright Lights&quot;</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>15</td>
<td>$38.70</td>
</tr>
<tr>
<td>Chicken Stock Concentrate - whole bird stock</td>
<td>$7.21</td>
<td>1 Quart</td>
<td>3</td>
<td>$21.63</td>
</tr>
<tr>
<td>Crook Neck Summer Squash</td>
<td>$2.06</td>
<td>1 Pound</td>
<td>4</td>
<td>$8.24</td>
</tr>
<tr>
<td>Crook Neck Summer Squash</td>
<td>$4.12</td>
<td>1 Pound</td>
<td>2</td>
<td>$8.24</td>
</tr>
<tr>
<td>CSA Family Size Farm Box</td>
<td>$31.93</td>
<td>Each</td>
<td>2</td>
<td>$63.86</td>
</tr>
<tr>
<td>CSA Farm Box for 2</td>
<td>$24.72</td>
<td>Each</td>
<td>2</td>
<td>$49.44</td>
</tr>
<tr>
<td>Culinary Sage 1 Bunch</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>1</td>
<td>$2.58</td>
</tr>
<tr>
<td>Curly Leaf Kale</td>
<td>$3.09</td>
<td>1 Bunch</td>
<td>4</td>
<td>$12.36</td>
</tr>
<tr>
<td>Eggplant, 1 lb. &quot;Black Bell&quot;</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>2</td>
<td>$6.18</td>
</tr>
<tr>
<td>Fan Fair Cucumbers</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>11</td>
<td>$33.99</td>
</tr>
<tr>
<td>Item</td>
<td>Price</td>
<td>Quantity</td>
<td>Unit</td>
<td>Total</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>Feher Ozon Paprika</td>
<td>$6.18</td>
<td>1 Pound</td>
<td>2</td>
<td>$12.36</td>
</tr>
<tr>
<td>Garlic</td>
<td>$3.09</td>
<td>1 Bunch</td>
<td>3</td>
<td>$9.27</td>
</tr>
<tr>
<td>Garlic Chives &quot;Nira&quot; 1 Bunch</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>6</td>
<td>$15.48</td>
</tr>
<tr>
<td>Garlic Salt 4 oz Jar</td>
<td>$8.24</td>
<td>4 Ounces</td>
<td>1</td>
<td>$8.24</td>
</tr>
<tr>
<td>Green Zucchini</td>
<td>$2.06</td>
<td>1 Pound</td>
<td>8</td>
<td>$16.48</td>
</tr>
<tr>
<td>Green Zucchini</td>
<td>$4.12</td>
<td>1 Pound</td>
<td>1</td>
<td>$4.12</td>
</tr>
<tr>
<td>Indigo Apple Tomatoes</td>
<td>$4.12</td>
<td>1 Pound</td>
<td>10</td>
<td>$41.20</td>
</tr>
<tr>
<td>Jalapeno Jedi Peppers</td>
<td>$6.18</td>
<td>1 Pound</td>
<td>1</td>
<td>$6.18</td>
</tr>
<tr>
<td>Jalapeno Jelly (mild) 8 oz Jar</td>
<td>$8.24</td>
<td>8 Ounces</td>
<td>2</td>
<td>$16.48</td>
</tr>
<tr>
<td>Japanese Eggplant</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>10</td>
<td>$30.90</td>
</tr>
<tr>
<td>Large Pasture-raised Eggs</td>
<td>$10.30</td>
<td>1 Dozen</td>
<td>9</td>
<td>$92.70</td>
</tr>
<tr>
<td>Lemon Cucumbers</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>5</td>
<td>$15.45</td>
</tr>
<tr>
<td>Listada Striped Italian Eggplant</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>1</td>
<td>$3.09</td>
</tr>
<tr>
<td>Lunchbox Peppers 1 lb.</td>
<td>$6.18</td>
<td>1 Pound</td>
<td>4</td>
<td>$24.72</td>
</tr>
<tr>
<td>Marketmore Cucumbers</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>2</td>
<td>$6.18</td>
</tr>
<tr>
<td>Millionaire Japanese Eggplant</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>6</td>
<td>$18.54</td>
</tr>
<tr>
<td>Parsley, 1 Bunch Flat Leaf &quot;Giant of Italy&quot;</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>9</td>
<td>$23.22</td>
</tr>
<tr>
<td>Patty Pan Summer Squash</td>
<td>$2.06</td>
<td>1 Pound</td>
<td>2</td>
<td>$4.12</td>
</tr>
<tr>
<td>Potatoes, 1 lb. Desiree</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>5</td>
<td>$15.45</td>
</tr>
<tr>
<td>Potatoes, 1 lb. German Butterball</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>3</td>
<td>$9.27</td>
</tr>
<tr>
<td>Potatoes, 10 lb. German Butterball</td>
<td>$28.84</td>
<td>10 Pounds</td>
<td>2</td>
<td>$57.68</td>
</tr>
<tr>
<td>Pure Arbequina Olive Oil 375 ml Bottle</td>
<td>$18.54</td>
<td>375 Milliliters</td>
<td>1</td>
<td>$18.54</td>
</tr>
<tr>
<td>Red Spring Onions 1 Bunch</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>7</td>
<td>$18.06</td>
</tr>
<tr>
<td>Rosa Blanca Italian Eggplant</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>2</td>
<td>$6.18</td>
</tr>
<tr>
<td>Round de Nice Summer Squash</td>
<td>$2.06</td>
<td>1 Pound</td>
<td>4</td>
<td>$8.24</td>
</tr>
<tr>
<td>Shallots</td>
<td>$6.18</td>
<td>1 Pound</td>
<td>1</td>
<td>$6.18</td>
</tr>
<tr>
<td>Shishido Peppers</td>
<td>$5.15</td>
<td>1 Pound</td>
<td>3</td>
<td>$15.45</td>
</tr>
<tr>
<td>Su Yong Long Cucumbers</td>
<td>$3.09</td>
<td>1 Pound</td>
<td>1</td>
<td>$3.09</td>
</tr>
<tr>
<td>Summer Squash 1 lb. Zucchini Mix</td>
<td>$2.58</td>
<td>1 Pound</td>
<td>1</td>
<td>$2.58</td>
</tr>
<tr>
<td>Sweet Cherry Peppers</td>
<td>$5.15</td>
<td>1 Pound</td>
<td>6</td>
<td>$30.90</td>
</tr>
<tr>
<td>Swiss Chard</td>
<td>$3.09</td>
<td>1 Bunch</td>
<td>1</td>
<td>$3.09</td>
</tr>
<tr>
<td>Tomatoes, 1 lb. Red Slicer &quot;Estiva&quot;</td>
<td>$3.61</td>
<td>1 Pound</td>
<td>10</td>
<td>$36.10</td>
</tr>
<tr>
<td>Tomatoes, 1 pint Cherry &quot;Indigo Reds&quot;</td>
<td>$4.12</td>
<td>1 Pint</td>
<td>5</td>
<td>$20.60</td>
</tr>
<tr>
<td>Tomatoes, 1 Pint Cherry &quot;Sun Gold&quot;</td>
<td>$4.12</td>
<td>1 Pint</td>
<td>11</td>
<td>$45.32</td>
</tr>
<tr>
<td>White Spring Onions, 1 bunch</td>
<td>$2.58</td>
<td>1 Bunch</td>
<td>2</td>
<td>$5.16</td>
</tr>
<tr>
<td>White Wine Vinegar 375 ml Bottle</td>
<td>$5.15</td>
<td>375 Milliliters</td>
<td>1</td>
<td>$5.15</td>
</tr>
<tr>
<td>Yellow Onions 1 lb.</td>
<td>$2.58</td>
<td>1 Pound</td>
<td>9</td>
<td>$23.22</td>
</tr>
</tbody>
</table>
To encourage participation from low income members of the Co-op, a $10 discount was offered for each prepared meal purchased by a low-income family. Three of the 30 households interested in participating requested this discount, and 2 purchased a total of 12 meals utilizing the discount. A total of 12 discounted meals were sold.

After completion of the food network trial, two surveys were sent to the consumers to solicit their feedback. The 67 households that did not purchase any items were asked their reasons for not participating and the 17 households that did participate were asked to give input on what went well and what they would like to see improved in any future food network. 8 non-participant households responded to the survey and 10 of the participant households responded. A summary of their responses is shown in Appendices D and E.

**Discussion of Findings**

While the suppliers utilized cash subsidies and volunteer hours, the prices paid by the consumers were set by the farmers and chef such that all additional costs were covered. The data collected mainly tries to provide insights into whether the supply of products offered was adequate to satisfy consumer expectations. It further allows us to assess consumer’s attitudes about the pricing and what they think a fair price for the offered services would be.

The high order fulfillment rate indicates that practically all consumer orders were filled, and no supply issues or constraints were experienced. Suppliers also seemed to forecast demand well and offer appealing options as more than four fifths of the items offered were sold. One customer did comment that they would welcome more variety of produce, however. This pilot was intentionally executed in late summer when farmers were harvesting the largest variety of produce for the year. Comments like these might become more prominent if this pilot would be implemented as a year around operation, suggesting the need for coordination and communication between farmers, chefs, and consumers to implement successful offerings during the winter month, for instance. Additionally, half of the respondents to the non-participant survey indicated they chose not to purchase items because they enjoy gardening and cooking and did not have a need to purchase fresh produce or prepared meals. Extending offerings to include items attractive to this group (e.g., nursery stock for gardeners, meats, dairy and other processed items, such as cooking oils and canned sauce) could motivate these consumers to join any future food networks.

Limited consumer demand seemed to be the main constraint to enlarging the operation and sales volume. There was capacity on the supply and logistics sides to serve 25 households, but only 17 households chose to participate and, of those, only 7 consistently placed orders each week. Another 6 placed orders most weeks. Four common factors that influence consumer demand are consumer awareness, convenience, quality, and cost. The data collected indicates consumer awareness was definitely a factor limiting consumer involvement. More than a third of the respondents (non-participating households) indicated they did not know they could participate. Marketing to Co-op households was minimal throughout with less than 10 hours expended to promote this opportunity. Future efforts will need to allocate more
resources to communication, marketing, and promotional efforts. Multi-language communications might be helpful as well, to encourage participation from non-English speaking households. Yet, consumer awareness was not the only factor restricting participation. 30 households responded to the initial solicitation e-mail expressing interest but only 17 households actually participated. Convenience might have been another factor affecting participation. While the food network pilot was designed to be convenient, offering online sales and free home delivery, some households chose not to participate due to convenience issues. Two households further reported, they chose not to participate because they did not have the means or inclination to shop online. Two more cited time constraints as the reason for not participating. This likely refers to time needed to use the online store and to communicate with food delivery staff, which seemed sufficient to discourage some participants. Here, better communication and enhanced design of the online store could help. A more sophisticated delivery system could also be implemented to include not only home delivery but also delivery to work sites and commuter hubs. A concierge service could be offered to place orders for those who cannot or do not feel comfortable shopping online.

Quality of the food items offered or bought does not appear to have played a major role in discouraging consumer participation in this study. Most participants specifically expressed their satisfaction with the quality of both the produce and prepared meals. Of those that offered suggestions for quality improvements, none suggested that the issues were sufficient to discourage them from continuing to participate. If quality played a role at all, it was in discouraging those with specific dietary needs from purchasing items. One non-participant cited this as their reason for not making purchases, and one participant made the point that he or she would have purchased more if their dietary needs could have been met.

Finally, cost perceptions might be hardest factor to address going forward. While none of the non-participants that were surveyed cited prices as a reason for not participating, the majority of participants surveyed felt that prices were too high. On average, consumers that made purchases felt the meal prices were 20 percent too high and produce prices were 10 percent too high. If cash subsidies utilized by the food network were eliminated and 100 percent of the logistics and food preparation costs were passed on to the consumer, the desired versus actual price discrepancy from a consumer perspective would have been considerably higher. If volunteer hours and equipment were eliminated as well, the discrepancy would be higher still.

The data allows us to break out the costs by category to gain some insight into where opportunities may lie to better align prices with consumer expectations. The cost breakouts per category, in order of decreasing cost, for the entire six-week effort are:

1. Kitchen rental costs - $4,224.00
2. Labor cost of prepared meals - $2,883.26
3. Kitchen equipment rental costs (if not donated) - $1,800.00
4. Ingredients for prepared meals - $1,265.44
5. Inbound logistics costs - $1,200.00
6. Home delivery costs (if volunteers were not used) $1,200.00
7. Farmer production costs + markup - $1,103.93
8. Insurance costs - $1,093.00
9. Cleaning supplies and non-reusable packaging (estimated) - $300.00
10. IT labor (if volunteers were not used) - $500.00
11. Marketing and communication labor (if volunteers were not used) - $140.00
12. Break-bulk labor, packaging, and labeling (if volunteers were not used) - $100.00
13. Banking and credit card fees - $74.32

Items 1, 2, 3, 4, and 8 are costs related solely to the sale of prepared meals. Item 7 is related solely to produce sales. All the other items are shared expenses between prepared meals and produce sales.

Estimated and actual expenses related to prepared meal sales amount to $11,265.70. Actual expenses related to produce sales amount to $1,103.93. Shared expenses amount to $3,514.32. Actual retail sales of prepared meals amounted to $1,299.00 for the entire six weeks and actual retail sales of produce amounted to $1,103.93.

Assuming shared costs are split evenly between prepared meal and produce sales, the sales-to-costs ratio is 1:10 ($1,299 in sales versus ($11,265.70 + $3,514.32/2) in costs) for prepared meals and 1:2.6 ($1,103.93 in sales versus ($1,103.93 + $3,514.32/2) in costs) for produce. If retail prices had been set to match average consumer expectations (i.e. a 20 percent reduction in price for meals and 10 percent reduction in price for produce) the ratios would be 1:12.5 for meals and 1:2.75 for produce.

The gap between sales and costs was much less for produce than for prepared meals, at least as they were presented for the purposes of this pilot. Prepared meal sales, however, stand to benefit more from economies of scale than produce, because kitchen rental, equipment rental, and insurance costs all stay constant regardless of the number of meals produced. Also, prepared meal sales were the second most popular feature of the pilot (after home delivery) as deduced from consumer sentiment survey results.

The results of the food network data collection effort suggest that it will be easier to narrow the gap between cost and price for local foods if prepared meals are not part of the product mix offered in the first phase of any future effort to implement a permanent local food network. Once a system is in place that allows sourcing local produce to supply wholesale demand, and consumer awareness for locally produced foods increased, additional value-added products (such as prepared meals) could be marketed once more and might be more profitable at that time. Indeed, most of the costs incurred during the six-week study were due to efforts of integrating meal preparation into the supply chain. Additional costs were incurred by attempting to offer home delivery as well.20

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20 A complete report was compiled by Cultivate Community Food Co-op and is available upon request from Sustainable Solano.
Potential Retail Demand for Locally Produced Value-Added Products

Efforts to open a Food Co-op in Solano County are currently in development and described in more detail in a later section of this report. Many of the farms currently involved in DTC sales that are utilizing existing retailers to promote their products are therefore collaborating with retailers outside the county lines with a focus on Sacramento and the greater Bay Area. We therefore also report the results of an analysis of consumer demand for value-added local food products conducted in partnership with the Sacramento Natural Foods Co-op here. It allows us to gain a better understanding of the potential demand and willingness to pay (WTP) for local value-added products once a co-op is fully in operation in one of the urban centers in Solano County. These results could further point to marketing opportunities for Solano Grown and produced products in nearby urban centers with currently higher demand and willingness to pay as an interim solution that could provide an additional income stream to small and medium size farms in Solano. The co-op provided us with access to their sales data, allowing us to estimate the willingness to pay for products that are locally sourced. Building primarily on our data analysis of cottage food operators, we requested used weekly sales data for two product categories currently listed under the cottage food regulations: baked goods and preserves. Our data spans the period from August 3, 2016 through August 22, 2017. For each UPC and week, the data set contains the product category, base price, wholesale cost, quantity sold, and value of the quantity sold. Using the quantity sold and value of quantity sold, we computed the actual or net price (i.e. accounting for any discounts) at which each item was sold. The included products are segmented into a large number of categories, but for the purposes of WTP analysis, we generally distinguished only between the broad categories of baked goods and preserves. The dataset includes a total of 758 baked goods and 94 preserves.

The sales dataset also includes limited information on product attributes. It contains data on the size of each product, the distance from the Co-op at which each product was produced (in miles and based on the supplier’s address) and an identifier that indicates whether the product is certified organic. Using that, we constructed an indicator variable (local100 dummy) to indicate whether a product was produced within 100 miles of the Co-op.

Table 10 shows the quantity sold for local and non-local goods over the year for which we have data. Local goods comprise 72 percent of all baked goods sold, despite making up only 60 percent of baked good products. Approximately 5.2 percent of preserves sold during the period are local, while 3.2 percent of preserve products are local.

**Price Premiums for Local Value-Added Products:**

- Local labeling has a positive effect on the price of preserves
- Local Labeling does not affect the price of baked goods in aggregate but does increase price for some subcategories of baked goods.
TABLE 11: QUANTITIES SOLD (8/3/16-8/22/17)

<table>
<thead>
<tr>
<th></th>
<th>Local</th>
<th>Non-local</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked Goods</td>
<td>372,204</td>
<td>143,188</td>
<td>515,392</td>
</tr>
<tr>
<td>Preserves</td>
<td>1,372</td>
<td>25,020</td>
<td>26,392</td>
</tr>
<tr>
<td>Total</td>
<td>368,275</td>
<td>114,197</td>
<td>541,784</td>
</tr>
</tbody>
</table>

We further surveyed the products available at the Sacramento Natural Foods Co-op directly to collect additional product information (by taking photos of products on the shelves). For the products, we were unable to locate, we conducted Google image searches, resulting in detailed product attribute data for all of the preserves and 603 of the 782 baked-goods products included in the dataset. The attributes are only those specified on the product packaging and do not capture any attributes that are not clearly labeled, (i.e. tortillas do not have dairy-free labels despite not usually containing dairy).

At both the product and store level, products are currently not promoted using a standardized local label. While the Co-op identifies local products in their data, they do not use this information for promotional purposes in these product categories at this point. A small number of products do indicate that they are local on their packaging by displaying the city in which they were produced. We created a local label dummy to identify these products and also included products made in-house and sold in the bakery. Only 22.6 percent of the baked goods (179 products) are labeled that way or sold in the bakery, and two of the preserves are currently labeled as such. This is in contrast to the 451 baked goods products and 3 preserves that would be classified as local according to the Sacramento Food Co-op information based on a 100-mile radius.

For each category, we specified a hedonic pricing model to estimate the marginal value consumers place on specific product characteristics or attributes. Such a model assumes that the price of a given product is a summation of the valuation of its attributes. Sufficient product differentiation with regards to these attributes allows to recover the specific valuation or marginal willingness to pay for each product attribute on average. For both categories, the dependent variable specified in our regressions is price per ounce.21

Willingness to Pay: Preserves

We estimated four model specifications using different combinations of attributes as summarized in Table 11. Model 1 includes only product size and the presence of a local indicators. Model 2 adds indicators for all labels included on at least one preserve product. Models 3 and 4 differ only in that the local label indicator is removed and replaced by the Local100 variable. In all specifications of the hedonic pricing model, the number of ounces (size) is statistically significant and negative. This indicates that there are economies of scale (i.e. price per ounce decreases as the size of the product increases). The local label coefficients are positive and statistically significant in the first two specifications, indicating a positive price premium for preserves with local indicators on their packaging. In the first specification containing the Local100 variable, we find that being produced within 100 miles of the Co-op has a positive and

21 While the size of all preserves in the sample is measured in ounces, the size of baked-good products in the dataset is measured in a variety of units, including ounces, each (i.e., one cookie), count, and pack. For 523 of the baked-good products, the unit of measurement is ounces. We limit the results reported here to the analysis of baked goods to these products.
statistically significant effect on price when controlling for product size. This indicates that these locally produced products are selling at a higher price on average, despite not being specifically promoted as such. This effect disappears when controlling for other labeled product attributes.

### TABLE 12: HEDONIC PRICE MODEL – PRESERVES

<table>
<thead>
<tr>
<th></th>
<th>(1) AvgPrPerUnit</th>
<th>(2) AvgPrPerUnit</th>
<th>(3) AvgPrPerUnit</th>
<th>(4) AvgPrPerUnit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package Size</td>
<td>-0.071***</td>
<td>-0.064***</td>
<td>-0.071***</td>
<td>-0.064***</td>
</tr>
<tr>
<td>Locally Labeled</td>
<td>0.337***</td>
<td>0.158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Added Sugar</td>
<td>0.120**</td>
<td></td>
<td>0.120**</td>
<td></td>
</tr>
<tr>
<td>No High Fructose Corn Syrup</td>
<td>-0.146***</td>
<td></td>
<td>-0.146***</td>
<td></td>
</tr>
<tr>
<td>Fair Trade</td>
<td></td>
<td>0.071***</td>
<td></td>
<td>0.071***</td>
</tr>
<tr>
<td>Gluten Free</td>
<td>0.039</td>
<td>0.039</td>
<td>0.039</td>
<td>0.039</td>
</tr>
<tr>
<td>No Cholesterol</td>
<td>0.012</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegan</td>
<td>-0.033***</td>
<td></td>
<td>-0.033***</td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>0.185***</td>
<td>0.185***</td>
<td>0.185***</td>
<td></td>
</tr>
<tr>
<td>No Artificial Colors or Flavors</td>
<td>-0.276***</td>
<td></td>
<td>-0.434***</td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>-0.017</td>
<td>-0.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMO Free</td>
<td>0.061**</td>
<td>0.061**</td>
<td>0.061**</td>
<td></td>
</tr>
<tr>
<td>Kosher</td>
<td>-0.106**</td>
<td>-0.106**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Palm Oil</td>
<td>0.591***</td>
<td></td>
<td>0.591***</td>
<td></td>
</tr>
<tr>
<td>Local100</td>
<td></td>
<td>0.103***</td>
<td>0.103***</td>
<td>0.158**</td>
</tr>
<tr>
<td>No preservatives</td>
<td>-0.222***</td>
<td>-0.332***</td>
<td>-0.230***</td>
<td>-0.332***</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>3748.000</td>
<td>3748.000</td>
<td>3748.000</td>
<td>3748.000</td>
</tr>
<tr>
<td>F</td>
<td>7350.030</td>
<td>3530.563</td>
<td>11090.372</td>
<td>3530.563</td>
</tr>
<tr>
<td>R²</td>
<td>0.691</td>
<td>0.779</td>
<td>0.683</td>
<td>0.779</td>
</tr>
</tbody>
</table>

Notes: Net price per ounce is the dependent variable
*denotes items produced within 100 miles of the Co-op and not products with a local label. As such, the consumer may not be aware that each of these products is local.
Standardized beta coefficients
* p < 0.05, ** p < 0.01, *** p < 0.001

**Willingness to Pay: Baked Goods**

We follow a similar approach, using the same four model specifications, for the baked good category and once again found that size negatively affects price, indicating economies of scale also exist in baked goods. Baked goods are measured in a variety of units (e.g. ounces, each, etc.), making it difficult to compare price per unit across all products in the category. As such, the regressions in Table 12 rely on data for only baked goods measured in ounces. The presence of local indicators on the package decreases price. Being locally produced reduces price only when the other labels are not included. Controlling for all other labels on baked goods, we find being locally produced does not affect price.
<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locally Labeled</td>
<td>-0.036***</td>
<td>-0.078***</td>
<td>-0.074***</td>
<td>-0.009</td>
</tr>
<tr>
<td>Local100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Added Sugar</td>
<td>0.246***</td>
<td>0.260***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No High Fructose Corn Syrup</td>
<td>0.157***</td>
<td>0.169***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair Trade</td>
<td>0.033*</td>
<td>0.043**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gluten Free</td>
<td>0.191***</td>
<td>0.205***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat free</td>
<td>0.352***</td>
<td>0.350***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paleo</td>
<td>1.005***</td>
<td>1.078***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grain free</td>
<td>0.046**</td>
<td>-0.036*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low or No Fat</td>
<td>-0.081***</td>
<td>-0.072***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Trans Fats</td>
<td>0.181***</td>
<td>0.189***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Cholesterol</td>
<td>-0.172***</td>
<td>-0.176***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Hydrogenated Oils</td>
<td>-0.104***</td>
<td>-0.121***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handmade</td>
<td>0.569***</td>
<td>0.594***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegan</td>
<td>0.021**</td>
<td>0.014*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy Free</td>
<td>-0.083***</td>
<td>-0.074***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Eggs</td>
<td>-0.053***</td>
<td>-0.046***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>-0.025**</td>
<td>-0.041***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Artificial Colors or Flavors</td>
<td>0.105***</td>
<td>0.104***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No preservatives</td>
<td>-0.028**</td>
<td>-0.023**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>-0.028***</td>
<td>-0.015*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Ingredients</td>
<td>0.021***</td>
<td>0.031***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soy free</td>
<td>0.117***</td>
<td>0.103***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMO Free</td>
<td>-0.115***</td>
<td>-0.107***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yeast free</td>
<td>-0.288***</td>
<td>-0.300***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kosher</td>
<td>0.021**</td>
<td>0.025**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Salt</td>
<td>0.416***</td>
<td>0.432***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactose Free</td>
<td>-0.277***</td>
<td>-0.271***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Glycemic</td>
<td>-0.120***</td>
<td>-0.153***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole Grain</td>
<td>0.033***</td>
<td>0.036***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made with Solar Power</td>
<td>-0.194***</td>
<td>-0.170***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Sodium</td>
<td>-0.002</td>
<td>-0.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keto</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Package Size</td>
<td>-0.053***</td>
<td>-0.043***</td>
<td>-0.052***</td>
<td>-0.044***</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.347***</td>
<td>-0.520***</td>
<td>-0.327***</td>
<td>-0.531***</td>
</tr>
</tbody>
</table>

Notes: Net price per ounce is the dependent variable in these regressions. The local label variable indicates that a product indicates that it was made local on the packaging. This can be by labeling the product as locally made or featuring the city in which the product was made on the packaging, for instance. Standardized beta coefficients are reported. Using robust standard errors, *, **, and *** denote statistical significance at the 10, 5 and 1 percent significance level.
We further disaggregated the baked goods into a number of subcategories so that we could include products measured in units other than ounces and to examine if estimated premiums differ across categories. Table 13 summarizes the estimated price premiums for local labeling and production.

**TABLE 14: ESTIMATED PRICE PREMIUMS FOR LOCALLY LABELED AND PRODUCED PRODUCTS**

<table>
<thead>
<tr>
<th></th>
<th>Locally Labeled</th>
<th>Locally Produced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Label Controls</td>
<td>Label Controls</td>
</tr>
<tr>
<td>Preserves</td>
<td>40%***</td>
<td>17%***</td>
</tr>
<tr>
<td>Baked Goods</td>
<td>(4%)***</td>
<td>(8%)***</td>
</tr>
<tr>
<td>Single-Serving Bakery Items</td>
<td>1%***</td>
<td>56%***</td>
</tr>
<tr>
<td>Buns and Pitas</td>
<td>(7%)***</td>
<td>2%</td>
</tr>
<tr>
<td>Tortillas</td>
<td>35%***</td>
<td>13%***</td>
</tr>
<tr>
<td>Bread Loaves</td>
<td>(4%)</td>
<td>0%</td>
</tr>
<tr>
<td>Packaged Cookies</td>
<td>80%***</td>
<td>11%***</td>
</tr>
<tr>
<td>Pies and Cakes</td>
<td>(14%)***</td>
<td>31%</td>
</tr>
</tbody>
</table>

Notes: Using robust standard errors, *, **, and *** denote statistical significance at the 10, 5 and 1 percent significance level. Values in parentheses indicate negative values.

Despite there being negative premiums for the baked goods category in aggregate, there exist positive premiums for both local labels and production in certain subcategories, most notably tortillas.

To summarize our results from this analysis, while we find a stronger potential for marketing local production in the preserves category in aggregate, we do detect a positive price premium for certain subcategories of baked goods that carry a local label. The heterogeneity of premiums in the baked goods category might be due to the fact that other attributes are more important to the consumer in this highly differentiated category, and that some baked goods are produced in house.22

**Existing Business Models, Possible Local Collaborations, and Lessons Already Learned**

In this section, we describe existing and successful businesses with a focus and approach that seems in alignment with this project. In addition to discussing four successfully operating businesses in more detail, we provide additional insights gained from reviewing additional models and summarize two initiatives specific to Solano County and relevant lessons already learned.

**Existing Business Models Reviewed**

While these businesses are not located in the county, these successful operations can provide valuable insights for the further development of a concrete business plan. Table 15 summarizes key characteristics of the reviewed business models, and we discuss each in more detail.

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22 A more detailed analysis is currently under way. Once available, these insights will be published in academic outlets and shared with this project.
# TABLE 15: SUMMARY OF EXISTING BUSINESS MODELS REVIEWED

<table>
<thead>
<tr>
<th>Name</th>
<th>Ceres Community Project</th>
<th>Three Stone Hearth</th>
<th>Capay Valley Farm Shop</th>
<th>Sierra Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Sebastopol, CA</td>
<td>Berkeley, CA</td>
<td>Esparto, CA</td>
<td>Nevada City, CA</td>
</tr>
<tr>
<td><strong>Non-Profit Status</strong></td>
<td>501(c)</td>
<td>For-Profit LLC</td>
<td>For-profit</td>
<td>501(c)</td>
</tr>
<tr>
<td><strong>Year Established</strong></td>
<td>2007</td>
<td>2006</td>
<td>2007</td>
<td>2007</td>
</tr>
<tr>
<td><strong>Revenue (2017)</strong></td>
<td>$2,599,221</td>
<td>NA</td>
<td>NA</td>
<td>$1,032,500</td>
</tr>
<tr>
<td><strong>Top Revenue Sources</strong></td>
<td>Foundations, Individuals, In-Kind, Earned Income, Special Events</td>
<td>NA</td>
<td>NA</td>
<td>Individual and business Donations (65%), Grants (20%), Earned Income (15%)</td>
</tr>
<tr>
<td><strong>2017 Expenses</strong></td>
<td>$2,265,618</td>
<td>NA</td>
<td>NA</td>
<td>$777,500</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td>Provide low-income people with free and low-cost meals prepared by teens</td>
<td>Pre-prepared meals and retail store with homemade goods</td>
<td>Food hub that supplies SF Bay Area Businesses with locally grown food</td>
<td>Educate, inspire, and connect families to fresh, local, seasonal food</td>
</tr>
<tr>
<td><strong>Number of Staff</strong></td>
<td>29</td>
<td>44 (in 2014)</td>
<td>6</td>
<td>21</td>
</tr>
</tbody>
</table>

**Ceres Community Project**

Ceres Community Project was founded in 2007 to “create health for people, communities and the planet through love, healing food and empowering the next generation.” The mission builds on a desire to support individuals dealing with serious illnesses, and providing them with free or low-cost, nutrient-rich prepared meals delivered to their houses, nutrition education, and a community of caring. Teens prepare the meals in their three commercial kitchens. This gives young people direct, hands-on experience with the impacts of fresh, healthy foods and community and makes them more aware of their own capacity to contribute. The ingredients are sourced locally, though the suppliers have changed. In the beginning, they worked exclusively with local small farmers, but the volumes at which they currently produce require a key distributor – Veritable Vegetable. They continue to source 100 percent local (60 miles) and 90 percent organic food for their program.

The project team spent a day at the organization’s headquarters in Sebastopol, California, with the founder and Executive Director, Cathryn Couch, learning about the history, legal structure, finances,

---

23 For more information, please visit: https://www.ceresproject.org.
operations, and nutritional approach of the organization. After this, the team spent time in the kitchen observing young chefs preparing meals under the guidance of experienced adults. The organization’s 2017 budget was $2.5 million; $2 million received through grants, contracts, and donations and $0.5 million program revenue. The organization employs 26 full-time employees (FTE) and engages 1,000 volunteers who contribute 55,000 hours a year (equivalent to 25 FTE). We received an extensive operational manual that details all aspects of the organization’s management.

This business might serve as a potential model for a value-added social enterprise that combines providing high quality foods with an educational and service component. Ceres Community Project also partners with local health care organizations to stay actively involved in their community.

Three Stone Hearth

Three Stone Hearth is one of the first (if not the first) Community Supported kitchens nationwide. It operates under a unique business model for food preparation and processing. Its model was originally inspired by the CSA model (Community Supported Agriculture), in which customers support a farm by committing in advance to a share of their produce, Three Stone Hearth customers support the kitchen by pre-ordering online, allowing them to plan ahead, reduce risk and food waste.

The business model is rooted in direct relationships with local farmers. The store front carries mostly prepared food, some raw products (e.g. milk and cream), as well as other value-added products from local producers. An extensive public education program helps building community awareness of and demand for the products promoted, while supplementing revenue from product sales.

As of January 1, 2017, the cooperative changed its legal entity from a Cooperative Corporation to a Limited Liability Company (LLC), due to a change in California workers compensation laws that would have added a huge financial burden to the organization. An LLC is a particularly flexible business entity, and they have been able to design a "new" company to continue operating in every meaningful way in a cooperative manner, with worker ownership and profit sharing; a democratized and self-directed day-to-day operating structure; and all the health, disability, sick, and vacation benefits established previously. The organization is using Holacracy, a democratic system for organizing work with very little centralized power and control.24

Capay Valley Farm Shop

Capay Valley Farm Shop, located in Esparto, CA, is a direct-to-consumer, wholesale food hub in the Capay Valley of Yolo County, which is midway between Sacramento and the Bay Area. Established in 2007, the food hub does wholesale business with independent specialty retailers, restaurants, and corporate cafeterias. They provide the highest quality items available including picked-to-order vegetables, fruits, herbs, and flowers, pastured meats and eggs, dried fruits and nuts, olive oil, grains, and honey. In the early years of its existence, the food hub attempted a CSA-style “farm shares” program for individuals and families. Currently, the food hub is focused exclusively on institutional customers, especially cafeterias of

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24 For more information on the organizational tool, go to https://www.holacracy.org/.
area high-tech companies. Capay Valley Farm Shop works with more than 40 small- to mid-sized farms
and ranches in Yolo County, where they assist producers with distribution, marketing/sales, and storage.

**Sierra Harvest**

Sierra Harvest’s mission is to educate, inspire, and connect Nevada County families to fresh, local, seasonal
food. A group of concerned parents who wanted to improve the quality of food in school cafeterias and
introduce local food cooked from scratch at every school created a 501 (c)(3) nonprofit in 2007. This part
of the organization is now dedicated to the Farm to School program that includes a full menu cooked from
scratch and a once-a-week tasting menu from a local farm. They also manage an Educational Farm for
local school children who come for field trips, U-pick, and summer camps.

Realizing the importance of strong, sustainable local farming, the organization turned its attention to local
farms and, in 2010, merged with a local farming nonprofit. The farming part of the organization includes
a farm incubator program, various classes and workshops for local farmers, “soup night” – potluck dinners
for farmers and community members, a land match program for beginning farmers, and a well-attended
annual Sustainable Food and Farm Conference. The organization envisions a network of financially viable
farms providing good food to the community, where health and wellness is the norm, and people are
engaged in growing, harvesting, preparing, and sharing fresh food.

The third priority of the organization is the community at large. Sierra Harvest runs a popular Sierra
Gardens program where they establish food gardens for community members that are subsidized for low-
income families. They actively participate in local food policy activities, provide education and assistance
with the CalFresh program for local residents, and manage a county-wide gleaning program.

Sierra Harvest’s vision is a thriving local food operation providing access to nutritious, local, seasonal food
for residents of all ages. They have strong connections with farmers, schools, and the community. Sierra
Harvest is a great model of an overarching, county-wide grass-root organization working with many
components of a local food system.

**Lessons Already Learned**

Two local initiatives within the county seem particularly relevant here as well. While Solano Grown is
currently not operating, efforts are underway to revive at least some of the functions of this organization.
The development of a Food Co-op is still underway but the number of already recruited members signals
consumer interests in and willingness to pay for locally produced foods.

**Solano Grown**

Solano Grown was founded as a California nonprofit organization with tax exemption under 501(c)(6) of
the Internal Revenue Code. It got started in 2009 after Solano County received a U.S. Department of
Agriculture Farmers Market Promotion Program (FMPP) grant award for $51,000. Among the outcomes
of this first grant was the creation of a Solano Grown logo and website.\(^{25}\)

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\(^{25}\) See: USDA FMPP Final Grant Report at
https://www.ams.usda.gov/sites/default/files/media/CA%20FY09%20Solano%20County%20%2451%24106.pdf
In 2011, the county received an additional $50,000 California Department of Food and Agriculture grant Specialty Crop Block Grant Program for “Solano Grown Marketing” (from October 1, 2011 to June 30, 2014). This funding was used to promote local agriculture through billboards, newspaper and radio advertisements, and a direct mail campaign. In December 2011, the Board of Supervisors authorized a four-year trademark license and property transfer agreement to allow Solano Grown to use of the Solano Grown brand. While the outreach targets have been reached, the effect on sales of local produce has not been recorded.26

In 2013, Solano Grown received an additional grant ($55,125) from the California Department of Food and Agriculture Specialty Crop Block Grant Program for the creation of an online ordering and promotion platform. The grant beginning was delayed as Solano Grown lost its nonprofit status (with tens of thousands of other small nonprofits across the US due to the changes in the IRS filing requirements). Work resumed in 2014, after the nonprofit status was reinstated.27

This is also the year that the Solano Grown Online Marketplace opened for business. Open from May through October, the Online Marketplace had a weekly pick-up point located at the Solano Community College in Fairfield. Customers placed orders by Wednesday and picked up their orders Thursday afternoon.28

**TABLE 16: SPECIALTY CROP SALES THROUGH THE ONLINE MARKETPLACE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Sales</th>
<th>% Monthly Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>May</td>
<td>$36.00</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>June</td>
<td>$25.20</td>
<td>-30.0%</td>
</tr>
<tr>
<td>2015</td>
<td>May</td>
<td>$279.68</td>
<td>1009.8%</td>
</tr>
<tr>
<td>2015</td>
<td>June</td>
<td>$272.02</td>
<td>-2.7%</td>
</tr>
<tr>
<td>2015</td>
<td>July</td>
<td>$105.20</td>
<td>-61.3%</td>
</tr>
<tr>
<td>2015</td>
<td>August</td>
<td>$173.50</td>
<td>64.9%</td>
</tr>
<tr>
<td>2015</td>
<td>September</td>
<td>$317.80</td>
<td>83.2%</td>
</tr>
<tr>
<td>2015</td>
<td>October</td>
<td>$160.90</td>
<td>49.4%</td>
</tr>
<tr>
<td>2015</td>
<td>November</td>
<td>$156.00</td>
<td>-3.0%</td>
</tr>
<tr>
<td>2015</td>
<td>December</td>
<td>$146.80</td>
<td>-5.9%</td>
</tr>
<tr>
<td>2016</td>
<td>January</td>
<td>$208.22</td>
<td>41.8%</td>
</tr>
<tr>
<td>2016</td>
<td>February</td>
<td>$139.96</td>
<td>-32.8%</td>
</tr>
<tr>
<td>2016</td>
<td>March</td>
<td>$154.66</td>
<td>10.5%</td>
</tr>
<tr>
<td>2016</td>
<td>April</td>
<td>$116.32</td>
<td>-24.8%</td>
</tr>
<tr>
<td>2016</td>
<td>May</td>
<td>$260.40</td>
<td>123.9%</td>
</tr>
<tr>
<td>2016</td>
<td>June</td>
<td>$275.33</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

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26 This information was discussed in the 2011 Board of Supervisors meeting (http://solano.granicus.com/MediaPlayer.php?view_id=8&clip_id=649&meta_id=225627) and is referenced in the CDFA 2011 Specialty Crop Block Grant Program, final performance reports (2014) available at [https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/FinalPerformanceReports.html](https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/FinalPerformanceReports.html).

27 This information is referenced in the CDFA 2013 Specialty Crop Block Grant Program, Final Performance Report (2016) available at [https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/FinalPerformanceReports.html](https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/FinalPerformanceReports.html).

Tables 16 and 17 include historic sales and participation data for the Solano Grown Online Marketplace.\textsuperscript{29} On average, 12.6 farms participated in the marketplace, peaking at 19 in June 2016. During those same months, average monthly sales were about $200, reaching a maximum of $279.68 in May 2015.

\textit{TABLE 17: SPECIALTY CROP FARMERS PARTICIPATING IN THE ONLINE MARKETPLACE}

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Number of Farms</th>
<th>% Monthly Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>May</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>June</td>
<td>12</td>
<td>-7.7%</td>
</tr>
<tr>
<td>2015</td>
<td>July</td>
<td>11</td>
<td>-8.3%</td>
</tr>
<tr>
<td>2015</td>
<td>August</td>
<td>13</td>
<td>18.2%</td>
</tr>
<tr>
<td>2015</td>
<td>September</td>
<td>13</td>
<td>0.0%</td>
</tr>
<tr>
<td>2015</td>
<td>October</td>
<td>14</td>
<td>7.7%</td>
</tr>
<tr>
<td>2015</td>
<td>November</td>
<td>16</td>
<td>14.3%</td>
</tr>
<tr>
<td>2015</td>
<td>December</td>
<td>18</td>
<td>12.5%</td>
</tr>
<tr>
<td>2016</td>
<td>January</td>
<td>5</td>
<td>-72.2%</td>
</tr>
<tr>
<td>2016</td>
<td>February</td>
<td>5</td>
<td>0.0%</td>
</tr>
<tr>
<td>2016</td>
<td>March</td>
<td>9</td>
<td>80.0%</td>
</tr>
<tr>
<td>2016</td>
<td>April</td>
<td>13</td>
<td>44.4%</td>
</tr>
<tr>
<td>2016</td>
<td>May</td>
<td>16</td>
<td>23.1%</td>
</tr>
<tr>
<td>2016</td>
<td>June</td>
<td>19</td>
<td>18.8%</td>
</tr>
</tbody>
</table>

According to the Local Food Marketplace staff, Solano Grown closed their account with this online ordering platform in early February 2017. Despite its short duration, this marketplace provided a number of lessons, most notably the following:

1. Small farmers need a variety of sales channels but also need assistance to sell within these channels.
2. For the type of hyper-local sales that the Solano Grown Online Farmers Market is promoting, additional and potentially hyper-local advertising needs to be in place as well.
3. Consumers want to see and touch their produce before buying it. An online market takes this tactile element out of the shopping experience, and many customers have been reluctant to use this market place for purchases as a result. Without that in-person component, consumers have difficulty getting over the hurdle of trust in the product. They might need the opportunity to experience the sold products in other settings first and establish trust regarding product quality before expecting them to place online orders.
4. The cost of the specialty crops on the marketplace can be high at times. This problem was identified and discussed early with some of the specialty crop farmers. This price variability made it difficult to have steady sales for some farmers. Competitive pricing is a necessity to ensure consistent sales.

\textsuperscript{29}This information is referenced in the CDFA 2013 Specialty Crop Block Grant Program, Final Performance Report (2016) available at https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/FinalPerformanceReports.html.
5. Community college students are not the ideal customers for the online market. Originally, the thought was that placing the pick-up point on a college campus would take advantage of a critical mass of customers already on site.

6. Moreover, the concept of using one drop-off and pick-up location seems unfeasible. A successful local market place requires a well-developed transportation system. Farmers relied on a project coordinator to pick up their produce and deliver it to the centralized site in Fairfield. Furthermore, the Chair of the Board had to personally deliver boxes to the customers in the area towards the end of the marketplace. New locations and a comprehensive delivery system have to be carefully considered.

A Solano County Food Co-op in the Planning

In 2016, Sustainable Solano helped to introduce a vision for a food cooperative in the Benicia/Vallejo area to the community. Spearheaded by Paula Schnese, who just moved to Benicia and was disappointed by the lack of local organic food in the most-affluent town in Solano County, food co-op efforts are steadily gaining momentum and support in Southern Solano County. The project development is supported by the National Food Co-op Initiative, which provides technical assistance and leadership development for the co-op board formed in the spring of 2016. Sustainable Solano acted as a fiscal sponsor for the group until they incorporated in July 2017, becoming Cultivate Community Food Co-op. The food co-op is currently in its early stages of development; as of January 2019, it has 152 owners. Sustainable Solano continues to promote the idea in the county.30

Sustainable Solano and Currently Considered Collaborators

In addition to these approaches, we identified a number of potential collaborators interested in shaping the local food economy of Solano County. Starting with Sustainable Solano who is taking the lead and will continue to coordinate efforts moving forward, we describe a number of potential partners that have already been engaged in the local food economy or are interested getting involved.

Sustainable Solano

Sustainable Solano is the only county-wide, non-profit organization in Solano County, California with initiatives that promote ecologically sustainable, economically viable and socially just communities. They envision a world that works for everyone, regardless of social status. Sustainable Solano began in 1999 as Benicia Community Gardens, with a single community garden at a local church. A second garden and community orchard soon followed (and still exist today). When droughts hit California in 2012, they began developing food forests on public/private lands, demonstrating how greywater systems and permaculture principles could save water. They also started a “Land Caretakers” sustainable landscaping training program, Community Supported Agriculture program and public education series on local food, titled “What’s for Dinner?”. In May 2016, the BCG Board renamed the organization “Sustainable Solano,” which better reflects the county-wide scope, mission and vision. Today, Sustainable Solano is engaged in two primary initiatives: 1) Sustainable Landscaping (including community gardens and urban forestry), and 2) building an environmentally sustainable, economically viable and socially just Local Food System in Solano

30 For more information see: http://cultivatecommunityfood.coop.
County. A third initiative titled “Community Conversations” features a monthly series of speakers/films/discussions on topics relevant to the non-profits mission. While the organization has grown, Sustainable Solano remains rooted in urban agriculture, sustainability and community resiliency.

Solano Public Health

Solano Public Health and Social Services Department has been a partner of Sustainable Solano since the inception of its USDA LFPP planning grant, awarded in September 2017. Specifically, they worked with the Health Promotion and Community Wellness Bureau Chief and staff within Vibe Solano. Three staff members from the Community Wellness Bureau serve on the Sustainable Solano Local Food System Advisory Board, including Bureau Chief Robin Cox. The mission of Vibe Solano is to maximize personal and community wellness by promoting healthy behaviors and environments in Solano County. Their philosophy is based on the belief that community health promotion and education strategies are an effective and cost-reducing means of promoting wellness. The department assesses, plans, implements and evaluates effective health promotion and education programs and initiatives, and believes that healthy environments promote healthy people. The majority of their work is community-based within Solano’s diverse neighborhoods, with an emphasis on health equity. Recent policy work around food access included their “Healthy Stores for a Healthy Community” initiative, where convenience stores started stocking fresh fruit and vegetables. Moving forward, Sustainable Solano will continue partnering with Solano Public Health, and utilize their knowledge and connections to further develop three areas within the Solano local food system:

1. Public food assistance in the County (SNAP-Ed, EBT programs, etc.), so we can fully integrate low income/low access communities into a local food system,
2. Farm-to-school, which would build upon their current programs within schools (i.e. water stations, decreased soda/vending machines, etc.),
3. Increased public awareness/education about local food. Ms. Cox will continue in her role of the Advisory Board member in 2019, which will ensure the transfer of knowledge and best practices between Solano Public Health, Social Services and Sustainable Solano.

Solano County Agriculture Department

The Solano County Agriculture Department promotes and protects the agricultural industry and protects public health and the environment. The head of the department, the Agricultural Commissioner of the county, also enforces laws and regulations that assure the continuity of agricultural trade and commerce. Solano County Agricultural Commissioner, Simone Hardy, has been serving on the Sustainable Solano Local Food Advisory Board since its inception in the fall of 2017.31

This partnership has been instrumental in the implementation of the LFPP planning grant and will continue to play a key role in the development of the Solano County local food system. The Agriculture Department provided various data and reports relevant to this work, including The Economic Value of Solano Agriculture study, detailed crop report information, and the production details for small farms through various certifications’ reporting. Ms. Hardy introduced this project and arranged for the project’s

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31 Simone Hardy stepped down at the end of 2018, and Jose Arriaga is serving as Interim Agricultural Commissioner. He is also currently serving on the Advisory Board.
presentation to the County Farm Bureau and to the Agricultural Advisory Committee. A representative of the Agriculture Department will continue serving on the Sustainable Solano Local Food System Advisory Board in 2019 to ensure the timely transfer of information between the department and the project. This close relationship will allow communicating updates to various stakeholders, including the Board of Supervisors, Farm Bureau and the Agricultural Advisory Commission.

Solano County Fairgrounds

Established in 1946 to produce the annual County Fair, the Solano County Fair Association is a non-profit organization that is governed by a Board of Directors appointed by the County Board of Supervisors. Its mission is "to ensure a positive experience for the public by providing a year-round, multi-purpose venue that showcases and celebrates the wide variety of resources and activities available to our diverse community."

Over the years, the County Fair lost its identity as a place to celebrate local agriculture. The new leadership of the Fairgrounds is committed to, once again, becoming a place to recognize and celebrate local food and farming. Mike Ioakimedes, who became the Executive Director & Chief Executive Officer of the Solano Fairgrounds in October 2018, has a great vision for community events at the Fairground, including a “Bounty of the County” annual festival—a vision developed together with Sustainable Solano. The festival would consist of a full day of showcasing and tasting Solano food and wine at the fairgrounds. The Fairgrounds has two certified commercial kitchens that are currently underused; they are envisioned as a place for community education and potentially a future community food center. Mr. Ioakimedes serves on the Sustainable Solano Local Food System Advisory Board. In this role, he has a complete knowledge and understanding of a bigger vision for a local food system and is in a unique position to integrate Solano County fairgrounds into various projects within this vision.

Community Alliance with Family Farmers (CAFF)

Community Alliance with Family Farmers (CAFF) has a mission to build sustainable food and farming systems through policy advocacy and on-the-ground programs that create more resilient family farms, communities and ecosystems. Their five programs include Farm to Cafeteria, Farm to Market Tools & Services, Food Safety/GAPs, Climate Smart Farming and Policy work. Within the Farm to Cafeteria program, they currently work with 68 schools, 15 hospitals and four universities across California. In Spring 2018, Sustainable Solano met with Ben Thomas of CAFF and Juan Cordon, Foodservice Director of the Vacaville Unified School District, to learn more about current farm-to-school efforts in Vacaville, and CAFF’s support role in Farm to School initiatives. Sustainable Solano is considering applying for future USDA Farm to School programs, with CAFF as a partner for both technical support and advice on developing an action plan that could be modified and adapted for all school districts in Solano County. CAFF’s Board Chair is also a Solano County farmer with whom Sustainable Solano established a relationship. This collaboration holds the strong promise of planning for and building a strong Farm to School program for the six public school districts in Solano County (Benicia, Fairfield-Suisun, Dixon, Rio Vista, Vacaville, Vallejo) and the school at Travis Air Force Base.

Kaiser

Within the healthcare industry, Kaiser Permanente has been a leader in local food procurement and awareness. They currently source food from within about 250 miles of Solano County, notably from a
central commissary in South San Francisco, and host year-round farmers markets on-site. Kaiser also has an established and active Wellness Program for their employees and staff. In early October 2018, Sustainable Solano met with three of Kaiser Vallejo’s staff (Nutritional Services Manager, Café Manager, and Program Manager for Health Education & Employee Wellness) to explore the following:

1. How more Solano County food products could get incorporated into the cafeteria, and
2. How to establish a CSA program for employees and staff, including cooking classes and visits to farms.

Kaiser has a strong interest in incorporating education, awareness and exposure to local food into their wellness plan. Sustainable Solano is currently discussing with Kaiser Vallejo how to feature one or two local produce items per month in the staff/guest cafeteria (starting in 2019) and supplement this effort via signage both inside and outside the cafeteria. For example, signage outside the cafeteria might include a free-standing display, with a profile of the Solano farmer, details on the food products being featured that month, and nutritional benefits.

Finally, the hospital policy does not currently allow CSA boxes to arrive on site. However, the Program Manager for Health Education is looking into what it would take to change that policy. In the meantime, Sustainable Solano has approached the Dan Foley Cultural Center (about ½ mile away) to see if they can host CSA boxes for both Kaiser and Sutter hospitals. The Dan Foley Cultural Center also has a large commercial kitchen which could be used for larger hands-on cooking classes, demonstrations, etc.

Fresh Approach

Fresh Approach is a 501(c)3 non-profit founded in 2008 by the Pacific Coast Farmers’ Market Association to help connect communities to the fresh produce available at farmers markets in their neighborhood. The organization’s mission expanded to “create long-term change in local food systems, by connecting California communities with healthy food from California farmers and expanding knowledge about food and nutrition.”

The first program was to promote the use of CalFresh / EBT at Contra Costa County farmers markets, as well as offering Cooking Matters, a six-week cooking and nutrition class series. The organization developed its own curriculum, called “Healthy Food, Healthy You” for its nutrition and cooking classes. In 2011 this program was expanded to Palo Alto as a VeggieRX pilot, with funding from the Health Trust, a foundation focusing on health equity in the Silicon Valley. In 2017 Fresh Approach began offering these classes in Solano County.

Fresh Approach has developed other programs and partnerships with certified farmers markets, community-based organizations, local businesses, schools, public health departments, community clinics, and others in six Bay Area counties: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, and Solano. Their key program, Freshest Cargo, delivers fresh produce to low-income communities in five counties (Solano is not a part of this program at this point).

32 Fresh Approach mission statement was retrieved from www.freshapproach.org.
Agricultural Associations in Solano County

There are 10 different regions in Solano County: Green Valley, Suisun Valley, Lagoon Valley, Vaca Valley, Pleasants Valley, Dixon Ridge, Elmira & Maine Prairie, Jepson Prairie, Ryer Island and Montezuma Hills. Two of these regions have created agricultural associations: Suisun Valley and Pleasants Valley. In the Suisun Valley, wines have been produced since the mid-1900s; however, it wasn’t until 1982 that this region was established as a formal wine appellation, and in 1983, became part of the North Coast AVA (American Viticultural Area). Suisun Valley is composed primarily of wine grape growers and vineyards and is approximately 8 miles long and 3 miles across at its widest point, with an estimated 3,000 acres of grape vines. The Suisun Valley Vintners & Growers Association (SVVGA) is a three-tiered membership organization with annual dues ranging from $100 - $1000 per entity. SVVGA has specific requirements for its members; for example, “Associate Members” must provide services or products to the viticulture or wine industry, and any non-ag vendors who are “Marketing Affiliates” must buy and sell products that support and enhance Suisun Valley agriculture and use Suisun Valley agricultural products as ingredients in a product sold to the public. The SVVGA stands as a resource for those in the local wine industry, providing information on pest management, “Crush Reports” which help set wine grape pricing, and product safety (FSMA) to name a few. Pleasants Valley Agricultural Association (PVAA) is comprised of a more diverse mix of small farms, which produce fiber, fruit and vegetables, olive oil, honey, herbs, nursery products, wine grapes. They also engage in agritourism services and provide spaces for retreats and overnight stays. PVAA’s 14 farms have a collective interest in agricultural tourism, preserving agricultural land, and cross-promoting with local businesses in Solano County. In August 2018, the group held its first annual “Open Farm Day” during which four different farms opened their gates to the public. 10 PVAA farms participated in talks, farm tours, information booths, tastings and sales of farms goods. While PVAA is enthusiastic about further developing agritourism in the area, including on-farm workshops and classes, they often require a significant investment of over $1,000 by the participating farmer.

Overall Feasibility Assessment and Benefit-Cost Evaluations

In summarizing and contextualizing our review of the existing literature, data collection and analysis, and discussion of existing local approaches, we are primarily evaluating the feasibility of the proposed food centers. However, we also provide recommendations for the successful implementation of Sustainable Solano’s overall vision of an ecologically sustainable, economically viable, and socially just local food system that serves Solano County’s residents.

The emphasis of our study and data collection was on farmers and agricultural sales within the County. Solano’s agricultural sales portray a consistent increase since 1997 but are significantly below the numbers for Yolo County. In 2012, sales of agricultural products by Solano County farms totaled $307,418,000 amounting to about 7 percent of total California sales. Compared to California overall and Yolo County in particular, the average size of farms seems to be increasing in Solano County. While California and Yolo County experienced downward trends, average farm size in Solano County increased from 400 to 473 acres over a period from 1992-2012, driven by small decreases in the total number of farms since 1997 and large increases in the number of acres dedicated to farming. Average farm sales have consistently increased as well, although these sales fall below Yolo County’s sales.
Both Solano and Yolo County produce a relatively high percentage of organic commodities to satisfy strong consumer preferences for organic foods in California and beyond, and experience increasing DTC sales compared to California’s overall averages. However, DCT sales make up less than one percent of overall sales, and only 13 percent of farms are engaged in these opportunities in Solano. While an almost identical percentage of farms is involved in DTC sales in Yolo County, they seem to outperform Solano’s farms. Solano County farms averaged DTC sales of nearly $25,000 in 2012, which more than doubled since 1992 levels, and are greater than statewide and national averages. Nevertheless, while on par with Solano County sales in 1992, Yolo County has since increased its DTC sales by 454 percent. This dramatic increase highlights an impressive growth potential for distribution channels currently underutilized in Solano County.

We further are concerned about the observed demographic trends for farmers in Solano County. Only 41 percent of all farming operations in Solano County reported generating positive cash income (in 2012). The average age of principal operators continues to increase (60.8 in 2012), and farmers have been in business for 23.8 years on average. These demographic trends suggest that it is critically important to rethink agriculture in an integrated local food systems approach that maintains and strengthens Solano County’s agricultural roots and attracts new talent. An additionally concerning aspect of a review of available data in this context is the fact that Solano County is severely underfunded in terms of grants and contributions by foundations as compared to other Bay Area counties.

Taking a closer look at crops currently produced within Solano County reveals that field crops (cotton, hay, and grain grown on a large scale for agricultural purposes such as animal feed or market grain) are grown on the majority of acres in Solano County, with the second largest number of acres devoted to animal production. Specialty crops such as vegetables, fruits and nuts are grown on a significantly smaller acreage. However, we see an increase in acreages assigned to these crops. We also observe significant variation in the value of crops over the years, with the most significant increase observed in the value of fruit and nut crops. The top three crops for 2016 were walnuts with an increase in value of 18.2 percent, followed by nursery products with an increase of 5.6 percent, and almonds with the largest increase (52.2 percent). Tomatoes that are largely used for processing fell from the first to the fourth rank, losing 19.7 percent of its value. These findings indicate a future potential of growing and marketing specialty crops in Solano County.

Disaggregated data of 41 Solano County farms registered as organic farms indicate that these farms already produce an impressive assortment of fruits and vegetables, berries, herbs, microgreens, nuts, cut flowers, and olives. Organic eggs and poultry are also produced within Solano County. More comprehensive data for 401 Solano farms that submitted pesticide reports allowed us a closer look at who grows what in Solano County. The smallest one third of farms have a median size of 15 acres and only grow one crop on average. In contrast, large farms grow a median number of 15 crops on average. While there is a significant overlap of the types of crops grown, some berry varieties, nuts, and squashes are only grown by smaller and medium-scale farms. These differences point to opportunities for small- and medium-scale farms to establish unique and exclusive supplier relationships. Interestingly, the 34 farms that are certified to sell DTC grow a much larger number of crops. These farms currently selling at farmers markets grow a median number of 32 crops, produced a median output of 43 tons in 2018 and were certified to sell in four to five counties on average.
In addition to utilizing this data provided by the Agriculture Department, we reached out to 60 small and medium size farms directly. We compiled data from 14 of these farms, 12 of which considered themselves small farmers. The first important result in this context is that the low response rate might be an indication of limited interest in local market opportunities. Furthermore, nearly all of the farmers that agreed to be interviewed already sell their products through DTC channels. These include CSA services, roadside stands, you-pick operations, and on-farm stores, and stands at farmers markets. Participating farmers further shared a number of challenges related to marketing their products and getting them to market. For instance, many pointed out that while farmers markets offer a great way to connect with customers, fees can be prohibitive and small farmers have a hard time covering the additional transportation and time costs associated with selling at farmers markets. A number of farms interviewed previously made use of Solano Grown, but even then, they faced difficulty with pricing their products in a way to satisfy consumers, and, hence, selling their produce profitably through this channel. While some of the farmers we surveyed followed organic practices, most did not certify their produce. They pointed to the prohibitive costs and time demands of organic certification. Farmers were not aware of any services or assistance they could utilize to support their efforts to get certified. Overall, we identified three primary farmer’s needs moving forward:

1. Need for more resources and opportunities to market to local customers,
2. Request for assistance with distribution of their produce and products,
3. Help in raising public awareness about local food production and its benefits.

We further tried to assess current consumer demand for locally grown and produced value-added foods within Solano County. While willingness to pay studies for locally produced foods indicate that demand is growing, we detect limited awareness and willingness to pay for locally-produced foods among Solano County residents. A farm-to-fork culture like the one thriving in Sacramento and the Bay Area seems largely underdeveloped. A pilot model revealed serious challenges when trying to market products directly to consumers. Limited consumer demand seems to be the main constraint to moving forward with the initial proposal but was not the only challenge we identified. Gaps between cost and price expectations by consumers further seemed largest for meals and other processed food offerings when compared to fresh produce. We also included retail opportunities in already utilized markets outside the county lines in our analysis to explore other marketing options for foods produced in Solano County. Here, we focused on products currently covered by Cottage Food Operators and find a stronger marketing potential for preserves than for baked goods.

In summary, despite its strong agricultural roots and a rich assortment of specialty crops and other food products produced within Solano County, farmers expressed little interest in or are skeptical of participating in local markets. While this might partially be a result of limited market access and underdeveloped distribution channels, most importantly, the demand for local foods is underdeveloped in Solano County. Our comprehensive review therefore clearly questions the feasibility of the original proposal.

Part of the challenges detected and discussed here are consistent with observed general developments in agricultural markets. Ongoing consolidation at every stage of the value chain, from farm-product procurement to more recent trends among grocers and increasing concentration in local retail markets is threatening the viability of small farmers (Saitone and Sexton, 2017). These developments coupled with consumer expectations of everyday low prices make it really challenging for small farms to benefit from
the unprecedented level of product differentiation in retail markets. While marketing opportunities exist, they require operating efficiently and within small margins only achievable by vertical integration or at least close coordination along the supply chain. A more than 400 percent increase in DTC sales observed in Yolo County as well as discussed existing local models point to opportunities and successful approaches, but are likely also a result of farmers utilizing well-established markets with stronger consumer demand and higher willingness to pay for locally produced value-added foods than detected among residents of Solano County. Returning to one of our originally posed questions of whether or not local food systems are good for both urban centers and rural communities, and who are clear winners or losers within communities, we can conclude that consumers in urban centers, and for the most part urban centers outside Solano County lines, currently benefit from the multifaceted agricultural production within Solano County. Furthermore, the small- and medium-scale farms are largely struggling to utilize existing opportunities to market their products directly to consumers in Solano County.

Rather than going ahead with developing a business plan for the originally proposed ideas, Sustainable Solano should therefore focus on forming alliances and developing a more comprehensive strategic plan for Solano County’s local food economy. Once more, our current supply and demand assessment does not indicate that the proposed food centers could be implemented and operated profitably, and we predict that such efforts would likely fail if pursued at this point. We recommend to strategically focus on supporting collaboration among small- and medium-scale farmers and providing services that strengthens market access before the development of a specific business plan can be revisited. Considered initiatives should include coordinated outreach, education and marketing efforts that raise awareness of issues faced by local farmers and increase appreciation for local food, and directly or indirectly increase demand for locally produced foods within Solano County at the same time.

These efforts should incorporate important lessons already been learned from earlier efforts, such as the establishment of Solano Grown. In particular, the challenges that the Solano Grown model faced illustrate that a focus on end consumers from the beginning might not generate enough volume to manage marketing opportunities effectively. One possible first step in developing business opportunities would be to focus on institutional buyers instead, as these will likely have the most established and reliable demand for locally produced foods in the county at this point. These contracts and delivery agreements could be used to establish collaborations among farmers and coordinate their offerings to provide larger and more reliable volumes of high-quality specialty crops. The most relevant reviewed business model in this regard is Capay Valley Farm Shop. It too, now exclusively focuses on institutional buyers.

As an organizational structure for farmer collaboration, we recommend considering traditional cooperatives models, or more recent hybrid models (e.g. New Generation Cooperatives or Limited Cooperatives Associations) that attract outside investment in more flexible ways. While significant investments would be needed to provide access to and benefit from economies of scale of processing and storage facilities, we recommend that Sustainable Solano and its partners could primarily focus on assembling and distributing larger orders or boxes of produce under an already recognized brand name such as Solano Grown. As part of these efforts to establish reliable supply relationships, we further recommend a thorough review of county-wide food assistance programs including funding and current sales volumes, as well as an exploration of future opportunities for local supply and management of these and related programs. In addition to being able to reduce waste by donating potential excess produce and products. These efforts could include the management of farmers markets as well as Market Match...
programs locally to provide additional access to local markets and generate revenue for Solano farmers. In addition to providing important educational and marketing opportunities, revenues based on fees and funds obtained to run these programs would now stay and be reinvested in local communities resulting in an overall consensus in the literature that such efforts not only benefit the participants of these programs but also strengthen the local economy overall. We strongly recommend reaching out to Fresh Approach as a viable model on how to incorporate food assistance funding into a local supply and distribution model.

Finally, in order to raise consumer awareness of issues faced by local farmers and valuation of local agricultural production within Solano County more directly, agritourism approaches could be pursued by some farms and supported via an established farmer network. Entertainment events and family activities, such as farm dinners, concerts, fairs, camps and workshops have the potential to attract consumers with relatively higher willingness to pay consumers, and revenue from these activities might be used to subsidize outreach and distribution efforts targeted at underserved populations.

Below, we discuss additional considerations regarding potential benefits and important cost considerations of establishing and strengthening access to local marketing opportunities and raising consumer awareness in more detail. Appendix F provides additional information regarding legal requirements for a collaborative organization of farmers, as well as additional background information regarding a suggested focus on institutional buyers and agritourism.

Potential Benefits and Important Cost Considerations

The key potential benefits of moving forward with developing a strategic plan focused on farmer collaboration are increased access to markets and increased profitability for small- and medium-scale farmers. While the ultimate goal of farmer coordination might be an establishment of a Solano County Regional Food Hub, caution should be applied in moving in this direction too fast or all at once. We document an increased interest in and a rapid implementation of food hubs, however, about a third of these models only operate as long as they are subsidized by significant grant funding and ultimately fail. More specifically, we recommend the development of a cooperative approach in multiple stages. The first and most critical stage focuses on consolidating and creating economies of scale when marketing specialty crops produced by small- and medium-scale farmers. We recommend building on services previously provided by Solano Grown. A re-establishment of these marketing services is likely less capital intensive as it would focus on providing an electronic marketplace, and can involve collaborations with key stakeholders such as the Agriculture Department. Sustainable Solano could help with coordinating drop-off and pick up locations and utilize their experience in coordinating CSA offerings. One could view the initial step as an attempt to consolidate production in an effort to ultimately establish physical distribution centers across Solano that will invest in infrastructure such as storage facilities over time and on an as-needed basis in later stages of collaboration among farmers. Prior to these capital-intensive investments, Sustainable Solano could assist with expanding opportunities for education and services in areas such as sustainable production practices, production planning, season extension, packaging, branding, certifications, and food safety. These efforts would enable small farms and businesses within Solano County to capture larger shares of marketing margins for value-added products currently captured by larger farms and businesses primarily operating outside of county lines. One aspect that should be considered here is that due to the geography of the County, the development of a single location might
not be suitable. Rather, a connected network approach could be pursued that allows to develop several locations. Finally, in addition to larger institutional buyers, restaurants, and caterers, even Cottage Food Operators could eventually be serviced by these distribution centers, and the provision of space and equipment to prepare and produce meals, preserves, baked goods, etc. could be revisited.

All these efforts can provide a multitude of benefits to the community. Working collectively would allow small farmers to pool their resources to more cost effectively bring their product to market. Collaboration among farmers can allow them to proactively market local specialty crops to institutions, businesses and government agencies. This increased distribution can open up new marketing capacities by partnering with the supplied institutions and other interested stakeholders to promote the benefits of local food products to end consumers, raise awareness and ultimately increase demand for value-added locally produced foods within the county. These collaborations and resulting services and opportunities provided, as well as a greater visibility overall can further remove or lessen capital and informational barriers to entry and attract young talent into farming.

In addition to providing direct benefits to farmers, empirical research suggests that agricultural cooperatives can reduce unemployment, increase tax revenue, stimulate rural economies, improve economic security, strengthen regional branding, foster and retain local businesses, and ultimately contribute to improving quality of life within communities. Multiplier effects from agricultural production can further generate significant indirect and induced effects, measured by increases in total economic output. While value-added food and beverage processing is one of the largest industries in Solano County, many of these benefits currently accrue outside the county. Creating viable wholesale opportunities, allowing this industry to start sourcing their inputs from within the county, and later market their products to Solano residents will keep profits recirculating within Solano County communities.

Finally, research further suggests that households that patronized DTC outlets had increased demand for fresh fruits and vegetables compared to those that did not. Households that purchase directly often purchase a larger quantity or more variety of fruits and vegetables than those that did not. While DTC outlets are currently underdeveloped in Solano County as compared to the neighboring Sacramento region, working with institutional buyers will increase access to locally produced, high quality specialty crops and likely stimulate demand for healthier foods. The suggested exploration of future opportunities for a local supply and management of food assistance and related programs within Solano County can further ensure increased access for underserved populations in this context.

It is worth pointing out once more that strong partnerships with community leaders, financial institutions and governmental organizations will be needed to develop and successfully operate a coordinated supply and distribution model at every stage suggested here. In this context, we strongly encourage Sustainable Solano to continue to rely on the expertise and input from a variety of stakeholders they engaged in this initial planning process. We recommend that they continue to discuss the development of a strategic plan with their advisory board and reach out to the board members to ask for their continued involvement going forward.
Potential Cost Savings from Vertical Coordination or Integration

Finally, we wanted to introduce a simple economic model of agricultural supply chains and product pricing that allows us to highlight important cost considerations and possible cost savings due to the suggested focus on cooperation among farmers.

Figure 22 presents a simple model of a typical flow of production of agricultural commodities. Cost savings are achievable by utilizing horizontal coordination or integration (e.g., farmers pooling their production to be able to supply larger orders), and vertically coordination and integration in either direction (towards farm input markets or toward consumer or retail markets) of the supply chain. These can address current market failures, help capture margins internally, and ultimately ensure profitability of farmers in today’s market environment.

**FIGURE 22: A TYPICAL FLOW FOR AGRICULTURAL PRODUCTION**

Notes: This graphic is reproduced from Sexton and Iskow (1988).
Opportunities to jointly order inputs such as seeds, fertilizers, etc. at more favorable prices will almost surely arise when farmers work together. We want to primarily discuss opportunities for downstream or forward vertical coordination and integration (toward consumer and retail markets) by farmers, which we believe are key in ensuring the feasibility of the recommendations provided here.

While farmers have strong incentives to invest in marketing opportunities for their own production, engaging in these activities as a single producer is almost never efficient. Our presented data analysis gave rise to a number of challenges small farmers face in this context and highlights once more that—as previously pointed out—increased consolidation along the supply chain makes it difficult for individual farmers to access such opportunities.

A simple price equation introduced in Sexton and Iskow (1988) incorporates marketing margins and can further illustrate potential cost savings and its effects on farm-gate prices. Moving produce from the farm downstream in the supply chain (towards the consumer) typically includes the following cost: Assembly of the raw products from the farm, processing, distribution, marketing, and retailing. These cost considerations and their impact on farm-gate prices can be captured as follows:

\[ P_t^* = \left( P_r - M \right) / K, \]

\( P_t^* \) denotes the maximum farm-gate price, \( P_r \) the retail price, \( M \) the margin (that now includes input cost, labor costs, as well as these above specified costs). \( K \) is a conversion factor from raw produce or commodities to the final retail product. If industries that assemble, process and distribute commodities are competitive, they will operate efficiently, resulting in the lowest possible margin subtracted from the final retail price or added to the farm-gate price. Similarly, competitive forces in the wholesale market would drive \( P_t \) to a maximum, as anyone trying to pay farmers too low prices would not be successful when farmers have other options to sell their produce.

This is not the situation that small- and medium-scale Solano farmers currently find themselves in, however. They have very little access to or choice among wholesale contracts due to their small volumes and limited varieties, and even less influence when negotiating contracts. They do not purchase inputs at low prices or operate at a volume that allows them to benefit from economies of scale. Furthermore, the consolidating of the processing and retail industry created significant market power, resulting in additional downward pressure on farm-gate prices. Farmers will also have to cover costs of certification (e.g. organic certification) when trying to produce differentiated crops demanded at higher prices by consumers. When trying to circumvent the challenges of operating on highly concentrated supply structures, and market directly to the consumer instead, transportation costs (e.g., to farmers markets) and opportunity costs of time (e.g., farmers selling at farmers markets when they could be working on the farm) can prevent small farmers from being competitive in these settings.

We envision that cooperation among small and medium-scale farmers could reduce costs and increase farm-gate prices in this simplified model in the following ways:

1. Farms can market products collectively and at lower cost than when trying to market them separately, reducing the margin, \( M \), based on a reduction in these costs due to economies of scale.
2. If marketing sector firms have market power over farms (and farms are forced to accept lower prices), collaborative bargaining might counterbalance that market power and allow farmers to negotiate better farm-gate prices.
3. Farms can internalize marketing margin previously added by other players by jointly investing in marketing and branding their products to raise awareness and demand for locally foods. Their marketing efforts might also increase the retail price, $P_r$, (prices consumers pay for their produce or value-added products produced with their commodities).

4. Farms can pool resources and jointly invest and use processing and storage facilities, potentially reducing the conversion factor, $K$, and therefore increase farm-gate prices.

If farmers organize more formally as a cooperative, they might further benefit from positive consumer perceptions of this business model once it is supported by their marketing efforts. Finally, they can reduce their costs by benefiting from special tax treatment offered to cooperatives. These tax savings can in turn be used to increase equity needed to invest in facilities and services, which farmers will be able to jointly benefit from in an advanced stage of collaboration.

It is worth pointing out that it is very unlikely that small- and medium-scale farmers will be able to make investments necessary to provide processing or large storage facilities. Both the consideration of hybrid models that allow attracting investor capital as well as active and successful grant-writing activities will be essential in covering initial cost as well as operating costs once this level of vertical integration is reached. It is recommended that due to the uncertain nature of both national and local funding structures, less than 50 percent of the operating budget should be covered by grants at all times, and Sustainable Solano should strive to reduce this percentage over time. More importantly, however, we want to point out once more that we recommend focusing on economies of scale by spreading costs of organization, management, and administration with regards to access to markets and selling larger volume first. In order to ensure farmer participation at this early stage it is essential to identify possible larger volume (as compared to reaching out to individual consumers) and long-term contracts. Working with institutional buyers such as Kaiser, schools, or identified food assistance needs within the county would be our recommended approach to pursue here.

Finally, a key to success of this cooperative model is that it stays attentive to the needs of the farmer. It is recommended to start small and engage the limited number of farmers that expressed interest and can jointly fulfill demands of institutional buyers. Our data presented here offers a base to determine a feasible scale in this context. In general, it will be critically important to develop a model that generates profits for at least some of the product sales. It is therefore also recommended to explore marketing opportunities beyond county lines, at least in the initial stages of development. Here, we recommend establishing continuous access to more informed and higher willingness to pay consumers in the Sacramento region and Greater Bay Area through partnerships with institutional buyers, food cooperatives or local retailers, and the expansion of existing supply relationships of interested farms (e.g. supplying to restaurants, selling at farmers markets, and offering or participating in CSA subscription models).

To summarize these cost considerations, in moving forward with a larger strategic plan, we strongly recommend considering possibilities to horizontally and vertically coordinate and integrate farmer decisions along the supply chain.

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33 Over 60 percent of consumers state that they are more likely to purchase food produced by a farmer-owned cooperative and agreed that food produced by a farmer-owned cooperative was of better quality than food produced by other types of companies when asked in national survey (Hardesty, 2005).
Concluding Remarks

Our study documents and discusses a limited interest in and underdeveloped opportunities for small farmers to sell within Solano County. We further detect a very low consumer demand for locally produced value-added products. While an implementation of the originally proposed food centers is clearly not feasible at this point, we recommend moving forward with developing a more comprehensive strategic plan for a local food system within Solano County. In this context, we gave recommendations and possible directions Sustainable Solano could pursue and discussed potential benefits as well as important cost considerations.

It will be essential to educate the community and continue to engage with various stakeholders about potential benefits and strategic alliances moving forward. We hope this study contributes to raising awareness about Solano’s agricultural roots and identity, and more specifically, to instilling an appreciation for the small- and medium-scale local farmers and the high-quality products they produce. Starting from a desire to provide increased access to fresh and healthy foods, Sustainable Solano’s vision of creating an environmentally and economically sustainable, value-driven, community-based local food system offers important opportunities to improve the existing agricultural infrastructure and strengthen value-based supply chains for local foods within this region. It further can provide direct welfare gains for consumers with already established higher willingness to pay for locally produced foods, inform additional consumers about the benefits of consuming local foods, and ensure access to these foods for underserved consumer groups. The detailed recommendations provided here can directly benefit small and medium-scale farmers in the region, create additional job opportunities, keep revenue within the county, generate additional income, and ultimately contribute to overall economic growth in Solano County.
References


Appendix A: Farmer Survey

1. For interviewer: Please enter numeric farmer id here.
2. First and most importantly, we are curious about your personal story and background. Why did you become a farmer? (Follow up questions: What are specific values and beliefs that guided your decision? How do they inform your practices and operations today?)

Business Operations and Farm Labor

3. Do you consider yourself a small, medium, or large farm?
4. How long have you been in operation? How long has the farm existed, and how long have you been involved?
5. Do you own, rent, or crop-share the land?
   a. Own
   b. Lease-to-own
   c. Rent for fixed amount
   d. Rent for a flexible amount (e.g. base rent and an amount or share of the crop or crop proceeds)
   e. Crop-share agreement
   f. Use land for free
   g. Other: _______
6. Is your land being leased under an easement?
   a. Yes
   b. No
   c. I don’t know
7. What is the legal structure of ownership of your operation?
   a. Single ownership
   b. Partnership
   c. Member of a cooperative
   d. Limited liability company
   e. Other: _______
8. Are you working full-time on this farm, or do you have additional employment or other sources of income?
9. How many individuals including yourself (operator) are involved in your operations?
10. Do you employ any of these individuals full-time or part-time?

Crops Planted and Harvested

11. Which farming and ranching activities were you engaged in for 2017? (check all that apply)
    a. Field crops (alfalfa, corn, cotton, sorghum, rice, wheat, etc)
    b. Vegetables, potatoes, and melons (cantaloupes and muskmelons, lettuce (head, leaf, romaine)
    c. Fruits and nuts (Almonds, apples, avocados, grapes, etc)
    d. Berries
e. Livestock, poultry, meats and dairy
f. Colonies of bees (for all purposes, honey producing) For interviewer: No follow up question
g. Non-food related activities (e.g. Nursery and seeds, flowers, wood, equine) For interviewer: No follow up question

12. If A: Field crops, what specific crops are you growing? For each, please share your best estimate of acres planted or allocated, quantity harvested or produced, and approximate value of sales (add seasons if applicable).

13. If B: Vegetables, potatoes, and melons, what specific crops are you growing? For each, please share your best estimate of acres planted or allocated, quantity harvested or produced, and approximate value of sales (add seasons if applicable). For interviewer: Note that this will be recorded on separate sheet.

14. If C: Fruits and nuts, what specific crops are you growing? For each, please share your best estimate of acres planted or allocated, quantity harvested or produced, and approximate value of sales (add seasons if applicable). For interviewer: Note that this will be recorded on separate sheet.

15. If D: Berries, what specific berries are you growing? For each, please share your best estimate of acres planted or allocated, quantity harvested or produced, and approximate value of sales (add seasons if applicable). For interviewer: Note that this will be recorded on separate sheet.

16. If E: Livestock, Meats and Dairy, what specific animals do you raise? For each, please share your best estimate of quantities, and approximate value of sales (add seasons if applicable). For interviewer: Note that this will be recorded on separate sheet.

17. How do you decide which crops to produce, and are you currently producing at capacity?

Agricultural and Land Management Practices

18. In general, how do you manage land productivity? Do you follow specific principles?

19. Which practices/methods do you use to maintain productivity, control weeds and manage pests?
   a. No Till
   b. Cover crop
   c. Manure
   d. Crop rotation
   e. Pesticides
   f. Integrated pest management
   g. Composting on farm
   h. Using delivered food waste or organic material from community partners
   i. Other:

20. Is your cropland irrigated?
   a. Yes
   b. No

21. What is the main source of water for your crops?
   a. Groundwater
b. Surface water  
c. Recycled water  
d. Other:  

22. Who is your water provider?  

23. Do you use renewable energy to power your farm?  
a. Yes  
b. No  
c. I don’t know  
d. Other:  

24. If yes, which type of renewable energy do you use?  

25. Would your farmland meet the requirements of certified organic production? For interviewer: This means that no prohibited substances (under the National Organic Program) were applied for the past three years. Please review the extra sheet on organic production to understand and explain this and the next questions.  
a. Yes  
b. No  
c. I don’t know  

26. Do you follow organic farming practices?  
a. Yes  
b. No  
c. For some of our crops, but not for all  
d. I don’t know  

Agricultural and Land Management Practices - Organic  

27. Are your products certified organic through the National Organic Program?  
a. Yes  
b. No  
c. I don’t know  

28. What are the reason(s) you are not using organic practices and/or certifying your crops or products as organic? For interviewer: If the previous answer was “for some but not all” modify this question to focus on the crops not organically grown and certified as organic?  

29. If currently transitioning to certified organic production, would you be interested in certifying your crops and products in this phase and be able to label and sell them as such (potentially at a higher price)?  
a. Yes  
b. No  
c. Maybe  

30. If not currently transitioning to certified organic production, would you consider transitioning if you could certify your crops and products as transitional organic in the three-year transition phase and be able to label and sell them as such (potentially at a higher price)?  

Ready for Market
31. Are you currently engaged in any packaging or processing activities on your farm?
32. Do you have access to any of the following operations or facilities within your operation? For interviewer: Please see additional handout for background information on sorting and grading.
   a. Sorting equipment
   b. Equipment to satisfy grading schemes (e.g. USDA grading schemes and standards
   c. Packing line
   d. Dry storage facilities
   e. Refrigeration
   f. Freezing facilities
   g. Meat processing facilities
   h. Other:
33. Who do you sell your farm products to?
   a. Wholesale or distributor
   b. Restaurants
   c. Direct to retail
   d. Direct to consumer
   e. Direct supply relationships with large producers (e.g. Driscoll, Taylor Farm, Oceanmist, etc.)
   f. Other:
34. Can you talk a little more about why you are selling through those channels? Would you be interested in selling through other channels? Which ones? Would you be interested in participating in local channels?
35. Did you sell/market farm products directly to consumers?
   a. Yes
   b. No
36. Did you market commodities or products through a Community Supported Agriculture (CSA) arrangement?
   a. Yes
   b. No
37. What geographic area does your CSA cover?
38. Which crop, livestock, poultry, or agricultural products did you sell through the CSA?
39. What is your overall volume and approximate annual revenue (2017) from CSAs?
40. During which months are you offering CSAs?
41. Did you market products through a roadside stand(s)?
   a. Yes
   b. No
42. What is the location of the roadside stand(s)?
43. Which crop, livestock, poultry, or agricultural products did you sell at the roadside stand?
44. What is your overall volume and approximate annual revenue (2017) from roadside stands?
45. During which months are you selling at roadside stands?
46. Did you market products through farmers markets?
   a. Yes
b. No
47. At which farmers markets did you sell products?
48. Which crop, livestock, poultry, or agricultural products did you sell at the farmers market?
49. What is your overall volume and approximate annual revenue (2017) from farmers markets?
50. During which months are you selling at farmers markets?
51. Did you market products through a you-pick service?
   a. Yes
   b. No
52. Which crops did you sell through a you-pick service?
53. What is your overall volume and approximate annual revenue (2017) from you-pick services?
54. During which months are you offering these services?
55. Did you market products through an on-farm store?
   a. Yes
   b. No
56. Which crop, livestock, poultry, or agricultural products did you sell at the on-farm store?
57. What is your overall volume and approximate annual revenue (2017) from your on-farm store?
58. During which months are you operating your farm store?
59. Are you interested in selling direct to consumers? What are your perceived barriers to doing so?
   Which of your farm products would you like to sell through this channel?
60. What are your perceived challenges in selling/marketing direct to consumers? Which aspects of your operations would you like to expand on via DTC? What are your most pressing current challenges?
61. Would you mind sharing your vision for the future of farming, and in particular for farming in Solano County? In the coming years, what will be the greatest opportunities and challenges in your view?
62. Is there anything else we have not asked, but you would like to share?
63. Are you interested in staying informed about this project and receiving additional information?
   a. Yes
   b. No
   c. Maybe
### Appendix B: Detailed Survey Results

**FARM SURVEY RESULTS**

<table>
<thead>
<tr>
<th>FARM STATS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE FARM SIZE (ACRES)</td>
<td>410</td>
</tr>
<tr>
<td>MEDIAN FARM SIZE (ACRES)</td>
<td>13.75</td>
</tr>
<tr>
<td>AVERAGE FARM REVENUE</td>
<td>$80,800</td>
</tr>
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<td>MEDIAN FARM REVENUE</td>
<td>$45,000</td>
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<tr>
<td>AVERAGE FARM EXPENSES</td>
<td>$67,500</td>
</tr>
<tr>
<td>MEDIAN FARM EXPENSES</td>
<td>$32,500</td>
</tr>
<tr>
<td>% WHO OWN THEIR FARMS</td>
<td>69%</td>
</tr>
<tr>
<td>% WHOSE LEGAL STRUCTURE IS SINGLE OWNERSHIP</td>
<td>77%</td>
</tr>
<tr>
<td>% WORKING OUTSIDE OF THE FARM</td>
<td>31%</td>
</tr>
<tr>
<td>% WORKING FULL TIME ON THE FARM</td>
<td>69%</td>
</tr>
<tr>
<td>% WITH IRRIGATED CROPLAND</td>
<td>62%</td>
</tr>
<tr>
<td>% WHOSE WATER SOURCE IS GROUNDWATER</td>
<td>23%</td>
</tr>
<tr>
<td>% WHOSE WATER SOURCE IS SURFACEWATER</td>
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</tr>
<tr>
<td>% USING RENEWABLE ENERGY ON THE FARM</td>
<td>23%</td>
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<tr>
<td>FARMLAND MEETING REQUIREMENTS OF CERTIFIED ORGANIC PRODUCTION</td>
<td>46%</td>
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<tr>
<td>% FOLLOWING ORGANIC PRACTICES</td>
<td>54%</td>
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<tr>
<td>% WHOSE PRODUCTS ARE CERTIFIED ORGANIC</td>
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</tr>
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<td>% WHO SELL DIRECTLY TO CONSUMERS (DTC)</td>
<td>85%</td>
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<tr>
<td>% WHO SELL THROUGH A CSA</td>
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</tr>
<tr>
<td>% WHO SELL AT ROADSIDE STANDS</td>
<td>15%</td>
</tr>
<tr>
<td>% WHO SELL AT THE FARMERS MARKET</td>
<td>46%</td>
</tr>
<tr>
<td>% WHO SELL THROUGH YOU-PCIK</td>
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</tr>
<tr>
<td>% WHO SELL THROUGH ON-FARM STORE</td>
<td>38%</td>
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## Appendix C: Pilot Costs

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<thead>
<tr>
<th>Item</th>
<th>Total Cost</th>
<th>Qty Purchased</th>
<th>Unit of Measure</th>
<th>Quantity Used</th>
<th>Sourced Locally?</th>
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<tbody>
<tr>
<td>Commercial Kitchen Rent</td>
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<td>Hours</td>
<td>16</td>
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<tr>
<td>Labor - Sous Chef</td>
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<td>Hours</td>
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<tr>
<td>Labor - Chef (Kitchen)</td>
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<td>Hours</td>
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### Project/Start-up Equipment

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<tr>
<th>Item</th>
<th>Total Cost</th>
<th>Qty Purchased</th>
<th>Unit of Measure</th>
<th>Quantity Used</th>
<th>Sourced Locally?</th>
</tr>
</thead>
<tbody>
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<td>Each</td>
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<tr>
<td>3.25 oz. condiment cups w/ lids</td>
<td>$10.00</td>
<td>100</td>
<td>Each</td>
<td>86</td>
<td>No</td>
</tr>
<tr>
<td>Eco Choice 8&quot; x 8&quot; x 3&quot; container (1 compartment)</td>
<td>$45.59</td>
<td>200</td>
<td>Each</td>
<td>147</td>
<td>No</td>
</tr>
<tr>
<td>Eco Choice 9&quot; x 6&quot; x 3&quot; container (2-compartment)</td>
<td>$40.10</td>
<td>200</td>
<td>Each</td>
<td>85</td>
<td>No</td>
</tr>
<tr>
<td>Misc. equipment (bowl, portion scoops)</td>
<td>$32.04</td>
<td>4</td>
<td>Each</td>
<td>4</td>
<td>No</td>
</tr>
<tr>
<td>plastic wrap</td>
<td>$9.89</td>
<td>1</td>
<td>Each</td>
<td>0.3</td>
<td>No</td>
</tr>
<tr>
<td>dish soap</td>
<td>$3.99</td>
<td>1</td>
<td>Each</td>
<td>0.5</td>
<td>No</td>
</tr>
<tr>
<td>bags of rubber bands</td>
<td>$1.50</td>
<td>2</td>
<td>Each</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>jug of bleach</td>
<td>$3.19</td>
<td>1</td>
<td>Each</td>
<td>0.25</td>
<td>No</td>
</tr>
<tr>
<td>dish gloves</td>
<td>$3.49</td>
<td>1</td>
<td>Each</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

### Food Items - for whole project:

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Cost</th>
<th>Qty Purchased</th>
<th>Unit of Measure</th>
<th>Quantity Used</th>
<th>Sourced Locally?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosher salt</td>
<td>$3.89</td>
<td>48</td>
<td>oz</td>
<td>13</td>
<td>No</td>
</tr>
<tr>
<td>Black peppercorns (in grinder)</td>
<td>$5.19</td>
<td>2.5</td>
<td>oz</td>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>Olive oil</td>
<td>$58.47</td>
<td>3</td>
<td>bottles</td>
<td>2.5</td>
<td>No</td>
</tr>
<tr>
<td>Avocado Oil</td>
<td>$12.49</td>
<td>25.4</td>
<td>fl. Oz.</td>
<td>17</td>
<td>No</td>
</tr>
</tbody>
</table>

### Food Items - for Week 1:

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Cost</th>
<th>Qty Purchased</th>
<th>Unit of Measure</th>
<th>Quantity Used</th>
<th>Sourced Locally?</th>
</tr>
</thead>
<tbody>
<tr>
<td>coconut oil</td>
<td>$2.40</td>
<td>5</td>
<td>heads</td>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>garlic</td>
<td>$2.40</td>
<td>5</td>
<td>heads</td>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>ginger root</td>
<td>$1.00</td>
<td>0.25</td>
<td>lb.</td>
<td>0.25</td>
<td>No</td>
</tr>
<tr>
<td>quinoa</td>
<td>$14.00</td>
<td>64</td>
<td>oz</td>
<td>41</td>
<td>No</td>
</tr>
<tr>
<td>coconut milk</td>
<td>$9.16</td>
<td>4</td>
<td>cans</td>
<td>3.5</td>
<td>No</td>
</tr>
<tr>
<td>cilantro</td>
<td>$2.90</td>
<td>1</td>
<td>bunch</td>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>Item</td>
<td>Price</td>
<td>Quantity</td>
<td>Unit</td>
<td>Additional Information</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------</td>
<td>----------</td>
<td>------</td>
<td>-------------------------</td>
<td></td>
</tr>
<tr>
<td>black beans, dried</td>
<td>$4.30</td>
<td>2</td>
<td>lb.</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>bell peppers</td>
<td>$20.60</td>
<td>4</td>
<td>lb.</td>
<td>4</td>
<td>Yes</td>
</tr>
<tr>
<td>onion, yellow</td>
<td>$5.16</td>
<td>2</td>
<td>bunch</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>garlic chives</td>
<td>$5.16</td>
<td>2</td>
<td>bunch</td>
<td>1.5</td>
<td>Yes</td>
</tr>
<tr>
<td>bay leaves</td>
<td>$8.24</td>
<td>1</td>
<td>bag</td>
<td>0.25</td>
<td>Yes</td>
</tr>
<tr>
<td>oregano, dried</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>cumin, ground</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>zucchini, yellow</td>
<td>$6.18</td>
<td>3</td>
<td>lb.</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>zucchini, green</td>
<td>$4.12</td>
<td>2</td>
<td>lb.</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>corn, ears</td>
<td>$6.00</td>
<td>12</td>
<td>ear</td>
<td>12</td>
<td>No</td>
</tr>
<tr>
<td>Limes</td>
<td>$2.00</td>
<td>6</td>
<td>each</td>
<td>6</td>
<td>No</td>
</tr>
<tr>
<td>chicken breast, b/s</td>
<td>$70.31</td>
<td>5</td>
<td>lb.</td>
<td>5</td>
<td>Yes</td>
</tr>
<tr>
<td>parsley</td>
<td>$7.74</td>
<td>3</td>
<td>bunch</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>chili powder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>allspice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>cinnamon, ground</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>
Appendix D: Pilot Survey Responses (Non-Participants)

Summary of responses received from Co-op members who did not participate in the food network effort:

1. Responses to the question “Why did you choose to not participate in the pilot?” (more than 1 response was allowed):
   a. I didn’t know I could sign up to participate in the food pilot – 3 responses
   b. I do my own cooking/gardening, so didn’t need any of the items being offered for sale – 4 responses
   c. I have dietary requirements that weren’t met by the food pilot – 1 response
   d. I didn’t have the time needed to participate in the food pilot – 2 responses
   e. I don’t like to shop for food online – 1 response
   f. I will participate if online purchasing and home deliveries become a permanent service – 1 response
   g. I live outside Benicia and Vallejo, so am not in the geographic area being served by the pilot – 1 response

2. Responses to the question “My annual household income is:”
   a. $25,000 to $50,000 - 1 response
   b. $50,000 to $75,000 - 2 responses
   c. $75,000 to $100,000 - 2 responses
   d. $100,000 to $125,000 - 2 responses
   e. Greater than $150,000 - 1 response

3. Responses to the question “My age is:”
   a. 30 to 39 years - 2 responses
   b. 40-49 years - 1 response
   c. 50-59 years - 2 responses
   d. 60-69 years - 2 responses
   e. 70 or above - 1 response

4. Responses to the question “Do you consider yourself a member of a minority group?”
   a. No - 7 responses
   b. Yes - 1 response

5. Responses to the question “What is your race?”
   a. White - 8 responses
   b. Hispanic or Latino - 1 response

6. Responses to the question “What is your ethnicity (choose up to three)?”
   a. Decline to answer - 1 response
   b. Eastern European - 1 response
   c. European - 4 responses
   d. Mexican/Mexican-American/Chicano - 1 response
   e. More than one ethnicity - 1 response

7. Responses to the question “English is the primary language spoken at my home?”
   a. No –
   b. Yes - 8 responses

8. Responses to the question “With which gender do you identify?”
   a. Male - 3 responses
b. Female - 5 responses

9. Responses to the question “What is the highest level of education you have completed?”
   a. Bachelor’s degree - 3 responses
   b. Master’s or PhD degree or higher - 5 responses

10. Responses to the question “Do you have any medical disability?”
   a. No - 8 responses
   b. Yes -  

11. Responses to the question “People in my household receive public assistance, welfare, or supplemental income benefits (e.g. Social Security, VA payments, disability pension, Housing Vouchers, SNAP benefits)”
   a. No - 4 responses
   b. Yes -  

12. Responses to the question “The nearest full-service grocery store to where I live is:”
   a. Less than half a mile away - 2 responses
   b. Half a mile to a mile away - 4 responses
   c. 1 to 5 miles away - 1 response
   d. More than 5 miles away - 1 response

13. Responses to the question “I buy most of my groceries at a store that is:”
   a. Half a mile to a mile away from where I live - 3 responses
   b. 1 to 5 miles away from where I live - 3 responses
   c. More than 5 miles away from where I live - 2 responses

14. Responses to the question “My main transportation method for procuring groceries is:”
   a. My car - 8 responses

15. Responses to the question “The number of people in my household is:”
   a. 1 - 1 response
   b. 2 - 4 responses
   c. 3 - 1 response
   d. 4 - 2 responses

16. Responses to the question “If a future program to provide prepared meals is implemented, a fair price that I think should be charged for a meal (not including delivery charges or food assistance discounts) is:”
   a. 7.00 to 8.99 dollars - 1 response
   b. 9.00 to 10.99 dollars - 5 responses

17. Responses to the question “Please include any additional commentary or observations you would like to share:”
   a. I am not likely to purchase prepared meals at this time
   b. I totally missed the email and I think that I’ve realized why. Lately I’ve been totally unable to attend most of the gatherings I’ve been invited to by organizations I’m involved with. So I may have see the headline "please join us..." and been distracted from reading for comprehension by my own sense of jaded-ness of my own capacity for extracurricular activities. That’s on me. However maybe the wording could have been different. Now, if I had read the email more clearly, I may still have declined. For me, reducing the amount of trash we generate through packaging is just as important (if not more important) as choosing responsibly sourced food. I obviously didn’t see the the prepared meals, but I can only imagine that they came with a fair bit of plastic to dispose of. I can avoid that by choosing produce that
comes bulk (unpackaged), grains/nuts/cereals/etc. from the bulk section at Raley's and even meats from the butcher counter that come wrapped in paper rather than in styrofoam trays. I can supply my own bags for produce and bulk items, as well as to carry out my groceries. I don’t know that there is, but if returnable/reusable packaging was available for these meals, I may be more interested in getting on board. I think that this could have double effectiveness as receiving such a package could really spur thoughtfullness about reducing trash in other aspects of our lives.

I did receive a CSA box for a while from Farm Fresh to You. I liked the produce, and the convenience. I liked that they collected the boxes, but after a while I realized it wasn’t for reuse, they were just recycling them. And then there was a big plastic bag in the box, and each collection of like items was in another bag, some things were in a plastic clamshells. So I canceled my service and chose to pickup the same produce from Raley's with none of that extra trash.

My long winded point is that if we solve one problem (access to quality food) by exasperating another (proliferation of trash), have we really made any progress?

Why not offer premade meals in-store, with a financial incentive to bring your own reusable containers to pack the food in? In fact I really hope that the Co-op will embrace carrying all kinds of bulk foods and allowing customers to supply and tare their own reusable containers.

c. I don’t know what a fair price as it depends on the meal so I didn't answer that question.

d. I invested in the coop and became a member when I was living in Benicia. I now live in Berkeley so I'm not sure how relevant my answers are for your study. I also usually intend on going to coop events, but something always happens that makes it inconvenient for me to get up to Benicia or Vallejo. I still fully support the coop and I'm so grateful for the work ya'll are doing!!

e. I did not receive the July 2nd email.
Appendix E: Pilot Survey Responses (Participants)

Summary of responses received from Co-op members who did participate in the food network effort:

1. Responses to the question “My favorite part of the food pilot was:”
   - a. The prepared meals - 3 responses
   - b. The locally grown produce - 2 responses
   - c. The free home delivery - 4 responses

2. Responses to the question “If I were to choose only one aspect of the food pilot to target for improvement it would be:”
   - a. The online store - 4 responses
   - b. The price of the prepared meals - 3 responses
   - c. The price of the produce - 1 response
   - d. The selection available for the produce - 2 responses

3. Responses to the question “The prices for the prepared meals were:”
   - a. Just right - 1 response
   - b. 1% to 10% too high - 3 responses
   - c. 11% to 20% too high - 2 responses
   - d. 21% to 30% too high - 3 responses
   - e. 31% to 40% too high - 1 response

4. Responses to the question “The prices for the locally grown produce were:”
   - a. Just right - 3 responses
   - b. 1% to 10% too high - 5 responses
   - c. 11% to 20% too high - 1 response
   - d. 31% to 40% too high - 1 response

5. Responses to the question “Shopping for groceries online is:”
   - a. Something I would do regularly if it was offered by the Co-op - 3 responses
   - b. Something I would occasionally do if it was offered by the Co-op - 5 responses
   - c. Something I would rarely or never do if it was offered by the Co-op - 2 responses

6. Responses to the question “Home delivery of prepared meals is:”
   - a. Something I would take advantage of regularly if it was offered by the Co-op - 4 responses
   - b. Something I would take advantage of occasionally if it was offered by the Co-op - 4 responses
   - c. Something I would rarely or never take advantage of if it was offered by the Co-op - 2 responses

7. Responses to the question “Home delivery of locally grown produce is:”
   - a. Something I would take advantage of regularly if it was offered by the Co-op - 4 responses
   - b. Something I would take advantage of occasionally if it was offered by the Co-op - 5 responses
   - c. Something I would rarely or never take advantage of if it was offered by the Co-op - 1 response

8. Responses to the question “I usually go shopping for groceries:”
a. Once per week - 1 response  
b. Twice per week - 5 responses  
c. Three times per week - 3 responses  

9. Responses to the question “My overall satisfaction level for the food pilot (with 1 being the lowest and 5 being the highest) is:”
   a. 3 - 4 responses  
   b. 4 - 3 responses  
   c. 5 - 3 responses  

10. Responses to the question “Do you have any feedback for our chef regarding any aspect of the prepared meal service?”
   a. Lovely choices in seasoning and food combinations. You are a very talented culinary artist!!!  
   b. The recipes were seasoned so well, and offered dishes that I would not normally go to the trouble for, myself. Also appreciated the ethnic diversity.  
   c. (3) I thought the food was delicious and there was a good variety for people who don’t eat meat or gluten.  
   d. Leave off garnishes that aren’t edible as is (long pieces of garlic chive, etc.) That’s a fussy, restauranty thing that doesn’t really do much for a precooked meal to be reheated at home.  
   e. I would like it and use it more often if the prepared meals were set up so that you can change items of the meal per your specific diet restriction.  
   f. It was delicious!  
   g. I liked the menu. I would like to know where the ingredients came from (besides the farms being used) and if these other ingredients were organic, sustainably grown, pesticide free, etc. Add labeling of ingredients. Depending on the ingredients in the meal prices should be beans $9-10.99; salmon $11-12.99  

11. Responses to the question “Do you have any feedback for our farmers regarding any aspect of the produce provided for the pilot?”
   a. The produce was fresh and beautiful……basil seemed a bit too cold, but everything else transported perfectly!! Maybe providing a reusable/returnable container for produce instead of plastic bags????? We are trying to not use plastics.  
   b. The quality was excellent and fresh.  
   c. I thought the amount of each item was very generous, e.g. small pepper, basil.  
   d. One of my purchases was for squash, I received only two and the price was quite high.  
   e. Make sure the coop knows how to handle fresh produce (during the pilot, volunteers refrigerated produce boxes containing tomatoes and potatoes). Please also include a list of the items in the boxes, and if possible, some suggestions on how to use them (newsletter, recipes, etc.).  
   f. It was good and fresh.  
   g. Great Produce from Eat Well Farm in my opinion!  
   h. The produce was really good and large quantities was a nice surprise. However, in the first delivery I had kale and it looked pretty bad. I would be interested in more variety.  

12. Responses to the question “Do you have any feedback regarding any aspect of the online store?”
   a. Seemed easy enough to navigate. Nice pictures of produce and meals……I always appreciate a picture before purchasing!!  
   b. The link that was provided in the email made it easy to access. Otherwise, it took me forever to figure it out...!
c. I think there should be a way to logon to the website and click directly to be directed to the shopping page.

d. The interface was a little unrefined and hard to navigate. The produce boxes on the online store did not list the contents, and I had to look up Eatwell Farms’ website and find that information on their site. The menu for prepared foods could have better descriptions of the meals and their ingredients.

e. I thought the online store was lacking. It was hard to find. I would rather that the products be divided up by categories like produce, packed foods, etc.... instead of by the farmer. That way it’s easier for me to shop. Obviously, there were not a lot of products to choose from, since it was the pilot of this program.

f. I found the store a bit frustrating having to move between stores in order to purchase. It could also use a better design.

g. It was hard to navigate between the different vendors. Print was small.

h. The online store looks good. What an asset for the co-op.

13. Responses to the question “Do you have any feedback regarding any aspect of the home delivery process?”

   a. Fast, efficient, friendly!!
   b. The suggestion of knocking and leaving the delivery near the door worked! Think it’s a good idea to establish the preferred delivery method on a customer-basis.
   c. I think late afternoon (early evening) delivery time is great because most people are either home or will be home soon so this alleviates a need for refrigeration if left on the porch.
   d. Home delivery is awesome! A lifesaver for people with disabilities/mobility issues.
   e. I think some more communication would have been helpful like knowing if something was out of stock or we would be given extras.
   f. Delivery was great!
   g. I just have one suggestion for any future pilot programs involving deliveries, especially cooked meals. It would be more beneficial if no one available to accept the delivery to place the meals in a container or bag that can be sealed to protect the meals from small insects and especially from ants.

14. Responses to the question “Do you have any general comments or observations related to the food pilot?”

   a. If price of meals was a bit lower, I would consider doing this on a continual basis. Love being able to choose produce amounts and different varieties. Produce amounts were generous and meal portions were generous too.
   b. I seriously think this idea of home-delivery of local, healthy meals by CCFC is a great one. Figuring out how to provide funding for this is a worthwhile project.
   c. I really looked forward to Tuesdays, knowing I wouldn’t have to cook dinner! Maybe a meal kit delivered weekly would be a nice offering too.
   d. The meals that came with side salads were by far our favorite.
   e. The price for eggs was outrageous. Far more than exactly comparable eggs from other CSAs.
   f. Overall it was a positive experience and I hope that this is something that the co-op will provide in the future.
   g. I think this a great service and more and more stores are doing this via Instacart. I hope we can scale it and offer it before we have a store.
h. I would like to receive a text reminder 48 hrs. before the order deadline. Life gets busy, and this would help.

15. Responses to the question “My annual household income is:”
   a. Less than $25,000 - 1 response
   b. $25,000 to $50,000 - 4 responses
   c. $50,000 to $75,000 - 0 responses
   d. $75,000 to $100,000 - 1 response
   e. $100,000 to $125,000 - 1 response
   f. $125,000 to $150,000 - 2 responses
   g. Greater than $150,000 - 1 response

16. Responses to the question “My age is:”
   a. 30 to 39 years - 1 response
   b. 40-49 years - 2 responses
   c. 50-59 years - 2 responses
   d. 60-69 years - 5 responses

17. Responses to the question “Do you consider yourself a member of a minority group?”
   a. No - 7 responses
   b. Yes - 2 responses
   c. Decline to answer - 1 response

18. Responses to the question “What is your race?”
   a. White - 8 responses
   b. Hispanic or Latino - 2 responses
   c. More than one race - 1 response

19. Responses to the question “What is your ethnicity (choose up to three)?”
   a. Decline to answer - 0 response
   b. Eastern European – 0 response
   c. European - 5 responses
   d. Mexican/Mexican-American/Chicano - 0 response
   e. Hispanic or Latino - 1 response
   f. More than one ethnicity - 2 responses

20. Responses to the question “English is the primary language spoken at my home?”
   a. Yes - 10 responses

21. Responses to the question “With which gender do you identify?”
   a. Male - 1 response
   b. Female - 9 responses
   c. Genderqueer - 1 response

22. Responses to the question “What is the highest level of education you have completed?”
   a. Less than high school diploma/GED - 1 response
   b. Some college or associate/trade degree - 1 response
c. Bachelor's degree - 5 responses  
d. Master's or PhD degree or higher - 3 responses

23. Responses to the question “Do you have any medical disability?”
   a. No - 7 responses  
   b. Decline to answer - 1 response  
   c. Yes - 2 responses  
      (1) Impacts ability to work – 1 response  
      (2) Does not impact ability to work – 1 response

24. Responses to the question “People in my household receive public assistance, welfare, or supplemental income benefits (e.g. Social Security, VA payments, disability pension, Housing Vouchers, SNAP benefits)”
   a. Decline to answer - 1 response  
   b. No - 7 responses  
   c. Yes - 2 responses

25. Responses to the question “The nearest full service grocery store to where I live is:”
   a. Less than half a mile away - 4 responses  
   b. Half a mile to a mile away - 4 responses  
   c. 1 to 5 miles away - 2 responses

26. Responses to the question “I buy most of my groceries at a store that is:”
   a. Less than half a mile away - 1 response  
   b. Half a mile to a mile away from where I live - 1 response  
   c. 1 to 5 miles away from where I live - 3 responses  
   d. More than 5 miles away from where I live - 5 responses

27. Responses to the question “My main transportation method for procuring groceries is:”
   a. My car - 9 responses

28. Responses to the question “The number of people in my household is:”
   a. 1 - 2 responses  
   b. 2 - 3 responses  
   c. 3 - 2 responses  
   d. 4 - 2 responses  
   e. 5 or more - 1 response

29. Responses to the question “If a future program to provide prepared meals is implemented, a fair price that I think should be charged for a meal (not including delivery charges or food assistance discounts) is:”
   a. to 8.99 dollars - 1 response  
   b. 9.00 to 10.99 dollars - 8 responses  
   c. 11.00 to 12.99 dollars - 1 response  
   d. 13.00 to 14.99 dollars - 1 response
Appendix F: Memos prepared by Sustainable Economies Law Center
Dear Sustainable Solano,

This memorandum describes possible legal structures for a cooperative and associated legal considerations for a Solano County agricultural producer cooperative formed to further your goals of promoting access to, consumption of, and awareness of local food in Solano County, California. Such a cooperative would work in partnership with existing organizations, such as Sustainable Solano, Solano Grown, local residents, institutional food purchasers, local government agencies, and others, as described in more detail at the end of this memo. We’ve learned from your interviews and meetings with farmers in Solano County that there are many producers of a diverse array of fresh fruits and vegetables (among other agricultural products) who struggle with the logistics of selling and delivering their produce to buyers in the Bay Area and we think that a produce distribution cooperative could help address their needs while increasing access to local food in Solano County (and beyond).

As we discussed, a working vision for the cooperative would be to develop it in multiple stages. The first stage would involve forming an agricultural producers’ cooperative with interested Solano County farmers as members of the main member class, meanwhile, a public awareness campaign utilizing the Solano Grown brand would promote the cooperative and local food consumption in and around Solano County. Later, provided that the farmer members agree to it, the cooperative would convert to a multi-stakeholder cooperative by amending the cooperative’s articles and bylaws to add additional member classes, which could include workers, household consumers, and possibly even local nonprofit organizations. The inclusion of these additional members would leverage additional financial capital and community engagement to create several community food centers across the county, each of which might include local produce distribution facilities as well as retail food services (e.g. groceries, restaurants, delis).

This memo describes legal considerations for the formation of an agricultural cooperative under federal and California law, bearing in mind the possibility of forming a simple agricultural producers’ cooperative that may later evolve into a multi-stakeholder cooperative.

As the cooperative’s business plan evolves and at various stages of operations, it’s advisable to consult with an attorney about the legal aspects of forming the cooperative and complying with applicable laws.

Sincerely,

Christina Oatfield
Legal Overview of Cooperatives

Under California law, cooperatives can be organized as corporations, like other businesses. But there are some unique features of cooperatives. In a cooperative, members typically purchase a membership share, which entitles members to use the services of the cooperative, to vote in elections for the Board of Directors of the cooperative (and to vote in other major decisions of the cooperative), and to a portion of any profits or surplus revenue. When a cooperative has profits or surplus revenues, those are typically distributed out to members in proportion to each members’ patronage or business done with the cooperative. In a cooperative each member typically has one vote, even if some members do more business with the cooperative than others. So while all members are entitled to one vote in the cooperative, one agricultural producer member who sells a larger volume of product through the cooperative is generally entitled to a proportionally larger patronage dividend or profit share compared to a member who sells less product through the cooperative. Thus, members are invested in the success of the entire cooperative, not just in their own farm enterprise.

Cooperatives can choose to offer other benefits to members, including, but not limited to, discounts on services provided by the cooperative, invitations to special events, or even participation in group insurance plans.

Two Options for Cooperative Corporations under California Law

California law provides at least two legal structures for cooperatives that Solano farmers can choose from: 1) the Cooperative Corporation Law found in the California Corporations Code beginning at § 12200, and 2) the Nonprofit Cooperative Association Corporation law found in the California Food and Agricultural Code beginning at § 54001. The Nonprofit Cooperative Association law was designed specifically for cooperatives that sell agricultural products, however, if the Solano farmers ultimately prefer to have a multi-stakeholder cooperative, then the more general Cooperative Corporation Law may be more suitable.

The purposes and activities of any California Nonprofit Cooperative Association Corporation (NCAC), must be tailored to agricultural purposes and members must be engaged in the agricultural business, unlike cooperatives formed under the general Cooperative Corporation Law which allows for any lawful business purposes to be the basis of forming the cooperative. A NCAC can be formed by three or more people, a majority of whom are residents of California, for any of the following purposes:

(a) The production, marketing, or selling of the products of its members.
(b) The harvesting, preserving, drying, processing, canning, packing, grading, storing, handling, shipping, or utilization of any product of its members, or the manufacturing or making of the byproducts of any product of its members.
(c) The manufacturing, selling, or supplying to its members of machinery, equipment or supplies.

(d) The financing of the activities which are specified by the purposes listed above.

(e) Any combination of the purposes listed above. (California Food and Agricultural Code § 54061)

This type of cooperative can sell products that can include horticultural viticultural, aquacultural, forestry, dairy, livestock, poultry, bee, or farm products (California Food and Agricultural Code § 54004). It must primarily use its resources to reduce operations costs for its members and otherwise engage in furnishing services or facilities to its members (California Food and Agricultural Code § 54179). These cooperatives may only admit as members, or issue common stock (i.e. voting stock) to people who are 1) engaged in the production of a product which is to be handled by or through the association, or 2) that use or employ any service or facility offered by the association, including people leasing land from the association (California Food and Agricultural Code § 54231). It can otherwise have non-member investors who are lenders or holders of non-voting preferred stock.

In addition to the general provisions that must be included in articles of incorporation, a NCAC’s articles must expressly identify the corporation as a Nonprofit Cooperative Association Corporation.

The Cooperative Corporation Law accommodates cooperatives in many different industries, thus, a multi-stakeholder cooperative could fit into this legal mold easily. The rest of this memo will focus on advantages available to cooperatives, most of which apply to cooperatives that could be formed under either the Cooperative Corporation Law or the NCAC, unless otherwise specified.

**Securities Law**

Securities laws exist at both federal and state levels to protect investors from overly risky or fraudulent investments. Securities laws apply to situations where investments are made where an investor contributing funds expects to receive their investment back, sometimes with a return (i.e. interest or dividends, etc.). Under securities laws generally, when a business makes an investment opportunity available to anyone, it must disclose all material information about the business and the investment offering to prospective investors and it must either register the offering with the federal Securities and Exchange Commission (SEC) as well as a state agency that regulates securities, or it must qualify for an exemption from registration or permitting requirements at both level of government. However, asking banks and other similar regulated financial institutions for a loan does not trigger the securities regulations discussed in this memo. Additionally, asking for grants or donations where the donor does not expect to receive money in return later does not fall under securities regulation. Because bank loans are seldomly available to beginning stage businesses, a new agricultural cooperative will need to consider other sources of capital, such as from individuals and institutions that are not in the business of making investments, which will require consideration of securities regulations.

Under California law, a NCAC can sell securities to its members and to the general public in California without first qualifying for a permit from the Department of Business Oversight (the California department that regulates securities) pursuant to California Corporations Code § 25100(m). It’s
important to note that this securities permit exemption under California law is an advantage enjoyed by cooperatives formed as Nonprofit Cooperative Association Corporations, and not as a general cooperative corporation. If the Solano farmers wanted to form an agricultural cooperative that could raise investment funds from many different individuals and institutions (not just financial institutions such as banks or credit unions) then forming as a NCAC could result in very significant cost and time savings as far as securities law compliance. Under California law there are numerous other exemptions from securities permitting requirements, however, the exemption afforded to agricultural producer cooperatives is significantly broad. Most other exemptions are available only where there is no public advertising of the securities offering, such as when only close friends, family, or business colleagues invest in the business.

There is a securities permit exemption available for general Cooperative Corporations under California law, however, this exemption only allows up to $1,000 per individual to be invested and the exemption applies to sales of memberships or voting shares in the cooperative, so it cannot be utilized to sell debt securities (i.e. taking loans from community members) (California Corporations Code § 25100(r)).

Under federal securities law, there is also an exemption for agricultural producer cooperatives that are tax-exempt under Title 26 US Code § 521 (Securities Act of 1933 § 3(a)(5)(B)(i)). This is a section of the tax code specifically for agricultural cooperatives, and it has some similar and some very distinct criteria from the California NCAC law described in this memo. There are circumstances in which § 521 tax treatment can be very advantages for a cooperative, but this tax status comes with restrictions and requirements on engaging with non-members as patrons of the cooperative that some cooperatives find unattractive, therefore, some agricultural cooperatives opt against § 521 tax status. However, under federal securities laws there are other exemptions from SEC registration requirements that a small local business might use, such as the intrastate offering exemption available for securities offerings conducted entirely within one state (SEC Rules 147 and 147A found at 17 CFR § 230.147 and § 230.147A). Further, California securities permitting exemption for NCACs is not contingent upon any particular federal tax treatment. Therefore, an agricultural cooperative need not comply with Internal Revenue Code § 521 tax treatment in order to utilize exemptions from securities registration and permitting requirements.

In summary, if the farmers cooperative wants to utilize community investing as a fundraising strategy then it may find that the California NCAC comes with the significant advantage of a securities permit exemption. However, if the farmers choose to form a different corporation type, then a community investment campaign is still a possibility by way of other less liberal securities permit exemptions or by spending the extra time and costs required for obtaining a securities permit. To conduct a securities offering with a California regulatory permit generally entails several months of advance planning and working with an attorney to apply for the permit, but actual costs and wait times vary considerably.

Further Reading

For a more in-depth analysis of securities offerings in the agricultural context, including reasons why farm enterprises might opt for community capital over institutional financing, as well as case studies of community investment offerings in California agriculture, see Oatfield, Christina, “Guide to Grassroots Financing for California Farmers” September 2017, published by the Sustainable Economies Law Center and available at this link: https://www.theselc.org/grassroots_finance_for_farmers
Tax Advantages

There is not a significant tax advantage to forming a NCAC compared to a cooperative formed under California's more generic Cooperative Corporation Law. The federal tax options discussed in this section can apply to both types of California cooperative corporations, depending on how the corporation operates. There are two portions of the Internal Revenue Code that provide rubrics for cooperative taxation: Title 26 US Code § 521 and Title 26 US Code Subchapter T. Agricultural cooperatives can choose between the two, among other choices. A major advantage of cooperative taxation under either of these rubrics is that surplus revenue that is returned to members in the form of patronage dividends are not subject to the “corporate double tax” meaning that the cooperative corporation is not taxed on the surplus funds that it returns to members, but the members are taxed as individuals for that dividend.

Internal Revenue Code § 521

This code section was designed specifically for agricultural cooperatives, though many agricultural cooperatives choose not to use it. It has some significant disadvantages for cooperatives that purchase agricultural products from non-members, because these non-members must receive the same economic benefits as members (i.e. a patronage dividend) in order to be taxed under this subchapter. For agricultural cooperatives that do little to no business with non-members, or who do not mind extending the benefits of patronage distributions to non-members, there can be benefits to conforming to the requirements of § 521 because under this section there are additional tax deductions that can be made beyond deductions available under the other cooperative tax rubric discussed next (Frederick, Donald A. et al, “Income Tax Treatment of Cooperatives,” USDA Rural Development, Cooperative Information Report 44, Part I June 2013, pages 8-10). Not also that § 521 cooperative must operate “on a cooperative basis” (Title 26 USC § 521(b)(1)) like all Subchapter T cooperatives discussed next.

Internal Revenue Code Subchapter T

This subchapter was designed for a wide array of cooperatives, and it applies to agricultural cooperatives as well. Cooperatives opting for taxation under this rubric must operate “on a cooperative basis” which means that three basic principles are followed by the cooperative, including: subordination of capital, democratic control, and allocation of surplus revenue in proportion to member patronage (Puget Sound Plywood, Inc. v. Commissioner, 44 T.C. 305 (1965)). In this context, subordination of capital means that members have substantial control of the cooperative, not equity investors. Democratic control generally is interpreted as meaning that each member has one vote. Finally, surplus revenues (revenues minus expenses) should be allocated in proportion to the patronage or business done by each member, rather than in proportion to their capital invested.

Some agricultural cooperatives choose Subchapter T taxation and not § 521 taxation because Subchapter T does not require that patronage refunds be distributed to non-members who do business with the cooperative, and many agricultural cooperatives often buy products from non-members but do not want to extend the benefit for patronage refunds to non-members who do not buy membership shares and otherwise participate in the cooperative as members.
There are some advantages to Subchapter T taxation compared to generic C Corporation taxation or S Corporation taxation. C Corporations typically have to pay the notorious "corporate double tax" meaning that the corporate entity must pay taxes on profits and then individual shareholders must pay taxes personally for the dividends they receive from those profits. S Corporations are taxed as "pass-through" entities meaning that the corporation does not pay taxes on profits but the profits or losses are passed onto the individual shareholders who pay taxes, whether they receive a cash dividend or not. A cooperative taxed under Subchapter T avoids the double tax on profit it allocates to its members, but has the benefit of being able to hold onto unallocated profits to reinvest them in the business, without its members being liable on their personal taxes for that profit. In the case of an S Corporation choosing to hold onto profits in the corporation's account, individual shareholders are still taxed on those profits even if those profits were never paid out to shareholders. Thus, one year a shareholder could end up owing a lot of tax on earnings he/she never personally received because those earnings were reinvested into the business. A cooperative can hold onto surplus revenue in a collective account without having to allocate those earnings to members’ individual tax bills, however, these retained funds would be subject to corporate tax. However, when a cooperative has surplus it would like to allocate to members, that amount is tax-deductible to the cooperative, thus avoiding the corporate double tax for patronage distributions to members. Thus, under Subchapter T a cooperative can simultaneously use features that resemble some of the best of both worlds of corporation and pass-through taxation. This can be very strategic for early stage cooperatives in capital-intensive industries (such as food distribution) where it’s wise to retain significant portions of revenues to be reinvested into the business in the following year.

California Tax Law

Corporations in California must generally pay income taxes (among other applicable taxes) similar to an ordinary business, with the minimum annual tax set at $800 as of this writing. A NCAC may pursue a tax exemption on its California taxes pursuant to California Food and Agricultural Code § 54042 if the cooperative is located in an area with high unemployment and at least 90% of the cooperative’s members are, or have been, within the previous 12 months unemployed or dependent on public social services for their income, among other requirements as described in that statute.

Further Reading

For a clear and brief discussion of 26 USC § 521, see Williamson, Lionel, “The Farmer’s Cooperative Yardstick: Should Your Cooperative be "Exempt" or "Non-Exempt"” University of Kentucky College of Agriculture Extension, Publication AEC-53, April 1987, available at: https://www.uky.edu/Ag/AgEcon/pubs/aec53.pdf


Cooperatives and Antitrust Laws

Under US antitrust laws, businesses generally cannot conspire with one another to set prices for their mutual benefit. However, the 1922 Capper–Volstead Act (codified at Title 7 USC §§ 291 - 292) provides a less stringent application of antitrust laws for agricultural producer cooperatives. It provides that agricultural producer cooperatives may exist for farmers to work together, including by setting prices together, among other things, without violating antitrust laws unless the activity of a cooperative rises to the level where it “monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price of any agricultural product is unduly enhanced” (7 USC § 292). This means that agricultural producer cooperatives are not entirely exempt from antitrust laws but that antitrust laws can only be applied to them if their business becomes an extremely powerful monopoly. To enjoy the protection under this Act, the cooperative or association must ensure that 1) no member of the association is allowed more than one vote, 2) the association does not pay dividends on stock or membership capital in excess of 8% annually, and 3) members contribute the majority of the value of products sold by the cooperative (7 USC § 291). These requirements for use of the Capper-Volstead Act are in line with other cooperative laws and widely recognized principles of cooperatives.

The protections against antitrust laws under Capper-Volstead clearly apply to an agricultural producer cooperative whose members consist only of those who are “engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers” (7 USC § 291), however, it’s unclear whether these protections would apply to multi-stakeholder cooperatives. Courts have ruled that agricultural cooperatives that include even a single member who is in the food packing or distribution business but is not engaged in producing agricultural products does not enjoy protection from antitrust regulation under the Capper-Volstead Act (National Broiler Mktg. Assn v. United States 436 U.S. 816 (1978) at 827-829, In re Mushroom Direct Purchaser Antitrust Litig. 621 F (2009) at 283). The US District Court for the Central District of California has concluded that the intention of Congress in enacting Capper-Volstead was to help farmers protect themselves from “the predatory middleman, the speculator who bought crops in the field and returned but a small percentage of their eventual worth to the grower” (Case-Swayne Co. v. Sunkist Growers Inc 389 U.S. 384 (1971) at 393). Thus, the Solano farmers should avoid accepting as members any packing, processing, or distribution enterprises, unless such enterprises pack and distribute produce as part of a farm enterprise that entails growing crops or raising livestock. Similarly, it would be advisable to avoid inviting institutional buyers to be members of the cooperative in order to maintain protection under Capper-Volstead.

However, there is no case law clearly interpreting Capper-Volstead with regards to the participation of other types of members, such as employees of the cooperative, or end consumers who purchase products.
of the cooperative. In the US Supreme Court ruling on *National Broiler*, Justice Brennan issued a concurring opinion which further discussed the intent of Congress in enacting Capper-Volstead and which may offer an argument that workers could perhaps be members of an agricultural producer cooperative without compromising protection under Capper-Volstead. Brennan pointed out that the antitrust law known as the Clayton Act provided exemptions for agricultural producer cooperatives and labor unions (an Act which Capper-Volstead intended to clarify). As Brennan wrote, in reference to the Clayton Act, “[t]his legislation linked industrial labor and farmers as the kind of economic units of individuals for whom it was thought necessary to permit cooperation -- cartelization in economic parlance -- in order to survive against the economically dominant manufacturing, supplier, and purchasing interests with which they had to interrelate” (*National Broiler Mktg. Assn v. United States* 436 U.S. 816 (1978) at 830). Thus, while the question of employee members in an agricultural producer cooperative remains unclear, Justice Brennan’s opinion offers a hint that Capper-Volstead protection could arguably apply to an agricultural cooperative that includes a class of a worker-members because the intent of antitrust laws was to prevent predatory practices by big industry actors that were harmful to small farmers and workers. Indeed, since the passage of the populist Capper-Volstead Act in 1922, and since the 1978 *National Broiler* case was argued, workers in the food system have experienced stagnating wages, making them among the lowest paid workers in today’s economy, and one could make the argument that protecting workers from the vast power and predatory practices of large agriculture and food industry giants is well within the spirit of Capper-Volstead. Similarly, since an ultimate goal of antitrust laws is to protect consumers from price fixing by industry giants, one could argue that inclusion of consumers as voting members in a multi-stakeholder cooperative does not violate antitrust laws. These arguments are no a sure bet, however, so the farmers’ cooperative should proceed with caution and seek legal advice when forming its membership and governance structure, especially when including any members who do not clearly fall into the category of farmer, rancher, dairy producer, or fruit/nut grower.

**Further Reading**


**Food Safety Modernization Act (FSMA)**

A concern raised by farmers repeatedly has been the administrative costs and hassles associated with the Food Safety Modernization Act (FSMA). FSMA regulates both farms and facilities that hold, pack, or process food. FSMA contains two main parts: the Produce Safety Rule and the Preventive Controls Rule. The Produce Safety Rule is more directly relevant to farms because it regulates the growing, harvesting, and packing of produce. The Preventive Controls Rule is generally designed for food manufacturing and for facilities that pack and hold produce, and farms are expressly exempt from this rule (21 CFR §117.5(k)(1)). Thus, in the context of the Solano farmers’ cooperative, individual farmers must be primarily concerned with the Produce Safety Rule. Meanwhile, the cooperative’s facilities used for holding, packing,
and distributing produce and other farm products must be concerned with the Preventive Controls Rule. There are numerous exemptions and partial exemptions from requirements under the Produce Safety Rule available for small farms and farms that grow products posing fewer food safety risks.

However, it appears there is no practical applicable exemption from FSMA’s Preventive Controls Rule for a farmers’ cooperative facility such as the one envisioned for Solano County farmers at this time. Thus, a produce distribution cooperative would have to comply with the requirements of FSMA. Some individual farmer-members of the cooperative may enjoy exemptions from FSMA’s Produce Safety on their own farms, but any packing and distribution facilities operated by the cooperative would likely need to fully comply with the Preventive Controls Rule, which would entail registering with FDA, being subject to inspections, having a written and approved food safety plan tailored to the facility, employee training, and detailed record-keeping. Additionally, the cooperative, in complying with the Preventive Controls Rule, may need to ensure that its suppliers (i.e. its farmer members) are implementing good agricultural practices on their individual farms. Prospective farmer members of the cooperative whose farms are exempt or qualified-exempt from FSMA’s Produce Safety Rule should not be too fearful that selling to the cooperative could trigger having to pay for expensive food safety audits or other costs of FSMA compliance because the rules on this matter do not necessarily prohibit a distributor regulated by FSMA from purchasing produce from an exempt or qualified-exempt farm. However, the rules require the buyer to consider the farm’s history of compliance and use of good agricultural practices (Title 21 CFR § 117.410). Therefore, exempt and qualified exempt farms may still be able to sell to a produce distributor, such as the envisioned cooperative, without having to bring their individual farms into full FSMA compliance. But in these cases, the exempt or qualified-exempt farm should maintain thorough records of any food safety-related training, testing, plans, inspection notes, and other food safety practices implemented on their farm to help make the case that the farm has a strong track record on food safety.

There are rigorous trainings offered through various non-governmental organizations on FSMA compliance. It’s advisable that the cooperative to send its staff to such food safety trainings before beginning operations.

On the topic of food safety, it should be noted that California law requires many small farms to follow the Small Farm Food Safety Guidelines published by the California Department of Food and Agriculture (CDFA). Farms that must comply with the CDFA guidelines include all farms that sell at certified farmers’ markets (California Food and Agricultural Code § 47020(c)), all farms that operate a CSA ((California Food and Agricultural Code § 47061(a)(1)(B)(i)) , and all farms operating on land that is not zoned primarily as agricultural land, which includes many urban farms and community gardens (California Health and Safety Code § 114376). Thus, under California law, even many small farms that are entirely exempt from FSMA are still subject to some important food safety requirements, which contain some similar (not identical) practices as required of FSMA covered farms. Adhering to California’s Small Farm Food Safety Guidelines and maintaining thorough documentation of compliance can help small farmers who are members of the cooperative sell their produce to the cooperative while avoiding some of the more costly audits and other requirements that other wholesale buyers may impose on farmers.
Further Reading

FDA has an information page about the Preventive Controls Rule, with links to additional resources, at this link: https://www.fda.gov/food/guidanceregulation/fsma/ucm334115.htm

California’s Small Farm Food Safety Guidelines are available at this link: https://www.cdfa.ca.gov/is/i_&_c/sffsg.html

USDA Grants Available to Agricultural Cooperatives

Agricultural cooperatives are given preference in applying for certain USDA grants, such as for value added food production. Further, USDA provides Rural Cooperative Development Grants to nonprofits that provide technical assistance to agricultural cooperatives, so in some regions there is additional government-funded assistance available to agricultural cooperatives for business planning, legal support, technical information, and other needs.

Further Reading
See USDA’s Rural Development webpage for current information on grants available. https://www.rd.usda.gov/

Legal Steps Involved in Agricultural Cooperative Development

Phase 1: Simple Farmers’ Cooperative

At least a few weeks before the local food distribution enterprise is ready to begin operations, a simple cooperative corporation can be formed with interested farmers as members. If the ultimate vision of the cooperative is to be a true multi-stakeholder cooperative with multiple types of members (e.g. agricultural producers plus consumers, workers, or other groups) participating in elections and in profit sharing, then it might be advisable to form a cooperative corporation under California’s Cooperative Corporation Law (the framework designed for various models of consumer and worker cooperatives). However, there are benefits to forming a NCAC for reasons discussed in the section of this memo about securities law. Therefore, the cooperative initially might choose to form as a NCAC under California law.

If the farmers choose to first form a NCAC but later decide to transition to a general Cooperative Corporation Law co-op, so as to accommodate a multi-stakeholder cooperative, the cooperative could plan to shift from a NCAC cooperative to a cooperative corporation law cooperative later. This could likely be accomplished by some amendments to the cooperative’s Articles of Incorporation and Bylaws, which could be done by an attorney for a similar amount of time and costs associated with forming a new cooperative corporation (California Food and Agricultural Code § 54083).
The corporation (whether a NCAC or generic cooperative corporation) can be formed with a class of investor members, in addition to agricultural producer members, if desired. The investors would be there for the sole purpose of raising capital from supportive individuals and institutions who could earn a modest dividend or interest on their investment. The corporation’s Articles and Bylaws can be written such that investors only vote on rare and major decisions such as any possible merger, dissolution, or sale of substantially all assets. Otherwise, decisions would be made by a board of directors elected by the agricultural producer members. In the early stages, of the group of farmer members is very small and engaged, the corporation can be structured such that all farmer members can be elected to the board. As the corporation’s membership grows, it may be more efficient to have a smaller board elected by the agricultural producer members. Board members may be compensated or not, depending on the cooperative’s preferences and funding available. Some boards are more actively engaged in the management of the cooperative while other boards delegate most responsibilities to paid staff.

To form a corporation, a group of founding members can draft Articles of Incorporation and Bylaws to file with the Secretary of State of California. There is an initial filing fee plus an annual Statement of Information that must be filed for small fees (as of this writing the initial filing is $100 and the annual Statement of Information is $25). Additionally, California has a minimum franchise tax of $800 per year for corporations, including cooperatives. It’s advisable to work with an attorney familiar with corporate law on the Articles of Incorporation and Bylaws and to work with a CPA on accounting and tax filings.

**Phase 2: Multi-stakeholder Cooperative**

When the cooperative is prepared to bring more member classes into its decision-making and profit sharing system, it could consider restructuring to include the following groups of member classes:

- Farmers
- Workers
- Individual or Household Consumers
- Investors
- Nonprofit Organizations

It’s important to consider antitrust regulations when adding additional member classes. See the section on Cooperatives and Antitrust Laws above, and consult with an attorney on specific changes in membership structure and about any other questions as they arise since the addition of some non-farmer members could trigger regulation or litigation under US antitrust laws.

When adding additional member classes the farmers will need to decide how to allocate profit and loss sharing and voting power among the different classes. In California cooperative law, voting power within a member class must be equal, meaning each member receives one vote (California Corporations Code § 12404). However, different classes of members can hold different powers. For example the farmer
member class could have the power to elect a majority of the board members and the consumers might only get to elect one board member. Or, as another example, the cooperative’s organizing documents could require that certain major decisions be approved by each member class.

A note about including investors as members: California corporate law allows for cooperatives to have preferred shareholders who have very few voting powers, however, they must have the right to vote on matters that would materially affect their proprietary rights in the cooperative (California Corporations Code §§ 12330(a) - (b)). Thus, investor members would not need to be involved in routine business decisions, however, they should have the right to approve or reject decisions such as authorizing additional member classes in the cooperative, authorizing additional shares to be sold, or amending major governance provisions of the bylaws that affect their financial interest in the cooperative. The cooperative could consider bringing on investors with such limited voting rights in order to access capital from the community, but also to ensure that farmers remain largely in control of the cooperative.

A note about including nonprofit organizations as members: including one or more nonprofit organizations as members can be advantageous for helping to ensure the cooperative stays on mission. Nonprofit organizations could be part of a special membership class that could hold the right to veto or approve of certain article or bylaw amendments (California Corporations Code § 12330(d)), giving the nonprofit the right to ensure that the cooperative doesn’t sell out to a larger agribusiness, for example. In addition or instead, the nonprofits could be given the right to elect one or more board members who would represent the broader community or the food movement. This could also help ensure that the cooperative adheres to certain policies or principles. For example, the farmers’ cooperative has discussed wanting to supply local food to the local community within Solano County, but it’s been suggested that selling produce to upscale restaurants in the central San Francisco Bay Area and to large tech company campuses is more lucrative. If the cooperative chooses to pass a policy requiring that a certain amount of food distributed by the cooperative goes to local food banks, schools, or other institutions, special powers given to nonprofit members could help ensure these commitments are honored, while allowing farmers to drive more general business decisions of the cooperative.

Examples of Agricultural Cooperatives, Multi-stakeholder Cooperatives

There are not many multi-stakeholder cooperatives in the US, and many of the examples that exist in the food and agricultural context are still in early stages. This memo does not provide a comprehensive report of multi-stakeholder cooperatives, but a few notable examples include the following:

- **Our Table Cooperative** in Oregon is a multi-stakeholder cooperative that operates a farm, grocery store, and small food distribution business with member classes for workers, consumers, and regional producers. Workers elect 3 out of 7 members of the board of the cooperative; consumers elect one board member, regional food and agricultural producers elect one, and there are two board members elected by the members at large. Additionally, Our Table Cooperative has raised over $1 million over the last five years largely from non-voting shareholder members.
● **Poudre Valley Community Farms** in Colorado is a multi-stakeholder cooperative that is raising money to purchase farmland to support the next generation of farmers. It is structured with two main member classes: consumers and farmers. Consumers elect 3 out of 5 members of the board of the cooperative; agricultural producer members elect one and other institutions elect one.

● **Organic Valley** is a national farmer-owned organic dairy cooperative. Though not a multi-stakeholder cooperative, it is notable because of its sales of non-voting investor shares to the general public to finance its operations. Organic Valley is an example of an agricultural cooperative that opts for taxation under Internal Revenue Code § 521 and uses the federal securities registration exemption for agricultural producer cooperatives.

**Further Reading**

For an overview of cooperatives in general with several case studies on multistakeholder cooperatives, see Lund, Margaret, “Solidarity as a Business Model,” Cooperative Development Center at Kent State University, date unknown, available at:

**Collaboration with Local Organizations, Government**

To meet its goals, the Solano agricultural cooperative should maintain close collaborations with local government and local nonprofit organizations of various types. Excellent partnership opportunities have already been identified with the following two organizations:

**Sustainable Solano**

Sustainable Solano is an educational nonprofit organization with tax-exempt status under IRC § 501(c)(3). Promoting sustainable and local food is a primary activity of the organization, and it has been working to develop a vision for a group of food hubs in each of Solano County’s major cities that serve as hubs for local food activities such as CSAs deliveries, cooking classes, community education, and large kitchens where chefs and community members can cook wholesome nutritious meals. These food centers will increase access to seasonal, locally-produced food and ultimately better health and well-being for residents county-wide. As a 501(c)(3) nonprofit, Sustainable Solano can engage in some limited economic development activities, such as incubating a local food distribution cooperative, so long as those economic development activities further Sustainable Solano’s nonprofit mission. As mentioned in the section of this memo on USDA grants, nonprofit organizations such as Sustainable Solano can secure USDA grants for cooperative development and local food promotion, among other agriculture-related projects. If Sustainable Solano continues to partner with an agricultural cooperative, Sustainable Solano must ensure that after an initial incubation phase, it engages with the cooperative only in such a way as to avoid using its nonprofit resources (funding and other assets such as its brand, goodwill, facilities, etc) to benefit the cooperative, unless Sustainable Solano is compensated at fair market value for its services. In any business dealings between the two entities beyond an initial incubation phase, the board of Sustainable
Solano must ensure that dealings are done "at arm's length" and with the best interests of Sustainable Solano as a priority. Thus, a mutually beneficial partnership between Sustainable Solano and the farmers’ cooperative would be legally sound, so long as Sustainable Solano abides by some ground rules for nonprofits engaging with private enterprises.

**Solano Grown**

Solano Grown is a California nonprofit organization with tax exemption under Internal Revenue Code § 501(c)(6). It was formed in 2008 by the County of Solano to hold onto the Solano Grown brand which has been used to market agricultural products from Solano County. Use of this brand would be highly desirable for the farmers’ cooperative and could be achieved through a simple licensing agreement between Solano Grown and the cooperative. As a 501(c)(6) organization, Solano Grown can lawfully enter into such a licensing agreement. The cooperative and Solano Grown will need to negotiate terms and consider questions such as whether the agreement will involve licensing fees, the length of the agreement, etc. Another issue to consider will be if users of the brand will need to adhere to any quality standards, and if so, who will enforce those quality standards. It may be unlikely that the Solano Grown organization will be willing to make an exclusive licensing agreement with the cooperative, so the cooperative may need to consider whether it would be willing to agree to use a brand that other farms in the county may also use. In this case the cooperative may want to be sure that any its licensing agreement will allow the cooperative to simultaneously use its own brand alongside the Solano Grown brand to market its products, or perhaps the licensing agreement could allow the cooperative to use the Solano Grown brand with a modification that is exclusive to the cooperative, or to producers who meet certain quality standards. Examples of modification of the brand could be use of phrases such as “Solano Grown - Sustainably” or “Solano Grown - Cooperative.”
Policy Memo Re: Institutional Purchasing

Date: December 6, 2018
To: Sustainable Solano
From: Christina Oatfield, Grassroots Finance Attorney
Re: Institutional Purchasing Policy to Promote Local Food Systems in Solano County

Dear Sustainable Solano,

This memorandum describes policy ideas that Sustainable Solano and its local partners could advance to further your goals of promoting access to, consumption of, and awareness of local food in Solano County, California. As with any policy idea, ample discussions with affected stakeholders greatly helps refine the policy proposal and build political support, so we highly encourage you to consider working on these ideas with other local organizations, farmers, city planners, and community groups.

Good Food Purchasing

What is Good Food Purchasing?

Many food movement advocates around the US have succeeded in lobbying institutions to adopt procurement policies, or food purchasing policies, which require the institution to purchase foods that meet certain criteria that promote good nutrition, local agriculture and local businesses, environmental sustainability, animal welfare, and workers’ rights. While individual consumers can have a positive impact on the food system by choosing to purchase certain products based on how they were produced, large institutions that purchase ingredients in large volumes can have much greater and more immediate impacts on the food system.

Solano County food and agricultural organizations and business owners could consider asking major institutions such as school districts, hospitals, city and county governments, and other institutions that regularly purchase food and agricultural products in large quantities to adopt a policy that prioritizes purchasing products from Solano County farms, among other criteria. Food procurement policies could require purchasing from farms within a certain number of miles from the institution (common procurement policies that favor local produce define local as grown within 150 or 250 miles) or from within a certain county. Additional policies could favor purchasing from farms with certain certifications, such as organic or animal welfare approved.

Resources

The Center for Good Food Purchasing promotes an adaptable food purchasing policy framework for large institutions, such as schools and hospitals, seeking to purchase food that provides measurable benefits in five categories which include: Local Economies, Environmental Sustainability, Valued Workforce, Animal
Welfare, and Nutrition. Institutions around the US have adopted some version of the Center’s food procurement policy. The Center provides metrics, standards, and technical assistance for institutions to adopt a policy and track its progress on implementation. See their online resources at this link: https://goodfoodpurchasing.org/

Success Stories

According to the Center for Good Food Purchasing, since adopting a Good Food Purchasing policy, LA Unified School District has shifted $12 million in spending toward local farms.

Friends of the Earth produced a report detailing how the Oakland Unified School District was able to substantially reduce environmental impacts and increase nutritional quality of its school meals while saving costs by lowering quantities of meat served, but purchasing higher quality meat. See the report titled Shrinking the Carbon and Water Footprint of School Food available at this link: https://foe.org/resources/shrinking-carbon-water-footprint-school-food/
Dear Sustainable Solano,

This memorandum describes policy ideas that Sustainable Solano and its local partners could advance to further your goals of promoting access to, consumption of, and awareness of local food in Solano County, California. As with any policy idea, ample discussions with affected stakeholders greatly helps refine the policy proposal and build political support so we highly encourage you to consider working on these ideas with other local organizations, farmers, city planners, and community groups.

Current State of Agritourism in Solano County

What is Agritourism?

Solano County Zoning Regulations define agritourism, in part, as “[t]he provision of facilities, amusement activities, commercial services, guides, or instructional content to encourage visitors to any agricultural, horticultural or agribusiness operation, either temporarily or on a permanent basis, for the purpose of enjoyment, education, or active involvement in the activities of the farm or operation other than as a contractor or employee of the operation. Agritourism includes agriculturally related indoor and outdoor amusement and recreation activities such as farm tours, hayrides, sleigh rides, corn mazes, picnic and party facilities and other similar uses as determined by the zoning administrator....” (Zoning Regulations § 28.01)

Benefits of Agritourism

Agritourism has been recognized as beneficial to farming communities in California, for economic and other reasons. It’s been identified as a strategy to promote small farm economic viability by enabling more diversity of sources of income to agricultural operations generally, and it can be especially helpful for supplementing income in low-revenue seasons. It can provide additional advertising opportunities for farm products. Additionally, these economic benefits arguably help protect agricultural land from housing development by promoting economic viability of small farms. (Keith, Diana, et al “Obstacles in the Agritourism Regulatory Process: Perspectives of Operators and Officials in Ten California Counties,” Agricultural Issues Brief, September, 2003, Agricultural Issues Center, University of California, Davis.)
Legal Barriers to Agritourism in Solano County

Note: all code citations in this section refer to the Solano County Zoning Regulations, also known as Solano County’s zoning ordinance, unless otherwise noted.

Solano County zoning laws create different agricultural districts in the county: Exclusive Agricultural Districts, a Suisun Marsh Agricultural District, and Suisun Valley Agricultural Districts. Different levels of agritourism activity are allowed in each of those districts. In the Suisun Marsh district no agritourism is allowed (Table 28-22A, Line 28.75). However, the other two agricultural districts allow agritourism uses, but on varying terms. The Suisun Valley Agricultural District law provides the most liberal agritourism laws in the county for wineries.

The Exclusive Agricultural Districts law, which applies to most agricultural lands outside the Suisun Valley, allows agritourism homestays and some other forms of agritourism on a “temporary” basis (Zoning Ordinance Table 28-21A). The agritourism activities in these districts must be “incidental” to commercial agriculture. Although “agricultural homestays” are allowed by right, there are some restrictions and requirements regarding matters such as parking, ingress and egress, food service permits, etc. in § 28.75.10(A) & (B)(1)). When a land use is allowed “by right” it means that no permits or fees are required, so long as the use conforms to any applicable limitations on that use in the zoning code. In the Exclusive Agricultural Districts, other on-farm agritourism uses involving amusement, entertainment, and seasonal sales are allowed, but only on a temporary basis and with a minor use permit (Solano County Zoning Regulations Table 28-21A). Obtaining a minor use permit requires a public hearing before a zoning officer, and as of the writing, the fee for a conditional use permit is $1,799. There is no prescribed timeline for obtaining one of these permits but according to one Planning Services official the average timeline from permit application submission to permit approval is about three or four months, however, the timeline can vary from case to case depending on the nature of the proposed agritourism use.

By contrast, the Suisun Valley Agricultural Districts zoning provisions, which apply largely to the Suisun Valley winery region, have more permissive zoning codes when it comes to agritourism. In the Suisun Valley Agricultural Districts agritourism uses are generally allowed by right (§ 28.23 and Table 28-23). Although § 28.23.50.50.C.4 requires a conditional use permit for “special events” in these districts, the zoning code defines “special events” quite narrowly as social events for third parties that are not relevant to the agricultural use of the property (§ 28.01). Thus it appears the conditional use permit requirement applies largely to weddings or other such social gatherings at wineries, not typical agritourism activities. Additionally, there is an exemption from the conditional use permit requirement for special events for small and medium wineries for up to six events per year with up to 150 guests per event by right pursuant to § 28.23.50.10.5. So overall there are many agritourism uses, and even some non-agritourism “special events,” allowed without use permits or fees in the Suisun Valley Agricultural Districts in Solano County. The stated goal of expanded uses allowed in the Suisun Valley Agricultural District is to “help foster small tourist-oriented centers within the Valley, help attract tourists, and provide additional opportunities to market local products” (§ 28.23.12).
The limitations and use permit requirements for Exclusive Agricultural Districts pose some challenges for small, diversified farms in the county. Many of Solano County’s small and diversified farms are located in Exclusive Agricultural Districts where the $1,799 minor use permit is a requirement for most agritourism activities, technically even a single small tour, tasting, or educational event on the farm. Although a farm could apply for one minor use permit to conduct agritourism activities on a recurring basis (in other words, a new minor use permit does not need to be obtained for every single agritourism event), the fee alone may be prohibitive for smaller farms. Many small farms operate on very tight profit margins so even if a minor use permit could open opportunities for additional revenue, the $1,799 fee may be a relatively large sum to pay for a business expense that may or may not result in more business. Some Solano farmers would like to host agritourism events that may have educational and community value, but that do not necessarily draw in significant additional revenue, thus a $1,799 fee may discourage community serving activities on farms. Additionally, some small farm advocates have complained that navigating the process of finding information about permits and applying for minor use permits is confusing, time consuming, and overall frustrating.

Policy Solution

An agritourism policy that would better promote the local food system in Solano County should include:

● Allowing agritourism as an accessory use of agricultural land throughout the Exclusive Agricultural District by right. This would mean that a farmer would not need to apply for permits or pay fees to have an agritourism operation on their land, so long as the use was accessory to the agricultural use on the land (i.e. so long as agricultural production remains the main use of the land and that agritourism does not become the main activity on the land).

● A requirement that upon enactment of a revised ordinance, the Solano County Planning Services must create a plain-language fact sheet about the new agritourism policy, including a simple table summarizing what is allowed by right, what may be allowed with appropriate permits, and what restrictions and requirements apply to various agritourism uses. The fact sheet should be available in multiple languages and it should be freely and easily accessible online and in relevant county government offices.

Resources

University of California’s Small Farm Program has numerous information resources to support agritourism, including regional summits, a website, and newsletter. See http://sfp.ucdavis.edu/agritourism/ and see their webpage specifically for local land use zoning and planning information at http://sfp.ucdavis.edu/agritourism/planners/

Clarifying Note: This memo describes allowed and restricted land uses, however, the construction of new buildings or renovation to existing buildings to accommodate agritourism is subject to additional restrictions, requirements, and permits which are beyond the scope of this memo.