

BUTTE COUNTY BASELINE FOOD ASSESSMENT

The State of Our Food System through August, 2021



Butte County Baseline Food Assessment

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Photo by Bajji Hantelman

Preface

This assessment is a baseline report of the current food system in Butte County, with the purpose of serving as a starting point to understand our capability to feed ourselves and the potential to create an interconnected network that fairly nourishes us all from soil to soul. Readers will find brief summaries of challenges and opportunities in our current food system but not specific recommendations or strategies that address the issues identified within, issues such as improving the economics of farming or decreasing food insecurity. Solving these problems is the work of future teams that are willing to commit the time, energy, and resources to create and implement solutions. As such, one goal of this assessment is to call people to action so that they dedicate time and energy to the issues they want to solve.

The Food System is a complex, dynamic set of people and operations, and, therefore, a food system assessment is a lengthy document. Thus, this report is divided into five main sections, with subsections. The reader can access sections of interest by word searching the document. Due to time and staff limitations, this assessment does not include information about all aspects of the Butte County Food System, and readers are asked to send additional information and comments to [BC Food Assessment Feedback Form](#) for the continued development of this on-going work.

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BASELINE FOOD ASSESSMENT FOR BUTTE COUNTY, CALIFORNIA

The State of Our Food System Through August, 2021

Prepared by Butte County Local Food Network
With the generous support of
North Valley Community Foundation
and the Butte Strong Fund

INTRODUCTION

Land Acknowledgement

The authors of this report recognize the original occupants of what is now referred to as the Butte County area and the descendants who are still living here. They include:

- Tyme Maidu Tribe-Berry Creek Reservation
- Enterprise Rancheria
- Mechoopda Indian Tribe
- Mooretown Rancheria

We acknowledge and are mindful that these first people have a special and sacred relationship with their ancestral lands and the waters that run through these lands, sustaining them for centuries. We strive to learn from their ways and be considered by the tribes as allies to respect and steward resources in this life-giving place.¹

Why a Food Assessment for Butte County?

A food assessment is a systematic evaluation of the strengths, gaps, and opportunities within a defined area. All aspects of our life are impacted by the food system, which is linked to many other essential resources such as water, air, soil, energy, labor, and land management. We take a broad view of the food system that stretches from seed to soul, and includes cultivation, production, transformation, distribution, access, and consumption of food,

plus waste, packaging, and other ramifications of the food system on all aspects of our lives and the environment. The Butte County Food Assessment is a comprehensive baseline report about the state of our food system today. The ultimate goal of preparing this report is to create an interconnected network that fairly nourishes us all. This assessment will lead to the development of a regional food system plan that will acknowledge the history and current work of food production and ensure access to food for all residents by supporting and increasing local food production and consumption and expanding economic opportunities.

Food assessments have been conducted in many areas of the United States, on city, county, regional, and state levels. The work done by Vermont is especially notable, as they created an actionable plan that, in eight years, has increased local food sales by 176%, created 742 new businesses and 6,559 net new jobs, and reduced food insecure households from 13.2% to 9.8%.² Sixteen

assessments have been done in California; however, most are not being used. One exception is San Diego, which is now creating a Food Vision for 2030.³ We are adamant that this assessment not sit on a “virtual shelf” but be a foundation to build a self-sustainable food system.

The Butte County Food Assessment is a comprehensive baseline report about the state of our food system today. The ultimate goal of preparing this report is to create an interconnected network that fairly nourishes us all.

Methodology

This work was started in August 2020 with an informational meeting open to all stakeholders in the food system. Of the approximately forty attendees, 14 people representing ten organizations, both county departments and community organizations, volunteered to form a core team. The efforts of this group resulted in a successful request for funding to the North Valley Community Foundation/Butte Strong Fund. To prepare this report, the research assistants researched websites, press releases, and news

reports, and conducted interviews with farmers, policy makers, county government staff, and businesses during Summer 2021. Many good sources of information were identified but time limited the team’s ability to conduct in-depth research and some sources were not available, such as school personnel, due to summer break. The USDA’s 2015 Local Marketing Practices Survey provided data about agricultural production and a 2020 update is expected in 2022, which will provide updated information to inform our continuing assessment.^{4,5} Interviews for this baseline assessment focused on how the individual or organization dealt with issues related to the production of food, including resources, challenges, and opportunities. A list of the Baseline Food Assessment Team, the Core Planning Team, and groups contacted for interviews and information is provided in Appendix A.

The food system is closely tied to other systems, including water, soil, climate change, and citizen health; these related topics are briefly discussed in the appendices. As the team collected data, we became aware of the magnitude of information from federal, state, regional, and county sources, plus the vast experience of so many who are involved in the Butte County food system.

Due to time limitations, the information in this assessment is current as of August 31, 2021. One primary example is the USDA Agriculture Census, which is conducted every five years. This assessment used data current through 2015 for the section Agriculture and Food Production; the next Census was completed in 2020 but the report will not be published until sometime in 2022. In addition to substantial reliance on secondary data (which in some cases, is ten years old due to the challenges in collecting and compiling data), interviews and focus groups were limited in scope and may not be generalizable. Additionally, some data obtained preceded the Camp Fire and onset of COVID-19, two major impactful events in the county, and updated quantitative data information was not always available; interviews

This report will provide a framework for developing a robust plan to strengthen our food system and will bring together all its stakeholders.

with various stakeholders do discuss the impact of these disasters on our food system. Due to these limitations, the reader may find that some sections are incomplete or include outdated information. We encourage the submission of additional and recent information via the [BC Food Assessment Feedback Form](#).

Goals

The goals of this baseline food assessment are:

- To give consumers, businesses, organizations, and city and county agencies—and all involved with food—an understanding of the food system in our county, with the information located in one document;
- To supply data that can inform all stakeholders about the actual food situation, rather than one perspective;
- To develop a baseline for our food system to understand our current situation and to serve as

a starting point for for soliciting support, including grants and business plans, to move our efforts forward and be used to compare the results of our efforts;

- To provide baseline data that can inform a county Food Visioning Plan for the next 10 years’ vision and 3-5 year action plan to take the steps to create this plan.

This plan will include local

and regional land use, economic development, public health, and environmental goals, programs, and policies that contribute to the sustainability and effectiveness of our local food system. The benchmarks will be periodically assessed to gauge and report success of the projects we develop from the action plan and to change projects to meet our goals. This report will provide a framework for developing a robust plan to strengthen our food system and will bring together all stakeholders in the food system.

While the primary outcome of this effort will be a county Food Sovereignty Visioning Plan, the shape of this plan will be determined by those who choose to participate in this endeavor. Efforts to identify and



This public domain photo shows Maidu men standing atop the Chico Ranceria Roundhouse, ca. 1915.

apply for funding are on-going and will accelerate the work, but the intention of the Butte County Local Food Network is to reach this goal. First, working groups will be formed around issues of interest to participants, with a 3-5 year outlook to plan and implement efforts to meet the most important needs in our county. This effort will be open to all who would like to participate. Our intent is for this report to be a “living document”, with information continually updated, likely on a website, and used to direct resources, including time, money, and people, to create a healthy food system.

Profile of Butte County

History

Incorporated in 1850 as one of the original 27 counties of California, Butte County is located in the Northern Sacramento Valley of California and

covers 1,636 square miles of land and 41 square miles of water (Appendix B: Map of Butte County). Geographically, the county is flanked by the Western Sierra Nevada Range to the east and the Sacramento River to the west, with an elevation rise from -3 feet to 7,192 feet, resulting in a variety of microclimates. The county is bordered by Tehama to the north, Plumas to the east, Yuba and Sutter to the South, and Colusa and Glenn counties to the west. In addition to the Sacramento River, the Feather River runs through the southeast part of the county, forming Lake Oroville.

The earliest known residents were the Northwest Maidu tribes, who lived along the Feather River. They were nomadic by seasons, but made preparations to store food in hidden places, in the same locations yearly. They wild-tended trees and shrubs, many of

which to this day serve both as food and medicine, such as elderberry, redbud, mulberry, pinons or pine nuts, lettuce, called “Indian or miner’s” lettuce, *Claytonia perfoliata*, which the Mechoopda pronounce pookoo (spelled py’ky’), and bay laurel. Acorns, ground into flour, were the staple of their diet and were supplemented with grass seeds, bulbs, tubers, and corn.⁶ Meat and fish were consumed as available. The Mechoopda hunted elk, antelope, and deer by bow and arrow and used netting to trap small animals like rabbits, often at their watering places, and fish, such as salmon.⁷

Non-Native people were drawn to this area

primarily for mining opportunities in the 1800s, but within a decade, agriculture became the primary industry. Mexico initially laid claim to the land and made land grants to settlers, including the Llano Seco grant, which is one of the last remaining intact grants. In the 1850s, the Gold Rush brought thousands of people to the area, resulting in the development of towns along Butte Creek (Chico) and the Feather River (Oroville).⁸ Land use reported in 2018, which likely does not include losses due to the Camp Fire, was 238,871 acres used as farmland (a decrease of 5,966 acres from 2008), 398,764 acres used for grazing, 46,650 acres as urban and built-up, and 365,781 acres as “other”, presumably parks and open space.⁹ Interactive maps and a zoning map are available.^{10,11}

Infrastructure includes two highways that run through the county, California State Routes 70 and 99, and several railroads, including Amtrak service via the Coast Starlight route and Amtrak buses to various locations. The other railroad routes are operated by Union Pacific Railroad and used for transporting goods.¹² Human movement in the county is primarily via personal vehicles, with one bus line, the B-Line, hubbed in Chico and serving

the communities of Paradise, Magalia, Oroville, and Gridley. Butte College runs a bus between its main campus in Durham and a smaller facility in Chico. Due to the waterways emerging from the Sierra Nevada, the county has six hydroelectric power plants, with Oroville Dam providing power to 800,000 homes when operating at full capacity.¹³ Water is managed by 15 water districts and companies, several crossing county lines, and is discussed in the next section.¹⁴ Butte County has 14 school districts with 91 public schools and 18 charter schools and is home to the Chico campus of the California State University and Butte College.¹⁵

Butte County’s population peaked in 2018 at 230,339 and has been decreasing, primarily due to displacement from the Camp Fire (November 8, 2018). The county population in 2019 was 218,726 then dropped to 211,632 in 2020 per the US Census Bureau.

Between 2017 and 2021, several disasters impacted Butte County. In February 2017, the main and emergency spillways of Oroville Dam were damaged, resulting in the evacuation of more than 180,000 people who lived downstream. In November 2018, the most destructive wildfire in California to-date, the Camp

Fire, killed at least 85 people and destroyed most of the towns of Paradise, Concow, and Magalia, and homes in Butte Creek Canyon, burning a total of 153,336 acres or 239.6 square miles, and destroyed at least 18,000 structures, which was about 14% of the homes and apartments in the county.¹⁶ In September 2020, lightning sparked fires in Plumas and Butte counties, merging into the North Complex fire, killing 16 people, destroying or damaging 2,455 structures, and burning 318,935 acres, including the southern portion of the Camp Fire Burn Scar, and leveling most of the communities of Berry Creek and Feather Falls.¹⁷ Between July 13 and October 26, 2021, the Dixie Fire burned 963,309 acres over five counties, killed 1 person, and destroyed 1,329 structures across Butte County and neighboring counties. As with the entire United States, and also globally, the COVID-19 pandemic has revealed the issues and inequities of our food system, including here in Butte County. In all of these crises, food and



The 2018 Camp Fire destroyed farms in Concow and Paradise and launched efforts to supply emergency food to victims. (Bottom photo courtesy of Northstate Food Bank)

shelter were in limited supply and the fires destroyed the livelihood of many people who lived in the burned areas (the “burn scar”), resulting in a lack of income, in addition to not having housing.

Overview of Butte County Demographics, Socio-economics, and Health

Demographics: Butte County’s population peaked in 2018 at 230,339 and has been decreasing, primarily due to displacement from the Camp Fire (November 8, 2018). The county population in 2019 was 218,726 then dropped to 211,632 in 2020 per the US Census Bureau.^{18,19} However, these numbers don’t reflect the North Complex fires, which broke out in August 2020, and destroyed the communities of Berry Creek, Brush Creek, and Feather Falls, where another 1,100 homes were lost to fires.

Many of those who lost their homes in the Camp Fire settled in Butte County but a considerable number left the county, even moving out of California. Initially, the populations of Chico, Oroville, and Gridley were significantly impacted; however, populations have continued to shift as prior Ridge residents seek permanent housing. Paradise showed a massive loss in population between the 2010 and 2020 Censuses. The town had been growing slowly, from 26,218 in 2010 to 26,532 by July 2018. By the following July, the population was 4,171. The April 1, 2020 Census count shows the town’s slow recovery, putting the population at 4,329. Chico was the place where the largest number of those who were burned out settled. The city’s population jumped roughly 9,000 people from July 2018 to July 2019, and has continued to increase in the last decade: Chico’s population went from 86,187 in 2010 to 101,475 in 2020, according to the Census Bureau. A number of other local jurisdictions showed a similar pattern, rising in 2019, and dipping in 2020, as those who had taken temporary shelter in these communities moved to permanent housing elsewhere. Oroville, however, showed steady growth,

Studies show that conventionally distributed foods travel an average of 1,500 miles from farm to consumer, contributing between 5 to 17 times more greenhouse gasses than locally marketed foods.

rising from 15,546 in 2010 to 20,042 in 2020. Gridley went from 6,584 to 7,421 in that period; Biggs, 1,701 to 2,025. Numbers were also available for Durham, which grew from 5,518 to 5,834

Most recent age and ethnicity data are from 2019. The county is almost evenly split regarding gender, with 50.5% female. The age distribution was 20% under 18 years of age, 62% between 18 and 64, and 18% over 64, which is a higher percentage of people over 64 than the state average of 14.8%,²⁰ indicating that Butte County has the challenge of ensuring food security in this population. The racial composition of Butte County in 2019 was 70.9% White alone, not Hispanic or Latino; 17.2% Hispanic or Latino; 5.0% Asian alone; 4.6% two or more races; 2.5% American Indian and Alaskan Native alone; 1.9% Black or

African American; and 0.3% Native Hawaiian and other Pacific Islander alone.

Socio-Economic: According to Data USA, 19.1% of the population lives below the poverty line, higher than the national average of 12.3%.²¹ The median household income in Butte County in 2019 was \$52,537 with an average of 2.6 persons per household. The per capita income is \$27,506.²² CalFresh serves approximately one in seven residents, nearly half

of which are children.²³ A 2021 report named Chico, the largest city in Butte County, as #1 among cities in California with the widest income gap. This measure is determined by comparing the difference between the top and bottom quintiles (20%) of incomes and serves as an important marker for economic disparity within the county.²⁴

Health: The health of Butte County residents was negatively impacted by the Camp Fire, and they already, even before the fire, had poorer health than residents of the majority of the 58 California counties. In 2018, Butte ranked 37 for health outcomes and 32 for health factors, and in 2020, Butte ranked 43 for health outcomes and 33 for health factors.^{25,26} From the 2019 Butte County

Health Assessment, the factors that are most critical to the health of Butte County residents are Access to Care, Mental Health and Substance Use Disorders, Chronic Conditions, and Adverse Childhood Experiences (ACEs) and Childhood Maltreatment. A 2013 report noted that 76.5% of Butte County adults have experienced at least one ACE,²⁷ which is likely higher after the Camp Fire. In 2018, Butte County led the state with the highest rate of preventable chronic care hospitalizations, with 1,341 per 100,000 people (state average was 700).²⁸

Many chronic diseases, such as heart disease, cancer, and diabetes, are related to nutrition. For diseases specifically related to nutrition, Butte County’s proportion of obese adults is 31.7%, compared to a state average of 27.1%.²⁹ Among adults 19 and older, 60.3% are overweight or obese (state average 61.5%).³⁰ For ethnic groups that have enough representation in the data, obesity and overweight among Hispanic/Latino people is 54.1% (state average 72.6%) while Whites are very close to the state average at 60.2%.

All of these demographic, socioeconomic, and health indicators are impacted by our food system, in both the production and the consumption of food. This report first describes Agriculture and Food Production, followed by Food Access in Butte County.

THE LOCAL FOOD SYSTEM

The local food system is composed of activities surrounding the production, marketing, and consumption of foods within a specific region. The following section reviews the benefits of a strong local food system and how our current system looks in terms of employment and capacity to feed itself. Research indicates that growth of the local food system provides benefits to communities in terms of food quality and variety, sustainability, and support to the local economy. Notably, producers who sell their products locally see greater returns on each consumer dollar

spent and employ more full-time local hires compared to export producers. While there are multiple sectors involved in the food system, the restaurant industry makes up the majority of food system employment in Butte County and also saw the greatest negative impact from the Camp Fire and COVID-19 pandemic. An analysis of what is currently grown in the county, as compared to USDA recommendations for a healthy diet, identifies areas of excess and deficit. Importantly, only a doubling or tripling of our current vegetable crop land use of 500 acres, would be needed for all Butte County residents to meet their daily vegetable requirements from local sources, an increase of approximately 1,000 to 1,300 acres, depending on vegetable yield, in a county with 1,047,040 acres of land, albeit not all suitable for crop production.

Producers get an average of only 17 cents for every consumer dollar spent in mainstream supply chains. In comparison, producers can see 7 times more profit from local outlets.

The food system is a complex network of activities associated with the production, processing, distribution, and consumption of food. The system therefore includes not only the logistics of how our food gets from seed and soil to our dinner plate, but also all of the policies and infrastructure involved in feeding the population, including government nutrition programs.³¹

According to the USDA, the local food system is the cluster of activities located within a specified region, often a 400-mile radius.³² In other words, local food is produced, processed, marketed, and eventually consumed within a specific location. This assessment focuses on hyperlocal, defined within the boundaries of Butte County, as well as some research into the regional food system, which includes neighboring areas in Northern California within an approximate 150-mile radius. The American Planning Association³³ has resources for incorporating food systems into community design.

Why Local Food Matters

An interconnected regional food system provides an opportunity to boost the local economy, support small business, and increase the quality of food

Growth between 2007 and 2014 (Percent)



Figure 1. Growth in local food sales outlets, 2007-2014. USDA Agricultural Market Service.³⁵

choices. In particular, locally grown and distributed food tends to be fresher, offering enhanced flavor, ripeness, nutrition, and variety. The local food system is considered a “moralized market” where economic principles merge with consumer values. Research shows growing consumer interest in freshness, transparency, and integrity in their food purchase, as well as increased interest in sustainability. Studies show that conventionally distributed foods travel an average of 1,500 miles from farm to consumer, contributing between 5 to 17 times more greenhouse gasses than locally marketed foods.³⁴ However, it should be noted that transportation makes up a comparatively small portion of the environmental impact of the food system. Food production itself accounts for the largest impact in greenhouse gasses, mostly by nitrous oxide and methane emissions. Thus, choosing locally grown, seasonal varieties and items produced with a smaller ecological footprint amplifies the environmental benefit of eating local.

Likewise, consumer buying is shifting toward more alternative formats than the traditional supermarket. In particular, there has been a rise of interest in “fresh markets”, which emphasize perishable rather than shelf stable (frozen or dried) items. Local food also has the benefit of connecting people to the origin of their food, interacting with farmers, learning about farming practices, and confidence in knowing where their dollar is going.

Interest in purchasing food from local sources has had considerable growth since the mid-2000s. Between 2007 and 2014, farmers markets have grown by 180%, food hubs by 288%, and farm-to-school programs by 430% (Figure 1, above). The top

three drivers for this growth are supporting the local economy, expanded options, and healthier choices.

Along with improved quality, the local food system provides direct benefit to the economy and places more money in the hands of local producers. Producers only get an average of 17 cents for every consumer dollar in mainstream supply chains. In comparison, producers can see 7 times more profit from local outlets. Food hubs return as much as 85% of their sales revenue back to the producer, and farmers markets strive to give 90 cents of every consumer dollar directly to the producer.³⁶

Moreover, buying local benefits the local economy and community as a whole, not the producer alone. Research indicates that only 15 cents of every dollar spent at a large grocery chain remains in the local economy; the rest of the money leaves the area to support outside interests.³⁷ However, 30 to 45 cents remain in the local economy when spent at locally owned businesses or through direct-to-consumer sales. In other words, every dollar spent locally has 2 to 3 times the power to support the local economy compared to dollars spent elsewhere.³⁸ The power of local sales is exemplified by efforts in Iowa, for which the Northeast Iowa Food and Fitness Initiative increased sales of local food by 20,000% in only 4 years (\$10,000 in 2006 to \$2 million by 2010). Such an enormous boost in local sales keeps an additional \$600,000 to \$800,000 dollars within the community.³⁹

Research further indicates that farmers market patronage increases interaction with other local businesses. Rather than going to a supercenter that functions as a one-stop-shop, patrons of farmers markets are inclined to shop at other small

businesses surrounding the market. Metrics from the Easton Farmers Market in Pennsylvania reveal that 70% of farmers market customers report shopping at other local businesses while attending the market, contributing an extra \$26,000 to the local economy.⁴⁰

Food System Employment

Food system related jobs make up approximately 17% of all jobs in Butte County (1 in every 6). Figure 2 below illustrates the distribution and trends in food system jobs within Butte County, according to the most recent available data. Examples of food system jobs include crop production, livestock production, agricultural services, refrigeration and storage, transportation, retail outlets, restaurants and food service, regulatory agencies, and government program administration. Please note that this is not a comprehensive view of food system employment because some data is considered not disclosable and is therefore not included in the U.S. Bureau of Labor Statistics database. For example, data

for beverage manufacturing in Butte County was available for winery jobs but not breweries or distilleries. Likewise, under-the-table or unpaid positions are not accounted for in this dataset. Additionally, while this figure focuses solely on jobs within Butte County, it does not tell us how much of this labor force contributes specifically to the local food market, as compared to external markets.

According to the data presented in Figure 2 below, food services and drinking places (i.e., restaurants and bars) account for 50% of food system employment. Agriculture accounts for 22% of food system employment. Food and beverage stores, food manufacturing (including beverages), and distribution and wholesale account for 16%, 8%, and 4%, respectively. Data on agricultural chemical manufacturing and farm product dry and refrigerated storage was unavailable.

Employment in agriculture, grocer, food manufacturing, and distribution and wholesale has remained relatively stable with subtle

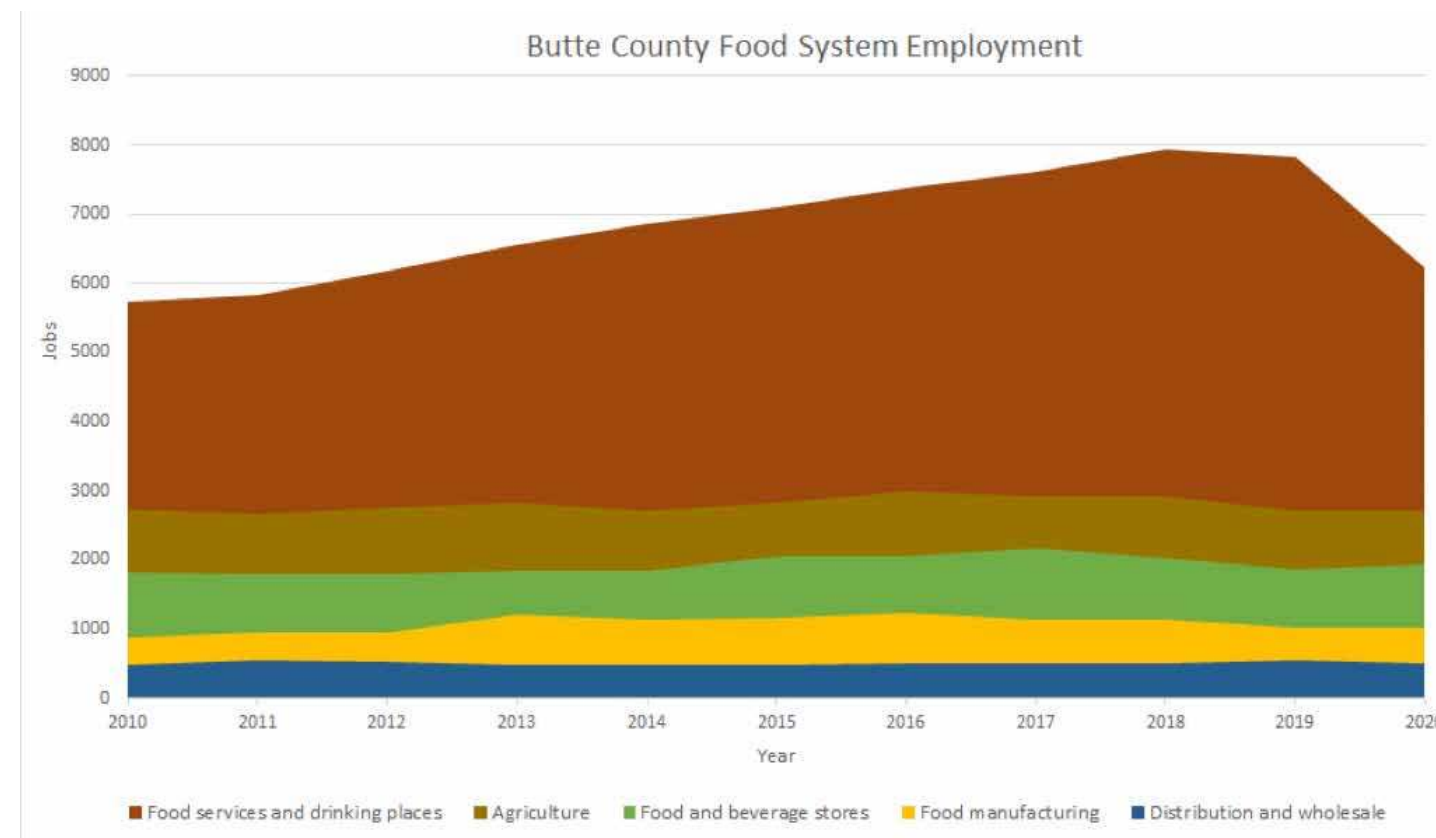


Figure 2. Butte County food system employment from 2010-2020.

Data obtained from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.⁴¹ NAICS codes included 111, 112, 1151, 1152, 311, 3121, 3253, 33311, 4244, 4245, 4248, 42491, 445, 45291, 49312, 49313, 54194, 722, 92614.

fluctuations over the last 10 years. The year 2019 saw a small decline in all sectors except distribution and wholesale, which may be a consequence of the Camp Fire. The year 2020 shows a significant decline in food service and drinking place employment, likely due to COVID-19 pandemic closures. The long-term effects of both the Camp Fire and COVID-19 pandemic have yet to be determined. Government jobs associated with agriculture and food regulation and program implementation are not visible in Figure 2 due to the small count (comprising less than 1% of the total) and have been relatively stable over the last 10 years.

It is important to note that local food sales increase

local jobs. Farms that engage in local sales offer 13 full-time positions per \$1 million in revenue, whereas export farms employ only 3 full-time workers per \$1 million in revenue.⁴²

Capacity to Feed Ourselves

One of the ultimate goals of a local food system is to provide the optimal types and amounts of food to sustain a nutritious diet for its people. Currently, the vast majority (approximately 75%) of Butte County's agricultural production consists of three crops: rice, almonds, and walnuts. Total crop acreage and variety continues to steadily decline. Livestock numbers and diversity have narrowed as well, with current cattle production at less than half of the level 80 years ago. The Butte County Crop Reports provide a detailed discussion of what is currently and was historically grown in the county.⁴³ One way to determine the capacity of the local food system to feed itself is to compare food production to recommended consumption, answering the following questions: Can we feed ourselves on what is currently produced within the county? Where is there excess? Where are there deficits?

Current acreage for vegetable production, as of 2020, was only 462 acres, a small fraction of total farmed land. Assuming good yields, Butte County would need to triple the amount of land currently devoted to vegetable production in order to assure all residents meet their daily vegetable requirements.

According to the USDA Dietary Guidelines for Americans,⁴⁴ the average adult consuming a standard 2,000 calorie diet should be consuming 3 cups of dairy, 6 ounces of grain, 5.5 ounces of protein, 2 cups of fruit, and 2.5 cups of vegetables. Recommendations for young children are 2 cups of dairy, 3-5 ounces grain, 2-4 ounces protein, 1-1.5 cups of fruit, and 1-1.5 cups of vegetables.⁴⁵ To determine the capacity for Butte County producers to feed all residents, the USDA recommendations were used as a basis to calculate the amount of food consumption necessary to meet these recommendations and then compared to the amount of food produced in each category. The

calculations, detailed in Appendix C, are based on assuming that all of the food that is produced in Butte County stays here; however, as noted elsewhere in this report, much of the agricultural production is exported out of the county.

In 2017 Butte County reported milk production

yields of 65,411 CWTs (or hundredweights) in 2017, which is equivalent to 6,541,100 lbs or 760,593 gallons (1 gallon = 8.6 lbs of milk). With 43,447 children and 185,249 adults (2017), Butte County milk needs for the year of 2017 were 14,660,248 gallons. According to this analysis, only 5% of the USDA recommended amount of dairy is produced within the county, assuming that all of the milk produced stays in the county, which is not the case.

While rice continues to be a primary crop grown in Butte County, other grains like wheat and barley have dwindled substantially. Currently, yields of several items including wheat, barley, oats, corn, hay, and hemp are reported as a single line item. The last time yields were recorded for wheat alone was in 2017, reporting a production of 4,702 tons

(or 9,404,000 lbs). Due to differences in processing this equates to approximately 14,106,000 loaves of whole wheat bread or 6,582,800 loaves of white bread, enough for each family to have one loaf of bread about every 5 days.⁴⁶ In contrast, Butte County produced 425,797 tons (or 851,594,000 lbs) of rice in 2019. If each person consumed 100% of their daily grains from rice alone, production would still surpass needs by 2,190,914,443 allotments of 6-ounces per person per day.

The weight of the average cow is approximately 1,300 lbs; however, the edible yield is only about 40%.⁴⁷ In 2020, cattle and calves in Butte County totaled 7,100,600 lbs of live weight, which equates to 2,840,240 lbs of edible meat. If each person consumes 4 ounces of beef, equivalent to one quarter-pound burger, this is only enough to feed each Butte County resident precisely 3.33 hamburgers per year. Of course, not all livestock is slaughtered per year so the actual amount of beef produced in Butte County per year is even less. With no other meaningful sources in the county, it can be concluded that current production of protein falls far below recommendations for a healthy diet.

According to the USDA recommendations for vegetables, Butte County would need to produce approximately 35,150,000 lbs of vegetables per year to feed each resident the recommended amount of 1.5 cups per day for children and 2.5 cups per day for adults.** Between 10,000 to 40,000 lbs of vegetables can be grown on a single acre of land.^{48,49} Current acreage, as of 2020, for vegetable production was only 462 acres, a small fraction of total farmed land. Assuming good yields, Butte County would need to triple the amount of land currently devoted to vegetable production in order to assure all residents meet their daily vegetable requirements. In comparison to the amount of land used for

monocropping, this is a negligible increase of only 924 acres and would dramatically improve access to fresh local foods for all community members. **Note that vegetable weights vary considerably from around 25 g/cup for spinach, 120 g/cup for carrots, and 150 g/cup for yams. This calculation is on the weight of broccoli at 90 g/cup.⁵⁰

Another way of assessing produce needs is to look at real-life examples. Pyramid Farms produces around 100,000 pounds of produce per year on 8.5 acres.⁵¹ This can feed 275 community members one pound of fresh produce every day of the year.

As of the 2020 Census, the population of Butte County is approximately 211,600. In order to feed every resident one-pound of locally-grown produce per day, Butte County would need around 770 farms like Pyramid Farms. While this may seem like a large number, it equates to only 0.6% of the total land area in Butte County. Moreover, most residents do not need a full pound of produce per day, meaning that each resident could adequately be fed a diet of fresh produce on even less land. This example demonstrates untapped potential to expand healthful diets and local food security

within Butte County.

Additional research about the food system includes understanding barriers to farming, particularly diversified farms, factors that influence food purchasing by Butte County residents to encourage buying more locally produced food, and the extent and recovery of food waste in the county.

AGRICULTURE AND FOOD PRODUCTION

This section outlines the current conditions, challenges, and opportunities of agricultural production, value-added food processing, food distribution, retail, and food service in Butte County.

Agriculture remains the backbone of the county economy, employing more than three times the national average. . . . Butte County had its first million dollar crop in 1939 (rice) and now grosses a sizable 10-year average of \$716,272,922 from all agricultural commodities.

Agricultural Production

Introduction

Butte County has a rich history of providing food for those who call this area home. The Indigenous people that lived in and frequented the valley such as Nisenan, Mechoopda, and Konkow in what is now defined as Butte County, as well as the more southern Miwok and Yokuts, would seasonally migrate between valley and foothills and lower montane areas.^{52,53} Foraging and managing the forests and meadows around them to produce edible foods such as waiji (wild potato), acorns, pine nuts, lettuces, and herbs, there was a distinct difference in both the Indigenous and settlers' views on environment and how to manage food resources. The early 1800s saw an influx of Mexican, Spanish, and American settlers to the area who received Mexican land grants providing land use rights along large tracts of land known as ranchos. These ranchos laid the foundation for land ownership and agricultural practices when California became part of the United States. One of the last remnants of this era is Rancho Llano Seco, still currently operating as a family-owned farm.⁵⁴

In 1848, gold was first discovered in Maidu territory and with it came a rush of American explorers journeying out west in search of wealth and land. One such settler was John Bidwell who became an early pioneer of California agriculture. Bidwell moved into Butte County in 1851 with an interest in acquiring land and was able to procure a Mexican Land Grant from success in mining along the Feather River. The Mexican Land Grant provided Bidwell with 22,000 acres of fertile soil, which became Rancho del Arroyo Chico. He began shaping California's agricultural economy by raising livestock, sheep for wool, and grain. In 1862, Bidwell's grain farm was declared the best in California and 15 years later, he earned a gold medal for his wheat at the Paris International Exhibition, an honor bestowed upon the finest wheat grower in the world. From the beginning of his work in Rancho Chico, he believed in a diverse farm and spectrum of exotic, specialty crops. Bidwell worked with new species for the area: melons and corn. He pioneered the growth of the almond and walnut industry. In the last few years of his life, John Bidwell could say that his Rancho had

become a model of California's farm industry.⁵⁵

Although no longer the #1 industry (surpassed by healthcare, government, retail trade, and hospitality and food services), agriculture remains the backbone of the county economy, employing more than three times the national average.⁵⁶ Butte County's varied topography, mix of prime and subprime ag land, varied climatic zones, and quality water create favorable growing conditions for many types of crops, from trees to tomatoes, as well as a diversity of livestock, herbs, and flowers. Locally-grown foods are cherished by the community and beyond. Butte County is best known for its fruit and nut trees, olive oil, and rice production, as well as the renowned Chico Certified Farmers Market and the scenic Sierra Oro Farm Trail.^{57,58} Butte County had its first million dollar crop in 1939 (rice) and now grosses a sizable 10-year average of \$716,272,922 for all agricultural commodities.⁵⁹

The climatic zones and ecoregions of Butte County include a *Sunset* hardiness 7-9 (thermal belt valley to high valley, foothills)⁶⁰ and USDA hardiness 9b-7a. The county falls into USGS ecoregions 4, 6-7 (good mixing of ecotypes from riparian river valley to foothill/terrace to mountain).⁶¹ However, shifts in growing degree days, plant hardiness zones, and heat zones are occurring.⁶²

Current Conditions

Key agricultural inputs include water, seed, land and soil, and labor, and are considered vital resources for food production. Factors such as climate change will have dire consequences on the amount and quality of these resources. The following section reviews the current state of and threats to agricultural inputs and their impact on local food production.

Water: Water Sources

Butte County is home to several water sources. Major inputs include surface water from the Feather River and precipitation. The major output is evapotranspiration, a process by which water is converted to energy by plants. Evapotranspiration rates vary considerably across crops. In total, agriculture uses 95% of the irrigated surface water in the county, while urban development has largely relied on groundwater. The trend toward more intense and persistent drought years has raised concern regarding the overpumping

of groundwater and proper water management throughout the county.

Total water input into Butte County is about 2 million acre-ft per year.⁶³ Acre-ft is a standard measure of water volume that equates to the amount of water needed to fill an acre one foot deep (or 325,851 gallons). Water inputs include surface flows, precipitation, and groundwater pumping (Figure 3, below). The major surface water sources in Butte County are the Feather River and Butte Creek, with most diversions occurring within the valley floor. Butte County's aquifer system comes mostly from the Sacramento Valley Basin and is divided into the following subbasins: Vina, West Butte, East Butte, North Yuba, Foothill, and Mountain. Additionally, Butte County houses 15 water districts that manage the distribution of water within their limits (Appendix D). Current water levels are monitored by the California Department of Water Resources.⁶⁴

Precipitation and applied surface water are the two primary sources of water into the county, and evapotranspiration for crop production is the primary source of water loss in the county (accounting for over 50% of outflow; see Figure 3 below).

Surface Water Use and Irrigated Farmland

In the valley floor (452,000 acres total), irrigated

agriculture accounts for 234,000 acres. Non-irrigated lands, developed lands, and wetlands comprise 141,000 acres, 47,000 acres, and 30,000 acres, respectively. The foothill and mountainous areas are mostly non-irrigated land. Surface water diversions, mostly from the Feather River and Butte Creek, average about 827,900 acre-ft per year and are predominantly used for agricultural needs. Approximately 95% of that goes toward agriculture and managed wetlands; the remaining 5% is for urban land use.

The amount of applied water required to grow a crop depends on crop variety, soil characteristics, climate, and irrigation methodology.⁶⁶ Evapotranspiration of applied water (ETaw) is a metric used to calculate how much irrigated water is needed to grow a crop assuming 100% water efficiency. Using this metric, the California Department of Water Resources (DWR) and University of California, Davis, developed the California Simulation of Evapotranspiration of Applied Water, a model that helps estimate seasonal water needs for different crop varieties.⁶⁷ According to figures from 2015 (a severe drought year similar to 2021), average ETaw for all crops was 3.1 acre-ft per acre, with considerable variability across crop type. Grain required the least applied water (1.25 acre-ft/acre) followed by cucurbits,⁶⁸ such as winter and summer squash and melons (1.78 acre-ft/acre).

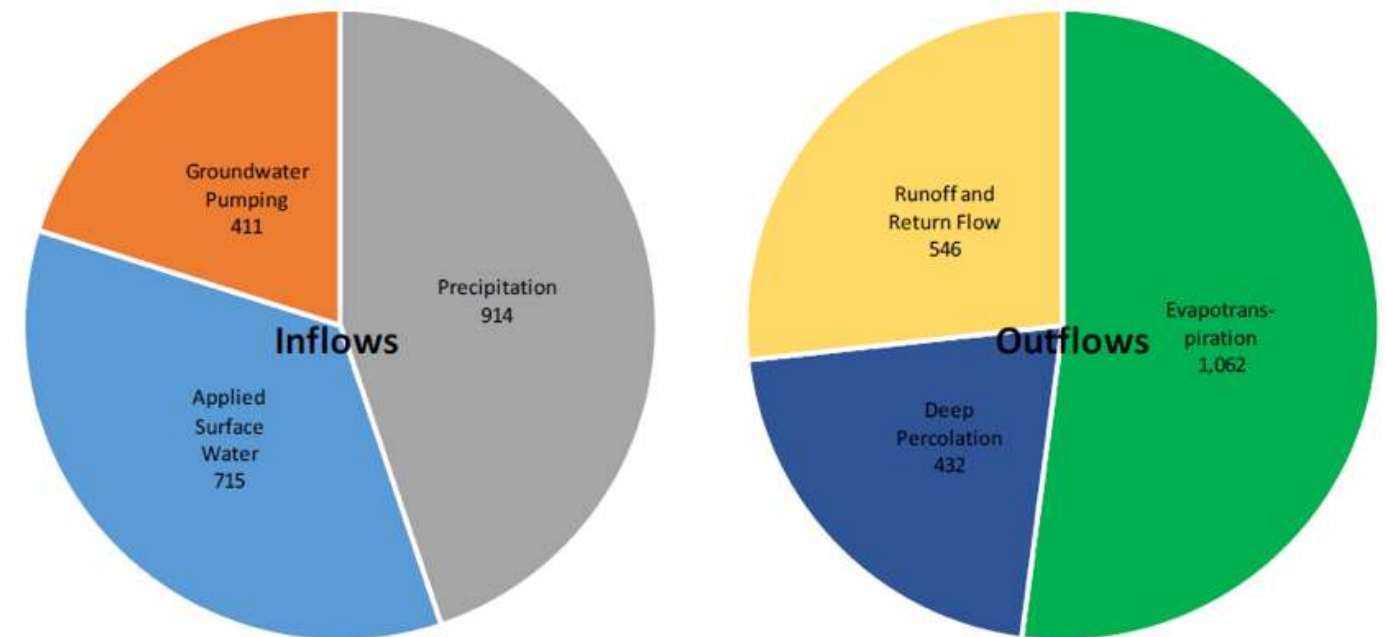


Figure 3. Butte County valley floor average inflows and outflows, 2000-2014. *Water Inventory & Analysis, 2016.*⁶⁵

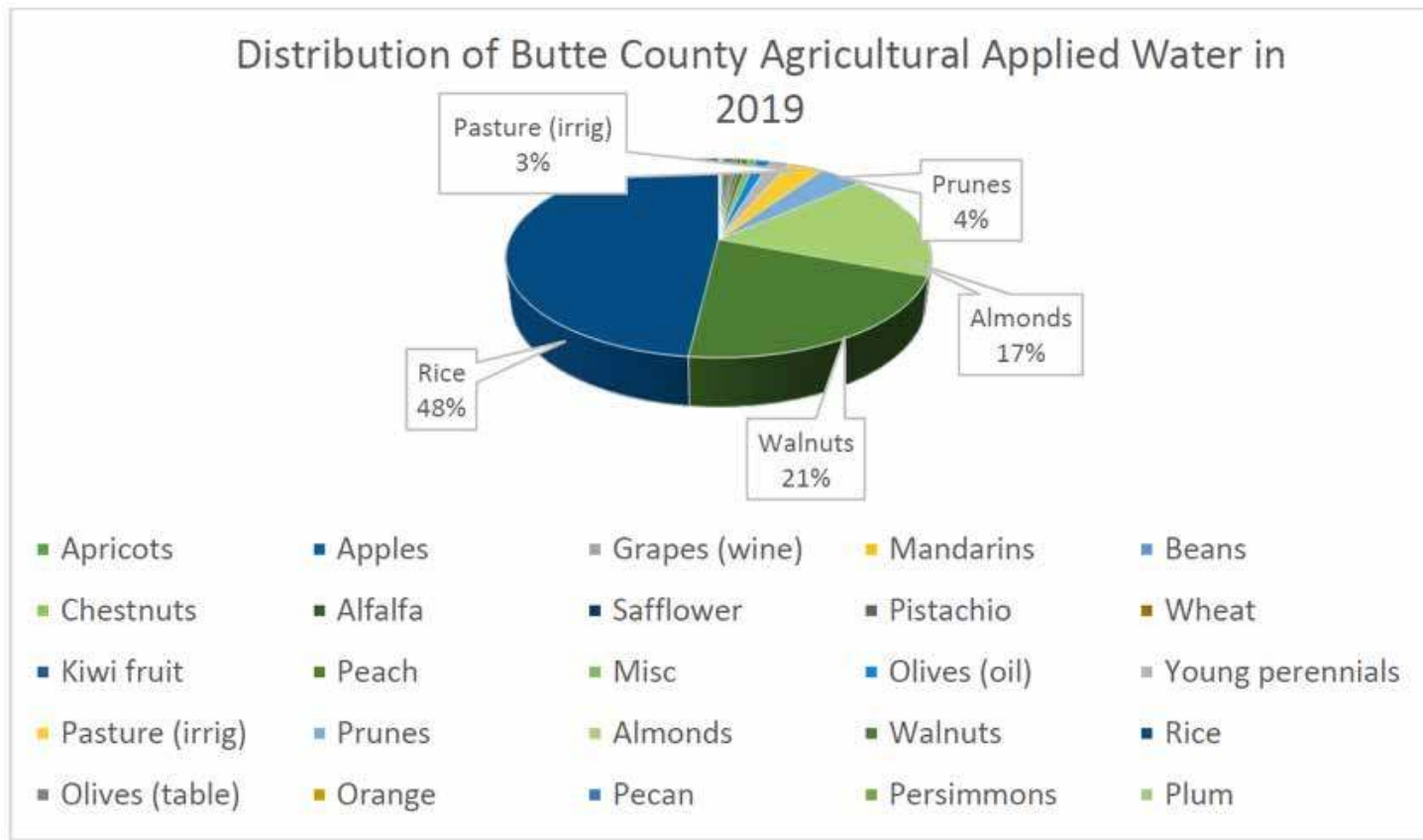
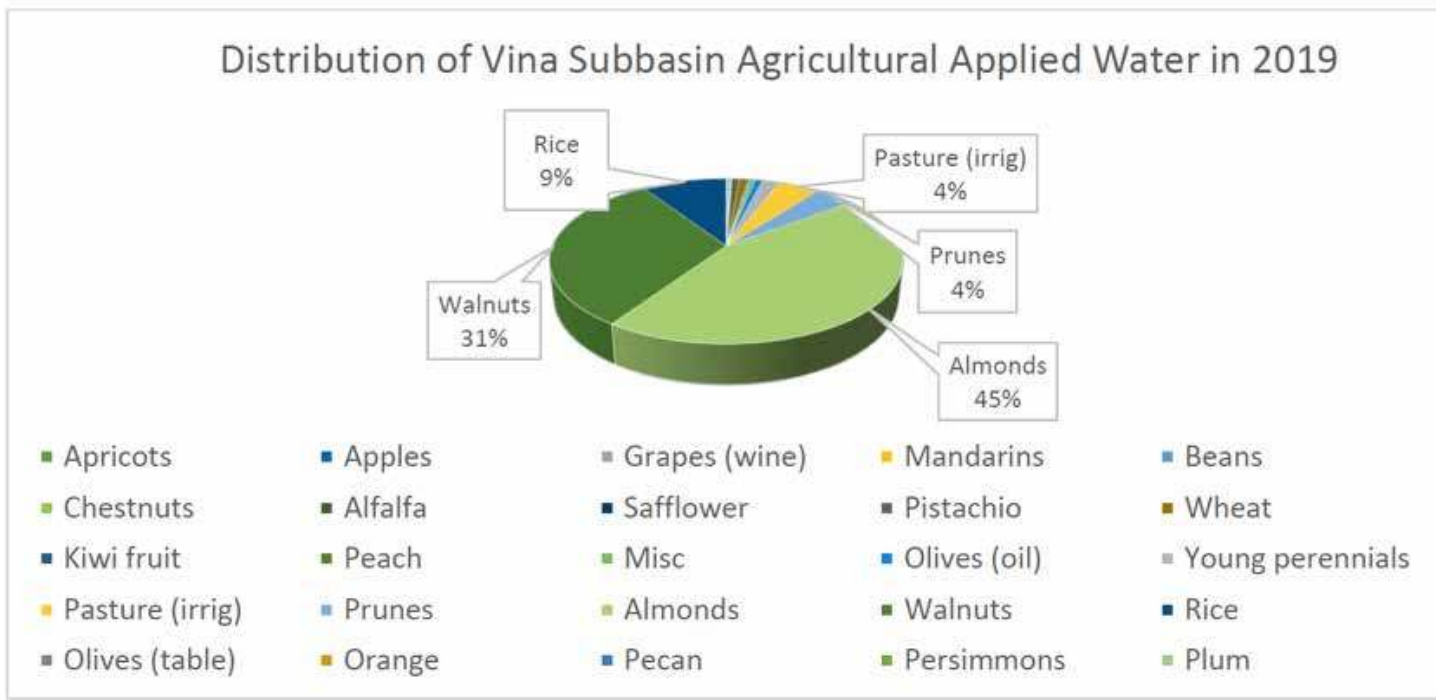


Figure 4. Distribution of applied water for agriculture in Butte County as a whole (above) and for Vina Subbasin (below).⁶⁹



Almonds required the most (4 acre-ft/acre), more than 3 times as much as grain. (See Appendix E.) The significance here lies in understanding that not all crops are equal when it comes to water demands, underlining the importance of proper water management and crop planning. Figure 4 (previous page) delineates the water used by various crops in the county and the Vina Subbasin.

Impact of Drought

The 2021 growing season was impacted by critical drought conditions. As of August 4, 2021, the Oroville Reservoir was at 24% of its capacity and 34% of its historical average for the time of year. In Figure 5, on the right, the red line indicates the historical average, the blue fill represents the current level.⁷⁰

While most surface water diversions from the Feather River go to irrigated farm land, a specified amount of water is set aside for environmental purposes, to help restore natural waterways and support wildlife habitat. This is non-negotiable and is predetermined by the Department of Water Resources prior to deciding how much each district can be allotted. During times of drought, the DWR updates their contracts with the water districts to reflect an adjusted amount that can be diverted for each district's needs. This is based on how much of the supply remains following the environmental diversions.

As an example, due to the current critical drought conditions, the Western Canal Water District (WCWD) was alerted of a 75,000 acre-ft reduction in their usual volume and the district board had to devise a plan to accommodate the reduced water supply.⁷¹ The WCWD is predominantly generational family rice farms, with one farm supporting an average of 4 to 5 families. Each farm was placed on a strict water budget of 3.6 acre-ft/acre and had to adapt their farming practices and planting accordingly. Some ground uses more water and some uses less; thus, the specific water management practices vary from farmer to farmer. Many farmers chose to upgrade to more efficient water systems, and several have been supplementing with well water as needed.

However, the largest impact of the drought is seen in production. In 2021, nearly all farmers had to reduce the number of acres planted, a water saving technique called crop idling. In total, the

WCWD estimates that rice farmers reduced their planted acreage by approximately 15% due to water constraints.⁷⁰ Crop idling due to drought has wide-reaching fiscal effects, including reduced income

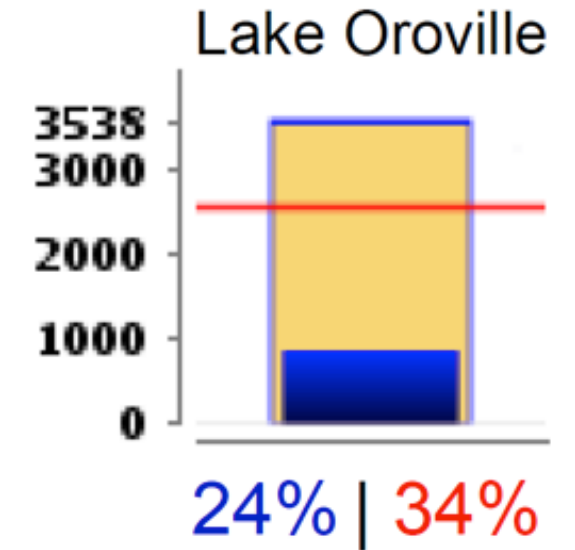


Figure 5. Representation of water levels at Lake Oroville Reservoir, August, 2021.

tax revenue and reduced labor needs (equating to layoffs or reduced hours for workers). Additionally, as previously discussed, reductions in surface water coincide with increased reliance on groundwater, which may not be sustainable in the long term.

Note: The initial allocation was 3.5 acre-ft/acre in April, but was increased by 0.1 on July 20th. Since the farmers had adjusted their planting plans for the initial 3.5 allocation, the 0.1 increase offered a small boost for farmers who ran thin on their original allocation, helping them to finish the season.

The amount of groundwater used is directly related to precipitation levels for the year and has been on a mild upward trend since the early 2000s. As is demonstrated in Figure 6 on the following page, groundwater pumping is highest in dry and critical drought conditions and lowest in wet years.⁷²

The concern here is that as drought periods become longer and more intense, groundwater may be removed faster than it can be recharged. Figure 7 on page 19 further illustrates the impact of drought years on groundwater sources.⁷³ The number of wells in alert stages, indicating low levels, increased significantly during the 2012-2015 drought, and

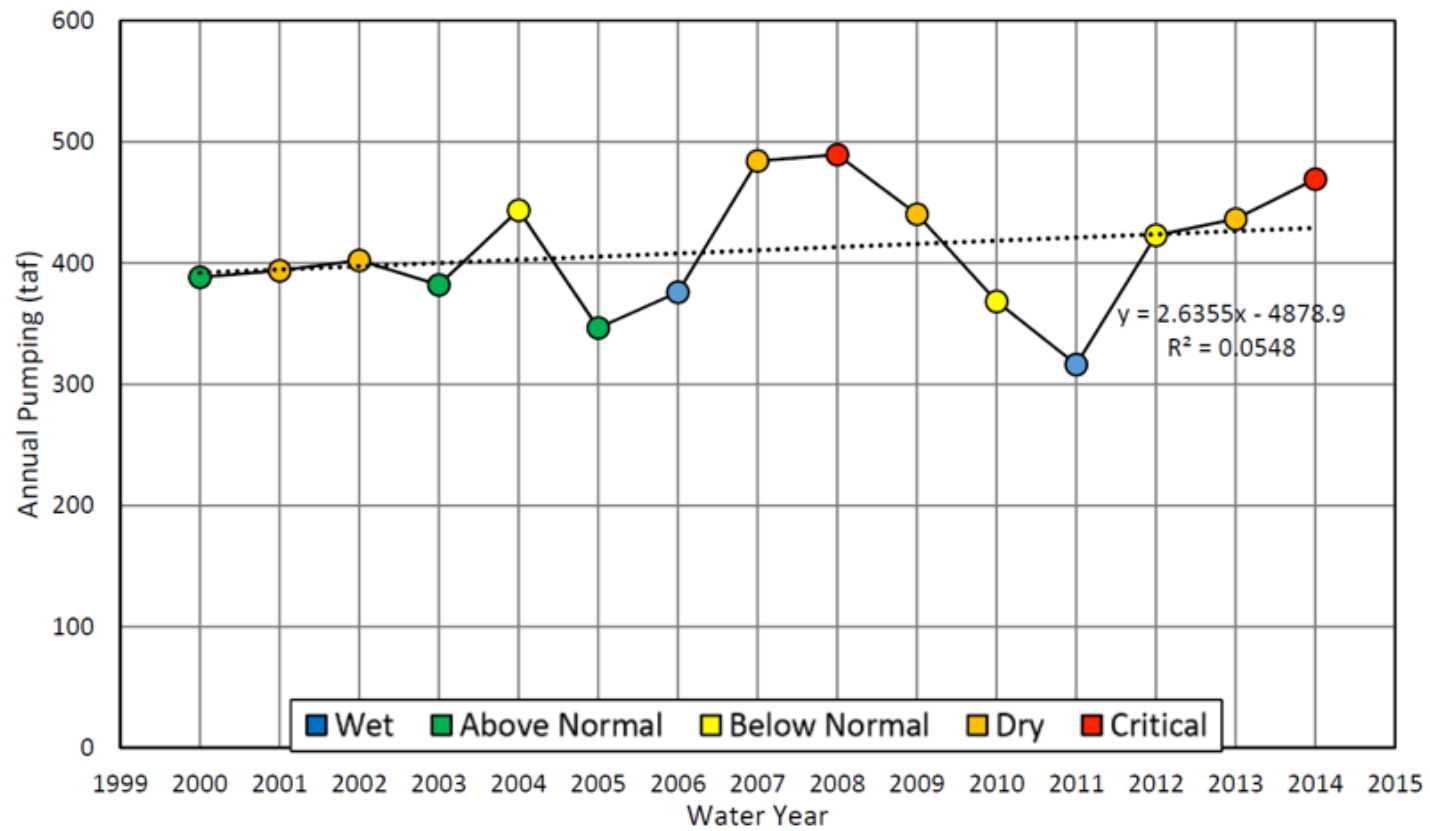


Figure 6. Butte County groundwater pumping according to water year type, 2000-2014.

despite some replenishment in the subsequent wetter years, it remained higher than before the drought, indicating an overall negative impact on well water supply in the last 10 years.

California uses the Household Water Supply Storage Reporting System to track data on the amount of dry or failing wells across the state. The system has been collecting data since it was created as an emergency response to the 2012-2016 drought that peaked in 2015 and has counted a cumulative total of 3,233 dry wells as of August 9th, 2021, a 437% increase in dry wells from the previous year. Butte County accounts for 46 of the failed wells, of which 14 (30%) were reported in just the one month of July 2021. Nearly half of all cases lie within the Chico and Forest Ranch area.⁷⁴

Regulation and Management Efforts

As water scarcity is becoming more and more of a reality, California is taking steps to optimize its water usage through proper management of surface and groundwater, much of which is carried out at the county level. Since the passing of Measure G in 1996, Butte County has not sold any groundwater out of the county.⁷⁵ In 1999, the Butte County Department

of Water and Resource Conservation was formed to protect natural water resources. Its goals include protecting, monitoring, and evaluating groundwater, supporting conservation and long-term sustainability, advocating for statutory protections and surface water rights, working cooperatively within the region, and improving water-wise education.⁷⁶ In 2016, a thorough assessment of Butte County's water inventory was assembled and used to inform the Butte Basin Groundwater Model and create a water budget to manage current and future water conditions. As a result of these efforts and additional factors, irrigated water use has decreased 17% in the last 20 years.⁷⁷

The largest water management effort surrounds the Sustainable Groundwater Management Act of 2014, a state-wide initiative to monitor, analyze, and manage groundwater. The state law is implemented at the local level within each of the three groundwater subbasins within Butte County: Vina, Butte, and Wyandotte Creek. For each basin, a Groundwater Sustainability Agency (GSA) is required to develop and implement a Groundwater Sustainability Plan (GSP) in accordance with the

Sustainability Groundwater Management Act (SGMA) regulations. Drafts of the plans are currently in motion and must be completed by January 2022. Each plan must include a water budget and specific action items in order to reach 100% sustainability by 2042.⁷⁸ In particular, the Vina Subbasin, which has been overly reliant on groundwater pumping, must undergo significant changes in groundwater usage to meet the new sustainability goals. A December 2021 board meeting of the Vina GSA set a new sustainable yield of 233,000 acre-ft, an action that requires groundwater use be cut by 10,000 acre-ft.⁷⁹ The draft plans will be open to public comment and posted on GSA websites for review.

A current topic, at the time of this writing, is the newly proposed Tuscan Water District. The water district would cover approximately 102,327 acres from the Tehama County line south to the northern border of the Western Canal Water District in the Durham area and include parts of the Vina and Butte Subbasins. The goal for the district is to fill a current gap in water management by delivering

surface water and recharge water within the proposed district, as well as develop and adopt a groundwater management plan in line with SGMA⁸⁰ to protect and manage our water supply using a self-governance model. Those that oppose the district are concerned about its structure as a landowner-based district, for which votes are provided according to land value, which equates to one vote per acre rather than one vote per citizen. Some community members are concerned that they will not be adequately represented and worry about handing over control to a select few large industrial farm operations. Another concern is that the focus should not be on diverting more surface water but rather on improving conservation efforts and shifting to more sustainable agricultural practices. The district has responded to concerns by assuring that they are working with the support and in the interest of all landowners, small and large, and will allow representatives to participate in decision making to preserve and protect our water.

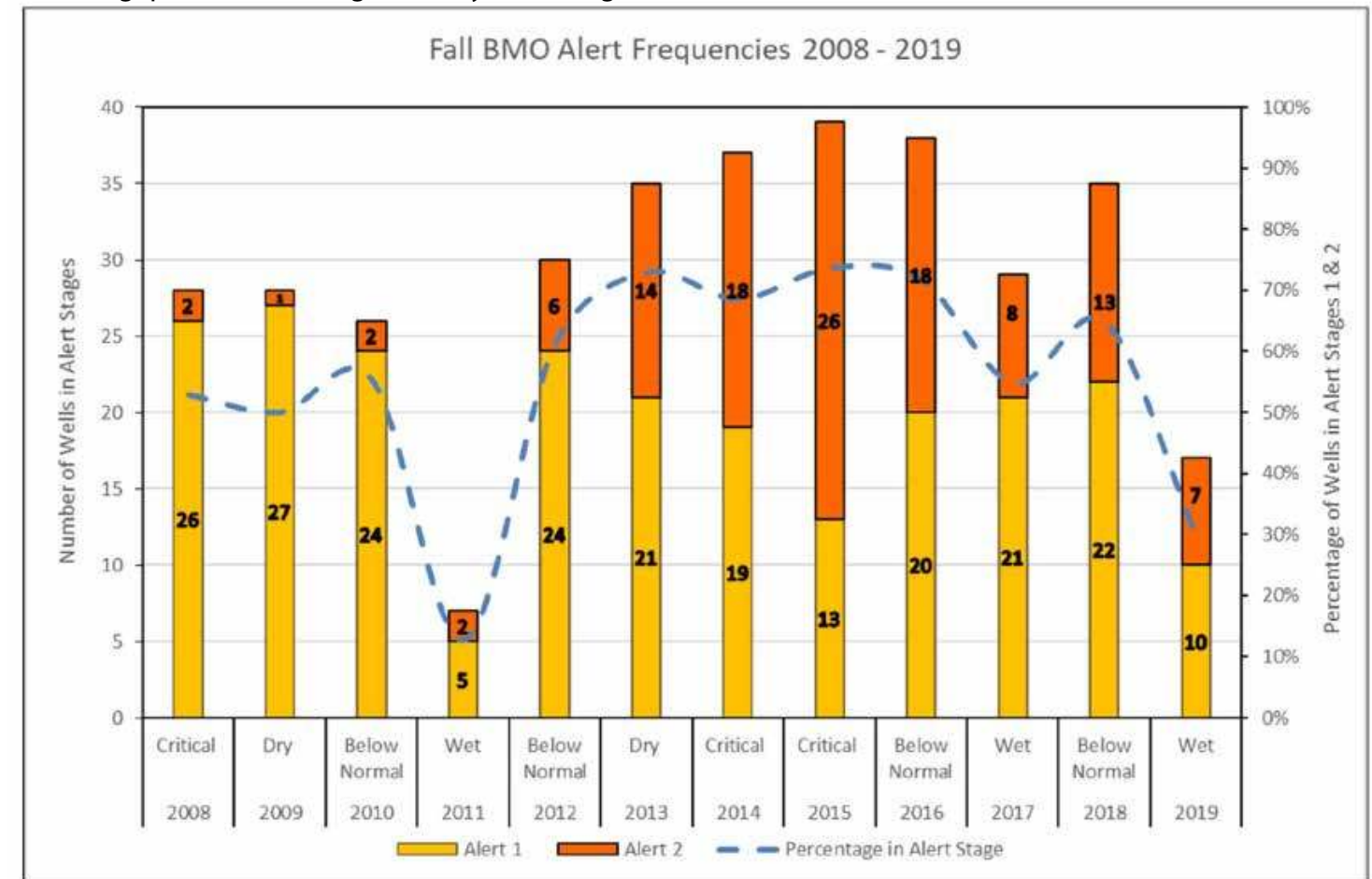


Figure 7. Number of wells in alert stages according to water year type, 2008-2019.



Redwood Seeds, in Manton, Tehama County, north of Butte County, is the seed-producing company closest to Butte County for garden seeds.

Seed

Crop agriculture can not occur without a reliable and quality supply of seed and plant starts. Butte County once housed the Sustainable Seed Company, which was forced to relocate out of state following the Camp Fire. Currently, the only commercial-scale seed producer in Butte County is the Rice Experiment Station in Biggs, which is a cooperative among commercial rice producers throughout California, including Lundberg Family Farms in Richvale. The COVID-19 pandemic had several effects on seed availability for both imports and local seed exchanges termed “seed swaps” that were paused due to the pandemic. Opportunity lies in encouraging local seed production and sharing of resources and knowledge to aid in the cultivation of unique varieties that thrive in Butte County.

Butte County was once home to the Sustainable Seed Company; however, the company was not able to continue after the Camp Fire, during which several employees, including the owner, lost their homes and relocated out of Butte County. Sustainable Seed entered into a cooperative business agreement with True Leaf Market, a company based in Salt Lake City, and continues to offer heirloom seed varieties

through an online platform.⁸¹ Butte County is home to the Rice Experiment Station (RES), based in Biggs, which produces and supplies seed solely to the rice industry.⁸² The RES is mainly funded by the California Rice Research Board and functions as a cooperative among rice producers throughout California. Lundberg Family Farms in Richvale, which grows and processes rice into value-added products, sources a few varieties from RES. Currently, the closest seed company offering a variety of seeds for home garden use is Redwood Seeds in Manton (northeast Tehama County).⁸³ Redwood Seeds explained that, as a small local company, they lack the ability to supply in bulk and do not work with commercial producers. The Butte County farmers that were interviewed for this assessment purchase the majority of their seed from nationwide retailers such as Johnny’s Selected Seeds and Osborne Quality Seeds.

The COVID-19 pandemic had varying effects on seed production and availability depending on seed type and source. Imported seed from Asia was impacted due to the logistics and heightened restrictions on foreign imports. Additionally, farmers were challenged by changes in the food market, with some items increasing and others decreasing in

demand, making it difficult to predict seed needs for the upcoming season.^{84,85}

International disasters such as the COVID-19 pandemic exemplify vulnerabilities in the global food supply chain. Likewise, continuing climate change and dryness in Northern California present a need for the cultivation of seed types that are best suited for new environmental stress, such as traditionally drought tolerant heirloom varieties. Encouraging local seed production is an opportunity to help cultivate and maintain supply of varieties best adapted to local conditions.

Butte County has several community-based seed swaps, all of which were paused due to COVID-19 from late Spring 2020 and into 2021. Before COVID, there were Seed Lending Libraries in both the Chico and Paradise Butte County libraries.⁸⁶ The Chico Seed Lending Library (CSLL) was a joint effort between the Butte County Library, GRUB Education Program, and Earthshed Solutions, the latter two organizations now defunct. It began as annual seed swap in 2009, which averaged between 200 to 300 people and occasionally had as many as 600 attendees. Growing interest in the swaps led to the development of a formal seed library in 2013. Members had to have an active library card and were limited to 5 seed packets per season. Participants were expected, by honor system, to harvest, save, and return viable seeds at the end of the season to ensure a continuous flow of seeds. In addition, each month the CSLL hosted “Lettuce Get Together,” where community members can come together to share gardening techniques and offer each other support.

Inspired by the CSLL, the Paradise Seed Lending Library hosted biannual seed swaps and established a lending library. Attendance varied from about 75 to 100 at spring swaps and 40 to 60 at fall swaps. Swaps began in 2015 and, following the Camp Fire, moved to a mobile format. October 2021 was the first seed swap event since the fire.⁸⁷ The Oroville Botanic Garden & Education Center has hosted their own seed exchange since 2018.⁸⁸ The Butte County Local Food Network delivers seed packets to 23 tiny libraries located in residential neighborhoods at various times throughout the year.⁸⁹ Paradise Seed Lending Library, BCLFN, and Harvests and Habitats⁹⁰ collaborate to create seed packets and seed swap

events.

Land and Soil

Butte County is a rural county with the majority of acreage devoted to agriculture and forestry lands. However, data from 2004-2021 indicate a slow but steady conversion of total farmland, namely prime farmland and grazing land, to both urban and rural development. In addition to land availability, soil quality is an important factor for productive agriculture in Butte County. Current soil productivity is estimated as 25 out of 100 NCCPI (National Commodity Crop Productivity Index). The major threat to soil health is climate change, specifically drought and fire, as well as unsustainable farm practices. Regenerative agriculture and Traditional Ecological Knowledge present options for best practices to support soil health.

Butte County has approximately 1,680 square miles of land, 75% of which are agriculture and forestry lands. Rural and urban development comprise the remainder. The current General Plan 2030 accounts for the addition of 2,700 new housing developments. The plan specifies that there will be no conversion of prime farmland or open space. Additionally, all land designated as Resource Conservation will continue to be conserved. However, land designated for grazing may be converted to urban development.⁹¹ Appendices F and G provide a Butte County farmland map and land use conversion graphs. A table summarizing land use conversion from 2004 to 2018 is presented in Appendix H.

Over the last 30 years, land use distribution has seen a very slow but steady reduction in total agricultural land by approximately 1,000 acres per year.⁹² Due to changes in how the land was categorized before and after 2004, a direct comparison of the 1988 to 2018 values for each type of farmland is difficult; however, in the 10 years from 2008 to 2018, total agricultural land decreased by 13,603 acres, most in prime farmland and grazing land. There was a concomitant increase in urban development by about 3,000 acres and “other land” by about 10,000 acres, which includes low density rural development. No land within the county is designated as “farmland of local importance”,⁹³ a designation used in other counties but not established by the Butte County Board of Supervisors.

Butte County has hundreds of soil types with a great

variety in textures including sand, silt, clay, and loam, as well as permeability, drainage, and slope. Bidwell Park alone is home to over 30 soil types.⁹⁴ Some of the most prominent soils in the county are Esquon-Neerdobe loam, with 57,816 acres, and Lofgren-Blavo complex, with 44,342 acres⁹⁵ (Appendix I). Soil is one of the most valuable assets to a farmer. There are 33,945 agricultural parcels with an average of 28.8 acres/field. The average NCCPI value, a measure of soil productivity, is 25. The NCCPI model accounts for soil, landscape, and climate factors and ranges from 0 (low) to 100 (high). The average value of farm land is \$17,176 per acre.⁹⁶

Two primary factors affecting nutrient availability in soil are pH and soil texture. At normal pH levels, the optimal amount of nutrients can be dissolved and then taken up by the plants. In alkaline soils (high pH) or acidic soils (low pH), certain desirable nutrients like nitrogen and phosphorus can become less available, while other compounds such as sodium or aluminum can reach excessive and harmful levels. In Butte County, acidic soil is most likely to be found in the foothills, whereas alkaline is more likely to be found in the valley floor. Soil texture affects water and nutrient absorption. High sand soils do not hold water or nutrients well and tend to result in leaching. High clay soils hold nutrients but can become waterlogged easily. The addition of organic matter improves soil texture, quality, and productivity.⁹⁷

Other concerns surrounding soil health are the ongoing effects of climate change, namely drought and fire. Over-pumping of groundwater without proper recharge can lead to land subsidence. Subsidence is the gradual or sudden sinking of the Earth's surface due to the movement of materials below the surface, commonly from oil or water extraction. Increased reliance on groundwater

pumping during times of drought can increase risk of subsidence. As is required by the Groundwater Conservation Ordinance and to meet monitoring requirements prescribed by SMGA, the Butte County Groundwater Quality Trend Monitoring Program tests groundwater quality as well as land subsidence throughout the three subbasins.

Data on land subsidence is collected on a continuous basis by extensometers. According to the 2020 Groundwater Status Report, no inelastic, permanently compressed, land subsidence has been recorded to date. Elastic land subsidence refers to compression that will rebound when water and the resulting hydrostatic pressure is restored. Such

elastic changes have been recorded on a seasonal basis but have been minimal and restored during wetter years. With on-going and worsening drought, this is an important concern.⁹⁸

Another major threat to soil health is potential damage from fire. Butte County continues to be impacted by fires within and surrounding the county line. Fire damages the fertile topsoil and leads to hydrophobia, one of the many negative impacts of fire. Hydrophobia occurs when hot burning trees leak a waxy substance that causes a

water-repelling condition and long term damage to the soil. Soil type and fire intensity play a role in how much damage may result.⁹⁹ According to an analysis by Natural Resources Conservation Service (NRCS), different soil types exhibit more or less risk for soil damage and seedling mortality due to their unique characteristics. As an example, Tuscan gravelly loam is at high risk for both. (See Appendix J for a complete list of fire damage potential by soil type.)

Additionally, fire, smoke, and ash can result in the accumulation of toxic chemicals in soil. Some of the most common pollutants occurring during and after a fire are polycyclic aromatic hydrocarbons, dioxins, and heavy metals such as lead, mercury, and arsenic.

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For agriculture, this not only impacts productivity but can also lead to adverse health effects for workers tending to the farm as well as those eating the harvest. Moreover, lead deposits in soil can be ingested by animals that eat in the soil, such as pecking chickens. Precautions for food safety should be taken in areas significantly impacted by wildfire. This is of the utmost importance for those producing food to the public, particularly for vulnerable populations such as older adults.^{100,101} The USDA has a program to support farmers and ranchers affected by both fire and drought.¹⁰²

At the county level, future goals regarding land and soil preservation, as outlined in the Butte County General Plan 2030, include the following: reduce risks from earthquakes (HS-6), reduce risks from steep slopes and landslides (HS-7), reduce risks from erosion (HS-8), reduce risks from expansive soils (HS-9), avoid subsidence from groundwater withdrawal (HS-10), and protect economically viable mineral resources and related industries while avoiding land use conflicts and environmental impacts from mining activity (COS-12).¹⁰³

One technique used by modern agriculturalists to restore the quality of soil is regenerative agriculture - a set of evidence-based farming practices focused on rehabilitating soil and environmental sustainability. (Appendix K gives an overview of regenerative agriculture.) Another important yet undervalued practice of ecological stewardship is Traditional Ecological Knowledge (TEK), which offers a more traditional approach to land and soil management through techniques developed by Native American peoples over tens of thousands of years.¹⁰⁴ The Chico Traditional Ecological Stewardship program supports the preservation and teaching of traditional Indigenous practices of caring for the land, ecosystem restoration, disaster recovery, and climate change adaptation.

Open Spaces

Despite being composed mostly of rural and forested lands, Butte County is largely private land with limited public access, including land owned by city, county, and federal governments, e.g., Bureau of Land Management and US Forest Service. Much of this land is leased to ranchers, which limits access to the public for activities such as harvesting wild game and fish, edible plants, and fungi. Approximately half of the forests in Butte County are private, with the other half publicly-owned.¹⁰⁵ Much of the privatized land is in lumber (Sierra Pacific), PG&E property, ranchland, water districts, and some placer claims. Some landowners will allow fishing and hunting on their property.

Labor

Agriculture is a primary industry in Butte County. The labor force includes full-time, part-time, contract, migrant, and unpaid labor. Approximately 40% of farms report using hired labor, generally hiring only a handful of employees (4 or fewer). Numbers vary slightly by source but agriculture provides approximately 4,000 jobs each year. The most common occupation is Miscellaneous Agricultural

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Worker, a designation for those who work mostly in crop production at minimum wage.

Another vital resource for food production is human labor. According to a July 2019 Labor Market profile, Butte County had approximately 3,580 jobs in agriculture and forestry, and that number is expected to grow by 4% through 2023.¹⁰⁶ Of these jobs, 2,193 were directly involved in crop production with another 934 offering support services to crop production. Only 131 were directly involved with animal production and 55 in support services for animal production.¹⁰⁵

The largest occupation within agricultural production is Miscellaneous Agricultural Workers, with 1,730 workers at an average hourly pay of

\$12.05 in 2018; estimates indicate the addition of 41 jobs in this category through 2023. The highest paying occupation in agricultural production is First-line Supervisors of Farming, Fishing, and Forestry Workers, at an average hourly pay of \$34.73 in 2018. Among the least paid are Graders and Sorters of Agriculture Products and Animal Trainers, receiving less than \$12 per hour on average in 2018. (Appendix L contains data on agriculture sector growth and earnings.)

Approximately 709 farms in Butte County (37%) hired farm labor in 2017, with the majority (69%) hiring 4 workers or fewer, which is expected of a county composed of mostly small family farms (see Table 1 below). In total, there were 4,348 paid workers reported in the 2017 Census of Agriculture, including full-time, part-time, contract, and migrant workers. The labor force included an additional 1,692 unpaid workers (i.e., work-trade and family).¹⁰⁷

Table 1. Farm labor. Census of Agriculture 2017¹⁰⁸

Total Workers	4,348
Migrant Workers	
Farms	29
Workers	459
Unpaid Workers	
Farms	846
Workers	1,692

While the impacts of COVID-19 on labor have been reported ubiquitously across industries, additional research is needed to better understand the specific pandemic effects on agriculture in Butte County.

Farms and Producers

Butte County consists largely of small family-owned farms. The number of farms declined over the last 10 years. However, the number of farms practicing sustainable methods has risen substantially between 2012 and 2017, according to the USDA Census of Agriculture, and the gross value of organic products has grown 3-fold. Compared to historical numbers, both the amount and diversity of both crops and livestock have declined. The three top crops (rice, almonds, and walnuts) account for approximately three-quarters of the value of agricultural production in the county. The majority of farmers are male, white, and middle to senior aged. Concern exists surrounding the possibility

of an “aging-out” of farmers if interest in farming does not develop in the younger generations. One up-and-coming form of farming is urban agriculture for which urban and suburban communities grow and supply food to locals. Regulations on urban agriculture vary from municipality to municipality, but are slowly changing to become more favorable for farmers.

The most recent Census of Agriculture¹⁰² shows a substantial 30% drop in net farm income throughout the county from 2012 to 2017 and over half of farms reported net losses for the year, revealing significant financial vulnerability in the agricultural sector. Increasing local sales is a means to boost the strength of the local food system and access to healthy food for the community. Currently 11% of farms engage in direct-to-consumer sales, mostly through farmers markets and CSAs. Through direct-to-consumer marketing and regionally-branded products, local sales make up approximately 1.8% of total agricultural sales in Butte County.

This assessment heard from several small farms that engage in local sales who have been burdened by many hardships including drought and fire, challenges reaching the consumer, and difficulty meeting consumer demands.

Farm Characteristics

This report uses the United States Department of Agriculture (USDA) definitions of farm and agricultural terminology.¹⁰⁹ Accordingly, a farm is any operation that produces and sells \$1,000 or more in agricultural products during any given year. Butte County had approximately 1,912 farms as of 2017, a 7% decrease from 2012.¹¹⁰ Per discussion with the Deputy Agricultural Commissioner, numbers are estimated to have declined even further in the last few years. Note that these figures slightly underestimate the actual number of farms due to the implausibility of counting every farm, especially very small producers or those that are not legally required to report yields. Possible explanations for this reduction in the number of farms is the transition of agricultural land into housing developments and the devastation of farmland due to wildfires in the foothills.¹¹¹

Ninety-five percent of Butte County’s farms are family-owned, and the majority (65%) are between

1 to 49 acres. Small farms (defined by the USDA as farms making less than \$250,000 in sales) make up over 81% of total farms, but only 6% of total sales, whereas large farms (\$250,000 or more in sales) make up only 19% of farms, but account for 94% of sales. Tables 2 and 3 on this page illustrate that Butte County is predominantly composed of small farms with limited capital compared to large farms.¹¹² This may increase their vulnerability to a number of stressors, including environmental disasters,

Table 2. Farms in Butte County by acreage.

Acreage	Count
1 to 9 acres	622
10 to 49 acres	625
50 to 179 acres	304
180 to 499 acres	230
500 to 999 acres	76
1000 or more acres	55

market fluctuations, and more, and suggests a need for additional support for smaller producers.

As of 2019, Butte County has 120 certified organic producers, 24 handlers, and 2 processors, equating to a total of 19,780 organic acres. The gross value of organic commodities totalled \$30,145,653, a 3-fold increase from 2009 (10-years prior). Although organic production is on the rise in Butte County, it still composes only 4% of total production value.

In addition, Butte County has seen a significant shift toward more sustainable land practices. (See Table 4, next page.) Since 2012, there has been an increase in the number of farms adopting no-till practices and planting cover crops, with a reduction in the number of farms using intensive tillage practice. The county has also seen a reduction in the number of farms using chemicals to control growth, thin fruit, ripen, or defoliate. Notably, the number of farms using any of the following practices - alley cropping, silvopasture, forest farming, riparian forest buffers or windbreaks - increased from only 1 in 2012 to 36 farms in 2017. The number of farms harvesting biomass for renewable energy remained steady at 14. Collectively, this signifies a trend in the

direction of increased sustainability within the Butte County agriculture community, but leaves room for improvement.¹¹³

Crops Grown

The first county report on crop acreage and yield was published in 1939 and has continued annually since.¹¹⁵ Comparing 1939 to 2019, there are significant changes in total acreage, diversity of crops planted, and distribution of crops. In 1939, the largest crops by acreage were barley, wheat, and rice, and the largest by value were rice, almonds, and peaches. The top three grossing crops comprised 32% of the total value for all agricultural commodities for the year. In contrast, by 2019, the top largest crops by both value and acreage were walnuts, rice, and almonds, and together they made up 76% of the total gross value of agricultural production. In other words, all other crop varieties comprised less than 25% of the total gross value, indicating a significant decrease in crop diversity over 80 years ago. The 2020 crop report indicates similar trends, with the top grossing crops (rice, almonds, and walnuts) accounting for 73% of the total value.

Total plant crop acreage has declined from historical numbers. Overall, there has been a net reduction in the acreage of all crops including rice, almonds, and prunes, except walnuts, which increased by 24,000 acres in the last 10 years and doubled in acreage over the last 20 years. Other staple crops such as

Table 3. Sales according to farm size.

Farm Size	Count	% of Total	Sales (\$1000)	% of Total
Very Small Farms (<\$10,000)	788	41%	1,934	0%
Small Farms (\$10,000 - \$249,999)	768	40%	53,245	6%
Large Farms (\$250,000 to \$499,999)	132	7%	468,975	50%
Very Large Farms (\$500,000+)	224	12%	420,853	44%

Practices	# of Farms 2012	# of Farms 2017	% Total Farms 2012	% Total Farms 2017	% Change
No till	89	120	4%	6%	35%
Reduced till	55	32	3%	2%	-42%
Intensive till	380	198	18%	10%	-48
Cover cropping	85	101	4%	5%	4%
Chemicals used to control growth, thin fruit, ripen, or defoliate	269	195	13%	10%	-28%
Harvested biomass for renewable energy	14	14	1%	1%	0
Practiced alley cropping, silvo-pasture, forest farming or had riparian forest, buffers or wind-breaks	1	36	0%	2%	3500%

Table 4. Sustainable farm practices, 2012 and 2017.¹¹⁴

wheat, olives, peaches, beans, and vegetables have continued to decline over the years. From 2009 to 2019, the grand total crop acreage decreased from 468,146 acres to 425,364 acres (a reduction of 42,782 acres). The year 2020 saw an additional reduction of 43,267 acres in total crop acreage from the previous year, meaning that in only one year total crop acreage declined by more than the previous 10 years combined. This is likely a consequence of the COVID-19 pandemic but further analysis is required to determine the exact cause.¹¹⁶

Likewise, the number of cattle raised in Butte County has steadily declined. The number of cattle peaked in 1969 with 39,300 head and by 2019 had decreased by more than half to only 14,700 head. The 2020 livestock report indicates an additional reduction of 600 head. Similar to what has been seen with plant crops, the diversity of livestock has decreased substantially since the 1939 report. In addition to cattle, Butte County once housed 28,000 hogs and 65,00 sheep (1939 report). Other farm animals reported in historical crop reports include numerous rabbits, chickens, and turkeys. Some local producers

such as Turkey Tail Farm and Wookey Ranch continue to raise a diverse range of livestock; however, numbers are not large enough to be included in the county crop reports. Dairy production has also declined, to the point where only two dairies remain in Butte County, Schroer Dairy¹¹⁷ and the Organic Dairy Unit at the Chico State Farm.¹¹⁸ In 2017, production was 65,411 CWTs, or 760,593 gallons. In 1939, total dairy production (milk including cream and butter) was 1,001,404 gallons, and in 1969, production was 2,971,465 gallons.

Producer Characteristics

The majority of producers in Butte County are male (62%), white (91%), and between 35-64 years old (54%). The distribution of race and ethnicity of farmers has remained relatively stable in recent years, whereas the number of female producers increased from only 18% in 2012 to 38% in 2017. The average age of Butte County producers is approximately 60 years old. Age is of special concern due to the fact that over 40% of producers are over 65 years old and only 5% of producers are under 35 years old in this physically demanding occupation

(Figure 8, below¹¹⁷). Moreover, only 84 (4%) farms have young principal producers. The vast majority of Butte County producers are middle-aged and older, who will age-out of the business in the next few decades, similar to national trends showing an increasing average age of farmers.¹¹⁹ However, the 2017 Census of Agriculture indicates that 568 (22%) of principal producers are beginning farmers (10 years or less of experience), indicating some relatively new interest in career farmers within Butte County. Producer demographics are detailed in Table 5, on the next page.

Urban Agriculture

Urban agriculture or urban farming is a growing part of the local food system, producing food in an urban or suburban area and providing it to local residents.¹²⁰ Urban agriculture includes food production in the form of backyard or rooftop gardens, community gardens, and roadside urban fringe agriculture.¹²¹ It can also include animal husbandry (e.g., breeding), beekeeping, aquaculture, aquaponics, and seed and seedling production. Urban farming often takes place in unused or abandoned urban spaces, offering both socioeconomic benefits to urban communities and positively transforming the land.

Urban agriculture is considered an important contributor to local food security, and the USD offers an urban agriculture toolkit to help guide successful urban projects along with grants, loans,

and legal support.¹²² Currently, the USDA does not collect data on the number of urban farms in the U.S. However, other sources indicate urban farming has grown in popularity over the last 15 years with a significant increase since the beginning of the COVID-19 pandemic. With disruptions in the supply chain and increased time spent at home, America saw increased interest in at-home and community level food production. County zoning ordinances differentiate agriculture, natural resource, commercial, and residential land use zones as well as provide some guidance as to what activities are allowed within each. As an example, crop cultivation and animal grazing is allowed in foothill residential, rural residential, and very low density residential, but not in low density residential, medium density residential, high density residential, or very high density residential, and animal processing is restricted in all residential zones.¹²³ However, within those guidelines, the amount of and support for urban agriculture varies throughout Butte County with each city delineating its own policies and restrictions. Oroville is particularly permissive of urban farming whereby people can grow and sell food directly from their property. City Municipal Code 17.16.230 establishes the right and regulations surrounding urban agriculture, including requirements that noise and chemical use do not affect abutting properties, that sales are permitted between the hours of 7 a.m. to 7 p.m. only, and that a minimum of 50% of the items sold must be produced on site (75% within Butte County).¹²⁴

The City of Chico has historically been more conservative regarding urban agriculture, but has responded to growing community interest over the last 10-15 years. Notably, the 2010 General Plan includes expanded provisions for urban agriculture by reducing the square footage requirements for small livestock.¹²⁵ Currently, the City of Chico allows residents to grow produce and raise some livestock and bees, which can be sold at farmers markets, restaurants, stores, and other outlets. Alternatively, they can donate the food or give it away for free from a stand in their front yards. They cannot, however, sell it directly from their property. Paradise has extensive mixed agricultural residential zones in which crop production and selling are permitted,

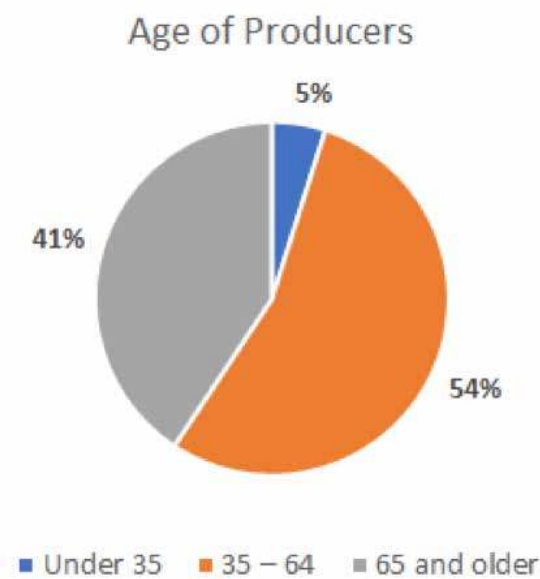


Figure 8. Age of farmers in Butte County.

Table 5. Butte County producer demographics, 2017.

Metric	Count	% of Total
Total Producers	3,302	
Male	2,050	62%
Female	1,252	38%
Age		
<35	162	4.9%
35-64	1,797	54.4%
65 and older	1,343	40.7%
Average Age	59.6	
Race		
American Indian/Native Alaskan	39	1.2%
Asian	174	5.3%
Black or African American	8	0.2%
Native Hawaiian/Pacific Islander	7	0.2%
White	3,020	91.5%
More than one race	54	1.6%
Other characteristics		
Hispanic, Latino, Spanish origin	291	
With military service	364	11%
New and beginning principle producers	568	17%
Type of business		
>50% household or family owned	1,816	
LLC	59	

and other agricultural uses require special permitting. The Paradise Planning and Zoning Department specifies that farm stands to sell produce are permitted under the home occupation

permit, if the structure used to sell the produce is enclosed or able to be enclosed and locked outside business hours. Additionally, the unit could not be greater than 50% of the net floor area of the residence or exceed 750 square feet.¹²⁶

Gridley permits urban agriculture in select locations, primarily in the southeast portion of the city. Information on urban agriculture in other municipalities within Butte County was not gathered in this report.

Farm Income and Expenses

Butte County experienced a large drop in total net cash farm income from \$213,050,000 in 2012 to \$152,239,000 in 2017, a loss of nearly 30% (Table 6 below). Per farm income dropped from \$103,624 to \$79,623, a 23% reduction. In addition, the average producer’s income fell over \$25,000 from \$98,535 to \$72,575, a loss of over a quarter of their net income.¹²⁷ The exact reason for this large decrease is worthy of further investigation; however, it amplifies the fact that farming is vulnerable to a number of factors, and in a county composed mostly of small family farms, it is of the utmost importance that support systems are in place to help reduce the financial strain of “bad” years.

Table 6. Butte County net cash farm income, 2012 and 2017.

Income	2012	2017
Total net cash Butte County-farm income	\$213,050,000	\$152,239,000
Average per Butte County-farm	\$103,624	\$79,623

More recent figures on net cash income that include the impact of the Camp Fire and the COVID-19 pandemic will not be available until the 2022 Census of Agriculture is released. However, based on the county’s 2018 and 2019 Crop Reports, both 2018 and 2019 crop values were significantly below average,¹²⁸ the result of losses for several commodities including winter grazing lands, apiaries, nurseries, organic production sites, vineyards, timber, and various livestock. Specifically,

the Camp Fire resulted in a loss of between 30,000 to 40,000 acres of rangeland, 50 acres of orchards, several nurseries, caused considerable structure and equipment damage, and impeded traffic along Highway 70, the main thoroughfare for transportation of goods to and from the area.¹²⁹

The Census of Agriculture report on net cash farm income from operations shows that in 2017 just over half (51%) of Butte County farms reported net losses (977 farms), compared to 49% that reported net gains or broke even (935 farms).¹³⁰ Compared to 2012, farms with net gains decreased by 13%. While fluctuations from year to year are expected, the trend shows increased financial instability in the agriculture sector.

Local Direct-to-Consumer Sales

Local food sales are a valuable stimulus for the local economy. According to the 2019 Farm to School Census, every dollar spent on locally grown food generates an additional dollar in economic activity.¹³¹ According to the 2017 Census of Agriculture, 11% of Butte County farms engaged in direct-to-consumer sales (i.e., farmers markets, u-pick, CSAs, farm stands), which resulted in \$9,556,000 in sales, a 418% increase from 2012. Additionally, \$5,807,000 worth of production was sold for use in regionally-branded products.¹³² An estimated 1.8% of all food produced in Butte County remains and is consumed locally through direct-to-consumer sales and 1% is sold for regionally branded products. In comparison, California averages 1.7% for statewide direct-to-consumer sales; however, when adding sales for regionally branded products, the California average for local food sales jumps to 11% of total sales. (See Appendix C: Calculations, item 2, for a description of the calculation methods of this section.)

Challenges in Agriculture Production

Butte County has faced significant challenges, especially in the past five years, as indicated by data and described by ten local producers who were interviewed for this assessment. The failure of the Oroville Dam, the Camp and North Complex fires, and COVID-19 have all revealed vulnerabilities in our ability to produce and supply food. Climate change and its associated effects, elevated temperatures,

the drying out of the land, increased wildfire activity, and drought, were identified as the primary hardships faced by these producers. The Camp Fire of 2018 not only caused the loss of lives and mass relocation out of the area, it also destroyed land and property including infrastructure and equipment necessary for agricultural production, as well as storage capacity. Road closures and loss of workers and customers worsened the situation. In total, agriculture-specific economic losses are estimated at \$5 million.¹³³ Additionally, it is estimated that over 60% of land owners were underinsured at the time of the fire,¹³⁴ resulting in financial crises and impeding recovery efforts. While the Camp Fire, as well as the subsequent North Complex fire the following year, were particularly devastating for farmers directly within the burn scar, the effects were felt throughout Butte County. Smoke and ash blanketed the surrounding area affecting soil and water quality, plant and animal health, and land value in the surrounding areas. Thousands of people were forced to relocate causing reductions in property value within the burn scar, for which approximately 30% of properties sold for below market value.¹³⁵ Meanwhile, the surrounding areas outside the burn scar witnessed price increases for both land and housing. Housing shortages led to rental costs increasing by 10-20% in the surrounding areas. Many of these hardships were faced again with the Dixie Fire, which covered much of Butte County in smoke from July 13 through October 25, 2021, during the peak production season.

Local agriculture has also been affected by the ongoing COVID-19 pandemic. The pandemic has not only impacted the supply chain for necessary agricultural inputs, but also has adversely affected the availability of labor, reduced hours of operation, increased regulatory compliance, impacted transportation and delivery procedures, and in some cases reduced sales.

Key challenges are inputs, including water and labor, and the decline in income for farmers. Farmers have typically had very low profit margins yet farming must be a financially successful business and the inability to make a reasonable income is one reason for the decline in farmers. Subsidies are currently available for rice and a few other select commodity

crops; however, no such support is provided to specialty crop farmers and support for animal agriculture is limited.

On-going lack of rainfall due to climate change is a foundational concern due to the need for water in agricultural production. Reliance on groundwater due to decreased availability of surface water and issues regarding water rights are concerns that must be considered in planning for continued agricultural production. Important considerations found in this research regarding water use are sources of water, as the county had an increase of 437% in dry wells over the past year, and types of production, i.e., crops, trees, and animal production, and the cost and time required to implement water conservation practices, such as regenerative agriculture. Additional elements in water use are crop idling, water for wildlife habitat, and adherence to state and federal regulations to conserve water.

Regarding other resources, one commercial seed producer is currently in operation in Tehama County, with seeds being somewhat limited for commercial production, particularly the development of seeds for food crops that are best adapted to climate change. Land, mostly prime farm and grazing land, in the county is slowly being converted to other uses at a rate of approximately 1,000 acres per year. Soil quality needs to be improved per the NCCPI index.

Labor availability is a serious concern for agricultural production, as it is with all industries and services. In addition to a lack of skilled workers, the average age of farmers is alarming, with few new farmers stepping up to fill these retirements and aging out of this physically demanding occupation. Comments from current area farmers describe difficulty obtaining land and burdensome regulations as two barriers for new farmers. (Appendix M summarizes a few of the policies and regulations pertinent to agriculture and food production.)



Dr. Cindy Daley and students at Chico State's Center for Regenerative Agriculture and Resilient Systems examine regenerated soil.

Difficulty in reaching the local market is another challenge expressed by farmers who were interviewed. Several local producers have experienced market saturation for commonly grown crop varieties, whereas those with more diversified or unique niche products have fared better. Outside of farmers markets, Community Supported Agriculture (CSA) is the primary outlet used by small local producers to reach a local customer base, but again has its limitations. More information on retail is provided in the Retail and Distribution section of this report. Lastly, local producers expressed concern over the standards and regulation associated with Organic Certification. Not only is the certification process burdensome and costly, it does not necessitate the land stewardship and ethical farm practices that many Butte County producers value. Several producers felt that the Organic Certification may mislead consumers and result in these consumers not purchasing food from local non-certified producers, many of whom use at least some organic farming practices.

(For a more thorough review of the factors affecting local farms, see Appendices N and O, Perspectives from Local Producers and Environmental Concerns, respectively.)

A new consideration for producers is a California law, SB 1383 "Short-lived Climate Pollutants (SLCP): Organic Waste Reductions," that went into effect on January 1, 2022.¹³⁶ This law requires organic waste to be diverted away from the landfill into compost, energy production, or food rescue to reduce greenhouse gas emissions. The impact of this law on producers is not yet realized at the time of this report.

Opportunities in Agriculture Production

Agriculture is a primary industry in Butte County, valued at approximately \$700 billion in gross production each year. The county's unique geography, positioned between the Sierra Nevada foothills and Sacramento River Valley, provides

an ideal landscape and natural resources for crop cultivation and livestock grazing. The Feather River and Lake Oroville have provided the county with reliable water supply for generations. Improvements in the management and conservation of the county's natural resources will play a vital role in preserving the local way of life, especially for industries that rely on the land such as food production. Financial resources for farmers must be explored to attract new farmers and improve their ability to make a reasonable income, particularly among young farmers. Action at the county, state, and federal levels is needed to ensure farmers are financially

supported, and farmers themselves are the best people to inform how such efforts should move ahead. Reducing regulatory burdens, e.g., dairy production, organic certification, and implementation of policies to support small, diversified farmers, who account for 81% of Butte County farms but only 6% of total sales, will support food sovereignty.

Opportunity lies in leveraging and expanding upon the

Opportunity for agriculture production lies in leveraging and expanding upon the resources that already exist Butte County, such as centers of research and innovation.

resources that already exist in Butte County, such as centers of research and innovation. Soil health improvement must link with Chico State's Center for Regenerative Agriculture and Resilient Systems to increase productivity; these practices also improve water retention and nutrient availability in the soil and have a positive impact on the climate. Soil remediation efforts in the burn scars should have increasing support. In 2020, the Center received a \$7 million grant to support soil health management systems in Northern California.¹³⁷

University of California Cooperative Extension (UCCE) offers a network of scientists and educators that serve as farm advisors to Butte County producers for each of the county's major agricultural commodities. Opportunity lies in expanding this service to small diversified farms through the placement of a Small Farms Advisor for Butte County, as is currently done in other prominent agricultural regions such as



commercial producers and community/home gardeners. Community seed swaps are an excellent venue to share resources, including information, and Seed and Plant Libraries should continue to be established in the county. For labor, incentives, including education and improved compensation, are needed to increase the workforce required for increased crop production. Butte County and the surrounding region must take advantage of incentive programs to

support beginning farmers, and working with the College of Agriculture at Chico State is an important link to engaging more young people in farming. Farming in urban areas, such as Oroville, Chico, Paradise, and Gridley, should be explored to both increase the amount of food produced and improve access to local, healthy food as urban farms have a very short distribution channel.

Food hubs have been established around the country to allow for a consolidated distribution network that serves farmers, retailers, food service, and consumers.¹³⁸ While the North Valley Food Hub was not initially able to be self-sustaining, learning from this experience and implementing best practices used by other rural food hubs would allow for increased use of locally produced food. Importantly, opportunity exists in increasing the availability, awareness, and utilization of financial assistance programs that support local agriculture such as the USDA Local Food Promotion Program.¹³⁹ Exemplary models implemented to support local food systems include the Purdue Extension Diversified Farming and Food Systems programming

Photo courtesy of Sierra Oro Farm Trail

Pistachios, wine, almonds, mandarins, apricots, and apple butter are some of the products offered by farms on the Sierra Oro Farm Trail.

Stanislaus/San Joaquin Counties and Riverside/San Bernardino Counties.

Additionally, Butte County is home to the California Cooperative Rice Research Foundation (CCRRF), which provides support to rice producers throughout the state and within the county including Lundberg Family Farms. Intra-sector cooperatives such as CCRRF foster an environment of support and collaboration that strengthens California agriculture.

Likewise, a continued emphasis on networking, collaboration, and sharing of resources between small-scale and diversified farms, such as the work being done through the Butte County Local Food Network, is an opportunity to strengthen the local food system by supporting its most vulnerable producers. (A list of some agrarian networks and resources within Butte County can be found in Appendix P.)

Challenges in water supply will continue to be at the forefront and appropriate allocation will continue to be discussed. In addition to water, local seed production should be encouraged, both for

which provides resources to small farms, urban agriculture, beginning farmers, and other local food systems issues.¹⁴⁰ A similar, and vastly successful, initiative to increase local food production and sales is the Vermont Farm-to-Plate Network Strategic Plan and Vermont Sustainable Jobs Fund, which has led to an approximately 3-fold increase in the amount of locally produced food sales.¹⁴¹

Opportunity to support the local food system exists in educating the public about and increasing transparency for ethical and sustainable farming practices. Likewise, opportunity exists to promote awareness of the importance of local food system resilience. Promotion of agritourism (described in the next section) through u-picks, farm tours, and vacation rentals offers a means to foster connection between producer and consumer and educates the public on the value of local food production. Great opportunity lies in the education and application of traditional land management (ecological) practices of the Native American tribes in this area, and is led by the Chico Traditional Ecological Stewardship Program. Moreover, local seed production and sharing is an opportunity to help cultivate varieties that are best adapted to the Butte County climate and conditions.

Increased promotion and development of urban agriculture, community gardens, and farm-to-school programs offers a platform for education as well as boosts local food sales, putting money directly into the local economy. Likewise, improved networking and collaboration between small local business owners, such as the pork and apple dinners co-hosted by Turkey Tail and Lassen Cidery, offer mutually beneficial support to business ventures within the local food system.

Value Added Food Production

Value added food production includes such activities as agritourism and the processing of raw materials into new foods. Agritourism is a means for small farms to supplement their income by offering activities such as farm tours, vacation lodging, education, or work-trade for visitors. From 2007-2017, agritourism grew by 200% and agritourism-related income quadrupled. Supportive government regulations, marketing, and collaboration with community organizations is a way to help expand Butte County agritourism further.

Food processors transform raw agricultural commodities into edible products such as baked goods or butchered meat. Cottage Food Operations are businesses for which non-hazardous foods are prepared and processed in at-home kitchens. Alternatively, small operators can expand to for-lease commercial kitchen space which acts as small business incubators. Two such kitchens currently exist in the Chico area.

Butte County is home to several small independent or family-owned alcoholic beverage processors who source or grow their ingredients locally. Breweries and wineries have the advantage of supporting locally grown foods while also creating social and gathering space for community members. Food processors benefit from regulatory and small business support.

Agritourism

One way that farms can generate supplemental income is through agritourism. Agritourism is an opportunity that connects the public to the farming industry through tourism, recreation, and education, while generating additional income for the operation. It brings people from big cities to rural towns to visit farms and ranches and understand the world of agriculture and see where their food comes, first hand. It provides social education, community enrichment, and benefits the local economy. The connection of producers and consumers provide supplemental income for farm owners. Importantly, agritourism preserves agricultural lands that could be threatened when small farmers are not supported. More information about agritourism is available from the National Agricultural Law Center.¹⁴²

Agritourism brings recreational services, entertainment, and enlightenment for children and adults alike. As more people are introduced to farmers, produce, and livestock, legal issues must be addressed. Butte County regulates agritourism permits for bed and breakfasts, farm tours, farmstays, special events, farm trail events, weddings, concerts, parties, educational classes, corporate events, and other similar activities. Table 7 on the next page provides the maximum number of attendees at special events according to "Changing the Rules: Planning for and Regulating Agritourism in California."¹⁴³

Table 7. Maximum number of attendees at agritourism events.

Total Parcel Size (Acres)	Max # of Attendees (Peak)
1.0 - 2.5	50 people [1] [2] [3]
2.51 - 5.0	100 people [1] [2] [3]
5.01 - 10.0	200 people [1] [2] [3]
10.01 - 20.0	300 people [1] [2] [3] [4]
Over 20 acres	350 people [1] [2] [3] [4]

[1] Permitted as an accessory.
 [2] Outdoor activities are limited to Sunday through Thursday 8:00 a.m. to 7:00 p.m. and Friday, Saturday, and Holidays 8:00 a.m. to 11:00 p.m. Indoor activities are permitted without restriction as to day or time.
 [3] All special events are subject to the noise standards in Table HS-3 of the Health and Safety Element of the Butte County General Plan.¹⁴⁴
 [4] Individual events for up to 400 people are approved through an Administrative Permit.

Current Conditions

In just 10 years, Butte County agritourism showed a dramatic 2-fold increase from only 22 participating farms in 2007 to 44 in 2017. (See Table 8 below.)

Table 8. Butte County farms participating in agritourism.

Year	# of participating farms	Income from agritourism (MM)
2007	22	\$116,000
2012	38	\$392,000
2017	44	\$504,000

Likewise, agritourism related income increased from less than \$120 million to more that \$500 million in the same 10-year span, a 400% increase.¹⁴⁵ While these numbers demonstrate the rich opportunity that agritourism offers, the impact of the wildfires and the COVID-19 pandemic is not yet known and will be better understood by examining the data in the next Census of Agriculture, due in 2022. However, based on the trends seen in the hospitality and entertainment sectors, it can be estimated that agritourism was similarly negatively impacted by both disasters, stressing the importance of continued political and logistical support to foster continued upward growth in agritourism.

Food Processors

Butte County has a variety of food processors that take the harvest and transform it into safe and edible food. These “added value” operations range from washing and trimming lettuce and animal slaughter to creating marinades and pasta, and include small businesses, volunteer groups, and multinational corporations. To prepare food for distribution to the public, both for sale and for distribution to underserved people without charge, requires the use of an approved facility that has been inspected by the Health Department to ensure food safety. These requirements include sanitation, sourcing from approved suppliers, and training for all personnel, e.g., obtaining a food handlers permit.

The smallest operation is a Cottage Food Operator (CFO), a business that is operated out of the home to prepare foods that are permissible under California law.¹⁴⁸ Approved cottage foods include items such as tortillas, candies, baked goods, and dried soup mixes.¹⁴⁹ Butte County has 64 Class A (direct sale to consumer) and 15 Class B (distributed via retail) CFOs at the time of this report. Butte County Environmental Health commented that they receive many questions about CFOs and having a resource, such as a periodic workshop, would be very helpful. If a business either wants to expand production or produce something that is not permissible to make at home, they need to lease space in a commercial kitchen. Two such facilities that provide space for small operators have been identified in the county, both in Chico: Meriam Park and South Chico. Both of these “kitchen incubators” provide space and equipment for preparation and storage and are operated as businesses. In many communities, kitchen incubators are operated as non-profits to support new business. In addition, some restaurants have allowed small food businesses to use their kitchens for producing products for sale. Butte County could benefit from additional incubators to support food-related businesses.

Increased food safety requirements surrounding the COVID-19 pandemic have presented challenges for food processors within the county as they have had to continuously adapt to changing regulations. For example, public health regulations reduced the number of animals that could be

Agritourism Case Study: Sierra Oro Trail¹⁴⁶

The Sierra Oro Trail has been operating since starting in a small tasting room in Oroville in 2004. The Sierra Oro Farm Trail was created to build awareness and interest in the farm-fresh bounty and rich heritage of Butte County agriculture. Member farms are largely family operated and oftentimes multi-generational. They decided they wanted to include a few wineries around them and the next year they were able to set up the trail with ten stops. Today, they have 30-35 stops, including small family farms, boutique wineries, and micro businesses.

The fires have impacted the local farms involved by destroying many of their buildings, barns, and caused serious blackouts. The blackouts cause employees to work in ambiguous conditions. In 2018 during the Camp Fire, they worked for half the month without power, hoping the Trail would still happen. Luckily, the day of the tour, power was restored, and they were able to continue their business.

Farmers have not dropped from the Trail because the capacity is 35 farmers, which supplies a week-end full of events. It can be quite difficult to go above that number of farms and locations in two days. Because of COVID they had to come up with a new way that would allow them to interact with the community and continue the business. They were not allowed to have a tour, so they improvised with a tasting box. This box included Chico State produce and Lundberg Farm and Sierra Nevada products. They also offered boxes for Christmas, Mother’s Day, and Graduation. In 2021, the Sierra Oro Farm Trail was expanded to the entire month of October and used a digital pass for attendees, which allowed tracking of attendance.

Other special events that coordinate with farmers and small businesses include promotion to Chico State parents on Alumni and Family Weekend and having the Trail events on Indigenous People’s Day, which could attract over 75,000 people to their operations. Some changes Sierra Oro Trail would like to see include storage of water during floods and wetter years in preparation for these drought years and more legislation like the Farm Modernization Act to help farmworkers earn viable wages.

Agritourism Case Study: GRUB CSA Farm¹⁴⁷

GRUB CSA Farm participates in agritourism by working with Hipcamp. They have two open camping spots to pitch a tent under their walnut trees with a panoramic view of their farm. The only requirement to participate as a Hipcamp host is to provide a restroom (toilet). At GRUB there is a sink, picnic table, swings, and porta-potty on site. Depending on what’s available at the farm, Francine usually puts together a box of complimentary veggies for the campers. Partnering with Hipcamp is an easy way for them to earn “free money” as Francine calls it. They charge \$50 a night, with \$45 remaining with GRUB and \$5 going to Hipcamp. There is usually little to no interaction with the guests, but she is always open and willing to talk with them about her organic farm and encourages them to explore the farm during their stay. Summer is usually their busiest season. GRUB CSA is a desirable Hipcamp location not only because of their organic farm but also because they are near the creek and the river. It’s the perfect stop for nature-loving travelers seeking a peaceful stay. Francine likes providing this space for campers so that they can experience an organic farm as an alternative to a hotel while traveling. She notes two highlights of the program: the extra income and the pleasure evident in campers while they walk around the farm. She is also in the process of converting one of their garages into a “Casita” so they can have a small Airbnb unit to rent out.

slaughtered in a single day, leading to reduced output for local processors such as the Chico Locker & Sausage Company. Other food processors have been impacted as well due to more stringent and novel regulations on food processing and delivery imposed by state and federal agencies due to the pandemic.¹⁵⁰

Additional research is needed to have a comprehensive understanding of food processing in Butte County.

Wineries and Breweries

Through tasting rooms and tours, wineries and breweries offer the added value of recreation, entertainment, and gathering space that supports the local economy and culture. Some of the county’s

most popular processors are alcoholic beverage manufacturers such as wineries and breweries, several of which source their ingredients from local producers or grow them themselves. Among others, Butte County is home to LaRocca Vineyards, Long Creek Winery, Almendra Winery, Lassen Cidery, and the Golden Beaver Distillery. Unfortunately due to a poor response rate, not all industry voices are accounted for in this report; however, interviews with LaRocca and Lassen Cidery offer valuable insight into the affairs of local beverage production in Butte County.

LaRocca Vineyards was founded in 1984 on 110 acres of neglected wine grapes.¹⁵¹

Their first homemade wine was released for public sale in 1991 using fully organic growing and processing methods. It is a core mission of LaRocca to show the world that it is possible to successfully produce high-quality and great tasting wine with no chemicals. Another core value is stewardship of the land. Organic viticulture must be creative, steadfast, and holistic in its practices in order to create a balance between the helpful and difficult aspects of nature. Some of LaRocca's practices include putting a protective layer of clay on leaves, utilizing cover crops, and capitalizing on the native habitat surrounding the vineyard which offers natural predators for pests. For the LaRocca family, wine is not just a living, it is a way of life. Winemaking is a mix of science and craft, and for boutique wineries, every bottle is a piece of art.

The family business has faced considerable challenges due to climate change and other hardships, including the disasters discussed elsewhere in this report. In July 2021, when interviewed, they noted that they are only farming 20 of their 110 acres. The hot dry weather is hard on the vines. Additionally, wildfire heat and smoke can injure the cambium layer of vine resulting in massive damage and even death to the vine. During

Some of the county's most popular food processors are alcoholic beverage manufacturers, such as wineries and breweries, several of which source their ingredients from local producers or grow them themselves.

the Camp Fire, the main highway was blocked, hindering traffic, distribution, and tourism. In total, sales were reduced by 95%. The winery suffered a further setback when the COVID-pandemic hit. Although they did apply for and receive federal emergency loans, the amount offered was based on their 2019 income - the year in which sales were severely impacted by the Camp Fire. Reduced staff and a closed taproom due to COVID regulations compounded damage to the already hurting business. At the time of this assessment, the winery has yet to rebound. In comparison to large producers, small family farms do not have

the resiliency nor the financial backing to wait out such periods of hardship.

LaRocca expressed concern that small producers are overshadowed by large corporate agriculture and are poorly supported by county regulations and policies. For example, water management tops the list of current concerns. In many cases, all of the agriculture sector is lumped together, but there are large differences in practice and needs depending on the crop grown, the operation's values, and its size. Small producers need to complete the same paperwork and go through all the same hoops as the large producers

whether they benefit from it or not, and at the same time, their concerns are not heard. According to LaRocca, what is needed is an amplified voice and better representation for like-minded, similarly sized operations, such as small organic family farms.

Lassen Cidery was established in 2016, born out of one man's love of small batch traditionally brewed cider.¹⁵² Although consumer interest has increased in hard cider over the last decade, traditional cideries are rare. Traditional methods use seasonally harvested whole heirloom apple varieties. Apples are pressed, fermented, aged in wine barrels for a few months, transferred to bottles, and then aged again to reach optimal dryness. There are

At right: Phil LaRocca in his Forest Ranch organic vineyard (top); Ben Nielson with his nose in a barrel of Lassen Cider.

no ingredients besides the apples themselves—no sugar, no juice, and no preservatives commonly found in commercial ciders. Instead, traditional cider fermentation makes use of the natural sugars within the apple and wild yeast present on the skin. The cider is never pasteurized, filtered, or adulterated in any manner.

The magic of traditional cider lies in the apples. A good cider apple must have a specific balance of acid, sugar, tannins, and fermentable fiber. Compared to the sugar apple that is commonly eaten fresh, cider apples are significantly higher in tannins, yielding a more bitter and tart flavor and offering a wide array of aromatics and flavor to the final product. Good cider varieties include Winesap, Newtown Pippin, Gravenstein, Arkansas black, and King David. The Sierra Beauty is a Butte County apple from the Gold Rush era, originally discovered in Oroville and cultivated by Bidwell's nursery. Another California original is the Wickson Crabapple, distinguished by its unique red hue. The Wickson possesses a high-sugar and high-acid content that makes it desirable for cider, despite being too acidic for use in desserts.

Lassen Cidery's appreciation for apples is clear. Ben Nielson names each fermentation after the apple from which it was made and the bottle states the exact orchard where the apple was harvested, offering full transparency to the consumer. All apples are regionally sourced and come from within Butte County as much as possible. In 2020, 100% of the apples used came from small Northern California orchards, 30% from within Butte County. Noble Orchards in Paradise and Irvine in Gridley are two regular suppliers for Lassen Cidery. Small batch, locally-sourced cider gives purpose to the cultivation of heirloom varieties, helping to keep them alive, and gives farmers a reason to maintain old orchards that would otherwise be neglected or removed. Northern California was once home to many orchards which have largely been replaced with grapes or housing developments.

Traditional cider production offers many benefits to the local food system. Cider makes use of damaged



or blemished apples that are undesirable for market. It can revive lost orchards, giving the owner reason to get production back up and running. Moreover, the cidery fosters collaboration with other community members. For example, the leftover apple fiber and pulp that remains after pressing is donated to a local pig farmer for feed. The cidery hires locals for temp work during the busy harvest season and encourages trades with other small-batch and homebrewers. During the Camp Fire, Noble Orchards was severely impacted, when much of their equipment and infrastructure was burned. With no way to handle the fall's harvest themselves, they hosted a free u-pick. Lassen Cidery picked much of their Winesap apples and from them created the Paradise Strong Cider for which 10% of all proceeds went back to Noble to help them carry on their 100 year tradition of growing apples. Lassen Cidery is devoted to supporting local agriculture, maintaining integrity of ingredients, and offering transparency to the consumer, all of which can be done by building relationships with local farmers.

Most of the challenges faced by Lassen Cidery are involved with business management and sales. The owner started the cidery out of a love for the craft; however as a one man operation, he must also handle other aspects of the business for which he is less knowledgeable. His story emphasizes a need for low-cost business support services for small ventures or improved networking among local business owners.

Butte County is also the home and birthplace of Sierra Nevada Brewing.¹⁵³ Although the company has grown to a nationally recognized brand, they still uphold many of their values as a small microbrewery. The brewery remains an independent private company, owned by the original founder, and employs around 1,000 people, mostly locals. In addition to craft beer, they offer a taproom with a full-service restaurant and brewery tours. To our knowledge, the brewery does not purchase local ingredients for their beers; however, they do showcase locally grown foods in the restaurant. Sierra Nevada also operates a garden that grows hops among other things. Starting in 2005 with just a few rows of hops, they now manage 10 acres of hops, 100 acres of barley, and a 2-acre garden that



The Rasmussen sisters' Live Life Juice Company in Chico first juiced in a rented commercial kitchen, for a pizza parlor in Hamilton City.

provides fresh produce for the restaurant. These homegrown ingredients are used to make specialty beers such as the Estate Series, which is made with 100% local ingredients harvested from its very own Estate Garden.

Challenges in Value Added Food Production

California counties bear the primary responsibility for regulating agritourism operations on agricultural land within their boundaries. Despite its growth in the last 15 years, Butte County's agritourism industry remains limited for several reasons. According to the Butte County Tourism Business Improvement District (TBID) Management District Plan, key needs include increasing occupancy, increasing local tax revenue, and stable funding for tourism promotion.¹⁵⁴ There

is not enough supplemental funding beyond monies paid by local providers that allow tourism in Butte County to become competitive in the tourism market. Also as funding for tourism increases, Transient Occupancy Tax (TOT) will be able to supply greater sales tax revenue. These two reasons would have a domino effect for the TBID and would begin to provide a stable source of funding that would not need political or economical help.

Opportunities in Value Added Food Production

The Sierra-Oro Farm Trail highlights over 30 farms and venues who open their doors every fall to the public. They have pioneered agritourism in Northern California. They are a non-profit association of farmers and business people that strives for a strong community with an agricultural foundation. In the early 1800s and 1900s, the land along the Sierra Oro Farm Trail provided walnuts, olives, peaches, oranges, kiwis, and even almonds that show the beautiful range of food possibilities in California. Their trail of farmers travels through Richvale, Gridley, Oroville, Bangor, Chico, Paradise, and Durham. Oroville has great productions of olives with endless olive oil tastings that take place at the Lodestar Farm and Bamford Family Farm (closed since the Camp Fire). Sierra Nevada Brewing Company, located in Chico, provides beer that travels globally and hosts events semiannually. Their events include Beer Camp in the Spring, Oktoberfest in the fall, and weekly company tours.¹⁵⁵

Groups such as WWOOF (Worldwide Opportunities on Organic Farms) and Hipcamp are organizations that allow people from all over the world to park, visit, and work on their farms. In 2017, Butte County had approximately 5 out of 1,912 farmers provide these services. WWOOF is a diverse organization that can place volunteers in farms that grow multiple crops and raise all types of animals. When volunteers help small business farmers, they help them to build their business and may lead to the farm employing their volunteers, which contributes to the local economy. Hipcamp is a newer and almost a glamping experience for agritourism. It allows people to pay a small fee to stay on farmers' land and learn about their mission. They get to taste the food they grow, meet the locals, and observe their operation. Hipcamp is another way to help the local

economy and hearten agritourism.¹⁵⁶

Additionally, establishing more commercial kitchens that can serve as food processing incubators for small business ventures such as Cottage Food Operations brings commerce and supports the local food economy. Opportunity also exists to increase the availability and access to low-cost business support services (i.e., marketing and accounting).

DISTRIBUTION, RETAIL, AND FOOD SERVICE

Distribution and retail accounts for 20% of Butte County food system employment and serves as a primary way for consumers to obtain local foods. It is estimated that just under 2% of total household food expenditure is spent on locally produced foods with direct farm-to-consumer sales through farmers markets and CSAs being the primary outlet. Natural food retailers and cooperative markets also engage in retail sales of locally produced foods but are limited by consumer demand for organic and out-of-season products which are not always available locally. Programs such as Market Match, WIC farmers market checks, and Matching On Regional Eats (MORE) help increase accessibility to fresh local foods for lower income residents, overcoming a primary perceived barrier of cost.

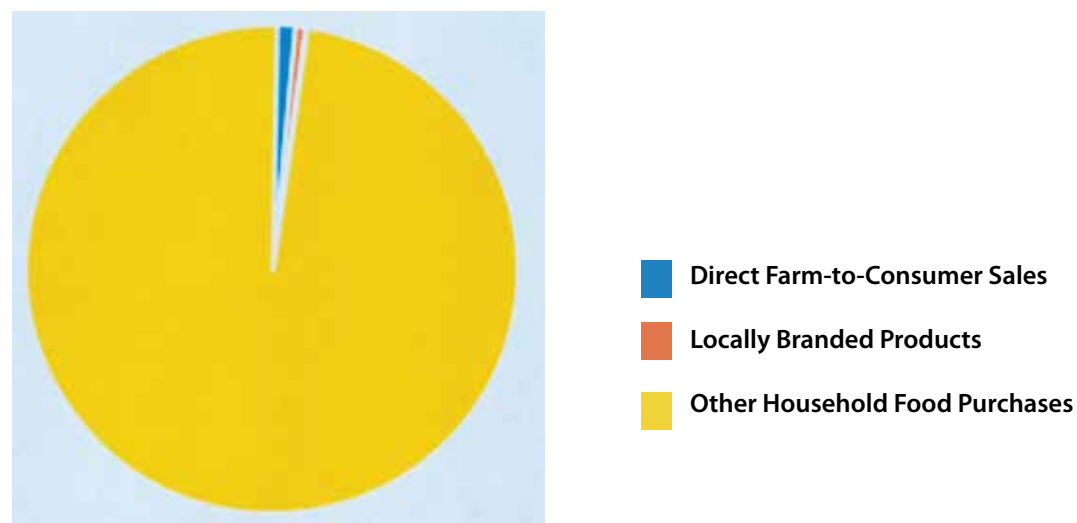
Current Conditions

The importance of the retail food supply chain became especially apparent during the COVID-19 pandemic when demand for at-home foods increased following restaurant closures and layoffs. The supply chain was also compromised with shortages and price increases in several household staples. This experience was a first of its kind for many Americans, but likely not the last and underlines the importance of a consistent and readily available food supply during times of emergency, which further illuminates the need for learning from this and previous disasters to strengthen the supply chain for food. This assessment considered the retail food system to consist of farmers markets, community supported agriculture, and grocery stores.

Butte County has 11 Certified Farmers Markets (not all currently operating), six community supported agriculture operations (CSAs), and several distributors/retailers that support the local

Figure 9. Butte County local food sales.

USDA Census of Agriculture and BLS Consumer Expenditure Survey.^{163,164}



food system, including the Chico Natural Foods Cooperative, S&S Natural Foods, and New Earth Market. To a lesser extent, some large grocery chains carry locally produced foods, for which Raley’s will be representative in this report.

Overall, distributors, wholesalers, and food and beverage stores (i.e., grocers) account for approximately 20% of food system jobs in Butte County. According to the Bureau of Labor Statistics (BLS), distributors and wholesalers employ approximately 500 people per year; food and beverage stores employ approximately 2,000 people per year. These figures have remained relatively stable over the last 10 years.¹⁵⁷

Sales of Locally Produced Foods

Local food sales in Butte County are presented in Figure 9 above and range from 1% to 2% depending on the metric used. (See Appendix C: Calculations, item 3, for a description of calculation methods used in this section.) It is estimated that purchases of locally produced foods comprise approximately 1.9% of total household food expenditure in Butte County, with direct farm-to-consumer sales comprising about 1.2% of total household food expenditure. Likewise, direct farm-to-consumer sales make up 1.8% of the market value of all farm sales within the county. Although this number seems low, it is in line with other counties within California. The San Diego Food System Assessment reported direct-to-consumer sales composed 1.1% of total sales,¹⁵⁸ and

in Santa Clara County, this channel is only a fraction of a percent.¹⁵⁹ The relatively small percentage that local sales comprise of total sales is an indicator of room for improvement.

Vermont has placed considerable effort into strengthening local sales and has seen results.¹⁶⁰ The Vermont Farm to Plate Network estimated that the percent of purchases on locally produced foods compared to total dollars spent on food within the state grew from 5% in 2011, when the program was initiated, to 13.9% by 2020. This increase is in part attributed to the passing and implementation of the Vermont Sustainable Jobs Fund, the Farm to Plate Investment Program, and the Vermont Agriculture and Food System Strategic Plan.

One market channel for facilitating the distribution of local food is a Food Hub, which is a “centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products.”¹⁶¹ In 2014, Chico State University’s College of Agriculture received a grant to develop the North Valley Food Hub (NVFH). The NVFH used an on-line posting and ordering system to connect farmers to food service operators and was in operation for three years, but did not become profitable enough to develop into a self-sustaining business.

An additional source of locally produced foods and a marker of food system resilience is at-home



food production (i.e., home gardens). Although this figure is unknown at the county level, national estimates indicate the average U.S. household produces around \$10 worth of their own food each year,¹⁶² which equates to approximately \$860,000 worth of at-home food production for Butte County as a whole. Although this number is not a precise measure of household food production, it can serve as a baseline estimate for growth and goal setting. A more in-depth analysis is required to determine exactly how much food Butte County homes are producing themselves.

Distributors & Grocers

Butte County is home to many grocers and distributors, including three natural food stores in Chico, all of which carry some locally-grown produce: Chico Natural Foods Cooperative, New Earth Market, and S&S Natural Foods. Chico Natural Foods is a consumer-owned cooperative with 3,000 active members and annual gross sales over \$4 million. They use a combined approach to sourcing foods, with some items coming from larger distributors and some from local producers. Organic certification is not required; however, all foods must be grown with organic and sustainable methods. Management reports that buying local is a regular part of goal-setting and decision making and is included in the co-op’s mission to support the local economy. Using the most recent estimates

from 2019, approximately 22% of total sales dollars (including non-food items) were for items sourced within a 150 mile radius and considered local. Moreover, just over a million dollars of purchasing was spent on local foods. Data on items sourced from within Butte County only (i.e., “hyperlocal”) was unavailable. At one time, Chico Natural Foods had a full-time local buyer staff position but that was terminated several years ago. Some of the local producers they purchase from include Comanche Creek, Pyramid Farms, Full Sun, Fang Farms, and Farmelot. Management stated that they sometimes accept items harvested directly from people’s homes.

New Earth and S&S both use NorCal Produce as their primary distributor and state a strong preference for purchasing certified organic foods, which limits the pool of local farms they can purchase from. Although we were unable to get an official figure from management, both stores appeared to carry between 5-10% local produce. Some of the producers they work with include Comanche Creek, Pyramid, Wild River Fruit Farm (Yuba City), Farmer Chi, Fang Farms, and Lony Steadman. Note that S&S serves as a distributor for some local food service operations. In Oroville, two natural food stores were identified but not interviewed: Heritage Natural Foods and Eden Healthy.

Raley’s is one of the largest grocers that carries local

products in their stores. Management reported that the number of local items offered varies seasonally, with a high of about 50% for produce during summer; however, their definition of local, which is shared with many other retailers, extends beyond the Butte County area to include most of Northern California north of Sacramento. Therefore, it could not be precisely determined how much Butte County represents of their total items offered. Additionally, purchasing decisions are made at the regional corporate level in Sacramento, and management is less familiar with the smaller producers from Butte County. Despite this, Raley's, originating in the small town of Placerville, remains committed to supporting local communities and puts effort into incorporating local foods in their stores and developing relationships with local producers. Unfortunately, due to their size, they have large quantity requirements as well as considerable "red tape" that needs to be met for every contract.

All four markets interviewed stated that the COVID-19 pandemic had a much larger effect in terms of supply, staffing, and sales than the wildfires. However, all stores had staff members and customers impacted by the fires, and New Earth reported that lettuce supply in particular was shorted when lettuce was affected by the smoke from the fires. Supply issues associated with COVID-19 have mainly been seen with meat, imported crops such as tropical fruit, and paper goods.

Additionally, Chico is home to The Danielsen Company, a wholesale and retail food distributor that supplies to several local schools within Butte County. Danielsen was not interviewed for this report.

Food Access

An important aspect of community health is access to a full-service grocery store. A food desert is defined as an area that is both low-income and has low-access to food. As of 2019, 28% of Butte County's population lived within a tract designated as a food desert.¹⁶⁵ For further discussion and analysis, please see the Food Accessibility and Security, Food Insecurity and Poverty section of this report (p. 66 ff).



Farmers Markets

Farmers markets offer one of the best ways for farmers to sell their product and for consumers to purchase local, freshly harvested produce. (To promote shopping by low-income people, several programs exist and are discussed in Food Accessibility and Security, Government-based Nutrition Assistance Programs, p. 73.) Regulations ban secondary parties such as distributors from purchasing booths. This helps prevent middlemen from stepping in and out-pricing farmers and ensures that consumers interact directly with the people growing their food. Butte County currently has seven operating farmers markets: two in Oroville, two in Chico, one in Paradise and a small market presence at Party in the Park, Paradise. Farmers markets located in Butte County, both active and

inactive, are listed in Appendix Q.

The Chico Certified Farmers Market (CCFM) currently has two year-round and one seasonal market. The first market, which evolved into the Saturday market located in downtown Chico, began in 1980 and has been running continuously since. It is the most frequented and has 100 members, about half of which are farmers; the rest are value added vendors that offer items such as prepared food or crafts. Sales approximate \$100,000 per week and the market reports that sales had been on a steady incline until 2015 where they peaked and have declined slightly since.

The CCFM offers a Wednesday market year-round that has about one-third of the activity as the Saturday market. CCFM also hosts a Tuesday market in Paradise. The market was closed in 2019 following the Camp Fire, due to concerns about toxicity and air quality, but reopened in 2020 and is running now. Despite having a very committed core group of attendees, the Paradise market activity is not quite enough to keep farmers engaged, and the number of vendors tends to dwindle throughout the season. At the time of this writing, the market is in jeopardy of not being able to sustain itself without increased sales or outside support. CCFM tried to establish a seasonal market in Oroville, but it was unsuccessful due to not having enough interest and has since shut down, per their website¹⁶⁶ and an interview with our researcher.

The Downtown Chico Business Association hosts the Thursday Night Market that offers a wide range of local vendors, crafts, performers, food trucks, and booths from local businesses and nonprofits. The market covers six to eight blocks of downtown, and local farmers comprise only a small portion of what is available. However, the market is very well attended.¹⁶⁷

Oroville Hospital sponsors a seasonal market on

Wednesday mornings that has successfully been running for over 10 years and has grown from only 10 vendors to more than 25. In summer 2020, a second market was opened in Oroville on Saturday mornings, which is run by a single proprietor, independent from the other markets. Unfortunately, the market's growth has been slowed by the COVID-19 pandemic. Yet, despite some setbacks, the Oroville Saturday Market remains open and is hopeful of continuing to build a strong farmer and consumer base.

Gridley has a history of a regular summer farmers market, but in 2019 attendance dropped. The organizers tried a couple other models, including holding the market only once a month rather than weekly but have been unable to boost engagement. An opportunity lies in collaboration with other models such as the Marketmobile (see below for a discussion of the Marketmobile) to help better reach community members.¹⁶⁸

Information on the diversity of farmers at the markets is limited; however, CCFM estimated that about 10% of their members are Hmong and that one is Punjabi and one is Hispanic. More research is needed to gain a better understanding of diversity within the farmers market circuit.

Farmers Marketmobile

The Butte County Local Food Network operates a Farmers Marketmobile that currently serves Concow every Saturday and Magalia on Sundays. The Farmers Marketmobile mission is to create a stronger local food system. They promote this by offering exclusively locally-grown food and by bringing local food closer to those living in the more rural areas of Butte County. The project also promotes food equity by accepting EBT as well as offering an "Angel Card" program that offers free food for qualifying individuals living within the area devastated by the Camp Fire. Currently, the Marketmobile has the

The Farmers Marketmobile mission is to create a stonger local food system. . . by offering exclusively locally-grown food and by bringing local food closer to those living in the more rural areas of Butte County.



Photo courtesy of Butte County Local Food Network

capacity to feed 144 families, totalling 364 mouths. The Marketmobile is occasionally impacted by extreme weather (snow or heat) and, more recently, dangerous air quality when wildfires occur in the area. When the air is unsafe due to fire activity, the food is either dropped off or given away for free to the community so that none is wasted.

Community Supported Agriculture

Butte County is fortunate to have several Community Supported Agriculture (CSA) programs supporting local farms. The half dozen emerging CSAs in Butte County function with various market models and support diversity of agricultural products within Butte County. Although traditional farmers markets offer the opportunity for farms to sell their produce directly to customers, CSAs in Butte County emerged in response to customer and producer needs not being met at these traditional markets. CSAs are designed such that the consumers and growers share both the risks and the bounty of

food production. In a traditional model, members pledge support to the farm by buying a share of the farm's production before each growing season and receive regular distributions of the farm's harvest. In return, the farmer gains advanced working capital to support the farm early in the season. CSAs typically focus on crop diversification in order to provide each member with variety and an extended harvest. Some CSAs also offer social and educational opportunities for members.^{169,170}

Co-Op-A-Box is an example of how farmers and consumers are developing innovative models to meet the unique needs of their own town. Due to the inconsistent operation of the Oroville Farmers Market, small farms within the community came together to establish Co-Op-A-Box, a "micro-local" CSA that employs a cooperative model to help producers within a twenty mile radius reach customers within that radius. From small fruit orchards to vegetable and herb farms, each

producer is paid directly to function within the co-op, and customers opt-in each week for either a \$20 or \$40 box, available for local pick up. Additionally, the CSA co-op has additional offerings, such as spice mixes, as well as nursery starts and compost to its customers.

Although originally established as a traditional CSA, with a change in ownership Comanche Creek CSA evolved towards a more cooperative model as well. With the opening of a storefront near downtown Chico, the new owner of Comanche Creek Farm established a brick-and-mortar grocery that partnered with other producers, such as Maisie Jane's Nuts and Chico Chai, to sell local products to Chico residents. Since opening the market, the farmer found that many of CSA customers dropped the subscription in favor of selecting produce from the storefront location, which also functioned as a pick up location for existing subscribers. This grocery offered community members the unique opportunity to buy produce that is blemished with bruises or bug damage, known as "seconds" or "imperfects," at a drastically reduced price. When employees left during COVID, the Comanche Creek Market closed in October of 2021.

While some CSAs like Comanche Creek exist as hybrid models, others, such as Turkey Tail Farm, rely primarily on their subscription customer base. With \$20 and \$40 box options and specialized, niche options such as mushrooms, pasture raised pork, and duck eggs, and products crafted from fresh herbs, Turkey Tail has maintained itself through its diversity and distinction of product. The CSA model also allows them to sell pork directly to customers without the strict regulations required at certified farmers markets. Unlike the other CSAs discussed that consist of several farms working together, Turkey Tail Farm's CSA offers an example of a model by which a single small farm can maintain a healthy living through selling high-quality food and herbs.

Another example of a more traditional model is GRUB CSA, located in Chico. GRUB CSA started as a collective of nine 2-acre plots established on individual properties, but has since evolved into a single 15 acre farm (plus an additional 10 acres that is farmed on the neighboring property). CSA participants purchase a membership and receive



Jim Miller, original Comanche Creek Farm farmer/owner, retired in 2019. Although his children did not continue the operation, he did succeed in selling the farm.

fresh picked produce in return. In addition to operating the 125-box CSA, the farm sells at the local farmers markets and to some local restaurants. GRUB owners expressed that they would like to expand to grocery stores, but despite practicing farming methods even stricter than what certification requires, they do not have the means to maintain organic certification, which most natural food stores and local markets prefer. The CSA provides them the opportunity to sell directly to the community without hassling with the managers of a traditional retail market.

Harvesting Hope CSA is unique in that it is supported through the Jesus Center, a non-profit Christian community-based organization providing assistance

to those in need. The farm is largely funded through philanthropic donations by those who are not in need of the food themselves. Food boxes are offered on an opt-in weekly basis; however attendance is low. Despite having 30 members, only between 5-15 pick up boxes each week.

Of the five CSAs interviewed for this assessment, two utilize a fairly standard CSA model, two have significantly modified models, and one indicates they will be abandoning the CSA model. Each CSA has developed a unique strategy to best facilitate their operation; however some commonalities shine through, such as offering weekly boxes with a variety of fresh produce, a non-compulsory (or voluntary) subscriber base, and service to the community. Within that framework, each CSA adjusts its model to address the specific needs of both their business and customer base. Due to the fact that CSAs provide food to a limited customer base, they as a whole represent a very small portion of the county's agricultural sales. Continued growth of the CSA model in Butte County would foster a stronger farm-to-table connection but will require significant outreach and education on the value of CSAs, as well as broader community support and encouragement through local nonprofit and government action.

Challenges in Distribution and Retail

Challenges expressed by farmers market representatives include difficulty sourcing vendors and getting farmers certified, challenges establishing strong customer bases at new and satellite markets, and burdens of working around regulations. For example, CCFM has attempted to support new farmers via innovative projects, but state rules and regulations hinder it. One effort was to allow four micro-farmers to share a single booth, but it was prohibited by the California Department of Food and Agriculture. Another hurdle is the process and red tape needed in order to accept nutrition assistance benefits. The Oroville Saturday Market expressed that despite being approved to accept SNAP (CalFresh) benefits, they have been unsuccessful in acquiring the EBT machine necessary to process payments, so shoppers have not been able to use their benefits at the market.

Another concern is the aging of farmers. Many

farmers are aging out, and the subsequent generation lacks interest to continue the operation. This trend is seen across the nation where only 8% of farmers are under the age of 35 years old.¹⁷¹ For those that want to start farming, many barriers are faced, such as high land prices and student loan repayment.

A barrier to getting local food in the retail store market is that most natural food stores want certified organic and most small local producers do not undergo the certification process. Additionally, grocers require large quantities and greater variety than what local producers offer. A large component of that is consumer demand. Produce needs to be staggered, diverse, and come in at a steady flow. Additionally, retail markets also have limited staffing capacity and sourcing small amounts from numerous producers is time consuming. Large markets such as Raley's require an extensive auditing process to ensure farmers are adhering to food safety standards and HACCP (Hazard Analysis and Critical Control Point) regulations. Another challenge is completing the contract process in a timely manner and at least 3-6 months in advance of purchase. Large retailers can not accept last minute harvests.

A major challenge is getting consumers on board with purchasing behaviors that support local farms. Although consumers hold an ethos that supports sustainable and local purchasing, their purchasing decisions do not always reflect that, particularly with purchasing seasonally. Increased consumer interest in purchasing seasonal varieties is needed to further expand the local food system.

Common challenges faced by CSA providers include absentee subscribers, issues inherent with the box model, increased labor needs for distribution, and varying consumer interest. Absentee subscribers, where customers purchase a box but do not pick up, presents a challenge for estimating numbers for harvest and labor needs. The box model has some limitations, such as reducing consumer choice in what they are receiving, increased labor and materials for packaging boxes, as well as transportation costs for delivery. Some CSAs offer pick-up only to help reduce this burden. Additionally, CSAs compete for customers with traditional farmers



Chico State's Wildcat Food Pantry works with the university's Organic Vegetable Project to make local vegetables available through the Pantry, one example of a productive community relationship.

markets, supermarkets, and retail outlets; therefore, CSA programs need to be distinct and offer additional benefits to members, such as community events, to encourage participation. CSAs with small customer bases are particularly susceptible to fluctuations in consumer interest. Moreover, CSAs are not eligible for any additional grants, subsidies, or awards that other farm models can receive, but have some advantages with permitting and regulation (such as for animal processing).

Opportunities in Distribution and Retail

Purchases of local foods by consumers, whether through retail outlets or direct farm sales, help foster strength and productive relationships within the community. For example, following the Camp Fire, Chico Natural Foods supported the community by providing thousands of dollars in donations and free food. Additionally, partnerships with other community organizations such as the North Valley Community Foundation and Chico State's Wildcat

Food Pantry foster collaboration and unity among community members, supporting the food system at the grassroots level.

Consumers can be empowered to buy local through expanding nutrition assistance and incentive programs like Market Match. Another program, the Gus Schumacher Nutrition Incentive Program (GusNIP), provides grants to local agencies and nonprofits for projects incentivizing purchases of fruits and vegetables. This was utilized by Chico Natural Foods to launch their Matching On Regional Eats (MORE) program. MORE provides a 50% discount to CalFresh recipients for purchase of California-grown produce. Encouraging such programs narrows the equity gap for consumption of fresh produce, puts money into the hands of local producers, and helps increase consumer exposure and interest in seasonal varieties.^{172,173}

Another opportunity is to improve marketing strategies for local foods, such as increased

advertising at farmers markets and labeling of “local” items in stores. A representative from Raley’s stated that there used to be a local nonprofit in Sonoma that would come into the stores and mark all locally-produced foods. Their efforts were welcomed by both management and staff. A similar model could be deployed elsewhere but the manpower would need to come from outside Raley’s staff, due to limited resources in the stores themselves. Note that this requires a uniform definition of what is local. Misuse and mislabeling of “local” leads to consumer confusion and mistrust.¹⁷⁴

Importantly, farmers have historically been under-capitalized. Opportunity lies in establishing financial and social support systems for the agrarian community. Subsidies, grants, low-interest loans, technical support, and accessible education programs can help aspiring new farmers get started, assist with regulations and certification processes, and promote resilience to weather less bountiful years and times of crisis. The USDA Local Food Promotion Program provides grants to help with direct-to-consumer sales and marketing. The expansion of this program, along with the development of more programs, presents an opportunity to help farmers access the consumer market.¹⁷⁵

Examples of successful community-based farming models include Veggielution,¹⁷⁶ a community farm located in an urban area in the south east side of the San Francisco Bay Area. The farm started in 2008 on a one sixth-acre parcel and has grown to 2 acres. It offers many programs centered around community engagement and education and holds a weekly farm stand that accepts both EBT and “Veggie Vouchers,” free food vouchers provided through clinics to families and children at risk for diet-related diseases. Another effective program is the Fresh Food Retail Initiative in New Orleans.¹⁷⁷ The program both improved local food sales and battled food insecurity by establishing fresh food markets in food deserts throughout New Orleans. A Chicago-based project geared toward marketing and demystifying local foods was pioneered by Chicago Food Policy Advisory Council¹⁷⁸ and implemented the use of “Chicago Grown” food labels to help consumers identify and boost sales of locally produced products.

Food Service

Food service refers to businesses or institutions that prepare and serve meals outside of the home and is categorized as institutional (e.g., hospital or schools) or commercial (e.g., restaurants). People generally spend just over half of their meals away from home, except during extenuating circumstances such as the COVID-19 pandemic. As an industry, food service accounts for 50% of food system employment in Butte County and until the pandemic was seeing small but steady growth. The following section reviews the use of local foods in both institutional and commercial food service.

In this report, “food service” is defined as any operation that serves prepared food (meals or snacks) for immediate consumption, also known as food-away-from-home (FAFH) purchases.¹⁷⁹ These operations may be commercial, such as restaurants and caterers, or institutional, including schools, health care, and congregate living. National statistics indicated pre-COVID that more than half of food purchases are made away-from-home as prepared food (i.e., restaurants, delis, fast-foods).¹⁸⁰ For institutional food service, students, patients, and residents rely on these facilities for some or all of their meals when attending school or needing care. Access to a consistent supply of food and other supplies that meet specifications is critical for both institutional and commercial operations. With disruptions in both customer demand and the supply chain, these operations risk being unable to provide the food that so many rely upon. The impact of the COVID-19 pandemic on the food service industry includes loss of business and staff and highlights the need to adapt quickly to continuously changing guidelines and supply shortages.

Increasing the use of local food in food service has a direct benefit to the recipients in terms of the quality of the food, to the environment in terms of sustainability, and to the local economy by establishing a consistent cash flow between large institutions and local producers. In addition, schools have the opportunity to expose students to fresh local food and teach the importance of a healthful diet.

Institutional Food Service

Institutional food service includes meals provided

at large institutions, often at no direct cost to the recipient. Institutions are generally restricted to operating within narrow budgets and capitalize on economies of scale to buy large quantities of products at discounted rates. Locally produced food is scarce in these settings.

Butte County has 13 school districts and the Office of Education that serve breakfast and lunch meals to K-12 students, funded through federal nutrition programs like the National School Lunch Program, which reimburses the school for meals that fit specific criteria. Participation in such programs has traditionally been income-based, according to which approximately 60% of Butte County students qualify for a free or reduced meal. Next school year, California will be expanding free lunches to all students regardless of income (Free School Meals for All Act). K-12 food service in Butte County relies largely on processed heat-and-serve items and includes minimal local foods. Although some schools have gardens, the produce is not used for meal service.

Butte County is also home to two higher education institutions. College and university foodservice is unique from K-12 in that it is driven in part by the values of the student body and operates with a larger per meal budget because meals are sold to students directly. California State University has been involved with several initiatives to increase local, sustainable, and fresh foods into their menu. Currently their use of local food (150 mile radius) is approximately 18%.

There are three fully operational hospitals in Butte County, which serve breakfast, lunch, dinner, and snacks to patients. Hospitals cite food safety and costs as a concern for use of locally grown food. In total, two hospitals include no local food on their menu and one purchases between 10-20% of their ingredients from

regional sources, with a handful of hyperlocal contracts within county limits.

The primary barriers to including locally-sourced foods in institutional food service are cost and accessibility. Foodservice management makes it clear that most but not all local foods come at a higher food cost. However, the extra labor involved in sourcing and processing local food increases the cost per meal substantially. Foodservice vendors must meet quantity and quality expectations and undergo an extensive contract process. Opportunity exists to support local producers through the contract process, as well as to establish a local food hub that offers some partially processed items and streamlines food purchases.

Butte County can look to other communities for examples of successful models for including local food in institutional menus, as well as funding opportunities to alleviate financial burden, such as The Good Food Purchasing Program.

Current Situation Schools

Feeding children and young adults, including in child care, preschool, K-12, before/after school care, and higher education, is critical to support optimum

learning and health. Schools in California are eligible for a number of state and federally funded School Nutrition Programs including the National School Lunch Program (NSLP), School Breakfast Program (SBP), California Fresh Fruit and Vegetable Program (FFVP), Meal Supplements (snacks), and Seamless Summer Feeding Program (SSO).¹⁸¹ Schools or districts must apply to participate in these programs and they receive funding through reimbursement. Participating schools must follow specific nutrition guidelines and are reimbursed for meals served.¹⁸² However, with federal reimbursement currently set at \$3.66 per free lunch served,¹⁸³ providing tasty and

Approximately 60% of Butte County students in its 13 districts have traditionally qualified for a free or reduced breakfast and lunch meal, funded through federal nutrition programs like the National School Lunch Program. In the 2022-23 school year, California will be expanding free lunches to all students regardless of income.

Table 9. Income-based eligibility for free or reduced price meals by Butte County school district, 2021-22.
CA Dept of Education: Student Poverty-FRPM Data 2020-21¹⁸⁶

District	Enrollment	Count	%
Butte County Office of Education	1,265	687	54%
Bangor Union Elementary	107	82	77%
Biggs Unified	563	358	64%
Chico Unified	13,909	6,703	48%
Durham Unified	991	446	45%
Golden Feather Union Elementary	62	53	85%
Manzanita Elementary	276	124	45%
Oroville City Elementary	2,533	1,895	75%
Oroville Union High	2,334	1,701	73%
Palermo Union Elementary	1,278	999	78%
Paradise Unified	2,102	1,349	64%
Thermalito Union Elementary	1,507	1,306	87%
Pioneer Union Elementary	52	52	100%
Gridley Unified	2,080	1,633	79%
COUNTY TOTAL	29,059	17,388	60%

nutritious meals is a challenge. Another challenge is understanding and tracking these different programs, as they have different requirements and guidelines set by California Department of Education.¹⁸⁴ A more detailed discussion of the role of schools in food security is presented on pp. 75 ff., in the section Food Accessibility and Security, School Nutrition and Child Care and Adult Food Programs. The county has 40 elementary schools, 11 middle schools, and 10 high schools, and 22 other educational options in one of 13 districts or with the Butte County Office of Education (BCOE), including continuation schools, special education programs, homeschooling, and more. In the 2020-21 school year, 100% of these schools participated in the federal National School Lunch Program, with the number of eligible students in each school ranging from 24.4% to 100% of enrolled students (Table 9 above). Eligibility is based on household income and can qualify a student for either a free or a reduced price meal (FRPM). A total of 60% of students (K-12) in the county were eligible for FRPM; 10 out of 13 districts (77%) had eligibility greater than 60%, and in one small district, all students were eligible. (Table 9 above details eligibility in each of the districts and the BCOE.) During the COVID-19 pandemic,

the USDA extended free breakfast and lunch to all students, which is expected to end with the 2021-22 school year. However, California will continue to provide free meals to all students in the 2022-23 school year via the Free School Meals for All Act. An interview with BCOE provided some insight into the current landscape of school food service within the county.¹⁸⁵ Individual districts are responsible for the procurement of food items for breakfast and lunch during the school year; BCOE procures meals for afterschool programs, the Summer Food Program, and the Child and Adult Care Food Program (CACFP). Tens of thousands of students are fed each day during the school year. When asked about purchasing more local foods, the Program Manager explained that districts follow similar procedures, but each district operates independently, as do programs such as after school. Large purchases go to bid and most food is purchased through large vendors such as Danielson's Gold Star, Pro Pacific, and Sysco. Charter schools link with the district of residence for purchasing food. BCOE and school districts also use local co-ops, such as Mountain View Co-Op, to increase purchasing power, especially for small districts. BCOE and Districts also use the USDA Food Distribution

and Department of Defense programs to assist in purchasing food resources. While there is nothing directly prohibiting purchasing from local producers, it is not practical for schools in most cases, due to increased costs and lack of vendor registration, a requirement to do business with the districts. Less than 1% of school food purchases are sourced locally; milk is the most likely to be local, and bulk foods that do not require cooking, such as mandarin oranges, are sometimes procured. Although some school sites have gardens, production is too small to be considered a meaningful source of food.

COVID has had a large impact on school nutrition programs. With so many children relying on school to provide a significant part of their nutrition, school closures due to COVID-19 can have a serious impact on children's health.¹⁸⁷ When schools closed to in-person learning in March 2020, Butte County school districts continued to prepare food for families by creating pre-packaged meals that were offered to all, with no application required. BCOE became the sponsor for contracts with the school districts so the schools could develop plans to safely distribute "grab and go" meals in a cost-effective manner. In Fall 2021, schools are providing both to-go and congregate meals, with these options providing flexibility for families and distributing food to more people.

Over the past few years, BCOE has worked with pilot projects with No Kid Hungry, like one model that prepared meals at a school's central kitchen to distribute food to five different neighborhood sites, where volunteers distributed meals to children at those sites. This program expanded BCOE's reach to the children and families in need located in and near Oroville, even in remote areas, such as the Reservation off Lumpkin Road and Eagle Crest. The program ran its pilot course time and was successful. BCOE did not use this model during COVID due to COVID restrictions and sites being Grab and Go.

Key factors that limit BCOE's nutrition services are limited warehouse, freezer, and refrigeration space, labor shortages, time, resources, and funding. They have a large geographic area to serve, and the population is spread throughout the county, especially when including the needs of Tehama and Glenn counties.

COVID has also impacted supply chains that serve schools and shortages have been problematic, particularly of paper goods. Costs have also increased by approximately 30% over the past two years, even more for some items, with shortages reported daily. Schools adapt by being flexible and obtaining food from the USDA Commodity Food program. The Commodity Food Program gives schools special access to their Sacramento warehouse depending upon the needs of the school. This food is delivered in bulk with limited processing so the food needs to be cooked, which requires recipe development specific for the commodities and trained labor to prepare the food. While most schools in Butte County have full service kitchens, labor and training needs limited their use prior to COVID-19 and still do, especially due to the pandemic and labor shortages.

BCOE nutrition programs keep a very tight inventory to minimize food waste; any extra food is transferred to kitchens that can use the food in future meals, then offered to students, and lastly, taken to local pantries. BCOE helps facilitate and maintain minimum inventory at meal distribution sites. For example, when a COVID outbreak at a preschool caused the center to close just after perishable foods were delivered, BOCE dispersed the food to families in need through local food pantry services. Food waste in schools is a key concern, as expressed in the focus group with school food service directors in Butte County. Butte County Public Health conducts tray waste analyses to alter the menu to achieve cost savings and diversify fruit and vegetable offerings. Composting is a desire for the future, but is not currently done at schools. BCOE has applied for a grant to initiate composting and will partner with some districts if they receive the grant.

In addition to K-12 foodservice, Butte County has two higher education campuses with onsite dining halls and cafes, Butte College and California State University, Chico. Butte College is a two-year community college with about 17,000 students enrolled in at least one class each year. The campus has a main dining hall serving made-to-order breakfast and lunch and satellite cafes serving prepared meals, beverages, and snacks. Butte College does not have on-campus housing. California State University, Chico (CSU Chico) is a

public university with 16,500 students enrolled each year, the majority (94%) attending full-time. Although most students live off campus, on-campus housing is available for 2,260 students with 6 onsite residential halls and an off-site housing complex. CSU Chico has 7 dining facilities on campus, including three cafes, two convenience stores, a residential dining hall, and a natural foods store. Dining services serve 15,000 meals a week. Dining services must operate within a \$10 budget per meal. This figure includes all associated costs for preparing the meal including ingredients, labor, management, equipment, and operational costs such as utilities, insurance, and uniforms.

A strength of university foodservice is that the choices offered are in part driven by the vision and values of the students. College students are in a unique phase of their life where they are increasingly concerned about social issues such as sustainability, health, and supporting local business. This influences management decision making as the university works hard to represent the needs of its students. Student advisory committees communicate student concerns directly to administration.

This is exemplified by waste prevention efforts, for which CSU Chico launched Leanpath technology to reduce food waste at the consumer level (where most of the university's food waste occurs). Participating students place their uneaten items on a scale to weigh how much is being wasted. The Leanpath software records the data and then presents it to the student along with eye-opening messages equating the wasted amount to fiscal or environmental impacts. Additionally the software provides feedback to management as to which menu items are the most wasted so that menu planning can be optimized for minimal waste. Another example of waste prevention efforts is the implementation of an opt-in geo-fencing app that

sends mobile alerts to students offering free uneaten foods, typically leftovers from catered events and meetings.

Since 2014, CSU Chico has participated in the Real Food Challenge. The last official number published for percentage of local foods used for campus dining was 15% from the 2015-16 school year. However, based on our interview with dining service management, this figure has slowly but steadily increased and is now closer to 18%, with the goal of reaching 20%. The University has shifted its sustainability programming and is no longer participating in the Real Food Challenge but

continues to work towards inclusion of more local and regional foods.

Healthcare

As of 2019, healthcare and social assistance account for 20% of all employment in Butte County. Additionally, the healthcare sector saw an increase of 3,192 jobs 2013 to 2018, making it the fastest growing industry in Butte County contributing to a third of new job growth.¹⁸⁸ The average hourly pay for food service staff is approximately \$14 (or minimum wage).¹⁸⁹

Prior to the Camp Fire, there were four hospitals and 576

in-patient beds in Butte County: Enloe Medical Center (Chico), Feather River Hospital (Paradise), Orchard Hospital (Gridley), and Oroville Hospital (Oroville). At three meals a day, this equates to 1,728 meals each day (630,720 meals per year) for patient meals alone.¹⁹⁰ Staff meals, out-patient meals, and catered meals increase this amount substantially.

For example, Enloe Medical Center is the largest healthcare employer in Butte County, with over 3,000 staff, of which 140 are in food service. On average, Enloe serves 125,000 meals per month, equaling 1.5 million meals each year! This figure comprises in-patient meals, out-patient meals (i.e., senior meals provided for Meals on Wheels and

Passages), pantry stock, several staff and visitor cafes and lounges, and internal and external catering orders. Unfortunately, the Feather River Hospital was severely damaged and is currently closed due to the Camp Fire. This closure has resulted in the layoff of over 1,000 employees, as well as the loss of 100 in-patient hospital beds. Finding additional beds for people needing hospitalization has impacted health care in Butte County as the other hospitals (Chico, Oroville, Orchard, and hospitals out of the county) have had to absorb these patients, particularly due to fewer hospital beds available during the ongoing pandemic.

According to our interviews, two of the three operating hospitals in Butte County reported that they did not purchase foods from local producers and rely mostly on large food distributors such as US Foods and Sysco and group purchasing organizations like Premier. Reasons for this (discussed in the next section) include concerns over food safety, financial and time constraints, and availability. Enloe Medical Center reported that prior to the COVID-19 pandemic, approximately 20% of their food purchases were sourced

from Northern California producers (within a 200-mile radius), but this amount had been reduced during the pandemic to 10%. They also contract with several hyperlocal producers (within a 50-mile radius) but were unable to provide an accurate estimate for the percent of total purchases that are hyperlocal. Some examples of current hyperlocal contracts include Comanche Creek Farms, Lundberg Family Farms, Tin Roof Bakery & Cafe, California Olive Ranch, and S&S Produce and Natural Foods.

With two of Butte County hospitals purchasing 0% local and one fluctuating between 10 and 20%, it can be stated that, despite being the largest industry in Butte County, current use of local food in health care is minimal. Additionally the majority of the

foodservice managers interviewed reported that including local foods was not a regular part of goal-setting discussions or procurement plans. None of the hospitals have gardens to grow their own food, citing food safety and labor as their main concerns.

(Note that due to lack of response, no data was collected for long-term care facilities. Therefore, future research is needed to better understand the role of long-term care in the local food system.)

Challenges in Institutional Food Service

Both school and healthcare foodservice management report that cost is the number one barrier to incorporating more local food on their

menu. It was explained that not all local foods are more expensive and that, in some cases, local foods can be less expensive. However, in total, local foods tend to come at a higher price, and local producers generally do not offer wholesale prices. It was stated that purchasing directly from local vendors at a farmers market can result in as much as a 400% price hike; whereas purchasing local food through a distributor may only result in a 150 to 200% increase when compared to non-local items. Moreover, BCOE reported

a 30% increase in food costs since the beginning of the COVID-19 pandemic, placing additional strain on the already limited budget. Current USDA reimbursement for school lunches is set at \$3.66 per meal, of which food costs are expected to be around 40%. Similarly, healthcare foodservice operates within an extremely tight budget. The average food cost for patient meals is around \$2.50 per meal. For this reason, most healthcare and school institutions rely on economies of scale to reduce purchasing costs through buying in large, wholesale quantities.

Possibly more important than the cost of the food itself is the cost of labor. Labor is one of the largest expenses in foodservice, and local foods are typically offered un-prepared, resulting in significant

CSU, Chico, last published the percent of local foods used for campus dining for the 2015-16 academic year: 15%. Based on our interviews with dining service management, this figure has slowly but steadily increased and is now closer to 18%, with a goal of reaching 20%.

With two of Butte County hospitals purchasing 0% local food and one fluctuating between 10 and 20%, it can be stated that, despite being the largest industry in Butte County, health care currently uses minimal amounts of local food.

increases in labor costs for prepping onsite. Another factor is that a food service budget has no room for losses due to spoiled foods; thus it is a practical advantage to buying foods that are processed, frozen, or dried for enhanced shelf-life and storage.

Staffing, especially during the pandemic, has been a major obstacle for institutional food service. Kitchens are either understaffed or staffed with new hires requiring considerable training. Although more than half of the K-12 school sites in Butte County have full service kitchens, many have not been upgraded because schools now use more processed food. Additionally, staff would need to be increased and trained to fully use these kitchens for meal preparation. University foodservice is fortunate to operate with a relatively larger budget, allowing for more onsite preparation, but still reports that the lack of pre-prepared local foods is an obstacle for inclusion in their menu.

Supply is the second most frequently mentioned barrier to the use of local foods. Institutional foodservice managers need to guarantee specific and rather large quantities of menu items with consistency in quality, delivery, and price. This directs them towards large distributors that can guarantee to meet their needs. Most local farms can not produce the quantity needed to meet those requirements or do not offer the range of items desired, which requires managers to source ingredients from many different producers. The process of sourcing, purchasing, and coordinating delivery from multiple independent farms is a logistical nightmare, whereas a unified purchasing system saves considerable time and is more desirable for institutional foodservice, especially for larger operations such as universities that serve thousands of meals a day. Coordinating contracts, ordering, and delivery with numerous small producers to fill an order that one distributor could supply adds significant cost in labor-hours as well as food costs due to purchasing in smaller quantities.

The process of setting up contracts with local producers presents another challenge. For example, in hospital foodservice, all new vendors need to pass a stringent process including an audit conducted and paid for by the hospital to ensure that the food and production meet safety regulations, the

vendor can ensure the quantity required, and their business model and billing process can integrate into the hospital's system effortlessly.¹⁹¹ Additionally, efforts to include local foods are stopped when they reach upper management, who perceive it fiscally impractical as well as express concerns regarding food safety compliance.¹⁹² This presents an opportunity to illustrate success models and the value of local foods to upper management.

Another challenge faced by institutional foodservice is emergency preparedness and disaster resilience. Disasters, such as wildfires and the COVID-19 pandemic, place hospitals and schools under considerable strain, and yet they need to continue to offer the same quantity and quality of service as always. Institutional food service must be prepared for supply chain disruptions, loss of staff members, increased traffic at the hospitals, school shutdowns, and unprecedented changes to policies and procedures. As an example, Enloe Medical Center foodservice management explained that due to COVID regulations, deliveries were reduced and limited to only certain times of the day. They were not permitted to let anyone into the building, and all parties were required to follow the safety guidelines established at the state and county level. This made it difficult to continue to receive deliveries from several of their smaller local contacts. During the peak of the COVID-19 pandemic, school foodservice had to completely reinvent their meal service to grab and go meals.

Taken together, these concerns highlight a need for greater inclusion of local foods by distributors that serve as one-stop-shops for the procurement of local food. For sites contracted with the state, such as K-12 foodservice, there is a need for more local producers to be registered as state vendors. Outreach and assistance with the registration process may help the numbers. For healthcare, support is needed to help local producers with the contract process and safety requirements. Additionally there is a need for options to help offset the difference in price-point between local and non-local.

Opportunities in Institutional Food Service

Incorporating local food in school and hospital menus is an opportunity for institutions to promote



This seasonal bruschetta, served at Grana restaurant in Chico, includes produce from several farms in Butte County. Owner/chef Jeffrey King shops at the Chico farmers market, and, on his menus, he names all the farmers whose produce the Grana kitchen uses.

health while investing in the local food system. Local purchases tend to be fresher whole foods, support small to mid-scale California farmers, and encourage seasonable and sustainable menus.¹⁹³ Strengthening institutional foodservice engagement with the local food system centers largely on leveraging grant-funded programs and enhancing coordination with local organizations, such as farm-to-school programs and food hubs. The following programs serve as examples of resources and programs that support collaboration between institutional food service and the local food system.

The Conscious Kitchen, a grassroots project hailing from Marin County, California, serves as an exemplary model of how schools can successfully incorporate fresh local ingredients in their menus. Conscious Kitchen is a non-profit with the mission of improving food equity, increasing local and ethical food in schools, and transitioning away from heavily processed ingredients to more onsite scratch food

preparation. Importantly, the Conscious Kitchen model accomplishes all this while staying within the USDA budget for meal reimbursement, passing no extra cost onto the school.¹⁹⁴

The primary opportunity in healthcare foodservice is outreach and education to encourage upper management to consider purchasing local in their vision and goal-setting discussions. Barriers must be addressed with practical, cost-efficient solutions, demonstrating it can be done within the prescribed budget, and providing models of the ways other hospitals incorporate local food. Evidence should be presented to management of direct measurable benefits to patient health outcomes or experience. Examples include length of stay, percent of meals consumed, and number of meals purchased by visitors. Education to foodservice managers and upper management can include seminars, training, outreach, pamphlets, incentives, and challenges. Ideas include a brief 5-min presentation that can

be shared with executives addressing practical solutions to perceived barriers, or a county-wide “buy local challenge.” Additionally, healthcare facilities may apply for grants or collaborate with local nonprofits to help cover the costs associated with modifying their traditional purchasing practices to include more local food sources.

Several programs actively promote local produce in schools. The Center for Healthy Communities (CHC) provides tastings of locally-grown produce as part of the USDA-sponsored Harvest of the Month program. CHC reaches over 12,000 students (K-5th grade) per month, giving approximately \$70,000 to local farms in direct sales. This program connects students to the source of their food by showcasing a different local farmer each month. In addition, the fruit or vegetable chosen for each month is one that they generally are not familiar with or is prepared in a different way, increasing exposure and acceptability to a variety of healthy seasonal foods. Unfortunately, these tastings are currently limited to once a month, but opportunity lies in expanding the program to include regular inclusion of locally grown foods into the school breakfast or lunch menu.

Additionally, Butte County is fortunate to be the home of the Butte Cluster UC Cooperative Extension CalFresh Healthy Living Program. This is a SNAP-Ed funded program that encourages the consumption of fresh fruits and vegetables in K-12 through school gardening, cooking, and nutrition education classes. These classes not only encourage healthy living behaviors, but also teach children how to grow their own food. A source of financial support for schools interested in working with local producers is available through the USDA Farm School Grant Program, which offers resources to local governments to develop and implement farm-to-school programs. Awards are granted every school year.¹⁹⁵

As is occurring in schools, there is a growing interest in offering more local foods in healthcare facilities. In Nevada County, CA, Sierra Harvest has pioneered a farm-to-hospital program that aims to bring affordable fresh local food to hospital patients, staff, and visitors by cultivating a food garden directly onsite. Additionally, this program hopes to provide an opportunity for both therapeutic

gardening and gardening and cooking classes for patients, particularly those diagnosed with a chronic disease requiring lifestyle change for disease management (e.g., diabetes mellitus).¹⁹⁶ The other exemplary program is Local Food to Local Hospitals, implemented at several locations throughout Maryland and funded through the USDA AMS Marketing Improvement Program Grant.¹⁹⁷ The project included three modules, the first two focused on hospital engagement and networking and the third on the development of purchasing practices, including cost-saving strategies and best practice standard operating proceedings. As a result, 9 hospitals launched food purchasing initiatives including local food from 11 different producers.

Support and models for incorporating more locally produced food are available, but take time, money, and people to implement. Additionally, procedural changes are difficult for many operations. The North Valley Food Hub should be reviewed for successes and areas of improvement, as food hubs are a viable business model for rural areas to support producers, food service operators, and consumers.¹⁹⁴ Moreover, both schools and hospitals may benefit from collaborating with the Good Food Purchasing Program, which assists large institutions to develop and adopt ethical food procurement models that focus on local, sustainable foods and support local economies.¹⁹⁸

Commercial Food Service: Restaurants, Catering, and Prepared Meals

Prior to the COVID-19 pandemic, the commercial food service industry in Butte County had shown a 10 year growth of 36%. However, hardships over the last two years took a heavy toll on the service industry with the loss of 1,575 restaurant jobs, a 4% reduction in drinking and eating establishments, and a 10% reduction in household food expenditure. Times of hardship underscore the importance of supporting the local food system and small business.

Our researchers spoke with a handful of restaurateurs throughout Butte County who actively engage with the local food system by purchasing ingredients from local producers. Purchases of local foods ranged from 15-70% of total food purchases. Butte County is fortunate to have a strong community-centered ethos. A primary advantage of including more local foods is supporting

the local economy and strengthening the connection between farmer, restaurateur, and consumer. Food quality and satisfaction also improve with the inclusion of more fresh local foods.

Restaurateurs face challenges in making local food a larger part of their menu. Cost is a concern but less so than for institutions. Some restaurateurs find that consumers are willing to pay a small premium for fresh, local foods. Some express concern over availability of consumer demand for imported or out-of-season items. One effective strategy to mitigate these challenges is implementing a rotating seasonal menu. Networking and marketing campaigns that promote restaurants that buy local can be a way to raise consumer awareness and interest in local foods.

Current situation

Industry/jobs

Butte County has approximately 1,200 retail food facilities including institutional food service, restaurants and bars, mobile food facilities, temporary and event operations, and cottage food operations.²⁰⁰ The Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages reports a total of 383 privately owned food service establishments in Butte County for 2020 (NAICS 722). This figure comprises 342 restaurants, 27

drinking places, and 15 specialty services (8 caterers, 5 mobile, and 2 contactors), a 4% reduction from the pre-COVID (2019) figure of 400 establishments. Please note that food service operations that are a part of hospitality, entertainment, and recreational facilities or civic and social organizations are not included in the BLS assessment unless they operate independently from the primary establishment.

The current state of privately-owned food service, as well as the impact of COVID, is illustrated in Figure 10 below. From 2019 to 2020, number of employees fell from 7,813 to 6,238, representing a loss of 1,575 jobs and a reduction of \$28,355,000 in wages.²⁰¹ This is in stark contrast to a previous 5-year growth of 16% and 10-year growth of 36% in food service jobs prior to the pandemic.

Food Expenditures

Previous to the pandemic, Californians’ household food expenditure as a percentage of total income had remained relatively stable at about 15%, the second largest household expense, which equates to an average household food expenditure of about \$10,400 for 2019. However, national estimates for 2020 food expenditure fell by about 10% from 9.6% to 8.6% of total disposable income. Likewise, 2020 marks the first time in nearly 20



Figure 10. Restaurant jobs in Butte County, 2010-2020. U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.



Farm Star Pizza, a Chico restaurant whose owner sources from area farms, credits farmers in its marketing.

years (since 2003) that national food-at-home (FAH) expenditure surpassed food-away-from-home (FAFH) expenditure, for which FAH increased from 45% of total food expenditure in 2019 to 52% in 2020, and FAFH fell from 55% to 48% of total food expenditure.²⁰² Although state and county level statistics have not been published for exact amounts of FAH and FAFH expenses, it can be proposed that Butte County saw a similar decrease in total food expenditure with a rise in the ratio of FAH to FAFH purchases during the COVID pandemic. These estimates, along with the reported decreases in food service jobs and wages (discussed previously), suggest a large impact of the COVID pandemic on restaurants and the local economy.

Local Establishments

Our researchers interviewed five restaurateurs who reported sourcing between 15% to 70% of their ingredients from local producers. Examples of local producers purchased from include GRUB, Pyramid,

and Comanche Creek. Only one of the restaurants spoken to reported growing their own food on site.

Strengths in Commercial Food Service

Butte County upholds a strong community-centered ethos that supports local and small business. Examples of this include a willingness of customers to pay a small premium for better quality food as exemplified by the success of locally driven restaurants such as Farm Star Pizza and the production of Sierra Nevada's boutique Estate Series using all homegrown ingredients. In addition, Butte County has a growing Restaurant Week with over 20 participating restaurants in 2021. Other strengths include the support system that evolves from the interconnection of farmers and restaurateurs: regulars can pre-order and negotiate price to ensure reliable movement of product and better inventory management and restaurants provide feedback to farmers on quality/availability, give food scraps back to farmers for composting, and support each other during disasters/emergencies through activities such as food donations, u-pick after Camp Fire, and reciprocal marketing. Most importantly, buying local keeps the flow of money within the community and improves the quality of food.

Challenges in Commercial Food Service

While the added cost of using local ingredients in terms of purchasing price and labor is still a concern for restaurants, it is significantly less so than for institutional food service because restaurants have more flexibility in what they can charge the customer. The number one challenge expressed by restaurant owners for including more local ingredients in their menu is availability and variety. Certain ingredients, such as avocados and fresh tomatoes, are not available or are only available seasonally from local producers, but customers have grown to love and expect them from their dining experience.

Another challenge is getting the consumer excited about buying local. Consumer demand largely drives what will and will not be successful in commercial food service. While there is a substantial population in Butte County, especially in Chico, that values the quality and ethics of local food, many do not appreciate it or have not been properly exposed. Zoning restrictions create another

barrier to restaurants growing their own food. One restaurateur had the vision of creating a community garden that would partially supply the restaurant while also being a cooperative garden space for other community members, but met resistance from city managers because of the location of the proposed garden.

Opportunities in Commercial Food Service

One of the greatest benefits of including more local food in restaurants is promoting communication and bonding between different types of local small and mid-scale businesses, which strengthens and builds resilience in the community. The use of seasonal, rotating menus offers an excellent way to incorporate locally produced food into a restaurant menu. This is done by several of the restaurants interviewed for this assessment and allows them to successfully serve local food throughout the year. Thus, promoting the use of seasonal menus among restaurants would further increase the amount of locally produced food that is offered in Butte County restaurants.

Another opportunity is to streamline and improve the purchasing process between food service and farmers. This can be accomplished with a food hub model. An example of a successfully implemented food hub model is the Tahoe Food Hub.²⁰³ This non-profit organization connects restaurateurs and wholesale buyers to local harvests and provides an easy-to-use online ordering system and doorstep delivery to local businesses. Additionally, they collaborate with farmers for crop planning to ensure proper diversity and availability of foods to meet consumer needs.

Suggestions for improvements to the local food system from the restaurant industry include better cold storage and walk-ins, more variety of types of crops grown locally, increased marketing initiatives and campaigning that support local producers and small business owners, and more programs that improve the consumer's exposure as well as access to local, seasonal crop varieties. A concrete example of a marketing campaign that would support the local food system at the consumer level is to provide a certification or title to restaurants that offer a menu of more than a certain percentage of local ingredients (e.g., 50%). This offers a unique



At community gardens, many hands make light work.

marketing tool for restaurant owners by leveraging consumer interest in buying local. Moreover, it would help to establish a network and build unity among restaurants that provide local food and help incentivize consumers to frequent the designated businesses.

Gardens

Gardens, regardless of location, provide interactive and impactful learning for all people, particularly children, about growing, preparing, and eating healthy food. Gardens provide food, recreation, and community for people and Butte County needs more gardens, as several community gardens have waiting lists. Responses to a survey described eight Butte County community gardens, following different models from paid to free beds. All include education, and COVID has limited programs and opportunities to recruit needed volunteers. The Camp Fire destroyed the gardens at the Paradise Guilds and several elementary schools, and several new gardens are beginning operation. A number of schools reportedly had gardens, but they

are difficult to maintain and staff, although some funding is available. Details about school gardens are not reported due to the timing of the assessment. While home gardens have increased in popularity with COVID-19, knowing the types and number of home gardens is beyond the scope of this report.

In addition to commercial agriculture, gardens are a source of food and have many other benefits, including higher fruit and vegetable consumption, physical activity, mental health, and social health.^{204,205} Gardens foster the relationship between holistic health (physical, mental, and social) and the environment as people learn about local food and self-sustainable food production, which is key to developing local food sovereignty. Gardens can be divided into three categories: Community, School, and Home Gardens. This report focuses primarily on Community Gardens, as schools were not in session when gathering data for this report and, although attempted, collecting accurate information about Home Gardens is difficult and would require a survey of a representative sample of Butte County Residents. USDA research has found that gardeners share excess harvests with other members of the community and local aid organizations.²⁰⁶

Community Gardens: Community gardens play a small but important role as a source of produce in Butte County and more gardens are needed. Community gardens have a variety of goals and are organized in different ways, but all have a common goal of allowing people to grow food. Community gardens can be a viable source of fresh produce for those with limited space to garden or who enjoy a shared approach to gardening. While some cities have gardens in areas where people have limited financial resources, many community gardens charge to have a plot and may not be feasible for low-income people due to cost (many community gardens have a yearly fee and deposit), transportation, time constraints, and lack of gardening knowledge. Information about Butte County community gardens was gathered via a survey and interviews, and more information will be gathered as needed for future work.

In Spring 2020, the Butte County Community Garden Network was formed for the purpose of sharing

ideas and supporting efforts by coordinating and working together when advantageous. An informal survey was sent to this group in Summer 2021 and yielded seven responses. The organizations and gardens responding were the African American Family & Cultural Center Community Garden (Oroville); Paradise Community Guilds' Garden; Green Paradise Garden; From the Ground Up Farms' Kentfield Gardens (Chico); Butte Environmental Council's (BEC) Oak Way Community Garden (Chico)²⁰⁷; Vecino (Chico); and the Front Yard Garden (Chico). The gardens started in the mid-2010s, primarily due to like-minded people wanting a place to garden with the community, to have fresh organic food for all, and to teach nutrition. One garden started with a community grant. The two Paradise gardens noted that their previous efforts had been destroyed in the Camp Fire and they are replanting. The Guilds' garden has both individual plots and a communal area for gardening and socializing. They would like to grow but need more volunteers. BEC had a garden on Humboldt Road on land leased from the City of Chico through 2019, at which time the City did not renew the lease.

These gardens follow different models. Two indicated they provide shared space for gardening, with the members sharing the land and the produce, and two have individual plots/boxes, with each person/family responsible for gardening in their plot/box. Three are teaching gardens. Of these, one noted that their goal is "to get people gardening", including a free space, with food given to neighbors and visitors. This garden provides seed, plants, and education. Another described that they talk with people who come by and help them with their questions and whatever they are wanting. As for changes in the model, the Camp Fire has been the significant event impacting gardening on the Ridge and resulted in a much lower level of participation due to people leaving and others working on their own property. They have stayed small and even two to four hours of volunteer time could help improve the Paradise gardens. One of the gardens noted that zoning impacts their ability to produce food so they are a teaching garden.

COVID-19 has had some impact on the operation of these gardens, and most are continuing with social

distancing and mask wearing. Another is planting fruit trees, and one noted that sharing information about needs and available vegetables using a website would be helpful. The survey asked about policy change and the responses noted reducing water prices and encouraging schools and other groups to come by the garden. Information collected includes planting time, types of plants, garden logs, number of active gardeners, work day events and volunteers, water usage cost, and donations. The number of people involved varies from at least five (due to COVID), a dozen each month for a kids' garden program and many more picking up food, to an estimate of 50 people per month. Volunteer hours vary from 20 to 30 hours per month with some reporting a decrease and another an increase since 2019.

Four of the gardens noted their garden produced enough produce to meet at least 30% of the produce needs for 12 to 25 or more families, with only one garden estimating that their output was 150 pounds of various items in 2019. Most schedule community work days, primarily every two to four months, with one garden meeting twice a month. All gardens compost and take in compost from others. All offer classes and workshops on topics such as composting, gardening, cooking, nutrition, and removing invasives, and would like to offer additional classes, such as a Biochar Workshop. Other events are urban gardening workshops, arts and crafts with kids, compost, garden party tours and potlucks, seed saving, working on the orchard, and a free space for seeds, plants, and extra vegetables. One garden has an annual event on National Food Day (Oct 24). However, these workshops and talks are limited to one or two due to lack of participation and have stopped due to COVID. In the past, the workshops were attended by 5 to 20 people, on average. Four of the gardens have dinners that are potluck, served by the organization, or a combination. In addition to operating the gardens, the volunteers provide garden consultation, drop off seeds to others, and promote volunteers and events.

The Paradise Guilds included a community garden, which was destroyed along with the building. Paradise Guilds has been an active participant in rebuilding and re-growing efforts on the Ridge. With



Both photos: this page courtesy of Butte County Local Food Network

A social component, like potlucks, music events, and kids' workshops, enhances many community gardens.



support from many groups, including the Camp Fire Restoration Project and Permaculture Action Networks, land that held the Norton Buffalo Hall, the Guilds' home, is being developed for gardening and permaculture training.²⁰⁸ Additionally, Butte County Local Food Network has partnered with Paradise Guilds to provide garden boxes and materials in their Garden BLITZes, with the first gardens distributed in May 2020.

An on-line search also discovered Gridley Grow, a consortium of organizations and individuals dedicated to growing a green, healthy, economically vibrant community for citizens and visitors.²⁰⁹

School Gardens: School gardens provide students with a wonderful opportunity to not only learn how food grows, they also allow the application of the curriculum to a “real-life” opportunity. Many groups have published garden curricula tied to state education standards.²¹⁰ Due to the timing of gathering data for this preliminary report, we were not able to determine the number and condition of school gardens in Butte County, which also has likely been impacted by COVID-19 pandemic restrictions. Prior to the Camp Fire, UC Cooperative Extension Nutrition had a large garden at Paradise Elementary School, which was destroyed in the fire, along with the school. They worked with other schools and had many requests, and the local Master Gardeners group implemented monthly lessons of the SNAP-Ed approved TWIGS (Teams with Intergenerational Support)²¹¹ curriculum and provided workshops to teach garden maintenance. Since the fire, they have tried to establish a garden at Pine Ridge Elementary, but restarting gardens is difficult due to fewer students, district changes, limited access to schools, and water. Efforts to establish school gardens on the Ridge are also hampered by knowing where it is safe to put gardens, access to water due to broken pipes, and limited UCCE staff. Through 2021, COVID-19 has stalled efforts to create gardens in Paradise and elsewhere in Butte County.

As part of the CalFresh Healthy Living program, Butte County Public Health (BCPH) is able to provide direct gardening education in K-8 schools. The funding is non-competitive and is a fixed amount for a specific time period, with funds coming from the Farm Bill as authorized by Congress, to USDA,

then to the Department of Social Services, to the California Department of Public Health, and then to the counties. Money can be used to purchase supplies for school gardens in census areas that qualify based on income, but cannot pay for salaries. BCPH provides supplemental education and supplies such as planter boxes and starter plants, and has also provided some support to community gardens. In addition to K-8 schools, education is provided to 20 Headstart programs and garden support to those with gardens.

While many gardens have been started, no follow up is done to determine the status of these gardens. Gardens are often underutilized and need designated school personnel to ensure the upkeep of the gardens. Schools apply for funding by submitting a request to the county with a work plan. Other grants are available for school gardens through a variety of sources, but to see these grants, a school needs to research or subscribe to appropriate funding channels and most schools do not have the staff or the time to research, write, and implement grants. Another limitation for school gardens is that some schools limit access to the grounds on weekends, after school, and over summer.

With the Camp Fire and COVID-19, requests have declined and funding has decreased. Generally, more requests are made in the spring and are initiated by interested teachers, staff members, or parents, who may help, but lack of volunteer support is the primary reason the gardens do not continue, especially over the summer. Biggs kept a garden going one summer and one idea that could keep a garden going over the summer is to partner with the Summer Lunch Program. To promote and sustain school gardens, Butte County should employ a School Garden Coordinator. After-school programs are another venue that can use gardening as an educational and recreational opportunity. The Boys and Girls clubs in Chico and Oroville have had a garden, as has the Torres Shelter, but just as with school gardens, lack of volunteer support snuffs out the life of the gardens.

At right: One Chico charter school, Sherwood Montessori, implemented a Plant, Grow, Cook program for its elementary students.



Home Gardens: Home gardening is popular in Butte County, and we attempted to develop a strategy to determine the number of home gardens but realized, upon the advice of the Department of Geography and Planning at Chico State, collecting accurate data about community gardens would require a survey of a statistically representative sample of Butte County residents, an effort beyond the scope of this report. The number of home gardens has increased during COVID-19.²¹² Anecdotal information from home gardeners indicates that climate change is impacting many of them, as decreased yields and increased pest problems have been mentioned.

While we could not estimate the number of home gardens in Butte County, several efforts exist to support home gardeners. Master Gardeners, a program of University of California Cooperative Extension, has a training every two years for volunteers who answer questions for home gardeners via email, phone, and in-person visits at their Oroville office.²¹³ The Master Gardeners hold workshops year-round, many at the Patrick Ranch in Durham. Butte County has approximately six retail nurseries and most of the hardware stores have a nursery, in addition to seasonal plant start sales at “big box” stores such as Walmart, and Costco, grocery, and drug stores.

One of the objectives of the Butte County Local Food Network (BCLFN) is to support county residents to successfully grow more food in their yards, both front and back. In March, 2020, they had their first “Garden BLITZ”.²¹⁴ The event is modeled after the Greater Milwaukee Victory Garden BLITZ. This event started in 2019 with 35 gardens installed by a few friends and now installs 500 gardens each Spring. The BCLFN Garden BLITZ invites people to either purchase or apply for a scholarship garden “package.” When they sign up, they get a raised-bed wooden garden box, soil, hardware cloth (for critter control) attached to the bottom of the box, 6 plants, and mulch. Community volunteers come on a Friday and construct the boxes, then more volunteers install the gardens on Saturday and Sunday of the weekend event.

The Garden BLITZ events have installed 169 gardens in residents’ yards over three BLITZs, Spring and Fall

2020, and Spring 2021. Of these gardens, 74 have been installed in Paradise, Magalia, and Concow. A Fall 2021 event was planned but was canceled due to a 300% increase in wood prices from COVID induced supply chain disruptions²¹⁵ and potentially dangerous air quality due to fires. Given the new normal with fires, the BCLFN decided to do all the gardens in the Spring over a few weekends. They anticipate installing a minimum of 100 in Spring 2022 and subsequent years over three weekends in strategic locations that can serve each area of the county.

An important and active effort for all gardeners is the establishment of Seed Libraries in the communities. BCLFN has provided free seed packets via Little Free Libraries in Chico and Oroville. Organizations in Chico and Paradise host periodic Seed Swaps. More information about both commercial and community seed sourcing has been discussed on p. 20 ff.

Challenges in Gardening as Part of the Food System

The top challenges reported by gardens are getting volunteers, as the labor is physical, and developing a water system. Community gardens also face the challenge of finding and accessing land that is approved by municipalities or available via other means (e.g., private land) and the need to provide oversight, for example, hire a manager. Funding would support garden managers and allow some of these organizations to host multiple garden sites. Due to the limited number of gardens, many of them must be accessed by vehicle or public transportation, which limits some community members. BEC has over 100 families waiting for a garden space; currently, a limited number of garden spaces are available with some people renting multiple plots. Other challenges for people are the costs associated with rental fees and deposit as well as cost of supplies, time constraints and transportation to garden sites, and lack of gardening knowledge.

Opportunities in Gardening as Part of the Food System

The primary opportunity for community gardens is to increase participation and involve more people, which requires more garden sites. A full-time garden coordinator would help to engage more people and find more sites, both providing more “community” in



Garden BLITZ volunteers and BLITZ garden recipients both make the BLITZ a success in Oroville.

the “community gardens”. Other ideas are to increase funding for a coordinator(s) and supplies, and to offer free or reduced cost plots, having more support from gardening experts, and having a “web hub” to recruit volunteers, advertise events, and let people know about the excess produce that is produced by the gardens.

FOOD ACCESSIBILITY AND SECURITY

Food accessibility is approached with a broad lens in this section, as securing local food should be the easy choice for all Butte County residents, regardless of income. With that in mind, of note is the impact of any disruption, such as the Camp Fire and COVID-19 disproportionately impacts low income households. Chronic food insecurity in Butte County is 14.4%, 4.2% higher than the California average, and among families with children, the rate is 18.7%, compared to the 13.6% state average. More than one in four children experienced food insecurity at some time during the past year. Estimates are that food insecurity will increase in our county. Access to food includes places to shop for healthy foods, yet 28% of residents live in an



area considered a “food desert”.

Introduction

The factors that influence what and why we eat certain foods have dramatically changed over the last century. For most of history, humans ate what was readily available in their geographic location. However, the industrial revolution and developments in engineering and technology, plus societal changes, have greatly changed the food landscape to offer primarily processed, shelf-stable, non-local foods, creating a centralized food production system as opposed to localized. This shift has negatively impacted our health, environment, and economy for many people, disproportionately people with limited resources. While this group is most likely to be food insecure and is the focus of this section, accessing foods that are healthy for the economy and for people should be the easy choice for all Butte County residents. The following section describes food accessibility in Butte County, with a focus on food insecurity.

While food accessibility can also mean food security, in this report, we consider food accessibility to include affordability, cultural appropriateness, obtainable with reasonable effort, and able to be prepared by the person, which differs depending on life circumstances. For example, some people may not have experience or exposure to some foods, others have never learned to cook “from scratch” or are not sure how to prepare their own food thus relying on pre-prepared foods, and others may not have access to some types of kitchen equipment. People of differing physical, mental, and emotional abilities have different challenges, as do immigrants, veterans, and other marginalized groups. Household composition also impacts food accessibility. USDA explains access to healthy food as primarily travel time, availability, and price.²¹⁶ Food security is defined by USDA as “access. . . at all times to enough food for an active, healthy life,” whereas food insecurity is considered “the limited or uncertain availability of nutritionally adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.”²¹⁷ When food accessibility is impaired, those affected are at risk for food insecurity. This can happen for several reasons, some of which include lack of availability

of food, insufficient purchasing power, inadequate distribution of foods, or poor utilization of foods and resources.²¹⁸ Note that food insecurity can be chronic or transitory and is experienced uniquely by each person. Although all regions have subsets of the population that lack food accessibility, and subsequently experience food insecurity, the focus of this report is to assess issues of food insecurity within Butte County.

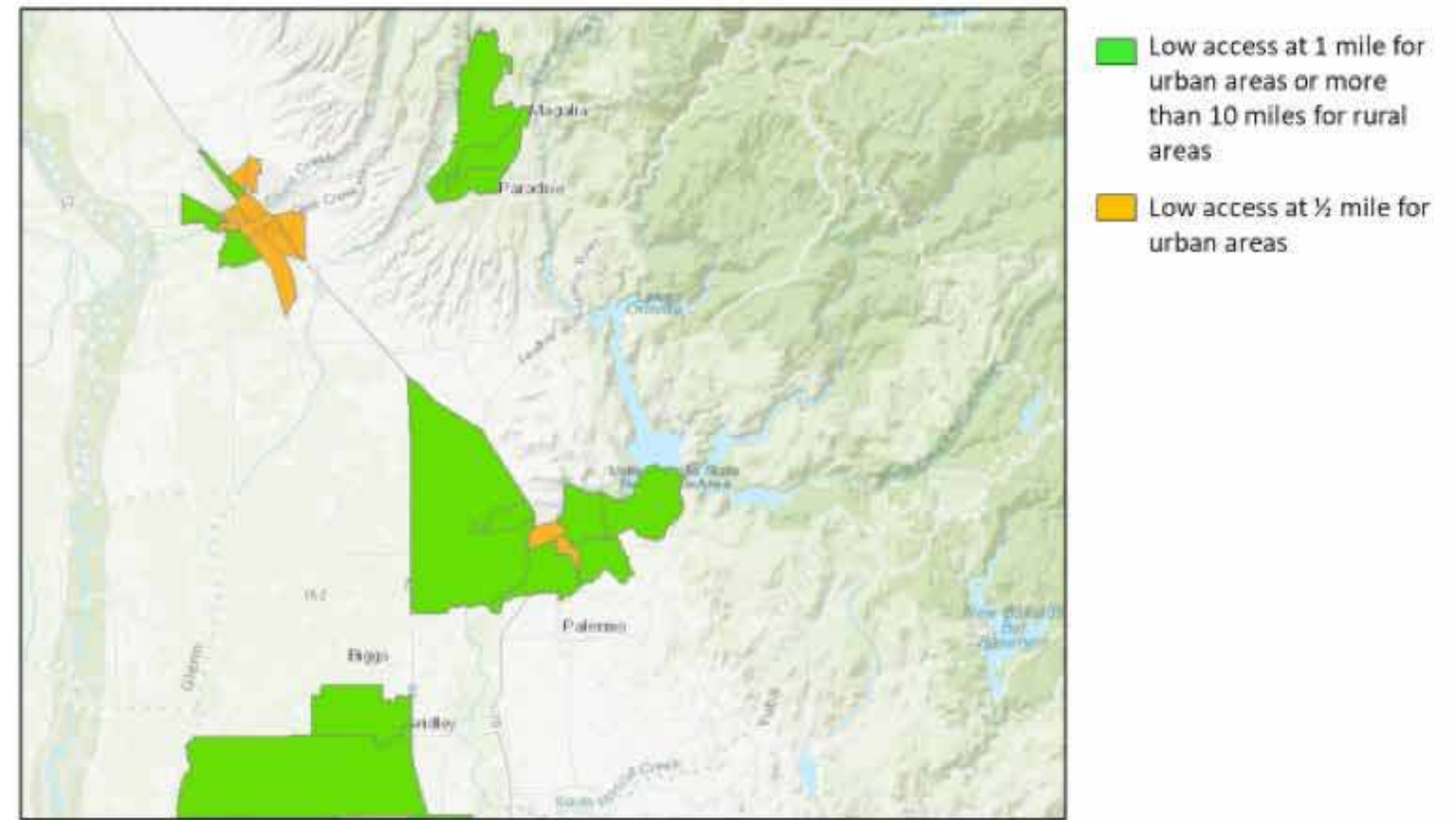
Food Insecurity and Poverty

Butte County has a higher rate of chronic food insecurity than the state average (14.4% vs 10.2%), particularly in families with children (18.7% vs 13.6%). More than 1 in 4 children in our county experience food insecurity at some point in time, and 60% of public school students are eligible for free and reduced lunch, based on household income. Food insecurity is directly related to lower income, and neighborhoods with lower incomes are likely to be “food deserts”, where residents live too far to easily walk to a supermarket or larger grocery store. In Butte County, 28% of residents live in a food desert, with 44% having low income and 18% are 65 years of age and older. Food insecurity leads to health problems, with more clinic and emergency room visits, particularly among families and older adults.

Although Butte County has some of the most fertile agricultural land in the state, food insecurity rates are higher than the California average. The most recent statistics (2019) from Feeding America indicate that Butte County has a food insecurity rate of 14.4%, with 76% of these food insecure people earning less than 200% of the federal poverty threshold, thus meeting the eligibility requirements for government nutrition assistance programs. Among families with children, the rate is even higher, 18.7%, with 65% of Butte County children living in households with incomes at or below 185% of poverty.²¹⁹ The average rate of food insecurity for all Californians is 10.2%, and 13.6% among children.²²⁰

Table 10. Percentage of population living in food deserts.²²³

Location	Low food access within 1 mile	Low food access within 1/2 mile
Butte County	28%	52%
California	7%	26%
United States	13%	--



“Food deserts” are defined by the USDA as low-income regions where more than 33% of populations have low access to food (low access means their distance from the nearest supermarket or large grocery store is either >1/2 mile or >1 mile in urban areas and >10 miles distance in rural areas).

Figure 11. Food deserts in Butte County, 2019.²²²

In Butte County, 39,960 (18.03%) of residents and 27.25% (more than 1 in 4) of children in the county experienced food insecurity at some point during the last year according to estimates from Feeding America. Sixty percent (18,535) of public school students in Butte County are eligible, based on household income, for free and reduced school meals.²²¹ Food insecurity will continue to increase as the county faces ongoing impacts from natural disasters and the COVID-19 pandemic such as increased poverty and food production and distribution barriers. Feeding America estimates that Butte County’s food insecurity rate will increase by 2.8% to 17.2% of residents not having enough food at least some of the time.

In addition to income, other factors impact food accessibility and security, including the built environment. Food deserts are areas where a substantial number of residents have low, or limited, access to food.²²² Low access is measured as either living more than 1/2 mile or 1 mile from the nearest

supermarket or large grocery store in urban areas and more than 10 miles in rural areas. Factors that determine this metric include the number of large grocery stores, super centers, fast food chains, income of residents, vehicle ownership, and public transportation. The Butte County Community Health Assessment conducted in 2019 notes that Butte County has marginally fewer grocery stores per capita than both national and state averages.

Butte County has 14 food deserts where 61,698 of Butte County residents live, which means that more than one in four people in our county, 28%, live in an area where food is not readily available (Table 10 on p. 66), considerably higher than the state average of 7%. These areas are highlighted in Figure 11 above: the primary food deserts are in central Chico, Oroville, south county, and on the Ridge (Paradise and Magalia). The poverty rate of the food desert tracts ranges from 36.7% to 13.4%. Of those living within the food deserts, 27,442 (44%) are low income, 12,980 (21%) are children 17 and under, and

10,872 (18%) are seniors 65 years and older. When the more stringent distance of ½ mile is used to identify food deserts, the number increases from 14 to 26 tracts and the number of people living in these areas jumps to 52%, a 2% increase from 2015.

Furthermore, Butte County has two “disadvantaged areas” as defined by the California Office of Environmental Health Hazard Assessment. These areas are “communities over-burdened by pollution, socioeconomic, and health impacts, and are one of our greatest challenges.”²²⁴ The designation is determined as areas that score in the top 25% on the CalEnviroScreen 3.0, which includes various measures of environmental and personal health factors. Higher percentages in each construct represent a greater burden. Two census tracts in Butte County qualify as Disadvantaged Communities: Tract 6007001300 (the central portion of Chico District 7) and Tract 6007003700 (a largely unincorporated tract overlapping Thermalito and the northwest side of Oroville), with a total population of 8,674. Markers for which these areas scored particularly high (above 90%) include the following: cleanups (contaminated sites requiring cleanup), groundwater threat, hazardous waste, low birth weight, cardiovascular disease, poverty, unemployment, housing burden, and education. See Appendix R, Disadvantaged Communities, for a map and detailed breakdown of the health hazard scores for each area.

Food insecurity leads to increased health problems, more frequent clinic and emergency room visits, and increased prescriptions, all of which are exacerbated by COVID-19.²²⁵ The 2019 Butte County Community Health Assessment revealed that food-insecure children have lower nutrient intake, more cognitive problems, and an increased risk of hospitalization and asthma.²²⁶ Although families receiving CalFresh benefits (SNAP, Supplemental Nutrition Assistance Program) have lower risks of these problems, they are not as healthy as families who do not receive CalFresh because the benefit levels may not be enough to supply adequate nutrition and because a many households have incomes above the eligibility limit but are still low income and do not have adequate funding for food. People 65 years of age and older are also at high risk for food insecurity,

which puts them at increased risk of many diseases and poorer quality of life.²²³ These adults often live alone and are on fixed incomes, both risk factors for food insecurity. In Butte County, 28% of seniors live below the 200% federal poverty limit and 14% are considered food insecure.²²⁸

The current and continued threat to food access and security in Butte County underpins the value of using this Baseline Food Assessment to establish a network and database of those working to address barriers to food access and food security, which will mutually benefit all the stakeholders and the public.

Disasters and Food Security

Sadly, Butte County is familiar with disasters, as we have had four major disasters in five years: the Oroville Dam breach, the Camp Fire, the North Complex Fire, and the COVID-19 pandemic. The first three can be in part attributed to climate change, which impacts food production, access, and security. As we found, any disaster plans that were in place at the time of these disasters were inadequate and reveal the need for effective, comprehensive planning. Other less likely but more immediate threats must also have disaster plans due to the fact they are unexpected and the damage would be almost instantaneous, such as cyber attacks, as have been experienced in meat packing, and disruption of the electrical grid such as an EMP (electromagnetic pulse). Changes and variability in temperature, precipitation, snowpack, and climate extremes such as heat waves, droughts, and floods are increasing, with several areas considered to be at high agricultural vulnerability, according to the Agriculture Vulnerability Index for California.²²⁹

Furthermore, Butte County’s Climate Change Vulnerability Assessment found that “agriculture is the most vulnerable economic driver in Butte County.”²³⁰ Butte County has identified seven climate change hazards that are already occurring and will continue to worsen, including agricultural pests and diseases, drought, extreme heat, human health hazards, severe wind, severe storms, and wildfire. These climatic changes directly impact Butte County’s agricultural production, as has been presented with specific examples in the section on Agriculture and Food Production, page 14 ff. The main impacts identified include changes to crop



These photos from NASA compare Lake Oroville water levels in 2019 (on the left) and 2021, a year of extreme drought.

yields and plant behavior based on temperature variance, decreasing water reserves, increases and changes in pests and diseases, and overall increased vulnerability to climate risks. The inability to produce crops in a dependable way jeopardizes the livelihoods of many of Butte County’s residents and increases people’s susceptibility to food insecurity. Natural disasters, exacerbated by climate change, such as wildfires and floods, displace people, disrupt people’s livelihoods, restrict their access to land to grow or gather food, close grocery stores, and ultimately contribute to increased food insecurity. Our county’s response and adaptations to climate change are critical to our communities’ future food security. More information about the impact of climate change in Butte County is detailed in Butte County’s Climate Vulnerability Assessment.

As Butte County has experienced, food and water are essential for human survival, and people become desperate without ready access. As we have also experienced, the response to these needs in a disaster is chaotic without a plan. Research has found that Butte County does not have a plan for Food Disaster Preparedness; we have had to rely on a

system that originates at the federal level and trickles down through various government and community organizations, a time-consuming and complicated process, explained in Appendix S. These plans also operate with the assumption that the disaster is “localized” and resources such as communication, energy, transportation, food and water, money, and the legal and governmental systems will be intact. However, what if these systems fail? While Butte County has a General Disaster Plan, the plan acknowledges that “it may be necessary to make difficult choices among competing requests for the same resources” but does not include distribution of resources to residents from a county “pool” that would “fulfill priority missions.”²³¹ When a request was made to CalOES (Office of Emergency Services) to know more about state food reserves, this information was not provided.

These points, which are expanded in Appendix S, support the need for a specific, citizen-centered Food Disaster Preparedness plan. The North Valley Food Bank has noted the need for this type of plan and are interested in being part of the development, but they don’t have the capacity to lead the process.

While the previous disasters have improved the county's ability to provide food in a disaster, reliance on outside assistance from the federal and state government and other organizations is still the primary source of food, which would leave individuals and families on their own should these resources not be able to meet all or part of our needs for food and water.

Food Security and Marginalized Groups

While low income people are particularly vulnerable, other factors, such as limited transportation and inability to cook, increase the likelihood of food insecurity. Among people 65 years and older in Butte County, 28% live below the Federal Poverty level, yet many are not on CalFresh indicating the importance of outreach to this group and also understanding other factors that create food insecurity for older adults, including transportation. While a significant group of Butte County residents experience homelessness, the Camp Fire has increased these numbers by at least 16%. People who are not white and who identify as LGBTQ+ are also more likely to be impacted by limited income and also face discrimination when accessing resources and support systems; thus, these barriers need to be removed to ensure they have access to healthy food. Food insecurity affects more than 40% of the college-aged population, which is an important group in Butte County. Efforts to meet the needs of this group have started, but more resources are needed, particularly due to the impact of COVID-19. Further research is needed regarding other marginalized groups.

Certain groups in Butte County experience unique situations that make them more vulnerable to food insecurity. This can include additional barriers to food access based on their age, income, health, race/ethnicity, sexual orientation, and/or gender expression. The groups discussed in this section are older adults, sheltered and unsheltered homeless people, Black, Indigenous, and People of Color (BIPOC), and Lesbian, Gay, Bisexual, Transgender, Queer/Questioning Plus (LGBTQ+); other marginalized groups should be added as research continues. Many reports have determined that the impact of any disaster or economic downturn, including the pandemic, disproportionately impacts people in these groups.²³² Furthermore, people who are in more than one of these groups have an

increased vulnerability to experience food insecurity.

Older Adults: Although definitions vary, older adults are generally considered 65 years of age and older. In Butte County, older adults make up 16.2% of the population. The occurrence of food insecurity in this age group, reported in 2020, was 13.9%, and 27.8% of seniors in Butte County live below the 200% Federal Poverty Level.²³³ However, 2016 data found that only 7% of Butte County CalFresh recipients are seniors,²³⁴ indicating an opportunity for more of them to enroll in CalFresh. Studies show that older adults who are food insecure are more likely to report lower nutrient intake, being in poor or fair health, being depressed, and having more limitations to daily activity than their food secure peers.²³⁵ Connecting older adults to federal food assistance programs improves food security and related health outcomes for older adults.²³⁶ Key problems are limited incomes, transportation, and mobility, which impacts their ability to prepare food.

Sheltered and Unsheltered Homeless People: The U.S. Department of Housing and Urban Development (HUD) uses the term sheltered homelessness to refer "to people who are staying in emergency shelters, transitional housing programs, or safe havens."²³⁷ HUD defines unsheltered homeless as "a person who lacks a fixed, regular, and adequate nighttime residence." Homeless people are more likely to experience food insecurity than the general population and their food insecurity is linked with higher rates of poor physical and mental health outcomes.²³⁸ According to the 2019 Butte Countywide Homeless Continuum of Care (BCHCC) Point in Time report, 2,304 people were homeless, 16% higher than the count in 2017.²³⁹ They attributed this largely to the Camp Fire, as 23% of respondents said this is their first time experiencing homelessness and it was due to the Camp Fire. The report also mentioned that the total homeless count was likely much higher, noting challenges to getting accurate counts of all those displaced. Furthermore, the coronavirus limited shelters' and programs' capacity to provide services to this vulnerable population. Other barriers for this population to receive services include lack of transportation, lack of a physical address to sign up for services, and lack of communication/internet to access services in the

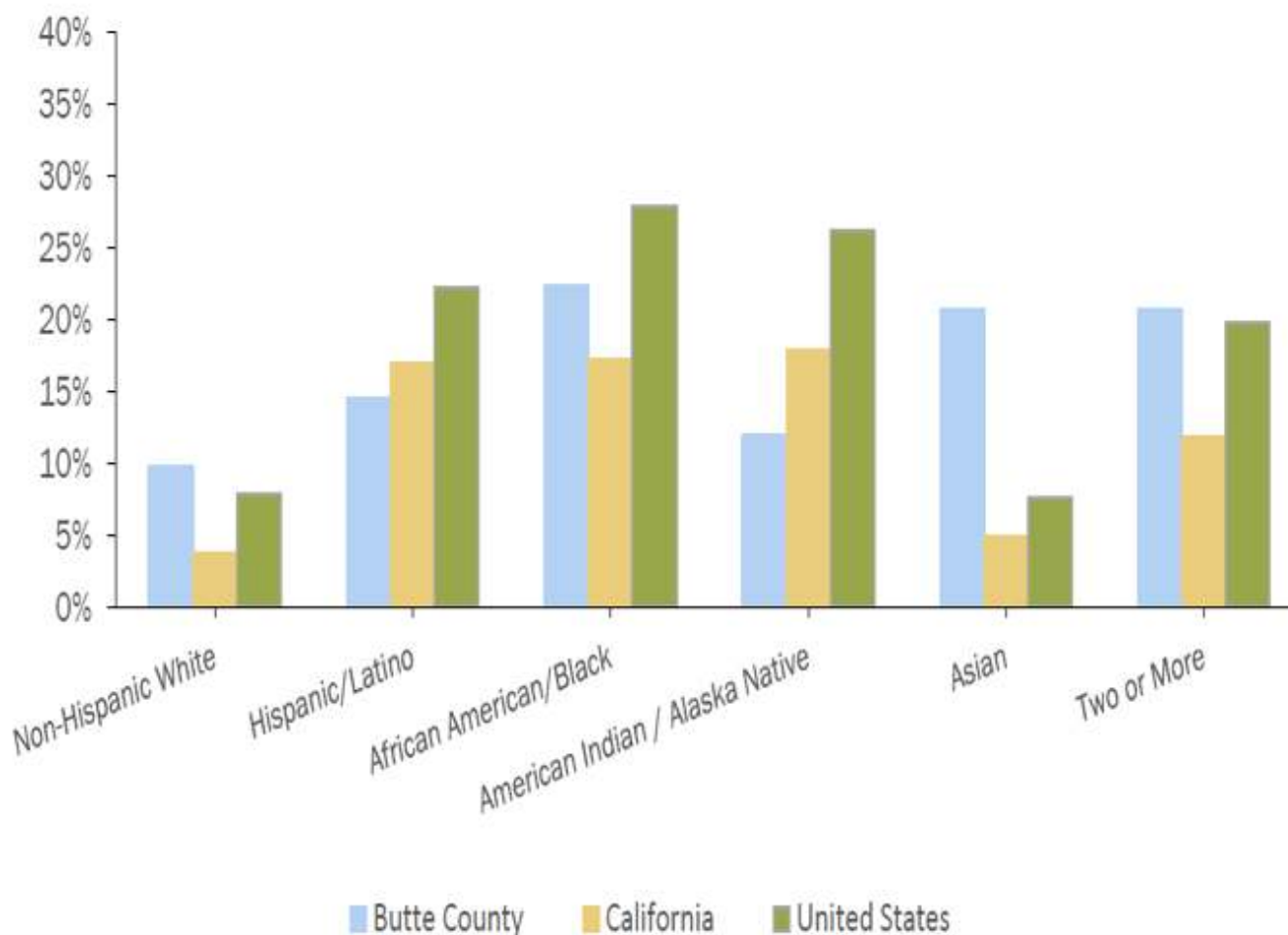


Figure 12. Percent households receiving Supplemental Nutrition Assistance (SNAP) benefits by Race/Ethnicity in Butte County, in California, and in the United States. US Census Bureau, American Community Survey, 2012-16. Source geography: Tract.

time of COVID.

BIPOC: For the purpose of this report, when examining food insecurity in BIPOC communities, communities including the Asian, Pacific Islander, and Black communities, and all those whose ancestry reflect a combination of these backgrounds are included. Indigenous includes not only Native American and First Nations residents of Butte County, but those whose identity reflects ancestry from Africa, South and Central America, Asia, Europe, Oceania, and the Pacific Islands. Disparities in income and food security can be related to historical discrimination against these groups.²⁴⁰ Data from the Butte County 2019 Census reports that 28% of residents are within the BIPOC community and this percentage has been increasing over time.^{241,242} Additionally, Butte County residents in these communities are more likely to live at or below the federal poverty level (20.2%-37.1%) compared to

Non-Hispanic Whites (19.8%), which increases their likelihood to experience food insecurity.

The graph in Figure 12 above, from the US Census Bureau, shows that the percent of people using Supplemental Nutrition Assistance (SNAP) benefits is higher in BIPOC communities compared to Non-Hispanic Whites.²⁴³ Rates across these groups in Butte County are often higher than across California. **LGBTQ+:** LGBTQ+ includes people who have sexual orientations other than heterosexual and/or express or identify their gender as non-cisgendered.²⁴⁴ People from this group have increased risk for food insecurity.^{245,246} Data suggests that between 2%-6.2% of people in Butte County identify as LGBTQ+.²⁴⁷ An informal internet survey was done among LGBTQ+ individuals in Butte County (2021) and found that 67.5% of respondents experienced food insecurity. The most common reasons for food insecurity for the ten respondents were lack



Photo by Michaela Warthen

At Chico's 6th Street Center, up to 300 homeless and runaway youth from ages 14 to 24 annually avail themselves of resources like counseling and workshops on employment readiness. The Center also serves these guests one meal/day. Here, guests ready a meal donated by a local chef from her restaurant's kitchen.

of access to resources and lack of work, and their situation was made worse by COVID-19. Just over half of them experience discrimination at food pantries, and two-thirds noted that the items offered at the pantries were not consistent with the choices they would make if they had money for food. Additionally, the California Healthy Kids Survey (2019) found that over half (51%) of K-12 students that identify as gay, lesbian, or bisexual reported not having eaten breakfast in the previous day, significantly higher than only 32.4% in those who identified as straight.²⁴⁸ This was higher also than the statewide average for LGB students for which 48.6% reported not having eaten breakfast.

Young Adults/College Students: In the past, young adults were not considered as a high risk group for food insecurity, but economic changes, particularly housing costs and wages that do not track with

cost of living increases, have created vulnerability for food insecurity in this group. While a college degree provides many advantages, the cost of higher education outpaces the inflation rate by an estimated 200%.²⁴⁹ California State University, with a campus in Chico, educates the most ethnically, economically, and academically diverse student body in the nation. The inability of students to meet the basic needs of food, housing, and other essentials has been formally studied since 2016 and found that 41.6% of CSU students were food insecure, with over half of those students (21.6%) considered to be at very low food security.²⁵⁰ Students who are food or housing insecure, or both, experience physical and mental challenges that result in poor academic performance and are at much higher risk of not completing their education. A study done in Fall 2016 at Chico State found

that 46% of students had either low or very low food security, and only 12% of these respondents took part in CalFresh nutrition assistance.²⁵¹ The 2018-2019 most recent report from Chico State indicated this number has increased to 50% of students,²⁵² likely due to the impact of the Camp Fire and COVID-19. In response to the realization that some Chico State students could not afford food, the Wildcat Food Pantry was started in 2013 and has expanded to include a permanent location and a small staff with refrigeration and freezer capabilities.²⁵³ The pantry serves as a hub of information and resources, including CalFresh enrollment (temporarily suspended due to COVID-19) and sources food from Feeding America, the North State Food Bank, the University Farm Organic Vegetable project, and personal donations. Open year round, the pantry had 37,495 visits from students and staff in 2018-2019. Butte College also has a basic needs program at the Roadrunner Hub. However, the Food Pantry was closed due to COVID-19²⁵⁴ and its current status is not known.

Other Groups: Food insecurity rate estimates were unavailable for other vulnerable groups such as veterans or people living with disabilities. However, the USDA Atlas of Rural and Small Town America indicates that in Butte County, 31% of veterans, as compared to 14.2% of the general population, live with a disability, and 17.6% of veterans live below the poverty level.²⁵⁵ More research is needed to better understand how these factors, as well as others, may contribute to food insecurity in the aforementioned populations.

Understanding the increased risk faced by all of these groups is important when conducting outreach, designing programs, and implementing solutions that improve food security in our community. Thus, including members of these communities on all work is imperative to ensure success.

Government-based Nutrition Assistance Programs

The primary government programs are CalFresh (SNAP), the Women Infant and Children (WIC) program, and School and Child and Adult Care Food Programs. Almost 12% of Butte County households receive CalFresh, with twice as many Oroville households participating, compared to Chico. Pre-Camp Fire

data indicate that only 60% of eligible Butte County households receive the benefit, both a loss to these people and to the county economy of \$28 million. The average WIC benefit is \$62 per month and not all eligible households participate, so more outreach is needed for WIC as well as CalFresh. Barriers to participation in these programs include transportation, limited phone access, and displacement due to natural disasters. Both CalFresh and WIC incentivize recipients to use their benefit to purchase food from Farmers Markets by providing a 50% discount or a specific dollar amount. For some children, schools and care programs are a primary source of food. In Butte County, 60% of children are eligible for the program and almost all participate. After the Camp Fire, schools played a critical role in feeding students and providing a sense of normalcy. During COVID-19, schools have again met the challenge by providing meals to all families without requiring eligibility determination. Starting in Fall 2022, meals will continue to be provided without cost to all students. The CalKidz Program at Butte County Office of Education provides support services and coordinates the Summer Food Service Program, which provided more than 172,000 take-home meals in 2020-21. Their mobile teaching kitchen engages students in food preparation and healthy eating. The Child and Adult Care Food Program provides reimbursement to home and community child care, pre-schools, and adult day care programs. Farm-to-School has started again in the schools, purchasing food from local farmers and bringing it to the students to taste. Three primary organizations provide nutrition education, including Harvest of the Month, to schools: Butte County Office of Education, Center for Healthy Communities, and UC Cooperative Extension Butte County. These groups also provide CalFresh outreach, inform adults, and connect residents with other services.

The federal government provides funding through the United States Department of Agriculture (USDA) for nutrition assistance programs that the state and county governments administer and supplementally fund. The three primary programs are Supplemental Nutrition Assistance Program (SNAP), known in California as CalFresh, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the School Nutrition and Adult and Child Care Food programs. Each program is focused on serving low-income individuals and families.

CalFresh (SNAP)

CalFresh is California’s version of the federal Supplemental Nutrition Assistance Program (SNAP), formerly the Food Stamp program. This program is supervised by the state and implemented by the county. CalFresh provides monthly benefits, through Electronic Bank Transfer (EBT) cards, to eligible low-income households (200% or less than the Federal Poverty Level)^{256,257} to help supplement their purchase of nutritious food. EBT cards can be used to purchase foods at participating retailers, and in April 2020, California updated policies to allow some purchases to be made online, due to COVID-19.²⁵⁸ The maximum amount a single-person household can receive per month is \$250, for a two-person household, the benefit is \$459, and four people can receive up to \$825.²⁵⁹

In Butte County, the food insecurity rate is 14.4%, higher than the average rate of 10.2% for California.²⁶⁰ Among this group of 32,450 people, 76% of them are below the nutrition assistance threshold of 200% poverty and 24% are above this threshold. According to the California Department of Public Services, in August 2021, Butte County had 17,630 households or 29,139 individuals accessing CalFresh benefits.²⁶¹ The number of households using CalFresh benefits in Butte County increased by about 2,000 between 2019 and 2021, likely due to impacts of the COVID-19 pandemic. Despite this increase it is estimated that only 62.2% of eligible people are enrolled in the program.²⁶² A

Figure 13. Percent of households receiving EBT, comparing Butte County cities, Butte County as a whole, regionally, and nationally. *The Demographic Statistical Atlas of the United States - Statistical Atlas.*



USDA study found that “88% of SNAP participants reported facing some type of barrier to achieving a healthy diet throughout the month,” with the most common barrier (61%) identified as the affordability of purchasing healthy food.²⁶³ The COVID-19 pandemic has significantly impacted the entire food landscape, including increased food insecurity, particularly among the most vulnerable. These groups include children and those who lost jobs during the Camp Fire, as unemployment in Butte County went from 6.1% to 13.3% from March to May 2020.²⁶⁴ Additionally, schools were closed to in-person learning and students who relied on the federal National School Breakfast and Lunch Programs had limited access to these meals. The federal government provided additional funds to families with school-aged children in the form of P-EBT (Pandemic EBT).²⁶⁵

Butte County ranks 18th out of all California counties and 26th nationally for program participation, with 11.8% of all households receiving CalFresh. However, participation percentages vary by city, with 20.1% (or 1 in every 5) of Oroville households receiving assistance, and only 10% of Chico households receiving assistance. Figure 13, left, reviews EBT participation rates as a percentage of all households according to city and in comparison to regional, statewide, and national rates.²⁶⁶

Even with this level of participation, pre-Camp Fire data found that only 60% of eligible Butte County residents received SNAP, and if the other 40% accessed this benefit, Butte County would receive an additional \$28 million in benefits, resulting in \$50 million in total economic activity.²⁶⁷

Market Match: The Market Match program is a nutrition incentive program that helps low-income CalFresh and WIC recipients stretch their benefits at farmers markets and other direct-sales outlets. Participating markets “match” the amount recipients spend on fruits and vegetables either by offering a 50% discount or by matching the amount they draw from their benefits (up to \$10 or 15 depending on site), effectively doubling their purchasing power. This helps incentivize recipients to eat a more healthful diet, directly supports local farmers, and boosts the local economy.

The program reports a 360% social return on

investment. Statewide numbers indicate that 84% of participating farms sold more fruits and vegetables and 37% have been able to expand their staff and production since joining the program. Likewise, 73% of recipients have increased the amount of fruits and vegetables they purchase, and 85% have increased the variety in items purchased. Overall, 71% report that Market Match has helped improve the health of their families.²⁶⁸ According to the Center for Healthy Communities, participation in Butte County nearly doubled during the COVID-19 pandemic from 2,591 participants in 2019 to 4,674 in 2020. Some California counties allow this benefit to be used at farm stands and for CSAs, which is an opportunity for Butte County.

WIC: The Special Supplemental Nutrition Program for Women, Infants, and Children

The WIC program provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.²⁶ Public Health administers the program in Butte County in three offices: Chico, Oroville, and Gridley,²⁷⁰ and participants are informed of other services in the county such as food pantries, but this information is difficult to keep up-to-date. WIC uses an EBT card similar to CalFresh, which allows participants to purchase specific foods, such as milk, fruits and vegetables, and cereal. The average benefit in Butte County is \$62 per month²⁷¹ and can be combined with other benefit programs. In an interview, WIC staff explained that family situations are different and many factors prevent them from participating in the program.²⁷² Families find it difficult to keep appointments due to limited phone access (especially problematic during the pandemic), transportation issues, and being displaced by natural disasters. Based on a Medi-Cal enrollment of 35,000 in Butte County, WIC staff believe more residents are eligible for WIC but the staff has limited time for outreach. Additionally, staff worked from home during most of 2020 and part of 2021 due to COVID-19 restrictions; office phones were not staffed as normal.

WIC distributes vouchers to participants during the

summer on a limited, first come, first served basis. While vouchers provide WIC participants incentive to increase purchase of fruit and vegetables and support local farmers, barriers exist for both the participant and the farmer. Farmers markets may be either perceived as or actually more expensive than discount grocery stores, particularly for some items, so many WIC participants do not utilize these services, according to an interview with Butte County WIC. Limited farmers market hours also impact a family’s ability to take advantage of price matching programs at the markets. Farmers do not understand how to use the program and do not redeem the vouchers, which both hurts the farmer and penalizes the county WIC program as funding is dependent upon voucher redemption that is tracked by monies reimbursed to farmers. In 2019, an estimated \$12,785 voucher value was redeemed by farmers out of \$19,960 vouchers distributed (64% redemption rate). Opportunities for improved use of this benefit include facilitating voucher redemption by farmers, allowing the vouchers to be used at farm stands and for CSAs (Community Supported Agriculture). Another opportunity is to allow WIC participants to use their WIC EBT card at farmers markets rather than vouchers to facilitate the use of benefits; currently markets can take CalFresh but not WIC EBT cards.

School Nutrition and Child and Adult Care Food Programs

Recognizing the important role of adequate nutrition to support learning and the high rate of food insecurity among county children, school meals were permanently authorized as a government program in 1947.²⁷⁵ Today, school nutrition provides almost half of the daily energy intake, with 41% of vegetables and 77% of milk intake occurring at schools.²⁷⁴ The operational aspects of school nutrition programs have been discussed in the Food Service section of this report, under Institutional Food Service (pp. 48 ff.), which includes information about specific programs and funding. This section discusses the role of Butte County schools in food security. Because data collection for this assessment was conducted over the summer, individual districts and schools were not available to provide specific information about the role of meal programs on the food security of their communities, but the



information herein indicates that school food plays a major role in feeding children who would otherwise be hungry.

Butte County is home to 91 public schools and 18 charter schools, serving 29,059 students,²⁷⁵ and any student can receive food from these programs, however, students from low-income households are able to receive food and meals for free or at a reduced price.²⁷⁶ Across Butte County school districts, an average of 60% of students are eligible for free or reduced price meals (FRPM), indicating that well over half of students in our county experience food insecurity.^{277,278} In Oroville, 79% of students are eligible.²⁷⁹ Prior to schools closing due to the COVID-19 shutdown, most, if not all, eligible students were participating in the program. During COVID-19, all students have been able to receive free meals and due to the on-going situation, no end date has been announced for this program. However, food service directors in Butte County schools have reported difficulty procuring the needed supplies, including paper goods, to operate their programs.²⁸⁰

In May 2021, the California Senate passed SB 364, the Free School Meals for All Act, becoming the first state in the nation that will allow all students in California to receive free school meals, regardless of income eligibility, starting in the 2022-23 school year.²⁸¹ The bill includes a one-time fund of \$150 million that will be used to help train staff, purchase equipment, and upgrade kitchens in order to enable schools to offer more fresh food prepared onsite. This program will help to eliminate barriers to healthy eating for all students, helping prepare them with the calories and nutrients needed to learn.

Food is also an important component of other educational programs, including preschool and before and after school care. The Butte County Office of Education (BCOE) Food and Nutrition Program provides support and education to county school food service operations and manages the CalKidz Food Program. Funded through the School Foodservice and the Child Care and Adult Food Programs, they provide hot lunches to children in over 30 sites, when congregate dining is allowed, in Butte, Glenn, Tehama, Colusa, and Shasta counties, through the Summer Food Service Program and other programs.^{282,283} In 2020-2021, they provided

more than 172,000 take-home meals to school-aged children (breakfast, lunch, and supper) at 30 sites in Glenn, Tehama, and Butte Counties. In the past, CalKidz has served 5 counties but COVID limited the ability of the program to expand beyond the three served this year. The Summer program is open from the first week of June through the first week of August. However, with the emergency of COVID last year, BCOE served meals from October 2020-September 2021 and continues to serve meals at Child Care and Adult Food Program at-risk community sites, such as Live Spot (youth center), YMCA BASES, and others. They have also provided food for other programs, including Feather River Recreation and Parks District, Axiom, and sometimes other sites such as churches and the African American Family & Cultural Center. BCOE hosts the annual CalKidz Summit in February to bring together all people and groups interested in and working on child feeding and nutrition. The summit provides up-to-date information about government and private programs, shares special projects, features vendors, and facilitates networking among attendees.

CalKidz also has a mobile teaching kitchen, sponsored by Raley's, that goes to schools and other events and hosts activities to support healthy eating. The mobile kitchen is out about three times a week, with more frequency during the summer, and focuses on education. Both the BCOE mobile kitchen and the previous implementation of home meal distribution sites have the potential to increase access to nutritionally complete meals and nutrition education to underserved populations.²⁸⁴ While CalKidz has not done any direct gardening, they support gardening with nutrition lessons and gardening education such as training activity projects and professional education with the district's Food and Nutrition Directors in their quarterly training, including composting and straw base gardening. Most districts have schools that have had intermittent projects and several have ongoing gardens. These efforts could be strengthened with funding, collaboration, and more networking.

Child and Adult Care Food Program (CACFP): The CACFP is a state and federally funded program that reimburses child care, adult day care, emergency

shelter, and at-risk afterschool care for meals and snacks that are served to clients during their care.²⁸⁵ These organizations may be non-profit or profit-based, such as a home day care or adult care facility. This includes Head Start and Early Head Start programs. In 2019, 46 sites in Butte County participated in the CACFP, including preschools, Headstart (E Center), school districts, Boys and Girls Clubs, and adult day care.

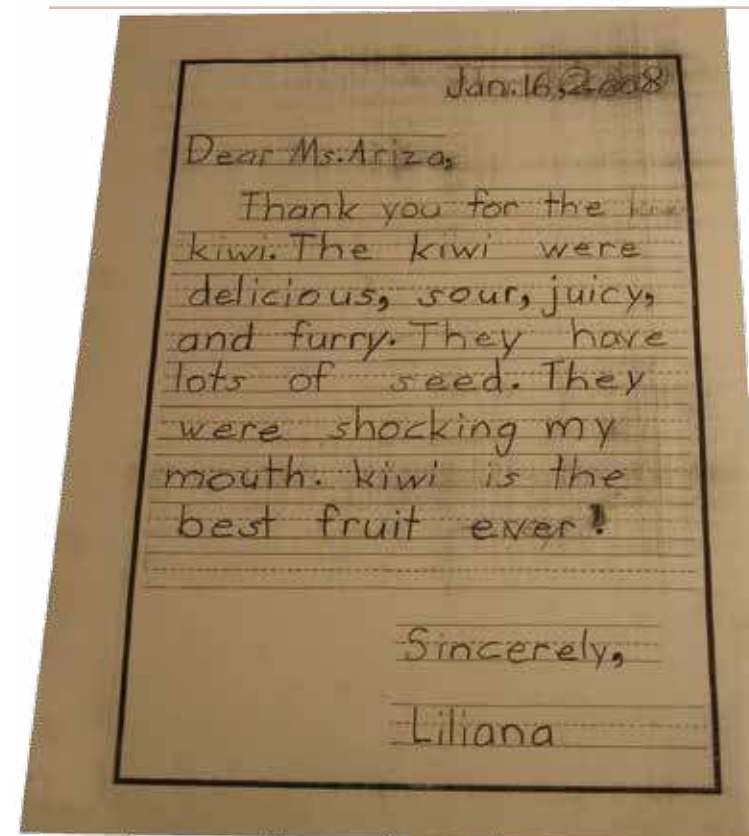
The Camp Fire directly affected all schools in Butte County, as schools outside of Paradise accommodated students displaced by the fire, who relied more than before on the school food program for their meals as their families struggled to find stable housing. BCOE brought food to groups that were feeding people and transported three truckloads of food from USDA directly to Red Cross warehouses. BCOE has also provided food distribution and relief for the Carr and Bear Fires. Schools impacted by the fires had to file paperwork regarding their nutrition services and BCOE provided representation to help schools and families with the paperwork and find benefits.

Farm to School funding provides support for school gardens and also monthly tastings of local produce through Harvest of the Month. UC Cooperative Extension and CSUC's Center for Healthy Communities also provide Harvest of the Month tastings, stencil playgrounds to support physical activity, and host kids' farmers markets using fresh produce from the North State Food Bank. This funding could access more local foods, but cost and supply are limitations. The Camp Fire and COVID-19 have caused a temporary halt to many school programs, including nutrition education, and in September 2021, Harvest of the Month was started again by the Center for Healthy Communities (CHC). In addition to CHC, UC Cooperative Extension and Butte County Public Health (BCPH) offer this program to qualifying schools within low-income communities.²⁸⁶ The program purchases food from local farmers to bring into local schools. Featuring a different fruit or vegetable each month, the food is picked up in the morning then cleaned and portioned for sharing with schools. Each school district determines how to best use the produce, either by serving individual samples to each student,

by incorporating it in the school lunch program, or as best used by the individual districts. Hosting kids' farmers markets is another way to encourage eating local fruit and vegetables. Using Harvest of the Month funding, BCPH has partnered with the North Valley Food Bank to provide fresh produce for this purpose. Children "shop" the market and bring the food home with educational information and recipes.

Nutrition outreach by UC Cooperative Extension in Butte County covers a five county region known as the "Butte Cluster" and includes Butte, Colusa, Glenn, Sutter, and Yuba counties.^{287,288} They provide two nutrition education programs that reach both children and adults, CalFresh Healthy Living and the Expanded Food and Nutrition Education Program (EFNEP) in schools and with low-income families through connections such as CHIP (Community Housing Improvement Program). They explained that participants in their programs face a variety of barriers, including transportation and limited time to shop and prepare food, which limits them from going to farmers markets and even attending school events. UCCE provides education that is mindful of cost and uses ingredients that are easily accessible and culturally appropriate. They include information about connecting to CalFresh to link families with these benefits. With COVID, their programming has become flexible and they are working to continue supporting students and families. They have a staff member who is trained in trauma-based programming and social-emotional health to ensure nutrition education staff focus on total wellness and honor each person in how they learn and view their food and nutrition needs. UCCE hosts the annual Healthy Kids walk/run each May and the Student Ag Field Day for 4th and 5th grade students in February. UCCE Butte County participates in community events such as health fairs, refers people to food distribution sites, and encourages gardening, with events such as "The Great Tomato Challenge" by providing supplies to low-income families in May 2021.

The Center for Healthy Communities (CHC)²⁸⁹ at CSU Chico oversees regional CalFresh outreach and enrollment, coordinates Market Match (double benefits at farmers markets), and supports the work to meet Basic Needs at many of the CSU campuses.



Photos by Jeremy Miller

Harvest of the Month programs introduce Butte County schoolchildren to farmers and the produce they grow in the county; teachers also weave the tastings into activities that meet state educational standards.

CHC offers a variety of other programs in addition to Harvest of the Month, including CalFresh Healthy Living (SNAP-Ed) on College Campuses, benefits enrollment for older adults, summer cooking camps for children, nutrition consulting, and food safety training.

Nonprofit and Community Organizations

Butte County is served by the North State Food Bank, the only food bank between Yuba City and Redding. With a small staff, they provide food to 45,000 people each month via food pantries and some direct distribution. Twenty-five food pantries were identified in Butte County in this assessment, and they receive food from residents and other groups. Starting in January 2020, new California legislation requires counties to decrease the amount of organic waste they send to landfills. This legislation made funding available for the task, and several projects have been undertaken in Butte County to redirect edible food waste to people in need. Meals are currently available in Oroville and to the homeless in Chico though two organizations. Other groups provide meals as part of temporary or transitional housing. Providing food via

a neighborhood "cupboard" and even a community refrigerator are also on-going, as are several efforts to provide food, education, and other resources to interested community members.

Butte County is fortunate to have a wide variety of organizations, groups, and individual people who devote time and money to providing food to those who do not have enough to eat. These efforts are categorized into food banks and pantries, organizations that provide housing and/or other services to those in need, and community efforts to provide food, both formal and informal.

Food Banks and Pantries

A food bank typically serves as a central distribution facility and provides food to food pantries, discussed below, and does not generally provide food to the public from their warehouse. The Northstate Food Bank (NSFB), housed in Oroville, is the only food bank between Yuba City and Redding, and they supply food to six counties: Butte, Glenn, Colusa, Plumas, Sierra, and Tehama.²⁹⁰ Part of the Community Action Agency, their programs include Commodity Distributions, Tailgate Distributions, and

Farm 2 Kids, providing food to an average of 45,000 people each month via these venues and food pantries, resulting in distributing an average of 1.7 - 2.4 million pounds of food per year. The Food Bank of Contra Costa and Solano counties also provides food to various organizations, including NSFB, in Butte County.

A food pantry is a facility that the public can access for free food. Pantries are usually part of a community outreach by a faith group, community organization, and sometimes, an individual or small private group. Pantries are usually supplied by a food bank and also have food drives and other efforts to bring additional food into their pantry, particularly to meet the needs of their community.²⁹¹ Usually pantries receive and distribute food each week, with limited or no space for storage. No formal designation exists for a pantry, and in Butte County, pantries vary from well-established regular operations at nonprofit organizations to informal collection and distribution of food. This assessment identified twenty-five food pantries in the county (see Appendix T for a detailed list); several more are likely in or have been in operation. Each pantry has different distribution days and times and different conditions for receiving food, such as frequency or proof of residency.

Food pantries receive food from a variety of sources and as such, the type of food is variable and may not be appropriate for clients. Many “shop” at the North State Food Bank, and several order and receive food from the Food Bank of Solano and Contra Costa counties. Food is also provided by several groups that collect food via “food drives”. One effort in Chico is the Chico Food Project, also known as the Blue Bag program. An entirely volunteer organization, this group leaves a blue bag on the doorstep of those who have committed to filling the bag once every two months with shelf-stable foods. To-date, the group has over 1,000 members and on a designated pick up day, empty bags are left on the porch and other volunteers collect the filled bags. Over 11,000 pounds of food is collected at each pick-up and then distributed to at least six food pantries in Chico. Some groups, such as the South Chico Community Assistance Center,²⁹² provide people with other items such as clothing and sanitary products and

services such as referrals.

Two gleaning groups exist in Butte County: the Chico Gleaners, open to people 50 years and older who pay \$40 per month,²⁹³ and the Paradise Gleaners, which had to relocate to Oroville as their facility was destroyed in the Camp Fire.²⁹⁴ Now that they have secured space, they serve 500 to 600 people and families each week.

Food waste recovery has been undertaken in many areas across the U.S. In 2016, California passed SB 1383 to reduce organic waste disposal by 75%.²⁹⁵ Beginning in 2022, SB 1383 will require Tier I edible food generators, like larger grocery stores and markets, to contract with food recovery organizations and recover the maximum amount of edible food that would otherwise go to waste, and make this food available to feed hungry people. In 2024 Tier II edible food generators, including larger restaurants, will follow suit to get excess edible food to food recovery organizations. Two grants have supported this effort in Butte County to-date. In 2018, the Jesus Center partnered with the Community Action Agency to receive a CalRecycle grant to launch a program that collects edible food from grocery stores, restaurants, and other venues to serve in their hot meal program or distribute through the North State Food Bank, with inedible waste going to compost. The Jesus Center was able to purchase new kitchen equipment and used an app to match donors with outlets to distribute the food.²⁹⁶ In 2021, the Northstate Food Bank partnered with the Center for Healthy Communities to receive a CalRecycle grant for similar purposes of diverting organic waste from the landfill and expanding food supplies for those who are food insecure by better managing food within the system.²⁹⁷ The “530 Food Rescue Coalition” will also use an app to match surplus food from stores, restaurants, and farms to pantries, to volunteers who will transport the food. The goal of the software is to help people find places to donate food, make donations easier, and help food distribution agencies claim donations and distribute them.

Meal Services

Organizations that provide meals can be divided into two groups: 1) those feeding low income people, many who are homeless, at a central

facility or bringing the food to their location, and 2) those providing meals in temporary or transitional housing. The organizations described are those found in our initial research.

Torres Shelter: The Torres Shelter ²⁹⁸ began as a sleeping only facility, providing housing for single adults and families. After adding additional facilities, including a kitchen and dining room, they became a 24/7 shelter, offering meals, laundry services, mental and physical health services, and support to move into long-term housing. They are currently following COVID-19 protocols, operating at about 70% capacity to ensure they have beds for new intakes.

Jesus Center/Renewal Center: Started in 1980, the Jesus Center ²⁹⁹ became the primary “soup kitchen” for Chico, offering breakfast and a mid-day meal. In addition to free meals, they provide housing to nearly 60 people in six homes. In May 2021, the hot meal program was stopped as they moved to a new location on Fair Street in Chico that provides “wrap around” comprehensive services in a residential facility for 60 people and does not offer meals to non-participants.³⁰⁰ Efforts of the Jesus Center have included job training, including internships on their farm and floral design with Bloomin’ Hope. They are also developing the Renewal Center across Park Avenue to provide shelter for more people, including families and specialized populations, co-located with services such as mental health, job training, and life skills development.

With meals no longer available at the Jesus Center, various groups have worked to fill in the gap, such as the Hunger Trolley Helpers and Friends on the Street, plus individuals who bring food to the homeless encampments.

*Safe Space*³⁰¹ is a volunteer-based organization that houses homeless people during the winter months, although they have made efforts to become a year-

round program. They depend on churches to host 60 to 80 homeless people overnight. However, with COVID, they were only able to host 12 to 24 people and only could accept medical referrals. In normal operation, they provide dinner and a breakfast “to-go” bag.

*Project Room Key*³⁰² was a state-funded program established as part of the California statewide response to COVID and ran from April 2020 through September 2021. The program provided a hotel room to homeless individuals with medical needs for housing due to COVID, housing over 100

people in Butte County. The program was managed first by Safe Space and then by the Torres Shelter and meals were prepared at the Jesus Center and delivered to their rooms. Other organizations provided various types of food assistance. The project ended on September 30, 2021.

*Hope Center, Oroville and Paradise:*³⁰³ The Hope Center in Oroville serves hot and cold meals once each day, six days per week. They also provide food boxes and disaster relief services for fire victims.

Chico Rescue Mission and Oroville Rescue Mission: Efforts to obtain information will continue.

*Chico Housing Action Team (CHAT)*³⁰⁴ offers a different model and indirectly provides food assistance. Their mission is to “ensure that every person in our community has access to housing they can afford.” Their nine different housing programs serve people with different needs and offer a variety of services, including a volunteer food distribution program that provides a box of food to those in their houses who want it every week. The food comes from food banks and donations.

Further research is needed to identify food providers in the county, particularly groups that provide prepared meals, including churches and the Salvation Army.

With meals no longer available at the Jesus Center, various groups have worked to fill the gap, such as the Hunger Trolley Helpers and Friends on the Street, as well as individuals who bring food to homeless encampments.

Grassroots Efforts and Other Organizations

Free Food “Cupboards” and Refrigerators

The premise is simple: neighborhoods provide free food at convenient locations throughout the community and invite anyone to help themselves to the food, and also encourage people to bring surplus food to the cupboard give away. Three cupboards were found in Chico: Vecino, which also has a community garden, at 1535 Laburnum Ave; on the 1400 block of Palm Avenue, and on 5th Street. In June, 2021, a community refrigerator was placed on Pine Street, between East 6th and East 7th streets. This modification of a food cupboard allows people access to foods that require refrigeration and also provides bins of dry food. Free food cupboards and refrigerator operations are run by community non-profits, private households, and volunteers who take excess food procured from donations or private funds and distribute them to sites within the community such as food pantries or drop-off/pick-up sites.³⁰⁵

*I AM's Garden*³⁰⁶ is a 501(c)3 non-profit in Concow, CA, started in 2015. They are operating as a distribution network for donated food, clothing, and other supplies like ice, water, and propane for the local community, as well as Chico, Quincy, and Gridley. Additionally, they provide cold food storage and emotional support. They pride themselves in not turning anyone away from services. Currently, their non-profit status is ‘non-operational’, which limits them in the funding and donations they can receive. However, they are working on reinstating that in order to increase their ability to serve.

*From the Ground Up*³⁰⁷ is a grassroots organization that began with the mission to educate and promote health in a variety of ways, including community gardens, self-healing, and healthy eating, especially with “at risk” populations. Based in Concow, their work has shifted to support fire recovery and resilience.

Challenges in Food Accessibility and Security

Disparities in food access and security likely precede written history, yet the right to adequate food is of global concern and continued effort.³⁰⁸ In our endeavors to ensure all Butte County residents have safe and healthy water and food, many

factors need to be considered as described in the section. One challenge, and opportunity, is to engage all members of the community in these efforts, and encouraging leadership by those who have the most to gain is crucial. With high rates of poverty and food insecurity, we have plenty of people to engage in this work, but respecting these people and building trust takes time. Additionally, the trauma and stress in our area must be acknowledged. UCCE emphasized the need to incorporate Social Emotional Learning strategies into education and information, which is especially important with people who have been through traumatic experiences such as the Camp Fire. Providing disaster planning is critical and following up to ensure that people are prepared is needed. COVID-19 has restricted the ability to connect to share ideas and collaborate, even more than before the pandemic. By having to work together virtually ways to connect with participants have been used, such as using emoticons, having instructors facilitate inclusion, and acknowledging each participant. Of particular note are older adults, homeless people, and BIPOC and LGBTQ+ groups that are disproportionately impacted by the pandemic restrictions and food insecurity.

Providing increased access to healthy food in food deserts is critical; however, business models don't support moving into these areas, so economic development is needed. One model currently operated by the Butte County Local Food Network is the Farmers Marketmobile, which purchases produce from farmers and brings it to Paradise/Magalia and Concow/Yankee Hill weekly to allow these residents in isolated areas access to fresh produce and accepts EBT cards. They also have Angel Cards, which are gift cards specifically for the Marketmobile that are sponsored by donors and are given based on an application process. Although the Marketmobile is not-for-profit, they require staff and resources such as fuel and vehicle maintenance. Work continues to make this a financially viable project, and, as with any business, investment is needed. Additionally, the North State Food Bank does outstanding work with a very small staff, which limits their reach into the community beyond providing supplies to pantries and commodity and tailgate distributions. The needs in our county indicate that additional staff are



required to expand the work of the Food Bank. Although once viewed as “far in the future”, the real impacts of climate change are affecting all of us, both producers and consumers. Integrating actions that support a healthy environment are crucial to ensuring a healthy food supply. More attention needs to be given to these efforts, including policy and legal requirements so that all members of society, from large corporations to individuals, are mindful of their impact on the environment and are able to make changes. Many groups in Butte County incorporate climate principles in their work, so much knowledge is available in our community.

Underlying all of these challenges is the need for more resources, particularly time or people with time, such as paid staff as part of their regular work day or volunteers. To address any of these challenges will require organizations, such as community groups, county departments, and businesses, to prioritize this work and provide staff to engage in these collaborative efforts. Additional resources may include funding for other needs, such as meetings, technology, and the use of consultants if warranted.

Opportunities in Food Accessibility and Security

In addition to the ideas presented in challenges, a variety of actions could be taken to improve access to healthy foods, as described by participants in this research. Implementing meaningful public education campaigns will be crucial to gain support and resources to make the needed changes in our food system.

More awareness and better utilization of government programs, such as CalFresh, WIC, and the CACFP would provide cash benefits to individuals and families to purchase healthy food, and more impactful nutrition education will help these clients wisely use the benefits to maximize their health. Food availability through pantries and distributions can be improved by having consistent days and hours of operation and be located in areas easy for people to access, e.g., off of bus routes.

While funding is always a challenge, we see opportunity by providing experiences and specific projects for people to invest either time or money, or both. Encouraging donations to specific efforts and asking donors and others to participate has been successfully used by the Butte County Local

Food Network in their Garden BLITZ and the Vecino Garden. Other ideas include schools, older adults such as volunteering with Passages,³⁰⁹ and community organizations such as the African American Family & Cultural Center in Oroville.³¹⁰

Connections and networking opportunities should be pursued. While the area has had two “food convenings” in the past five years, COVID has stopped in-person gatherings. While virtual gatherings have been helpful, more support is needed so the transition to in-person meetings will happen as soon as possible. The value of sharing best practices, celebrating accomplishments, and identifying needs cannot be measured but these meetings are crucial to sharing information and for taking time “out” to assess efforts and focus on priorities. Another benefit of these meetings is, connecting with others to work together so that our efforts are synergistic and not duplicative. Lastly, these meetings draw the press, which shares information about the work that is happening, and still needs to happen, and engages community members in this effort.

A longer-term opportunity is to work with county and non-profit agencies to synthesize information from annual reports to understand changes in food access. BCPH provides annual reports to the state and understanding the county and regional impact of CalFresh funding would be helpful to note what has been accomplished and to identify needs. Part of this reporting is developing consistent metrics to track food distributed. Currently, pounds of food are often reported and other measures, such as servings or numbers of families fed, would be of interest.

CONCLUSIONS

This report provides an overview of the current state of the local food system in Butte County and discusses issues surrounding food security. Growing demand from consumers for fresh and ethically sourced food has led to an increased interest in the local food system. Consumers not only want improved quality, but also to know where their food is coming from, how it was grown, and where their dollars are going. Incentive programs such as the USDA local food promotion and Farm-to-School programs continue to grow in reach and offer a means to strengthen the local food system. It cannot

be denied that supporting the growth of the local food market offers social, health, and economic benefits to the people of Butte County.

This report discusses challenges faced by different sectors of the local food system, highlights areas of need, and presents opportunities for growth. Local food producers are challenged by the current COVID-19 pandemic, as well as continuing and escalating environmental stress brought upon by climate change, particularly wildfire and drought. The majority of Butte County farms are small family farms, which experience increased vulnerability as compared to large corporate farms with greater capital. Although many farms have demonstrated outstanding resilience, persistent hardship is a serious threat to the future of small local farms. Concern exists surrounding the overall aging-out of farmers. The average age of farmers is increasing locally as well as nationally. Barriers to entering into the industry include investment capital and education in agricultural methods. Assistance is needed to encourage and support a younger generation of farmers entering the field.

Local producers and processors report varying experiences in connecting with the local market. Some find alternative models such as CSAs to be favorable while others rely on the farmers market model. In general, direct-to-consumer sales remain a comparatively small portion of the food system (between 1-2% of total food sales). The primary outlets for local foods are farmers markets and CSAs, with minimal inclusion of local foods at grocery stores and distributors. Cooperative markets offer a greater variety of local foods but are challenged by consumer demand for non-local or out of season items. Additionally, organic certification, which is costly and burdensome to many local producers, remains a top priority for several retailers and customers, limiting interest in non-certified local products.

A select few restaurants offer a menu driven by local ingredients, and next to no local items are used by institutional food service. The highest proportion

of local foods used in a restaurant was 70% of total ingredients; however, most restaurants interviewed reported using around 10% local ingredients. The primary barriers to the inclusion of more local foods include cost and consistent supply, variety, and seasonality. Although the higher cost of local foods is a barrier to use by retailers and food service, possibly more important is the increased labor-hours associated with procuring, processing, and preparing local foods. Staffing shortages exacerbate this issue. The information gathered during this assessment strongly suggests the need for a local or regional food hub to streamline the connection of retailers to producers. Additionally, a greater offering of fully or partially prepared local foods would enhance

their utility and consequently their inclusion into menus, especially for tightly financed operations.

Butte County has higher rates of food insecurity than the California average, despite our strong agriculture base, with families with children and older adults most at risk. Notably, the Camp

Fire and North Complex fires have exacerbated food insecurity and COVID-19 has had the most detrimental impact on those who were already vulnerable. Many factors contribute to this problem, including low income, difficulty accessing food due to distances that many people need to travel to shop for groceries (indicated by the high numbers of residents living in food deserts), and income inequality, which has increased by 130% between 2012 and 2019,³¹¹ with a ratio of 17.8, indicating that those who have higher incomes make more than 17.8 times that of lower income people, with Northern California having the largest income gap in the state.³¹² Lack of consistent food leads to negative health outcomes, which not only impact healthcare but also the working ability of these residents, who often work more than one job.

Research of marginalized groups indicates that many older adults do not take advantage of nutrition assistance programs, such as CalFresh, and need to be connected to these resources. While efforts to meet the needs of homeless persons continue to

The value of sharing best practices, celebrating accomplishments, and identifying needs cannot be measured. . . .

develop, the lack of centralized services and housing make food security very difficult for these people, as a significant number of people remain homeless after the fires. Food insecurity for other marginalized groups must be addressed, including outreach to people who identify with LGBTQ+ and BIPOC groups.

Nutrition assistance programs are critical for many Butte County residents, and slightly more than half of those eligible participate in these programs, which highlights the importance of increasing outreach for these programs. In addition to decreasing hunger and improving health, these benefits have a direct economic impact on the economy as these are funds that would be spent in the county, if received by those who are eligible. Participation in school eligibility programs is more than 60%, and soon all students will have free lunch, as California is the first state to pass this important measure, which continues this benefit started due to COVID-19. The Camp Fire impacted many areas of food security, including agricultural producers and gardens, and destroyed several markets. This fire also led to the relocation of people outside of the county, decreasing the participation in CalFresh; however, among people who have stayed, the need for food and benefits has increased. While the impact of COVID-19 on CalFresh applications was limited by stimulus payments, the situation will likely change once these payments stop. Government and non-profit groups share information and would like to have increased opportunities to network and collaborate.

Several organizations provide nutrition education and support gardens, especially in schools, but COVID-19 has severely limited these activities for the past two school years. These groups adapted and maintained connections with the communities served, and are now restarting programs such as Harvest of the Month. While many people consider gardens to be excellent learning experiences and also can provide food for families, more support is needed to increase gardening in Butte County,

notably staff to educate and ensure on-going maintenance of gardens, especially in schools. Resources for our regional Food Bank and pantries must be increased and researching models to support producers while supporting families, such as the Farmers Marketmobile pilot project, should be explored.

Food is also provided through various non-profit and volunteer “grass-roots” organizations, both with formal facilities serving meals to residents and informal groups that feed people, particularly homeless people. Chico no longer has a “soup kitchen” that currently serves daily hot meals as the one organization, the Jesus Center, has shifted their efforts to more comprehensive services in a residential setting. In Oroville, the Hope Center provides hot meals and other services. Efforts to shelter homeless people will provide food to those that avail themselves of these services; however, these hot meals are also important to low income people who live nearby.

In conclusion, this assessment is the first step in understanding the ability of Butte County to nourish all residents and notes some gaps and barriers in reaching this goal. This assessment does not suggest solutions. Butte County Local Food Network’s objective in preparing this assessment is to inform, inspire, and motivate our community to come together to develop and implement solutions, engaging all members to meet specific needs in the creation of food sovereignty.

Butte County Local Food Network’s objective in preparing this assessment is to inform, inspire, and motivate. . . .

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