

bae urban economics



## Economic Contributions of Ventura County Agriculture

Prepared for Ventura County Agricultural Commissioner's Office

August 12, 2022 (Final)

# bae urban economics

August 12, 2022

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Via e-mail: amie@cultivate-ca.com

Dear Amie:

BAE Urban Economics (BAE) and Sustainable Agriculture Education (SAGE) are pleased to submit this revised Draft Study of the Economic Contributions of Ventura County Agriculture, as part of the Ventura County Sustainable Agricultural Conservation Planning Strategy. This draft incorporates revisions in response to comments on our preliminary draft received from John Krist and Matthew Fienup, as well as comments provided by County staff and other stakeholders who participated in the June 9, 2022 project partners meeting.

Sincerely,



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# EXECUTIVE SUMMARY

This report documents the contributions of agriculture to the economy to Ventura County, so that stakeholders have a clear understanding of the local economic activity dependent upon conservation of the County's agricultural lands. The analysis here provides support for the overall Ventura County Sustainable Agricultural Conservation Planning Strategy, in addition to serving as a stand-alone document to inform the public and policymakers about the industry's contributions to the local economy.

## **Agricultural Land in Ventura County**

According to the California Department of Conservation, Ventura County contained slightly less than 316,000 acres of agricultural land in 2018, a decrease of approximately 29,000 acres, or eight percent, since 1984. This agricultural land makes up 27 percent of the total land area of the county, and 57 percent of county land not under control of federal agencies, control as the Forest Service or the Bureau of Land Management. Ventura County agricultural land values in Ventura County are among the highest in the state.

## **Agricultural Operations in Ventura County**

The Economic Census reported 2,135 farm operations in Ventura County in 2017, nearly the same as the reported 2,150 in 2012. However, there was a modest shift toward smaller operations, with a decrease of 30 farms of 500 or more acres, an increase of 20 farm operations of less than ten acres, and a decrease in the average acres per operation from 131 to 122 acres. Over three-fourths of the farm operations in the county were 50 or fewer acres in size.

## **Agricultural Production in Ventura County**

As of 2020, the top three crops by acreage, with over 10,000 acres harvested for each crop, were lemons, avocados, and celery. The largest shift from 2010 to 2020 in total acreage harvested was in strawberries, where the acreage harvested has trended downward for an overall decline of over one-fourth, to 8,801 acres.

According to the 2017 Census of Agriculture, three-quarters of the 2,135 farm operations in Ventura County are in fruit and tree nut farming. No other category accounts for even ten percent of the total farm operations.

## **Direct Economic Contributions of Agriculture**

As of 2020, total wage and salary farm employment in Ventura County averaged 25,100 jobs over the year, eight percent of overall wage and salary employment in the county. Since 1990, farm employment has increased from 16,800 to 25,100, a nearly 50 percent increase, while overall county employment has only increased by 27 percent over the same period.

Annual average farm employment peaked at 27,100 in 2013, slightly above more recent levels. Agricultural employment in Ventura County is highly seasonal. In recent years, farm employment has typically been lowest in January, at between 18,700 and 24,200 jobs, and highest in April or May, at around 30,000 jobs. Unlike other sectors of the economy which saw a decline in jobs due to the COVID pandemic, farm employment levels did not decrease beyond the usual seasonal pattern, reflecting the essential nature of agricultural activity regardless of lockdowns and other measures that adversely impacted much of the economy.

While overall employment in agriculture was about the same in 2020 as in 2010, there have been shifts in the employment by subsector over the 2010 to 2020 decade. Most notably, employment in strawberry farming declined by over 20 percent or 2,000 jobs, mirroring the decline in total acreage for strawberries in recent years. Employment in other types of berry farming increased by over 700 percent, from less than 700 to almost 5,600 jobs. Jobs in greenhouse and nursery production declined by over one-quarter to 2,180 total in 2020, and support activity jobs declined by approximately 1,200 jobs. The vast majority (97 percent) of agricultural workers employed in Ventura County live within the county.

As of 2020, the value of all agricultural production in Ventura is slightly below \$2 billion annually, an increase from approximately \$1 billion in 2000 (see Figure 8). On an inflation adjusted basis, the value peaked in 2015 and has been declining almost every year since then.

Fruit and nut crops dominate the agricultural economy in Ventura County, accounting for over 60 percent of total crop value in 2020 at \$1.2 billion. Second and third in value by major category are vegetable crops at \$0.5 billion and nursery stock at \$0.2 billion. Combined, these three categories generate 97 percent of the agricultural value in Ventura County.

Strawberries are by far the most valuable crop in the county, at \$575 million, or 29 percent of the county's total crop value in 2020. Nevertheless, the value of this crop has declined 17 percent over the last several years, from a peak of \$691 million in 2012. By value, the second-ranked crop was lemons, at \$216 million. The value of this crop has also declined, from a peak of \$269 million in 2014. Nursery stock, which includes various plants grown for sale, was ranked third, with sales of \$193 million in 2020, down over one-third from a high of \$299 million in 2008. Most of the other top ten crops by value also show declines in 2020 from values in earlier years. Furthermore, these declines are in nominal values, with no adjustment for inflation.

### **Indirect and Induced Economic Contributions of Agriculture**

In addition to the direct jobs and value added directly in the agricultural sector, additional jobs and businesses in other sectors are supported by the household expenditures of the agriculture workers and the expenditures of agriculture businesses in the county. This report uses the IMPLAN input-output model to estimate the indirect and induced economic impacts

(i.e., “multiplier effects”) of Ventura County’s agricultural production within other sectors of Ventura County’s economy.

According to IMPLAN, in current-year (2022) dollars and on an annual basis, Ventura County’s agricultural sector directly provides approximately \$1.4 million in labor income, adds \$1.4 billion in value, and generates \$1.8 billion in output. In addition to these direct contributions, IMPLAN estimates that on an annual basis the sector supports an additional 5,760 indirect and induced jobs and is responsible for \$610 million in indirect and induced value added and \$1.0 billion in output.

As expected, the retail industry is one of the main beneficiaries of agriculture’s spending within Ventura County; however, at 8.6 percent of the total annual indirect and induced impacts, it ranks below several other sectors, including the real estate/rental/leasing sector 25.7 percent), followed by Finance/Insurance (13.9 percent), Health Care/Social Assistance (11.3 percent) and Wholesale Trade (9.3 percent). These data demonstrate that the agricultural activities that occur in Ventura County’s rural areas supports a diverse range of economic activity that is likely to be found mostly in Ventura County’s cities.

#### **Other Benefits of Agriculture in Ventura County**

In addition to economic output and jobs quantified in other parts of this report, Ventura County agriculture provides a range of other benefits and contributions to the local community. These include:

##### *Placemaking and Visitor Attraction*

Not only is Ventura County’s agricultural activity an integral part of the Ventura County landscape from a visual and aesthetic standpoint; it is also a visitor attraction. According to the 2017 Census of Agriculture, there were 58 Ventura County farm operations that reported income from “ag tourism and recreational services” for a total of \$20.5 million in annual income. Visitor attractions associated with local farms include tours, farm stays, and venues for public and private events. Agriculture and related activities are components of agritourism more broadly, which helps to make Ventura County a visitor destination, bringing additional economic benefits in related sectors such as retail, hospitality, and recreation.

##### *Ecosystem Services*

Ecosystem services represent another real, but difficult to quantify economic contribution of agriculture. Through direct and indirect contributions, ecosystem services provide humans with the necessary provisions for life, a healthy environment, and emotional comfort. The ecosystem functions outside of the economy however, it provides natural benefits that allow the economy to function, such as crops and soil fertility. Agricultural lands are and can be managed to provide ecosystem services to the greater community by providing food, energy, climate stability, improving soil retention, contributing to natural beauty and much more. The

value of ecosystems services provided by Ventura County's farm and rangeland ranges between approximately \$174 million and \$491 million per year.

#### *Food Processing and Other Value-Added Activities*

The economic value of food processing and other activities that are related to marketing and selling finished products that are made from local produce are not fully captured in the direct, indirect, and induced economic impacts quantified in other sections of this report; however, a 2015 study of Ventura County food processing opportunities indicated that, as of 2014, food processing contributed \$814 million of annual economic output to the county economy. Although it should be noted that not all food processing activity is directly linked to local agricultural production, convenient access to local produce would be a locational advantage for food processors that do utilize local produce in their food products. Benefits of food processing to Ventura County include long-term competitiveness for growers, new job opportunities for the region's labor, food security for the region, and regional quality of life. The 2015 study indicated that indirect and induced economic impacts from a food processing facility such as a fruit puree producer with 115 onsite jobs would create 200 additional jobs within the county. In addition, allowing farmers to capture economic benefits from food processing can be an important component of their long-term economic sustainability and preserving Ventura County's base agricultural production.

# INTRODUCTION

This report documents the contributions of agriculture to the economy to Ventura County, so that stakeholders have a clear understanding of the local economic activity dependent upon conservation of the County's agricultural lands. The analysis here provides support for the overall Ventura County Sustainable Agricultural Conservation Planning Strategy, in addition to serving as a stand-alone document to inform the public and policymakers about the industry's contributions to the local economy.

This report contains two main sections: documentation of existing agricultural activity, and the calculation of the indirect and induced impacts of agriculture in Ventura County. The section on existing conditions compiles baseline economic data to document existing agricultural activity and trends in Ventura County. To provide context and understanding of the story behind the published data, BAE and SAGE conducted key informant interviews with local agricultural industry experts to obtain their perspectives on the state of the County's agricultural industry and the factors driving various trends seen in the data, to help refine this preliminary draft of this report.

Utilizing information regarding the direct economic activity of the County's agricultural industry and IMPLAN economic impact modeling software, the consultant team will prepare an industry contribution analysis for the agricultural sector in Ventura County, including indirect and induced economic impacts linked to the sector of agriculture within Ventura County. This quantifies the additional economic output, jobs, and labor income generated by the County's direct economic activity in other business sectors that support the agricultural industry such as utilities, suppliers, retailers, professional services and others, as well as the additional spending throughout the local economy that flows from the wages paid to workers in the agricultural sector.

# EXISTING AGRICULTURAL ACTIVITY

This section of the report documents current and historic agricultural activity in Ventura County. Topics covered include the following:

- Acreage and Size of Operation
- Type of Operation
- Employment
- Value of Agricultural Production

Data sources consulted include:

- U.S. Census of Agriculture, conducted every five years - last conducted in 2017
- Ventura County Agricultural Commissioner's Office
- California Employment Development Department
- U.S. Department of Labor, Bureau of Labor Statistics
- U.S. Bureau of Economic Analysis
- U.S. Census Bureau Longitudinal Employer-Household Dynamics and American Community Survey
- California Department of Conservation

## **Acreage of Agricultural Land**

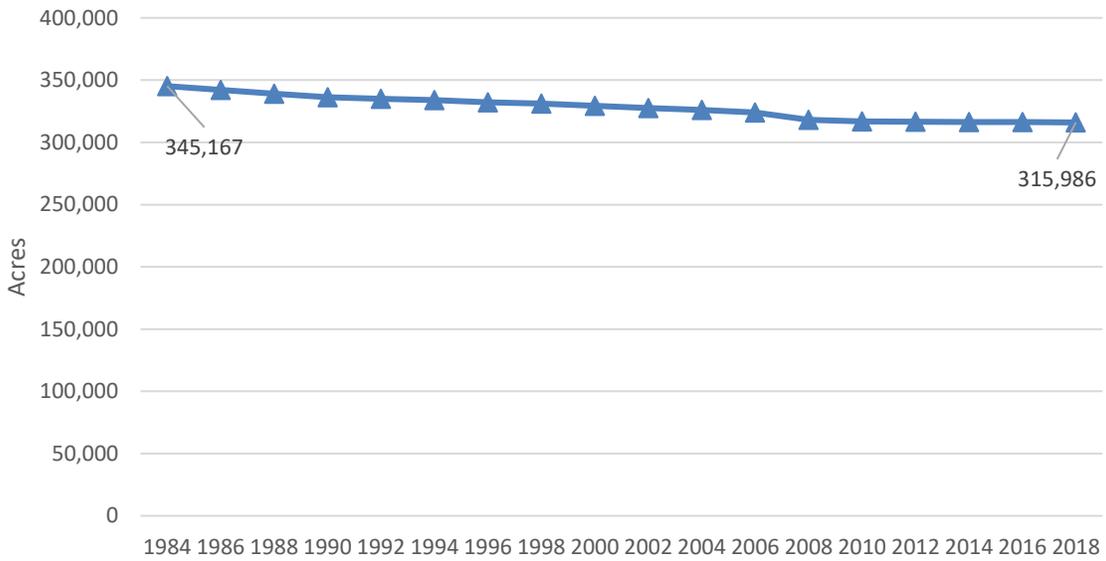
According to the California Department of Conservation,<sup>1</sup> Ventura County contained slightly less than 316,000 acres of agricultural land in 2018 (see Table 2). This is a decrease of approximately 29,000 acres, or eight percent, since 1984. This agricultural land makes up 27 percent of the total land area of the county, and 57 percent of county land not under control of federal agencies, control as the Forest Service or the Bureau of Land Management.

Ventura County's agriculture acreage is divided between farmland (used for crops), and rangeland. Of the total 315,986 acres of agriculture acreage as of 2018, 118,272 acres, or 37 percent, were reported as farmland (see Figure 2). The acreage of farmland declined gradually between 1984 and 2018, by approximately 14,000 acres, or 11 percent, meaning that farmland for growing crops was decreasing at a slightly higher rate than land used for rangeland. Currently, farmland makes up about ten percent of the total county land area.

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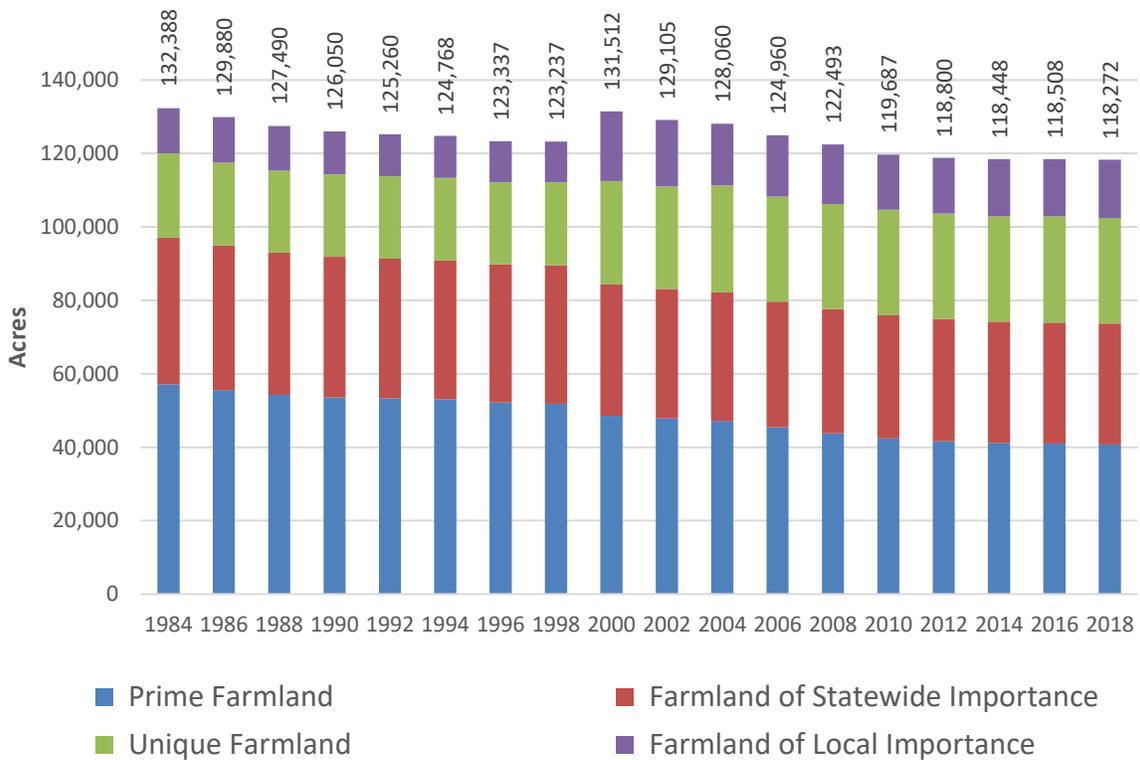
<sup>1</sup> For an explanation of the methodology used by the Department of Conservation for their estimates and land use nomenclature, see Appendix A. These estimates vary somewhat from estimates from the Census of Agriculture and the Ventura County Agricultural Commissioner.

**Figure 1: Total Agricultural Acreage in Ventura County, 1984-2018**



Source: California Department of Conservation, 2021.

**Figure 2: Ventura County Farmland Inventory, 1984-2018**

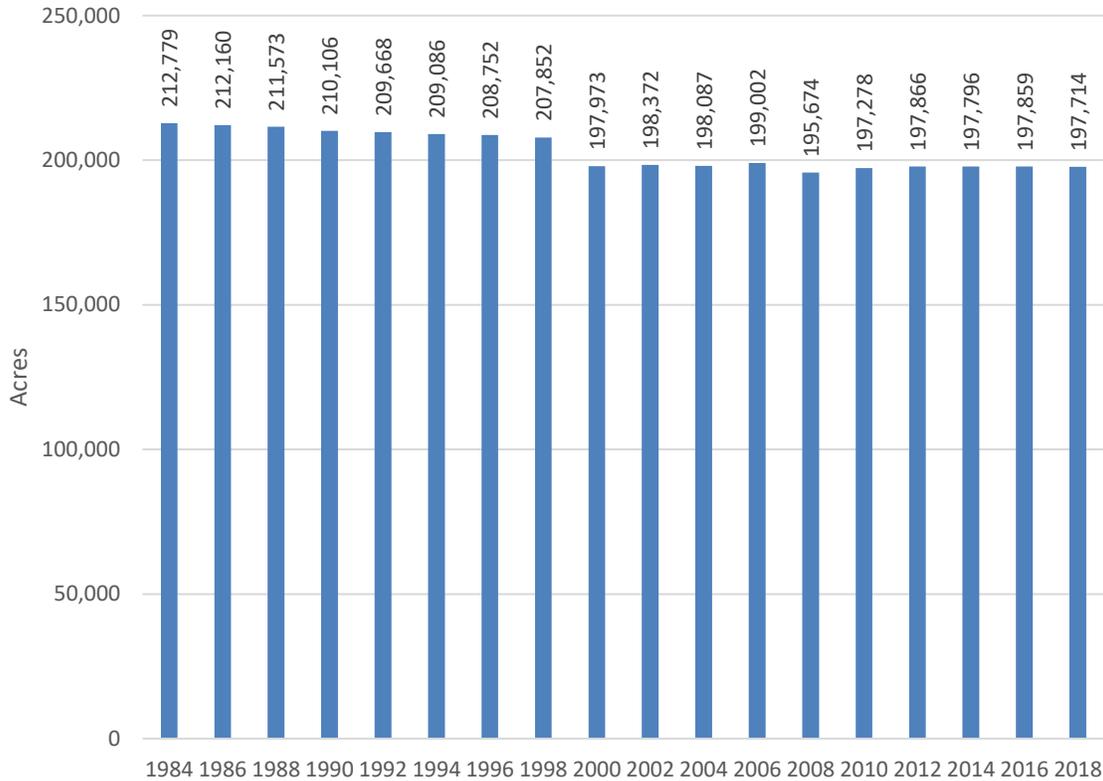


For definitions for the land use categories, see Appendix A.

Source: California Department of Conservation, 2021.

The remaining 63 percent of agricultural land in the county, 197,714 acres, is land used as rangeland for animals. Between 1984 and 2018, rangeland acreage declined by 15,065 acres, or seven percent. Overall, the county showed a loss of 29,181 acres of agricultural land over the same period.

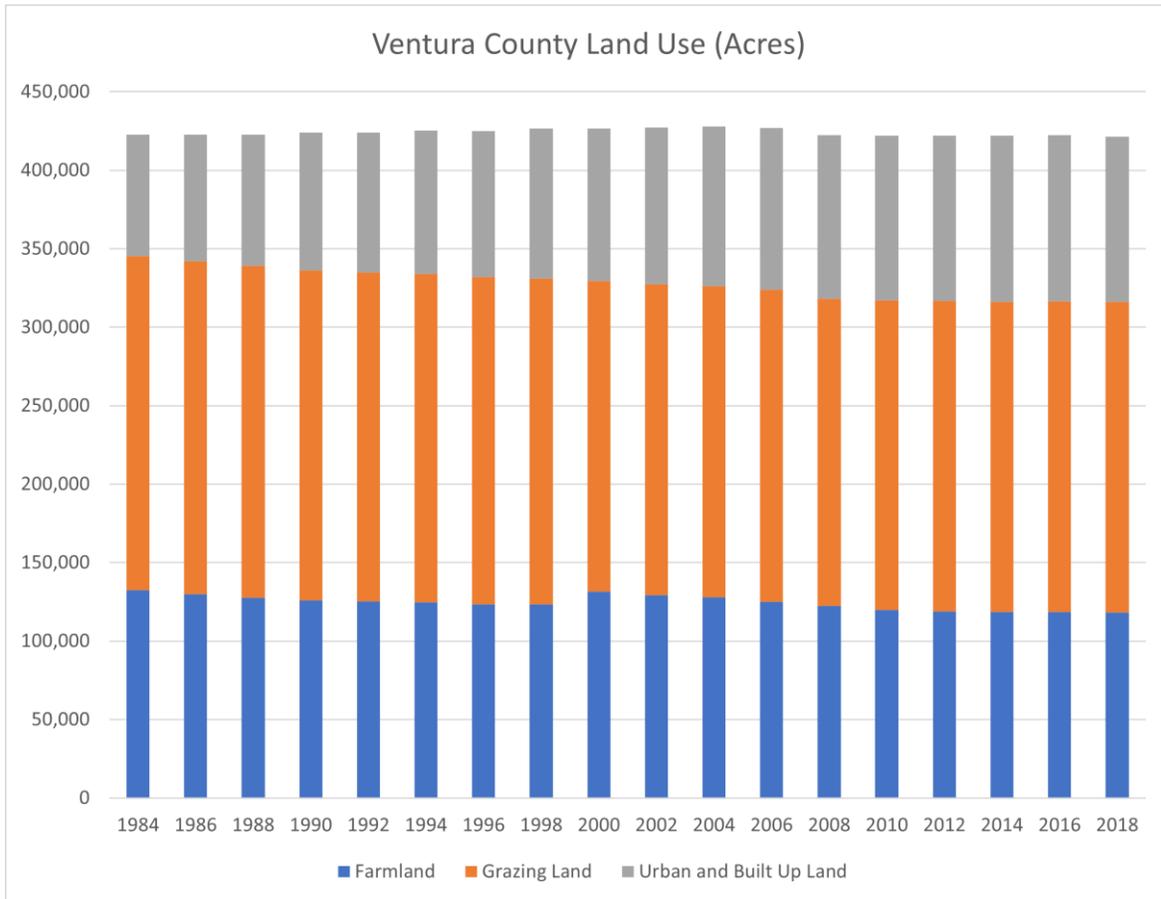
**Figure 3: Grazing Land, 1984-2018**



Source: California Department of Conservation, 2021.

In addition to agricultural land, the Department of Conservation also estimates the amount of “urban and built-up land” in California counties. The gray shaded portions of the bars in Figure 4 show a total of approximately 105,000 acres of land in this category in 2018, an increase of 27,836 acres since 1984, nearly matching the combined loss of farmland and grazing land over the same period.

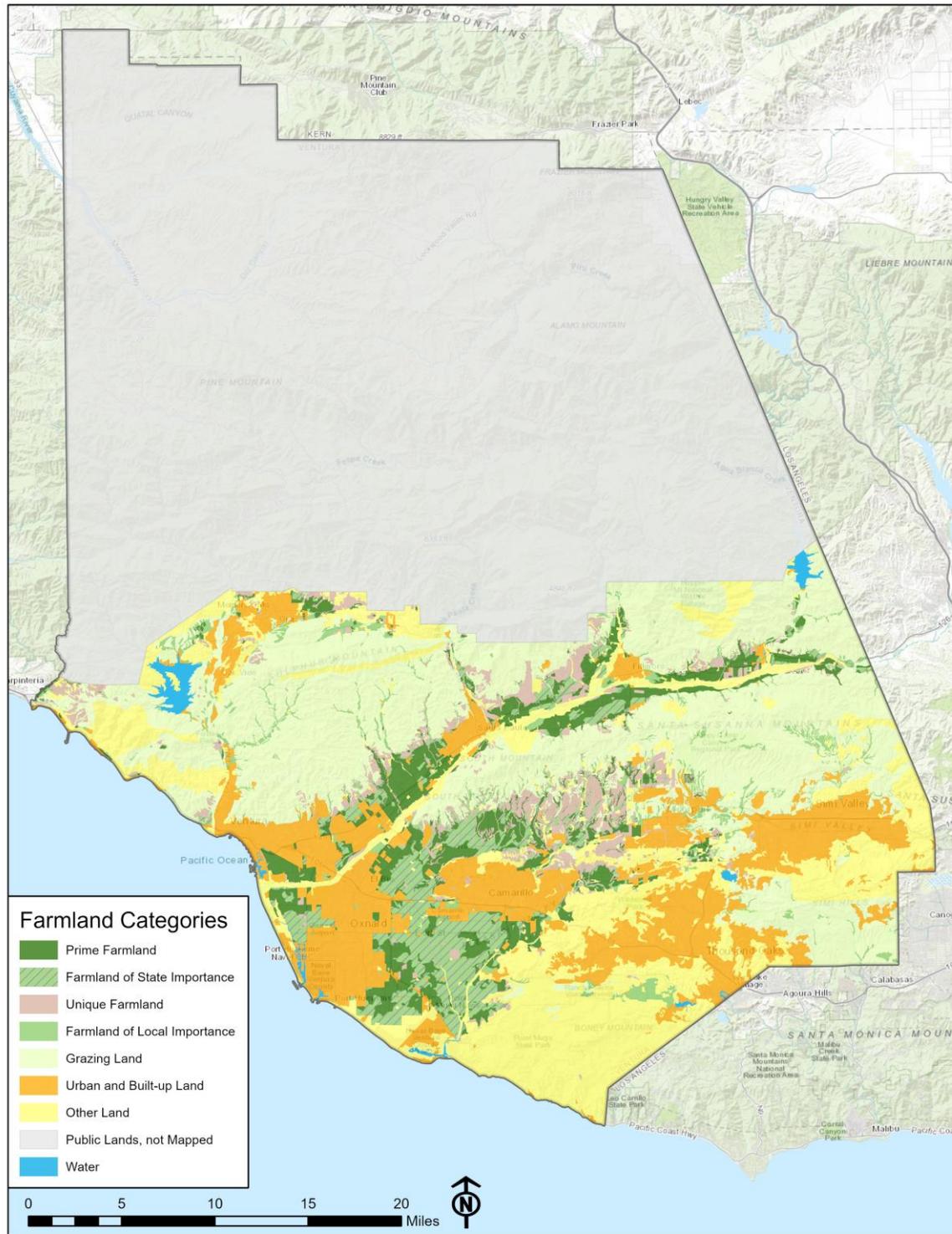
**Figure 4: Land Utilization Trend, 1984-2018**



Source: California Department of Conservation, 2021.

Figure 5 shows the geographic distribution for these agricultural and other land uses in Ventura County as classified by the California Department of Conservation. Much of the farmland is concentrated along the Santa Clara River and to the east of Oxnard.

**Figure 5: Land Use in Ventura County**



For definitions for the farmland categories, see Appendix A.

Source: California Department of Conservation, 2021.

### ***Farmland Values***

It is beyond the scope of this study to determine the effect of the various SOAR (Save Open-space and Agricultural Resources) initiatives in Ventura County, which require a public vote before agricultural land or open space areas can be converted to other uses with some exceptions, on the rate of agricultural land conversion. A 2008 study titled, “Ventura County’s Agricultural Future”,<sup>2</sup> by Ken Kambara, Ph.D., et. al., examined the effects of SOAR, among other topics. The report concluded that SOAR initiatives had very little effect on the rate of decline of agricultural activity in the county, and that agricultural land values had continued to rise, even with SOAR initiatives in place. According to the report, the increasing land values were at odds with expectations that SOAR initiatives would help to limit increases in agricultural land values and help to protect the economic viability of farming. Data published by the American Society of Farm Managers & Rural Appraisers (ASFMRA) in their 2022 Trends publication<sup>3</sup> for California and Nevada is shown on Table 1, below. The data show that land values have been fairly stable at the low end of the ranges for land used for row crops, lemons, and avocados, declining slightly for land used for all three crop types; however, the high-end values for all these crop types increased, particularly for row crops, which rose from \$81,000 per acre in 2017 to \$91,000 per acre in 2021. The discussion of land values in the Trends report indicated that the variations in land values are primarily related to location, with the Oxnard Plain area generally commanding the highest values and the more inland areas where there are more extreme variations in temperatures. The report also indicated that for land used for lemons and avocados, upper end values associated with smaller orchard parcels are more influenced by underlying homesite values as compared to land values for commercial-sale orchards. Based on a review of the prevailing land values in other California agricultural regions covered in the ASFMRA report, Ventura count agricultural land values are among the highest in the state, typically exceeded only by land values in premier wine-growing areas, but also by dairy properties in Western Riverside and San Bernardino County.

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**Table 1: Ventura County Agricultural Land Values (Per Acre)**

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	<b>Crop Type</b>					
	<b>Row Crops</b>		<b>Lemons</b>		<b>Avocados</b>	
	<b>Low</b>	<b>High</b>	<b>Low</b>	<b>High</b>	<b>Low</b>	<b>High</b>
<b>2021</b>	\$42,000	\$91,000	\$49,000	\$90,000	\$35,000	\$65,000
<b>2020</b>	\$42,000	\$81,000	\$49,000	\$90,000	\$35,000	\$65,000
<b>2019</b>	\$42,000	\$81,000	\$49,000	\$90,000	\$35,000	\$65,000
<b>2018</b>	\$45,000	\$81,000	\$50,000	\$86,000	\$37,000	\$63,000
<b>2017</b>	\$45,000	\$81,000	\$50,000	\$86,000	\$37,000	\$63,000

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Source: American Society of Farm Managers & Rural Appraisers, Trends, 2022.

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<sup>2</sup> Kambara, Ken, et. al. Ventura County’s Agricultural Future: Challenges and Opportunities. May, 2008.

<sup>3</sup> American Society of Farm Managers & Rural Appraisers. Trends, 2022 (California & Nevada). 2022.

## Size of Operations

The Economic Census reports 2,135 farm operations in Ventura County in 2017, nearly the same as the reported 2,150 in 2012, as illustrated in Table 2. However, there was a modest shift toward smaller operations, with a decrease of 30 farms of 500 or more acres, an increase of 20 farm operations of less than ten acres, and a decrease in the average acres per operation from 131 to 122 acres. Over three-fourths of the farm operations in the county were 50 or fewer acres in size.

Stakeholder input on a preliminary draft of this report indicated that there is a perception that, contrary to the data, there has been a consolidation of farm ownership within the county, including ownership by corporations based outside of the area. Closer examination of the data in Table 2 indicates that in absolute numbers, the largest increase was in small operations between 1.0 and 9.9-acres in size while the largest decline in farm operations was in the next size category, from 10.0 to 49.9 acres. The next largest declines were in the largest size categories of 500 to 599 acres (-19 operations) and 1,000+ acres (-11 operations). These data show that the largest number of farm operations are still concentrated in the small to medium-size categories and that the number of operations in the largest size categories actually fell by significant percentages between 2012 and 2017.<sup>4</sup>

**Table 2: Farm Operations by Acreage, Ventura County, 2012 and 2017**

Area Operated (acres)	2012	2017	Change, 2012-2017	
			Number	Percent
1.0 - 9.9 acres	943	963	20	2.1%
10.0 - 49.9 acres	733	711	(22)	-3.0%
50 - 179 acres	246	260	14	5.7%
180 - 499 acres	116	119	3	2.6%
500 - 999 acres	54	35	(19)	-35.2%
1,000+ acres	58	47	(11)	-19.0%
<b>Total Operations</b>	<b>2,150</b>	<b>2,135</b>	<b>(15)</b>	<b>-0.7%</b>
<b>Total Acres Operated</b>	<b>281,046</b>	<b>260,102</b>	<b>(20,944)</b>	<b>-7.5%</b>
<b>Average Acres per Operation</b>	<b>131</b>	<b>122</b>		<b>-6.8%</b>

Sources: USDA National Agricultural Statistics Service, Census of Agriculture, Table 1; BAE, 2022.

## Type of Operation

Table 3 shows land use trends for the ten highest-value crops in 2020. As of 2020, the top three crops by acreage, with over 10,000 acres harvested for each crop, were lemons, avocados, and celery. This table demonstrates that high value is not entirely linked to the

<sup>4</sup> Review of the Census of Agriculture form indicates that “farm operations” includes all land farmed by an operating entity, whether owned or leased.

amount of land required; for example, celery ranked third in acreage used, but only sixth in value. The largest shift over the decade in total acreage harvested was in strawberries, where the acreage harvested has trended downward over the decade, for an overall decline of over one-fourth, to 8,801 acres. Avocados and tomatoes also showed substantial declines in acreage harvested; tomatoes were never a large land user over the decade, but avocados, even after the decline in acres harvested, still had the second-highest acreage harvested in 2020. It should be noted that land may be used to grow more than one crop type in a given year, so the total acreage by crop could result in double-counting.

**Table 3: Acreage Harvested, 2010-2020 of Top 10 Crops in 2020 by Value**

Crop	Acreage by Year						Change, 2010-2020	
	2010	2012	2014	2016	2018	2020	Number	Percent
Strawberries	11,875	11,419	11,630	10,230	9,109	8,801	(3,074)	-26%
Lemons	16,856	19,284	14,926	14,801	14,201	17,015	159	1%
Nursery Stock	3,589	3,194	3,326	3,250	3,118	3,138	(451)	-13%
Avocados	18,916	19,284	19,709	18,486	17,116	16,435	(2,481)	-13%
Raspberries	2,630	3,076	4,629	4,350	4,008	2,856	226	9%
Celery	11,949	10,598	11,003	13,204	12,151	14,063	2,114	18%
Tomatoes	1,607	1,734	466	398	381	376	(1,231)	-77%
Peppers	2,690	3,146	4,352	3,471	3,065	1,850	(840)	-31%
Blueberries	na	526	528	486	620	636	na	na
Cabbage	4,046	3,111	3,922	3,284	3,795	3,194	(852)	-21%

Note: Crops shown are top ten by value, shown ranked in descending order of value.

Crop and Livestock Reports, 2010-2020, Ventura County Agricultural Commissioner's Office; BAE, 2022.

According to the 2017 Census of Agriculture and as shown in Table 4, three-quarters of the 2,135 farm operations in Ventura County are in fruit and tree nut farming. No other category shown accounts for even ten percent of the total farm operations.

**Table 4: Ventura County Farms by Type of Operation, 2017**

NAICS	Type of Operation	Number	Percent
1112	Vegetable and melon farming	82	3.8%
1113	Fruit and tree nut farming	1,621	75.9%
1114	Greenhouse, nursery, and floriculture production	130	6.1%
1119	Other crop farming	54	2.5%
11193, 11194, & 11199	Sugarcane farming, hay farming, and all other crop farming	54	2.5%
112111	Beef cattle ranching and farming	64	3.0%
1122	Hog and pig farming	2	0.1%
1123	Poultry and egg production	21	1.0%
1124	Sheep and goat farming	29	1.4%
1125 & 1129	Aquaculture and other animal production	132	6.2%
	<b>Total farms (a)</b>	<b>2,135</b>	

Sources: USDA National Agricultural Statistics Service, 2017 Census of Agriculture, Table 44; BAE, 2022.

## Employment

### ***Total Agricultural Employment***

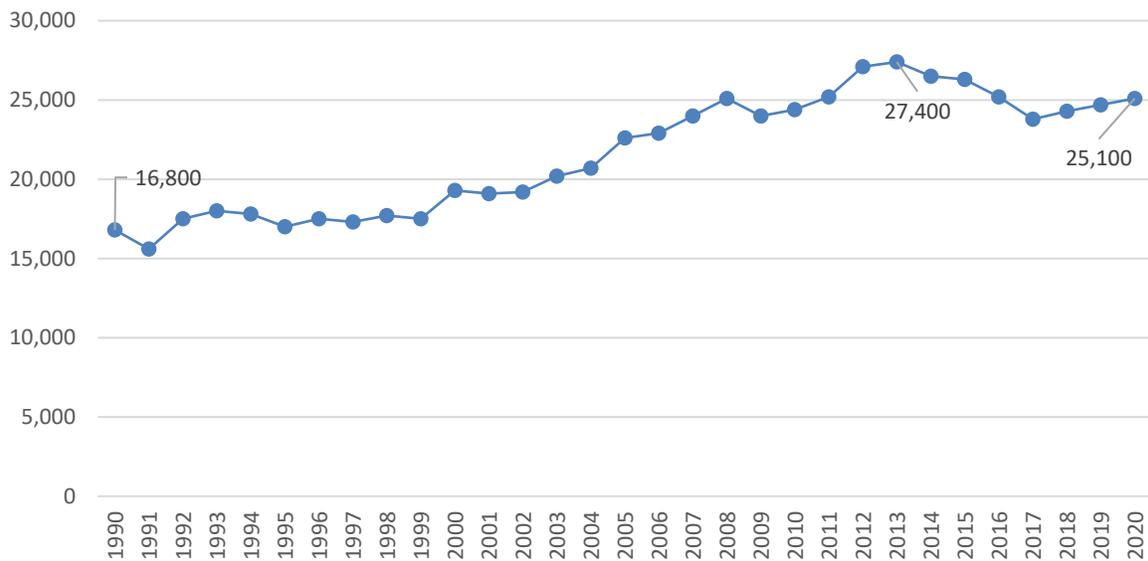
As of 2020 (the most recent annualized data available), total wage and salary farm employment in Ventura County averaged 25,100 jobs over the year, eight percent of overall wage and salary employment in the county.<sup>5</sup> Since 1990, farm employment has increased from 16,800 to 25,100, a nearly 50 percent increase, while overall county employment has only increased by 27 percent over the same period (see Figure 6). Annual average farm employment peaked at 27,100 in 2013, slightly above more recent levels. It should be noted that these are counts of *jobs*, not of *workers*. (See *Place of Residence for Workers in Agriculture in Ventura County* section below for a discussion of the number of agricultural workers who live in Ventura County.) A worker may hold more than one job; however, over the course of a year, a what is counted as a single job may be held by more than one person. The U.S. Census Longitudinal Employer-Household Dynamics<sup>6</sup> reports that in 2019, Ventura County had 24,667 total jobs in the agriculture, forestry, fishing, and hunting sector but only 20,681 primary jobs in that sector (where a worker would only hold one primary job), indicating that many jobs in the sector are held by workers with multiple jobs. This may reflect in part the seasonal nature of many of the jobs, as discussed next.

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<sup>5</sup> The total farm employment estimates here are from the Current Employment Statistics (CES) series from the California Employment Development Department, which are considered the official state employment estimates. Estimates from various other sources, such as the U.S. Bureau of Economic Analysis (BEA), the Quarterly Census of Employment and Wages (QCEW), IMPLAN, and the 2017 Census of Agriculture are in the same general range.

<sup>6</sup> <https://lehd.ces.census.gov/>.

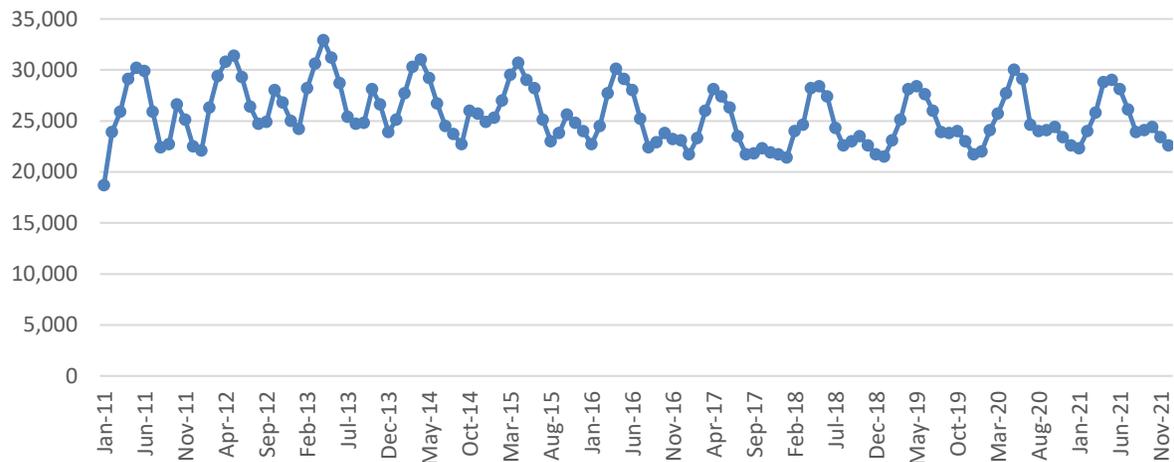
**Figure 6: Total Farm Employment in Ventura County, 1990-2020**



Source: Industry Employment – Official Estimates, California Employment Development Department Labor Market Information Division, 2021

Agricultural employment in Ventura County is highly seasonal, as shown in Figure 7. In recent years, farm employment has typically been lowest in January, at between 18,700 and 24,200 jobs, and highest in April or May, at around 30,000 jobs. August and September also tend to have low employment, and there is a secondary peak in October. Unlike other sectors of the economy which saw a decline in jobs due to the COVID pandemic, farm employment levels did not decrease beyond the usual seasonal pattern, reflecting the essential nature of agricultural activity regardless of lockdowns and other measures that adversely impacted much of the economy.

**Figure 7: Total Monthly Farm Employment in Ventura County, 2011-2021**



Source: Industry Employment – Official Estimates, California Employment Development Department Labor Market Information Division, 2021

### ***Agricultural Employment by Subsector***

The next table provides additional detail on the county’s agricultural employment by subsector in 2010 and 2020. Fruit and nut tree farming, the sector reporting the majority of farms as shown above in Table 4, also generates the majority of farm employment. In 2020, the largest employment-generating subsectors at the detailed level are strawberry farming, farming of other types of berries, and support activities for crop production. The county’s agricultural and related employment is heavily oriented toward crop production, with animal production and aquaculture, forestry and logging, and fishing, hunting, and trapping only responsible for approximately 100 jobs, along with very few related jobs in support activities.

While overall employment in agriculture was about the same in 2020 as in 2010, there have been shifts in the employment by subsector over the 2010 to 2020 decade. Most notably, employment in strawberry farming declined by over 20 percent or 2,000 jobs, mirroring the decline in total acreage for strawberries in recent years. Employment in other types of berry farming increased by over 700 percent, from less than 700 to almost 5,600 jobs. Jobs in greenhouse and nursery production declined by over one-quarter to 2,180 total in 2020, and support activity jobs declined by approximately 1,200 jobs.

**Table 5: Agricultural Employment by Subsector in Ventura County, 2010 and 2020**

Industry by NAICS	2010		2020		Change, 2010-2020	
	#	%	#	%	#	%
<b>NAICS 111 Crop production</b>	<b>16,571</b>	<b>67.9%</b>	<b>18,391</b>	<b>73.6%</b>	<b>1,820</b>	<b>11.0%</b>
NAICS 1112 Vegetable and melon farming	2,017	8.3%	1,662	6.7%	(355)	-17.6%
NAICS 1113 Fruit and tree nut farming	11,284	46.3%	14,115	56.5%	2,831	25.1%
NAICS 11131 Orange groves	305	1.3%	316	1.3%	11	3.6%
NAICS 11132 Citrus, except orange, groves	531	2.2%	446	1.8%	(85)	-16.0%
NAICS 11133 Noncitrus fruit and tree nut farming	10,447	42.8%	13,353	53.4%	2,906	27.8%
NAICS 111333 Strawberry farming	9,502	38.9%	7,454	29.8%	(2,048)	-21.6%
NAICS 111334 Berry, except strawberry, farming	686	2.8%	5,559	22.3%	4,873	710.3%
NAICS 111336 Fruit and tree nut combination farming	56	0.2%	27	0.1%	(29)	-51.8%
NAICS 111339 Other noncitrus fruit farming	188	0.8%	309	1.2%	121	64.4%
NAICS 1114 Greenhouse and nursery production	2,972	12.2%	2,180	8.7%	(792)	-26.6%
NAICS 1119 Other crop farming	299	1.2%	(a)	n.a.	n.a.	n.a.
<b>NAICS 112 Animal production and aquaculture</b>	<b>100</b>	<b>0.4%</b>	<b>100</b>	<b>0.4%</b>	<b>0</b>	<b>0.0%</b>
<b>NAICS 113 Forestry and logging</b>	<b>75</b>	<b>0.3%</b>	<b>(a)</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
<b>NAICS 114 Fishing, hunting and trapping</b>	<b>8</b>	<b>0.0%</b>	<b>(a)</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
<b>NAICS 115 Agriculture and forestry support activities</b>	<b>7,642</b>	<b>31.3%</b>	<b>6,480</b>	<b>25.9%</b>	<b>(1,162)</b>	<b>-15.2%</b>
NAICS 1151 Support activities for crop production	7,540	30.9%	6,306	25.2%	(1,234)	-16.4%
<b>Total Agriculture, Forestry, and Fishing Employment (b)</b>	<b>24,396</b>	<b>100.0%</b>	<b>24,983</b>	<b>100.0%</b>	<b>587</b>	<b>2.4%</b>

**Note:**

Establishment and employment counts are annual averages.

(a) Withheld to avoid disclosing data.

(b) Sectors shown may not sum to the total, which includes subsectors not shown where employment is very limited and/or withheld.

Sources: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics, 2010-2020; BAE, 2022.

**Place of Residence for Workers in Agriculture in Ventura County**

The vast majority (97 percent) of agricultural workers employed in Ventura County live within the county, based on an analysis of 2015-2019 Public Use Microdata Sample (PUMS) data from the American Community Survey. In comparison, only 88 percent of all persons working in the county across all industry sectors also live in the county (see Table 6). It should be noted that the worker counts in this table consider only the primary occupation of the American Community Survey respondents, leading to a lower count of agriculture workers than the total jobs described by the other sources above.

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**Table 6: Ventura County Agriculture Workers Living in the County**

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	<u>Agriculture</u>	<u>All Sectors</u>
Total Persons Working in Ventura County	20,332	362,110
Persons Living and Working in Ventura County		
Number	19,638	319,594
Percent	97%	88%

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Note: Excludes a very limited number of persons living outside California.

Sources: U.S. Census, 2015-2019 American Community Survey, Public Use Microdata Sample (PUMS); BAE.

## Value of Agricultural Production

Based on the Agricultural Commissioner's annual reports, as of 2020 the value of all agricultural production in Ventura County was approximately \$2 billion annually, an increase from approximately \$1 billion in 2000. Adjusting for inflation<sup>7</sup>, the 2000 value would be approximately \$1.6 billion in 2020 dollars, indicating an inflation-adjusted increase of slightly more than 25 percent over the two decades (see Figure 8). However, on a nominal and inflation adjusted basis, the value peaked in 2015 and has been declining almost every year since then.<sup>8</sup>

In comparison to countywide economic output in all sectors, agriculture performed slightly better than the overall economy over the last two decades. Between 2001 and 2020, Ventura County's gross domestic product increased by 85 percent, according to the U.S. Bureau of Economic Analysis. Over the same time period, the County's crop reports indicate that the total value of agricultural production increased by 88.4 percent. However, in more recent years, agriculture has not performed as well. Agricultural production value declined by 9.7 percent, while countywide GDP increased by 8.9 percent in the 2015 to 2020 time period.

To put longer -term trends in perspective, Figure 8 plots the crop values from the Ventura County Agricultural Commissioner's reports with statewide agricultural commodity values compiled by the U.S. Department of Agriculture. The crop values plotted in Figure 8 are inflation-adjusted using the Consumer Price Index (CPI) figures published by the U.S. Bureau of Labor Statistics. The chart shows that Ventura County's total commodity value trend has generally followed the statewide trend, although statewide crop values showed a distinctly higher peak in 2014. Over time, for the state as a whole as well as for Ventura County, the inflation-adjusted crop values have declined since peaking in the middle part the 2010 to 2020 decade.

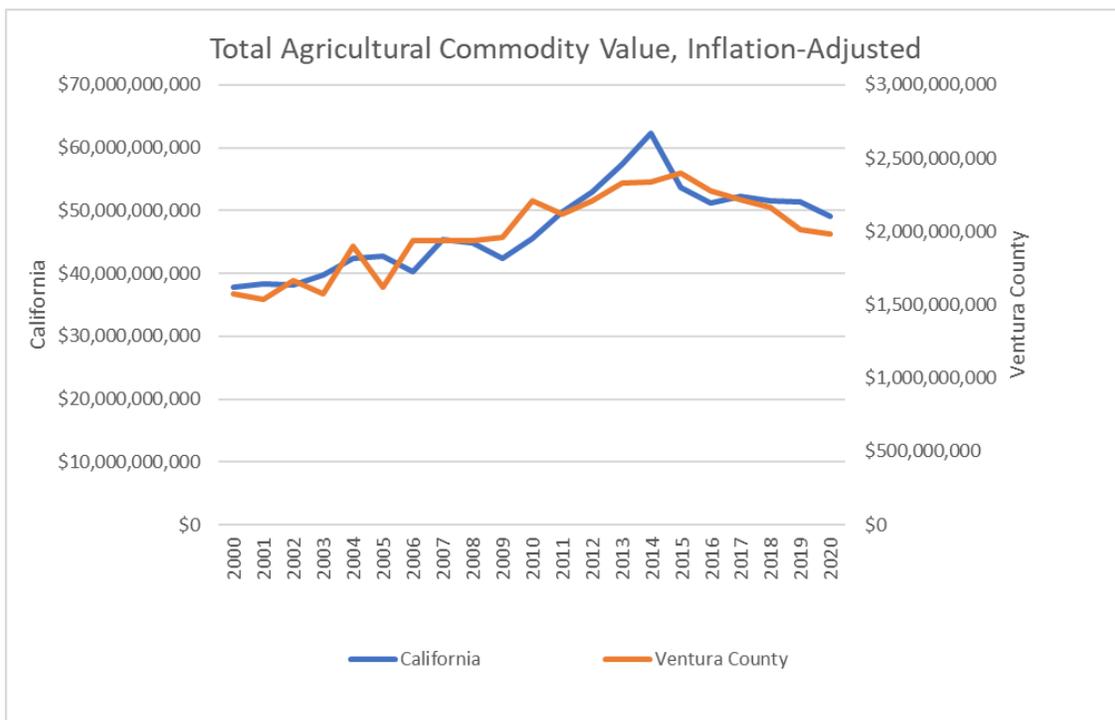
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<sup>7</sup> Using the All Urban Consumers inflation index for the U.S., from the U.S. Bureau of Labor Statistics.

<sup>8</sup> Note that these numbers state the total value of the crops, not the net revenues or profitability of farm operations.

While the trend in the value of agricultural output is an indicator of the overall economic activity in the sector, stakeholders who provided input on this report felt that it was important that this report acknowledge that gross output values do not reflect profitability of agricultural operations, which is a key component of the long-term viability of the agricultural sector. On a national level, the USDA Economic Research Service indicated in a February, 2022 bulletin that net cash farm income for farms specialized in specialty crops (fruits, tree nuts, vegetables, and nursery/greenhouse) were projected to decrease by 21 percent between 2022 and 2021. Data on net income for Ventura County agricultural producers are not publicly available; however, local stakeholders cited factors such as rising costs of inputs for agricultural production, combined with competition with producers in other regions and countries that limits the prices paid for Ventura County agricultural commodities as creating increasing pressure on the profitability of local operations. As mentioned previously, Ventura County’s agricultural land values are very high in comparison to other regions of the state. This creates limitations on the types of crops that can be grown at a profit in the county (e.g., high value specialty crops as opposed to commodity crops). The ASFMRA report cited previously (*Trends, 2022: California & Nevada*) mentioned institutional buyers as a factor the high sales prices for agricultural land in the state’s coastal regions and noted that there has been a compression in capitalization rates paid for land. This suggests that that the profitability of agricultural production relative to land costs is declining.

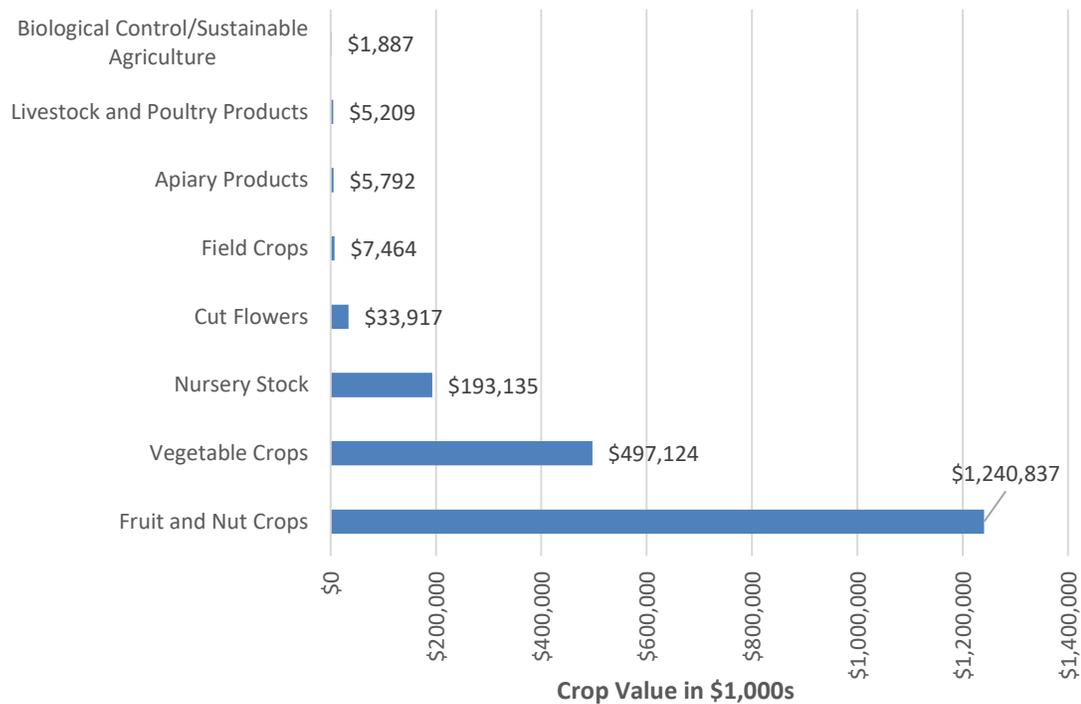
**Figure 8: Total Value of Agricultural Products, 2000-2020**



Sources: Crop and Livestock Reports, 2000-2020, Ventura County Agricultural Commissioner’s Office; USDA/ERS Farm Income and Wealth Statistics, 2022; BAE, 2022.

Fruit and nut crops dominate the agricultural economy in Ventura County, accounting for over 60 percent of total crop value in 2020 at \$1.2 billion, as shown in Figure 9. Second and third in value by major category are vegetable crops at \$0.5 billion and nursery stock at \$0.2 billion. Combined, these three categories generate 97 percent of the agricultural value in Ventura County.

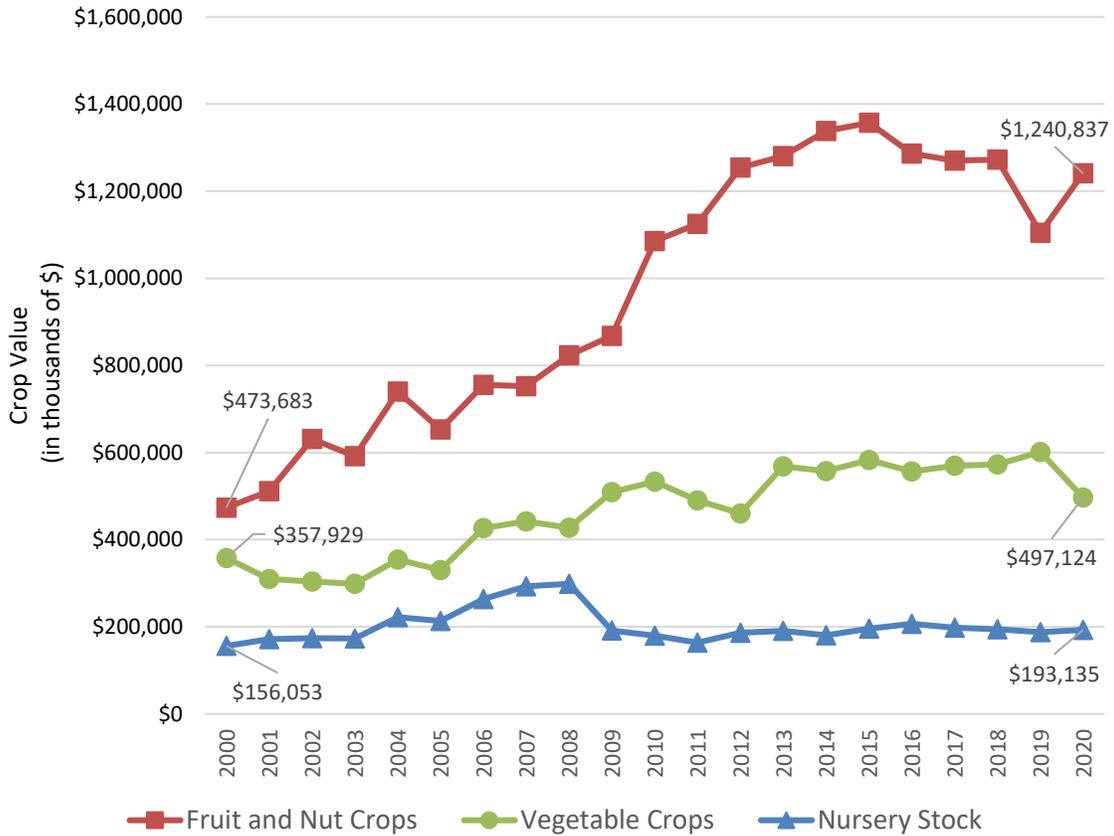
**Figure 9: Crop Value by Major Category in Ventura County, 2020**



Sources: 2020 Crop and Livestock Report, Ventura County Agricultural Commissioner's Office; BAE, 2022.

Figure 10 shows that fruit and nut crops drove the growth in value for Ventura County agricultural products between 2000 and 2020, showing growth of 162 percent over the period (nominal dollars). For the other two large value-generating crop categories, vegetable crops showed a growth of 39 percent in value, and nursery stock grew by 24 percent.

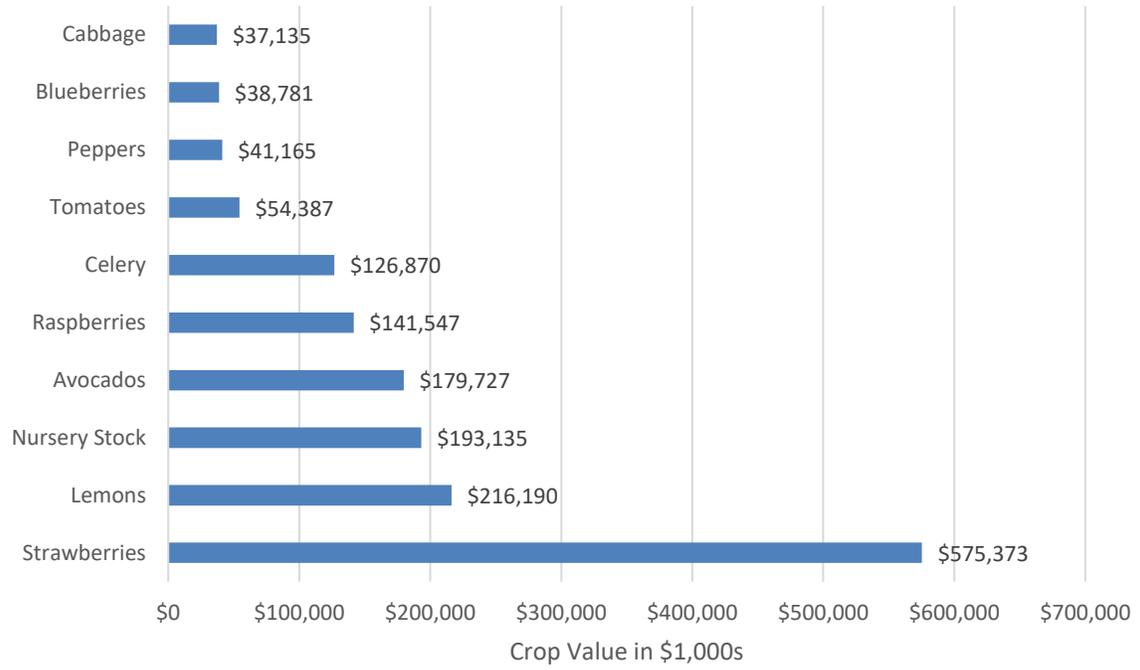
**Figure 10: Crop Value Trends for Top Three Major Categories, 2000-2020**



Crop and Livestock Reports, 2000-2020, Ventura County Agricultural Commissioner's Office; BAE, 2022.

More detail is provided in Figure 11 regarding the top ten specific crops by value. Strawberries are by far the most valuable crop in the county, at \$575 million, or 29 percent of the county's total crop value in 2020. Nevertheless, the value of this crop has declined 17 percent over the last several years, from a peak of \$691 million in 2012. By value, the second-ranked crop was lemons, at \$216 million. The value of this crop has also declined, from a peak of \$269 million in 2014. Nursery stock, which includes various plants grown for sale, was ranked third, with sales of \$193 million in 2020, down over one-third from a high of \$299 million in 2008. Most of the other top ten crops by value also show declines in 2020 from values in earlier years. Furthermore, these declines are in nominal values, with no adjustment for inflation.

**Figure 11: Top Ten Crops by Value in 2020**



# INDIRECT AND INDUCED ECONOMIC CONTRIBUTIONS IN VENTURA COUNTY

This section of the report provides a measure of the agriculture sector’s contributions to the overall economy of Ventura County. In addition to the direct jobs and value added directly in that sector, additional jobs and businesses in other sectors are supported by the household expenditures of the agriculture workers and the expenditures of agriculture businesses in the county.

To estimate these contributions, the analysis here uses the IMPLAN input-output model to develop an industry contribution analysis. As stated by IMPLAN:

*Industry Contribution Analysis (ICA) is a method used to estimate the value of an Industry or group of Industries in a region, at their current levels of production. ...Contribution is a term that is used to denote that the study is looking at how the current state of industry supports other businesses in the local economy. Industry Contribution Analysis is a unique method which affects a constraint upon the Model by "removing" feedback linkages or buy backs to the Industry being analyzed. Typically, this method is used in conjunction with the IMPLAN Study Area Data because you are no longer looking at an individual firm, or a group of firms, but rather an entire Industry. This method can also be used with single firms, but when it is, the results of this method should be considered conservative.<sup>9</sup>*

IMPLAN is a widely recognized model used to assess local and regional economic impacts and is described in detail in Appendix B, including definition of key terms used herein, such as “indirect” and “induced” impacts.

## Baseline Data

This analysis uses IMPLAN’s own estimates of employment and output/value for agricultural sectors. The detail in these estimates varies somewhat from those discussed above, but overall employment and output/value are of the same order of magnitude for the different sources. Appendix C provides additional discussion on this topic. Mirroring the other sources discussed previously, IMPLAN estimates indicate fruit farming, vegetable and melon farming, and support activities are the dominant sectors for employment and output.

## Industry Contribution Analysis

The results of the industry contribution analysis are presented below in Table 7. While the baseline IMPLAN data regarding direct agricultural activity do vary somewhat from indicators of the County’s agricultural activity from other sources, such as the Agricultural Commissioner’s

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<sup>9</sup> <https://support.implan.com/hc/en-us/articles/360025854654-ICA-Introduction-to-Industry-Contribution-Analysis>, accessed March 9, 2022.

crop reports and the Bureau of Economic Analysis, the IMPLAN estimates discussed below provide a good indicator of the relationship between direct economic activity in the local agricultural sector and other indirect and induced (i.e., “multiplier effects”) within the County that are attributable to agricultural production.

In current-year (2022) dollars, and on an annual basis, Ventura County’s agricultural sector directly provides approximately \$1.4 million in labor income, adds \$1.4 billion in value, and generates \$1.8 billion in output. In addition to these direct contributions, IMPLAN estimates that based on IMPLAN’s own estimates regarding the nature of the county’s agricultural sector, on an annual basis the sector supports an additional 5,760 indirect and induced jobs and is responsible for \$610 million in indirect and induced value added and \$1.0 billion in output.

**Table 7: Summary of Agricultural Industry Contributions to County Economy, 2022**

<u>Impact Type</u>	<u>Employment</u>	<u>Labor Income</u>	<u>Value Added</u>	<u>Output</u>
Direct	24,636	\$1,431,203,000	\$1,383,981,000	\$1,845,221,000
Indirect	954	\$61,250,000	\$107,385,000	\$211,099,000
Induced	4,806	\$272,106,000	\$502,358,000	\$813,816,000
<b>Total</b>	<b>30,396</b>	<b>\$1,764,559,000</b>	<b>\$1,993,724,000</b>	<b>\$2,870,136,000</b>

Notes:

Employment rounded to nearest whole number. Dollar amounts are in 2022 dollars and are rounded to nearest thousand.

Sources: IMPLAN, 2022; BAE, 2022.

Table 8 shows a breakdown of the distribution of the annual indirect and induced economic impacts from Ventura County’s agricultural production within other sectors of the County’s economy. As expected, the retail industry is one of the main beneficiaries of agriculture’s spending within Ventura County; however, at 8.6 percent of the total annual indirect and induced impacts, it ranks below several other sectors, including the real estate/rental/leasing

### **INDIRECT ECONOMIC IMPACTS: FRUIT GROWERS SUPPLY COMPANY**

Fruit Growers Supply Company is an example of the type of local indirect economic impact that agricultural production supports within Ventura County. It was established in 1907 by Sunkist Growers and is the oldest non-profit supply cooperative in the country. The Santa Paula Supply Center is one of the company’s five retail outlets in southern California. Originally founded for citrus growers, the company now supports regional growers who produce a range of other crops such as stone fruit, avocados, nuts, grapes, and row crops. The Company is committed to “Sustainable Forestry Initiative (SFI) 2015-2019 Standard” and contributes to sustainable forestry practices in their timberlands. Fruit Growers Supply Company helps growers be more sustainable through the adoption of solar-powered drip irrigation systems, bee-friendly approaches to pest management, organic-approved products, custom-designed corrugated produce boxes, food-grade postharvest fruit wax, and sustainable pallets.

sector 25.7 percent), followed by Finance/Insurance (13.9 percent), Health Care/Social Assistance (11.3 percent) and Wholesale Trade (9.3 percent). These data demonstrate that the agricultural activities that occur in Ventura County’s rural areas support a diverse range of economic activity that is likely to be found mostly in Ventura County’s cities.

The indirect and induced economic impacts all flow from the expenditures made by local farming operations, via their purchases of services and supplies or their payroll. In addition, the presence of the agricultural sector in Ventura County stimulates other economic activity within the County that is not reflected in the impacts shown in Table 8. As discussed in the next section of this report there are additional aspects of agriculture that create value for the Ventura County community in areas such as ecosystem services, placemaking and aesthetics, and agritourism.

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**Table 8: Annual Indirect and Induced Impacts by Industry**

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<b>Major Industry Group</b>	<b>Total Indirect and Induced Output per Year</b>	<b>% of Total</b>
Agriculture/Forestry/Fishing/Hunting	\$426	0.0%
Mining/Quarrying/Oil & Gas Extraction	\$1,175,723	0.1%
Utilities	\$15,211,049	1.5%
Construction	\$17,073,662	1.7%
Manufacturing	\$3,872,118	0.4%
Wholesale Trade	\$94,883,719	9.3%
Retail Trade	\$87,712,019	8.6%
Transportation/Warehousing	\$18,259,271	1.8%
Information	\$38,682,680	3.8%
Finance/Insurance	\$142,095,969	13.9%
Real Estate/Rental/Leasing	\$262,968,064	25.7%
Professional/Scientific/Tech Services	\$41,596,390	4.1%
Management of Companies/Enterprises	\$17,285,383	1.7%
Admin/Support/Waste Management Svcs	\$36,942,113	3.6%
Educational Services	\$11,181,247	1.1%
Health Care/Social Assistance	\$115,600,700	11.3%
Arts/Entertainment/Recreation	\$6,363,058	0.6%
Accommodation/Food Services	\$51,728,826	5.0%
Other Services (excl Public Administration)	\$45,342,547	4.4%
Other Government Enterprises	\$16,940,112	1.7%
<b>Total</b>	<b>\$1,024,915,077</b>	<b>100.0%</b>

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Sources: IMPLAN, 2022; BAE, 2022.

## OTHER BENEFITS OF AGRICULTURE IN VENTURA COUNTY

The preceding chapter examined the economic contributions of agriculture to Ventura County's economy in quantifiable terms using readily available data on business activity. In addition to those quantitative impacts, agriculture has other less identifiable yet still valuable impacts within the local economy.

### **Placemaking and Visitor Attraction**

The data presented in this report do not fully quantify the impacts of agriculture on local placemaking and visitor attraction. Not only is Ventura County's agricultural activity an integral part of the Ventura County landscape from a visual and aesthetic standpoint; it is also a visitor attraction. Following are several examples of how local agricultural activity brings visitors (and spending) to the Ventura County economy that is not fully accounted for in the direct, indirect, and induced economic impacts presented in the preceding chapter.

#### ***Farmers Markets***

Farmers markets are organized by farmer's associations such as the Ventura County Certified Farmers' Market Association, nonprofits such as the Oxnard Downtown Management District, governments like the Camarillo City Council, individuals, or the county. Farmer's markets provide the opportunity for farmers to sell directly to consumers, which allows them to capture profit that normally would go to distributors, wholesalers, and retailers. Consumers benefit from produce that is at its freshest and from the ability to interact with the people who produce the food.

Farmers markets make considerable direct and indirect economic contributions to Ventura County. There are eight farmers markets in Ventura County. The four farmers markets in Midtown Ventura, Thousand Oaks, Downtown Ventura, and Santa Clarita are part of the Ventura County Certified Farmers Markets. There are two farmers markets in Oxnard, one in Downtown Oxnard and one in Channel Islands Harbor. There are two markets in Ventura, one in Midtown Ventura and one in Downtown Ventura. There is one market each in Camarillo, Ojai, Santa Paula, and Thousand Oaks.

The farmers markets have between 21 and 69 vendors, with an average of about 38 vendors per market. Most vendors are farmers selling produce. While Ventura County farmers are well represented, based on analysis of online vendor lists per market, on the average, around 50 percent of farmers come from outside of the County. Such a multi-county supply area for farmers' markets is typical for California and contributes to the overall market vitality for both farmers and customers.

Products at markets include locally grown fresh produce such as citrus, tomatoes, avocados, pomegranates, grapes, berries, leafy greens, cucumbers, apples, squash, eggplant, cruciferous vegetables, root vegetables, microgreens, nuts and also cut flowers and nursery products as well as products such as stone fruit and corn, from other warmer growing areas. Other food goods sold include cheese, honey, jams and jellies, olive oil, candy, kettle corn, tamales, sausages, baked goods, and walnut oil. Non-food goods include soaps, art, clothing, bags, pet supplies, candles, and jewelry. Examples of agricultural vendors include Adaboy Acres, Maggie's Farm, and Rose's Garden. Examples of pre-packaged food vendors are Ojai Olive Oil, Wagon Wheel Bakery, and Garlic Gold Garlic Products. Examples of artisan vendors include Aprons & Things, Country Bird Houses and Feeders, and Gourmet Potter. Examples of prepared food vendors include Mr. Corn Tamales and YOUBITE Sausages.

As an example of economic activity associated with farmers markets, data available for the Downtown Oxnard Farmers Market show that there is an average of 400 customers per week with peak attendance at 700 customers per week during summer. Cumulative annual sales are over \$350,000. Weekly sales are about \$7,000 and individual vendor sales range from \$80 to \$1,200 depending on the product and time of year.

### ***Agritourism***

Agritourism also makes considerable direct and indirect economic contributions to Ventura County. According to the 2017 Census of Agriculture, there were 58 Ventura County farm operations that reported income from "ag tourism and recreational services" for a total of \$20.5 million in annual income. Many Ventura County farms offer farm visits and farm stays. Farm visits include tours, educational experiences for children, and pick-your-own days. Farm

### **DIRECT TO CONSUMER: ANCILLARY ECONOMIC DATA**

Farmers markets are an example of direct-to-consumer sales. A UC Davis study shows that for every dollar of sales bought directly from farmers, twice as much economic activity is generated within the region. A paper by the USDA states that direct sales between consumers and farmers increase the retention of profits for farmers and can be a strategy for development in rural communities as more money is returned locally. Healthy food incentive programs, which include farmers markets that accept SNAP or EBT can generate economic benefits. One study shows that for every \$1 invested into a healthy food incentive program, up to \$3 in economic activity is generated in turn.

Growers that sell locally create 13 full time jobs per \$1 million in sales in comparison to three jobs that are made from not selling locally. Farms selling local food through direct-to-consumer marketing channels were more likely to remain in business over 2007-12 than all farms not using direct-to-consumer marketing channels, according to US Census of Agriculture data.

stays offer a relaxing getaway and an opportunity to experience life on a working farm.<sup>10</sup> While these on-farm activities help farmers to diversify and expand their income streams, the attraction of visitors via agritourism activities supports additional spending in the larger tourism economy, including visitor spending for lodging, restaurants, retail and services, and other entertainment and recreational activities in which visitors may partake in conjunction with their local agritourism activities.

A prominent example of agritourism in Ventura County is the Ventura County Farm Day presented by the agricultural nonprofit, SEEAG<sup>11</sup>. It is a free event where more than 30 participating locations open their doors to the public. Over 20 of these locations are farms, ranches, and agricultural organizations. More than 6,000 visitors attend farm day each year. In 2017, Whole Foods hosted a light breakfast before visitors went on farm tours.<sup>12</sup>

One of the most popular destinations for agritourism is Underwood Family Farms. The farm boasts two locations which host popular pick-your-own days throughout the week and are home to animal centers and farm markets.<sup>13</sup> Seasonal events include Tomatomania, Fall Harvest, and Christmas Trees on the farm. Underwood family farms also hosts a kids farm camp and educational farm tours. A season pass for a family of 5 is offered at \$275. Oats and Ivy Farm is a location that offers a farm stay. The farm features goat products and experiences such as goat milk soap, goat yoga, and cheesemaking classes.<sup>14</sup>

Other farms in Ventura County offer agritourism opportunities as well as rural settings for events such as weddings and housing, as illustrated by a few examples. McGrath Family Farms offers tours including the Regenerative Farm Experience Program, Farm Manager Tour, Farm Owner Tour, and school tours. Limoneira has created housing on some of their farmlands and also provides community gardens, a farmhouse for communal cooking, and green spaces as community amenities. Maravilla Gardens began as a farm and has transformed into a wedding venue offering a scenic rural location.

### *Events*

Agriculture-related events also make considerable direct and indirect economic contributions to Ventura County. Agritourism events fall into categories of farm visits, street fairs, fundraiser meals, and festivals/fairs. They are hosted by the county, nonprofits, and individual companies.

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<sup>10</sup> It is important to note that farm stays may be subject to County land use and environmental health regulations, including those related to commercial kitchens, temporary rental units, and bed and breakfast inns.

<sup>11</sup> <https://venturacountyfarmday.com/>

<sup>12</sup> <https://www.morningagclips.com/ventura-county-farm-day/>

<sup>13</sup> <https://www.underwoodfamilyfarms.com/>

<sup>14</sup> <https://oatsandivyfarm.com/>

## REGULATING SERVICES: FLOOD MITIGATION

Maintaining agricultural uses in the Santa Clara River Floodplain via the Santa Clara River Floodplain Protection Program (FPP) is estimated to limit the inundation of land and buildings that otherwise would be at risk of flooding. A 2011 study by the Ventura County Watershed Protection District found that the FPP can provide significant economic benefits from a flood reduction perspective, including reduction in flood damages of about \$21 million during a 50-year event, \$204 million during a 100-year event, and \$1,048 million during a 500-year flood event.

The largest event is the annual Ventura County fair held in August (in 2022, on August 3-14). The fair is held at the 63-acre Ventura Fairgrounds and features rides, games, food, an agricultural show, animals, and concerts. In 2019, the last year that the fair was held due to COVID-19, there were 300,000 visitors<sup>15</sup> throughout the 12-day long event. In 2019, nearly 16,000 county residents entered art projects for competitive exhibits<sup>16</sup>. \$1.6 million was raised for youth at the 2019 Junior Livestock Auction. \$15.7 million was raised from the auction over the past 10 years. There were 14,664 entries in Fair department competitions. The fair had 35 corporate sponsors and 14 media sponsors<sup>17</sup>. In 2018, 67.7 percent of attendees were from Ventura County, with the majority of visitors coming from Los Angeles (14.1 percent) and Santa Barbara (7.1 percent) counties. Of those that visited from outside of the area, 28.9 percent reported staying at a hotel.

Ventura also hosts a winter and spring Wine Walk and a County Ag Week. Both the winter and spring wine walks have free admission to a street fair. The spring Wine Walk has over 40 tasting locations and the winter wine walk has over 80 tasting locations<sup>18</sup><sup>19</sup>. In 2021, 585 people attended the Winter Wine walk, according to Facebook<sup>20</sup>, and people from around California come for the event. Hosted by the local organization, Totally Local VC, the Ventura County Ag Week provides an array of events including a luncheon, tasing events, a Meet-The-Farmer mixer, and educational events.<sup>21</sup>

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<sup>15</sup> <https://10times.com/ventura-countyfair>

<sup>16</sup> <https://www.vcstar.com/story/news/local/2019/08/13/ventura-county-fair-attendance-2019-official-numbers/1994360001/>

<sup>17</sup> <https://www.venturacountyfair.org/wp-content/uploads/2019/12/202020Ventura20County20Fair20Sponsorship20Kit.pdf>

<sup>18</sup> <https://www.springwinewalk.com/>

<sup>19</sup> <https://www.venturawinterwinewalk.com/>

<sup>20</sup> <https://www.facebook.com/events/4677642742264476/>

<sup>21</sup> <https://totallylocalvc.com/ventura-county-ag-week-2020/>

## Ecosystem Services and Environmental Amenities

### ***Ecosystem Services***

Ecosystem services represent another real, but difficult to quantify economic contribution of agriculture. As described below, ecosystem services include many of the “co-benefits” of agricultural activity. The emerging field of ecosystem services and the assessment of their value is fundamentally about connecting people to natural and working lands. Traditional conservation schemes tend to focus on local factors such as clean air, clean water, and specific habitat or species protection; their focus is usually on a non-human element. The theory behind conservation of ecosystem services and their related natural capital incorporates anthropogenic values and relationships for and toward nature, and particularly those elements of nature that benefit human sustenance and quality of life. Ecosystem services are relevant at the global, regional, and local levels.

Ecosystem services are defined as “conditions and processes through which natural ecosystems, and species making them up, sustain and fulfill human life.”<sup>22</sup> Natural capital is essentially the product of ecosystem services that are valuable to humans, economically, culturally, and intrinsically.

Ecosystem services are categorized as provisioning services, regulating services, supporting services and cultural services<sup>23</sup>. Provisioning services provide goods and materials for human consumption and use. Regulating services are ecosystem processes that regulate the environment and, in turn, benefit humans. Supporting services are those that support other processes and functions of the ecosystem. Cultural services are aspects of nature that hold beneficial value for people through meaningful interactions.

Through direct and indirect contributions, ecosystem services provide humans with the necessary provisions for life, a healthy environment, and emotional comfort. The ecosystem functions outside of the economy however, it provides natural benefits that allow the economy to function, such as crops and soil fertility. Agricultural lands are and can be managed to provide ecosystem services to the greater community by providing food, energy, climate stability, improving soil retention, contributing to natural beauty and much more.

The table below, excerpted from the Nature’s Value report, produced by Santa Clara Valley Open Space Authority and Earth Economics, gives examples of ecosystem services, categorized into provisioning services, regulating services, supporting services and cultural services.

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<sup>22</sup> Daily. *Nature’s Services*

<sup>23</sup> [https://www.openspaceauthority.org/system/documents/NaturesValue\\_SCC\\_int.pdf](https://www.openspaceauthority.org/system/documents/NaturesValue_SCC_int.pdf)

**Table 9: Examples of Ecosystem Services**

<b>TABLE 1: Ecosystem Goods and Services</b>	
<b>GOOD/SERVICE</b>	<b>Economic Benefit to People</b>
<b>PROVISIONING SERVICES</b>	
Food	Producing crops, fish, game, and fruits
Medicinal Resources	Providing traditional medicines, pharmaceuticals, and assay organisms
Ornamental Resources	Providing resources for clothing, jewelry, handicraft, worship, and decoration
Energy and Raw Materials	Providing fuel, fiber, fertilizer, minerals, and energy
Water Supply	Provisioning of surface and groundwater for drinking water, irrigation, and industrial use
<b>REGULATING SERVICES</b>	
Biological Control	Providing pest and disease control
Climate Stability	Supporting a stable climate at global and local levels through carbon sequestration and other processes
Air Quality	Providing clean, breathable air
Moderation of Extreme Events	Preventing and mitigating natural hazards such as floods, hurricanes, fires, and droughts
Pollination	Pollination of wild and domestic plant species
Soil Formation	Creating soils for agricultural and ecosystems integrity; maintenance of soil fertility
Soil Retention	Retaining arable land, slope stability, and coastal integrity
Waste Treatment	Improving soil, water, and air quality by decomposing human and animal waste and removing pollutants
Water Regulation	Providing natural irrigation, drainage, groundwater recharge, river flows, and navigation
<b>SUPPORTING SERVICES</b>	
Habitat and Nursery	Maintaining genetic and biological diversity, the basis for most other ecosystem functions; promoting growth of commercially harvested species
Genetic Resources	Improving crop and livestock resistance to pathogens and pests
<b>CULTURAL SERVICES</b>	
Natural Beauty	Enjoying and appreciating the presence, scenery, sounds, and smells of nature
Cultural and Artistic Inspiration	Using nature as motifs in art, film, folklore, books, cultural symbols, architecture, and media
Recreation and Tourism	Experiencing the natural world and enjoying outdoor activities
Science and Education	Using natural systems for education and scientific research
Spiritual and Historical	Using nature for religious and spiritual purposes

Source: Adapted from de Groot et al., 2002 and Sukhdev et al., 2010

Source: Santa Clara Valley Open Space Authority, Earth Economics, 20xx.

### *Quantification of Ecosystems Services*

Ecosystem services can be quantified to determine their volume and impact. Many tools to quantify ecosystem services have been developed. These include several developed by the USDA and partners to quantify the environmental benefits of conservation practices, and in

some cases to estimate the number of credits a landowner can sell through environmental markets.<sup>24</sup>:

- COMET-Farm is a whole farm and ranch carbon and greenhouse gas accounting system
- COMET-Planner provides generalized estimates of the greenhouse gas impacts of conservation practices for planning purposes.
- Water Quality: The Nutrient Tracking Tool (NTT) estimates nutrient and sediment losses from crop and pastures and NTT is being used in several water quality trading programs to estimate water quality benefits.
- Ecosystem Services: EnviroAtlas provides geospatial data, easy-to-use tools, and other resources related to ecosystem services, their stressors, and human health.

#### *Valuation, Monetization and Payment for Ecosystem Services*

Through the use of a variety of tools, including those mentioned above, quantification of ecosystem services is possible, albeit complex with multiple factors involved. Valuation of ecosystem services is more nuanced. One approach for translating ecosystem services generated from agricultural lands into monetary values to assess the cost of providing these services in the absence of natural processes that automatically perform them. Earth Economics created the Ecosystem Valuation Toolkit and have used it to calculate estimated monetary values of ecosystem services on project sites.<sup>25</sup> The tool was created using values derived from peer reviewed articles and journals. The tool was used to calculate the monetary values of farmed and non-farmed areas as well as their benefits and damages.

The table below shows the estimated value of Ventura County crop and rangeland annually and per acre with values derived from the Nature's Value report, produced by Santa Clara Valley Open Space Authority and Earth Economics in 2014.<sup>26</sup> As summarized in Table 10, the value of ecosystems services provided by Ventura County's farm and rangeland can be estimated at between approximately \$174 million and \$491 million per year, based on the per-acre value factors identified in the Nature's Value report. Ecosystem services that could be provided by the Ventura County croplands and rangelands shown in Table 10 include food and fuel, seed dispersal, the mitigation of drought and floods, nutrient cycling, waste purification and decomposition, agricultural pest control, biodiversity maintenance, soil renewal, maintenance of soil fertility, climate stability, regulation of disease carrying organisms, protection from soil erosion, watershed protection, pollination, aesthetic beauty, wildlife habitat, recreational opportunities, and research opportunities. These ecosystem

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<sup>24</sup> <https://www.usda.gov/oce/energy-and-environment/markets/quantifying>

<sup>25</sup> [https://delta-institute.org/wp-content/uploads/2018/09/Valuing-the-Ecosystem-Service-Benefits-from-Regenerative-Agriculture-Practices-\\_Farmland-LP-Impact-Report.pdf](https://delta-institute.org/wp-content/uploads/2018/09/Valuing-the-Ecosystem-Service-Benefits-from-Regenerative-Agriculture-Practices-_Farmland-LP-Impact-Report.pdf)

<sup>26</sup> Batker, D., et. al. "Nature's Value in Santa Clara County" Earth Economics, Tacoma, WA & the Santa Clara Valley Open Space Authority, San Jose, CA. 2014.

services fall into provisioning, regulating, cultural, and supporting categories; all of which are beneficial to surrounding communities and their economies.

**Table 10: Estimated Ecosystems Services Value of Ventura County Cropland and Rangeland**

Landcover	Landcover Type	Acres	Percentage of Total	Annual Per-Acre Value		Total Annual Value	
				Low (\$/acre/year)	High (\$/acre/year)	Low (\$/year)	High (\$/year)
Cropland	Hay/Pasture	6845	6%	\$769	\$10,190	\$739,491	\$7,287,845
	Cultivated	111427	94%	\$121	\$2,517	\$2,889,347	\$59,941,616
	<b>Total</b>	<b>118,272</b>		<b>\$890</b>	<b>\$12,707</b>	<b>\$3,628,838</b>	<b>\$67,229,461</b>
Rangeland	Mixed Forest	19,771	10%	\$1,249	\$1,423	\$62,996,888	\$71,775,904
	Shrub/Scrub	59,314	30%	\$453	\$756	\$14,363,817	\$23,955,775
	Grassland	118,628	60%	\$2,125	\$7,502	\$92,977,453	\$328,172,821
	<b>Total</b>	<b>197,714</b>		<b>\$3,827</b>	<b>\$9,681</b>	<b>\$170,338,158</b>	<b>\$423,904,500</b>

Sources: Earth Economics and Santa Clara Valley Open Space Authority, 2014; SAGE, 2022.

There are various evolving mechanisms for facilitating payments for ecosystem services (PES). Some are incentive or market-based such as: tradable permits, (e.g., markets for pollution reduction or carbon sequestration); and certification schemes (e.g., organic, bio-dynamic). Others are government based such as tax benefits, and yet others are voluntary efforts by businesses or communities. PES is a dynamic arena that will quite possibly offer benefits to Ventura County agricultural land stewards in the future.

### ***Environmental Amenities***

Because farmland is a form of open space, the presence of farmland is often considered a desirable environmental amenity for nearby residential areas. To the extent that residents value proximity to this type of open space amenity, farmland may create additional value for nearby residential properties. Although BAE was not able to identify any studies that evaluate this link, the fact that residents have provided strong voting support for the various SOAR initiatives within the Ventura County suggests that residents do value Ventura County's working landscape.

### **Food Processing and Other Value-Added Activities**

The economic value of food processing and other activities that are related to marketing and selling finished products that are made from local produce is not be captured in the direct, indirect, and induced economic impacts quantified in preceding sections of this report. An example of the type of impact that would not be captured in this report is a food processing company that is located in Ventura County specifically to have ready access to locally grown produce that it purchases from others and uses in its products. Such a company would be classified in the manufacturing sector (as opposed to agriculture) and would in turn spawn its own distinct set of indirect and induced impacts within the local economy.

A 2015 report prepared by Applied Development Economics and The Hatamiya Group for the Economic Development Collaborative of Ventura County (EDC-VC) titled “Food Processing in Ventura County”,<sup>27</sup> stated that local food processing creates a number of benefits, including: “long-term competitiveness for growers”, “new job opportunities for the region’s labor”, “food security for the region”, and “regional quality of life”. Importantly, the study reported that, “Farmers’ ability to capture the added economic benefit from value added food processing is critical to their long-term economic sustainability” and suggested that utilizing some agricultural land for food processing activities would result in net gains for the farm economy. Further, the report indicated that food processing in Ventura County generated \$814 million in annual economic output as of 2014. The report indicated that indirect and induced economic impacts from a food processing facility such as a fruit puree producer with 115 onsite jobs would create 200 additional jobs within the county.

### VALUE-ADDED PROCESSING: OJAI OLIVE OIL COMPANY

When agricultural producers conduct some or all of the processing, distribution, and marketing of their products, they capture more of the value chain from the products that are ultimately sold to the end user within the local economy, creating additional jobs and income within the local economy. The Ojai Olive Oil Company, a third generation owned and operated farm based in Ojai, grows olives and mills them into oil. All of the olives are picked by hand which allows the picking and processing rates to align and minimizes the time the fruit spends between the tree and the mill. Compost is created out of the byproducts from the milling process. Ojai Olive Oil company follows organic, sustainable, and permaculture farming practices including synergistic crops, animals for fertilizing, locally produced composts, and beneficial insects. The Ojai Olive Oil Company sells its products directly on their farm, through their website at local farmers’ markets and wholesale.

At least some of the economic impacts of the Ojai Olive Oil Company are captured in this report, because it is a local grower whose production figures should be captured in the direct economic impacts of countywide agricultural production and in the indirect and induced economic impacts of agricultural production; however, the side-bar profiles the company and provides an example of how other local agricultural producers may be able to capture more of the value-chain that is created with the processing and marketing of finished products to consumers. This creates more income for the agricultural producer and captures more of the resulting economic activity within the local economy as opposed to having that value creation and economic activity occur elsewhere, where it will not benefit the local economy.

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<sup>27</sup> Applied Development Economics and The Hatamiya Group, “*Food Processing in Ventura County*”. December, 2015.

# APPENDIX A: IMPORTANT FARMLAND CATEGORIES

The following is from the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) and describes the farmland categories used by the program to track changes in farmland over time. This information is directly excerpted from <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx>, as accessed on March 21, 2022.

## Important Farmland Categories

FMMP's study area is contiguous with modern soil surveys developed by the US Department of Agriculture (USDA). A classification system that combines technical soil ratings and current land use is the basis for the Important Farmland Maps of these lands. Most public land areas, such as National Forests and Bureau of Land Management holdings, are not mapped.

The minimum land use mapping unit is 10 acres unless specified. Smaller units of land are incorporated into the surrounding map classifications. In order to most accurately represent the NRCS digital soil survey, soil units of one acre or larger are depicted in Important Farmland Maps.

For environmental review purposes under CEQA, the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land constitute 'agricultural land' (Public Resources Code Section 21060.1). The remaining categories are used for reporting changes in land use as required for FMMP's biennial farmland conversion report.

### ***Prime Farmland (P)***

Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

### ***Farmland of Statewide Importance (S)***

Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

### ***Unique Farmland (U)***

Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as

found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

***Farmland of Local Importance (L)***

Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

***Grazing Land (G)***

Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

***Urban and Built-up Land (D)***

Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

***Other Land (X)***

Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

## APPENDIX B: OVERVIEW OF IMPLAN

This appendix provides additional clarification of the workings of the IMPLAN input-output model, beginning with an overview of the data that IMPLAN uses internally and moving forward through the process of how the model estimates the impacts of new economic activity or the contributions of existing industries.

### ***What is IMPLAN?***

IMPLAN is an input-output model that estimates the total economic implications of new economic activity or the economic contributions of current activity within a specified geography. The model uses national industry data and county-level economic data to generate a series of multipliers, which in turn estimate the total economic implications of economic activity.

At the heart of the model is a national input-output dollar flow table called the Social Accounting Matrix (SAM). Unlike other static input-output models, which just measure the purchasing relationships between industry and household sectors, SAM also measures the economic relationships between government, industry, and household sectors, allowing IMPLAN to model transfer payments such as unemployment insurance. Thus, for the specified region, the input-output table accounts for all the dollar flows between the different sectors within the economy.

***National Industry Data.*** The model uses national production functions for 546 sectors to determine how an industry spends its operating receipts to produce its commodities. The model also uses a national matrix to determine the *byproducts*<sup>28</sup> that each industry generates. To analyze the impacts of household spending, the model treats households as an “industry” to determining their expenditure patterns. IMPLAN couples the national production functions with a variety of county-level economic data to estimate the impacts on a local level.

***County-Level Economic Data.*** In order to estimate the county-level impacts, IMPLAN combines national industry production functions with county-level economic data. IMPLAN collects data from a variety of economic data sources to generate average output, employment, and productivity for each of the industries in a given county. It also collects data on average prices for all of the goods sold in the local economy. In this analysis, IMPLAN uses economic data for Ventura County. IMPLAN gathers data on the types and amount of output that each industry generates within the region. In addition, the IMPLAN model uses county-level data on the prices of goods and household expenditures to determine the consumption functions of regional households and local government, taking into account the availability of each commodity within the specified geography.

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<sup>28</sup> The byproducts refer to any secondary commodities that the industry creates.

**Multipliers.** IMPLAN combines these data to generate a series of SAM-type multipliers for the local economy. The multiplier measures the amount of total economic activity that results from an industry (or household) spending an additional dollar in the local economy. Based on these multipliers, IMPLAN generates a series of tables to show the economic event's *direct*, *indirect*, and *induced* impacts to gross receipts, or output, within each of the model's 546 sectors. These outputs are as follows:

- **Direct Impacts.** Direct impacts refer to the dollar value of economic activity available to circulate through the economy and the jobs associated with that economic activity. The direct impacts do not include household savings and payments to federal, state, and local taxes, as these payments do not circulate through the economy.

It should be noted that impacts from retail expenditures differ significantly between the total economic value of retail and the amount available to circulate through the local economy. The nature of retail expenditures accounts for this difference. The model assumes that only the retail markup impacts the local economy, particularly for industries heavily populated with national firms such as gas stations and grocery stores. Since local stores buy goods from wholesalers and manufacturers outside of the area, and corporate profits also leave the local economy, only the retail markup will be available for distribution within the local economy. To the extent that retailers' headquarters are located within the county or region, the model allocates their portions of the impacts to the local economy.

- **Indirect Impacts.** The indirect impacts refer to the impact of local industries buying goods and services from other local industries, and to the jobs supported by those purchases. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to income and taxes. For capital projects this would include payments for construction inputs such as wood, steel, office supplies, and any other non-labor payments that a construction firm would purchase in the building process.
- **Induced Impacts.** The induced impacts refer to the dollar and employment impacts of household spending by the employees generated by the direct and indirect impacts. In other words, induced impacts result from the household spending of employees of business establishments that the new households patronize (direct) and their suppliers (indirect). The model accounts for local commute patterns in the geography. For example, if 20 percent of construction workers who work in the region live outside of the region, the model will allocate 80 percent of labor's disposable income into the model to generate induced impacts. The model excludes payments to federal and state taxes and savings based on the geography's average local tax and savings rates. Thus, only the disposable incomes from local workers are included in the model.

### ***Specifying the “Event” and Running the Model***

Once the model is built for the specified geographies, it is time to specify the “event” that the model will analyze and run the model.

*Specifying the “Event.”* The “event” refers to the total economic value of industry output that the analyst is considering. In the case of the ongoing economic impacts of a new institutional development such as a school, the “event” would be the operations of a school, including the resulting new jobs and the worker compensation. In the case of an industry contribution analysis the “event” would be the current operations of an industry sector, including the existing jobs, worker compensation, and the output in that sector

*Running the Model.* Once the event is specified, IMPLAN runs the event through the model to generate the results. By default, IMPLAN applies the local data on average output per worker and compensation per worker to determine the direct impacts. The model then applies the value of the event to the national production functions and runs a number of iterations of this value through the production functions for the local economy to determine the indirect and induced impacts. For each iteration, the model removes expenditures to government, savings, and for goods bought outside of the local economy so that the results only include those dollars that impact the local economy.

### ***Summarizing the Impacts***

Once the model is run, IMPLAN generates a series of output tables to show the direct, indirect, and induced impacts within each of the model’s 546 sectors. IMPLAN generates these tables for three types of impacts: employment, output, and value added.

- *Employment* shows the number of employees needed to support the economic activity in the local economy. It should be noted that for annual impacts of ongoing operations, the employment figure shown represents the amount of employment needed to support that activity for a year. Furthermore, IMPLAN reports the number of jobs based on average output per employee for a given industry within the geography. This is not necessarily the same as the number of full-time positions.
- *Output* refers to the total economic value of the event in the local economy.
- *Value Added* shows the total income that the event generates in the local economy. This income includes:
  - *Employee Compensation* – total payroll costs, including benefits
  - *Proprietary Income* – payments received by self-employed individuals as income
  - *Other Property Type Income* – payments for rents, royalties, and dividends
  - *Indirect Business Taxes* – excise taxes, property taxes, fees, and sales taxes paid by businesses. These taxes occur during the normal operation of businesses, but do not include taxes on profits or income.

## APPENDIX C: ECONOMIC DATA SOURCES

### Differences Between IMPLAN GDP and Other Data Sources for Ventura County Agricultural Economic Activity

The Civic Alliance State of the Region Report cites two sources for its data on crop value and GDP: the Agriculture Commission's Crop Report and a report from the California Lutheran University Center for Economic Research. BAE has been unable to obtain a copy of the California Lutheran report, which is cited as a data source in the State of the Region report. Based on our review of the State of the Region Report, BAE believes that the numbers that are not from the Crop Report originate from the Bureau of Economic Analysis, and perhaps were cited in the California Lutheran study.

First, it should be noted that like the IMPLAN data, the data from the Crop Report and from the BEA itself are also estimates. As stated in the Commissioner's introductory letter in the 2020 report: "The *estimated* gross value of Ventura County's agriculture for calendar year 2020 is \$1,985,365,000." {Emphasis added}. The IMPLAN number of approximately \$1.73 billion corresponds very closely to the U.S. Bureau of Economic Analysis' estimated agriculture GDP for the County, also approximately \$1.73 billion.

Furthermore, the Crop Report estimates also vary from the Census of Agriculture, which reports that in 2017, total commodity sales for agriculture in Ventura County were approximately \$1.63 billion, compared to \$2.10 billion reported in the 2017 Crop Report. More recent data are not available from the Census of Agriculture.

While it may appear that there is a significant variance between the IMPLAN figures and figures from other sources, the figures are not directly comparable.

For employment, the Civic Alliance report appears to rely on the Quarterly Census of Employment and Wages (QCEW). The numbers are based on most wage and salary employment, excluding certain public sector employment. These numbers are in fact "real" numbers rather than estimates; however, they do not include all jobs. Based on QCEW data, the ratio of agriculture jobs to total jobs is approximately 8.1 percent, higher than the IMPLAN estimate of 5.4 percent. This difference is due in large part to IMPLAN's inclusion of proprietors (i.e., non-wage and salary workers) in their count of total jobs, thus making the comparison of the QCEW and IMPLAN-derived employment ratios an apples-to-oranges exercise.

The IMPLAN-based measure of agricultural economic activity as a percentage of overall activity does vary from the percentage provided on page 12 of the State of the Region report. As stated herein, IMPLAN estimates that the output of the agriculture sector is approximately 2.1

percent of total county output, while the State of the Region report provides an estimate of 3.8 percent.

The IMPLAN estimate relies strictly on IMPLAN's internal model's estimates of output for the agricultural sector and for overall output for the county. The State of the Region estimate, however, relies on mixed sources. In that report, agricultural value is from the Agriculture Commissioner's annual crop report, but the gross county product estimate comes from the U.S. Bureau of Economic Analysis. The BEA estimate of agriculture's percentage contribution to gross county product is lower than the Agriculture Commissioner's value estimate. In fact, it appears that the Agriculture Commissioner's value estimate is a total value estimate, equivalent to total output as defined by IMPLAN and BEA; the BEA county number is a value-added estimate, which subtracts the value of intermediate inputs used in growing crops or raising animals (e.g., fuel purchases for farm equipment). As a result, the IMPLAN ratio and the State of the Region percentage estimates are not directly comparable; the State of the Region estimate compares total output in one industry with value-added output; the IMPLAN ratio compares output in one industry with total output countywide.