YOLO COUNTY AGRICULTURAL CONSERVATION PRIORITY PLAN

PREPARED FOR:

Yolo County
Yolo County Administrator's Office
625 Court Street, Room 202
Woodland, CA 95695
Contact: Charlie Tschudin
530.666.8850

PREPARED BY:

ICF
989 9th Street, Suite 1200
Sacramento, CA 95814
Contact: Sally Lyn Zeff, AICP
916.212.7555

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Contents

Tables

Figures

Acronyms and Abbreviations

ACEP	Agricultural Conservation Easement Program
CAAP	Climate Action and Adaptation Plan
CROP	Coordinated Rural Opportunities Plan
FPPA	Farmland Protection Policy Act
LAFCO	Local Agency Formation Commission
LESA	Land Evaluation and Site Assessment
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
NRCS	Natural Resources Conservation Service
RCD	Resource Conservation District
RUCS	Rural-Urban Connections Strategy
SACOG	Sacramento Area Council of Governments
USDA	U.S. Department of Agriculture
YCCAC	Yolo County Climate Action Commission
YLT	Yolo Land Trust
Yolo HCP/NCCP	Yolo County Habitat Conservation Plan and Natural Communities Conservation Plan

Executive Summary

As a leader in farmland preservation, Yolo County seeks to accomplish the following objectives to support growth and the preservation of high-value farmland.

- Identify intrinsic values of farmland, in addition to food production, that are of high value.
- Identify high-priority agricultural areas for conservation.
- Recommend conservation methods either by geography or crop or by soil type.

Yolo County is under growth pressure as the Sacramento metropolitan region continues to expand, but the County has limited capacity to accommodate development. Development is concentrated in the four cities (Davis, West Sacramento, Winters, and Woodland), and the County has developed a conservation and mitigation program to protect agricultural land from conversion to nonagricultural uses. Other planning efforts by the County and other entities to protect agricultural land in the County include the Yolo County General Plan, which includes agricultural land conservation policies that discourage conversion of agricultural land to nonagricultural uses, the Rural-Urban Connections Strategy and Coordinated Rural Opportunities Plan created by the Sacramento Area Council of Governments, the Yolo County Habitat Conservation Plan and Natural Communities Conservation Plan, the Yolo Land Trust Yolo County Agricultural Conservation Priority Plan, and efforts by the County to reduce greenhouse gas emissions by using agricultural land as an opportunity for carbon sequestration.

Outreach about the Plan included meetings with the Yolo Land Trust (YLT), the Yolo Habitat Conservancy, the Yolo Planning Commission, the Farm Bureau, the Yolo County Board of Supervisors, and stakeholders. Notification of the Plan will be provided through email, direct mail, and social media.

Available data for agricultural resources and key indicators of lands were used to identify and map land that could be used to satisfy the County's Agricultural Land Conservation and Mitigation Program. Key indicators include the following.

- Lands not in public ownership or under conservation easement
- Whether lands are under the Land Conservation Act of 1965 (Williamson Act)
- Prime and non-prime farmland
- Agricultural lands near developed areas, including cities and unincorporated communities

Four selection criteria are proposed for the County to use when considering which lands to conserve. Land should be prime farmland that is located in areas identified in the mitigation ordinance as priority conservation area or that is adjacent to other agricultural lands, or land that is not desirable for nonagricultural development.

Conservation of agricultural land provides economic, technological, and community benefits. Conservation methods include creation of an agricultural mitigation bank, managing privately held conservation easements, locating conservation lands within the same areas as lands conserved for open space and habitat conservation easements, and implementing carbon sequestration and other programs.

Overall strategy recommendations are as follows.

1. The areas within 2 miles of the urban growth areas of the incorporated cities and the town of Esparto should be the geographic priority areas for agricultural land conservation.
2. The County's acquisition of conservation easements for agricultural land should focus on prime farmland located in areas most subject to development pressures.
3. Other programs beyond those required by the County could be used to support the acquisition of conservation easements, and the County should continue to collaborate with other public and private entities.
4. The County's land acquisition should focus on lands as near as possible to urban growth boundaries, which would multiply the value of conservation by reducing the development potential for lands on the other side of the conserved areas.

Chapter 1
Strategy Recommendations

Geographic Priority Areas

As described in Chapter 6, *Selection Criteria*, it is recommended that the areas within 2 miles of the urban growth areas of the incorporated cities and the town of Esparto continue to be the geographic priority areas for agricultural land conservation because those lands are subject to the highest likelihood of development should changes in land use regulations or policies occur. Additionally, consider establishing substantial farmland conservation areas immediately adjacent to city spheres of influence and to the Esparto Urban Growth Boundary, consistent with General Plan Policy CC-1.7, *Reinforce the growth boundaries for each community through appropriate mechanisms including greenbelts, buffers, conservation easements and other community separators.*

Recommended Preservation Mechanisms Either by Geography or Crop or by Soil Type

Discussions with local experts, including government advisers and local farmers, presented in Appendix B, *Agricultural Trends*, highlighted that the crops grown in Yolo County change over time as farmers respond to many different forces, including market changes and the availability of water. For this reason, crop-specific approaches could easily become outdated.

It is recommended that the County's acquisition of conservation easements for agricultural land focus on prime farmland located in areas most subject to development pressures, as described in Chapter 6 and Chapter 7, *Results of Analysis*.

Collaboration with Other Entities

The County has a successful history of collaborating with public and private entities to conserve farmland and support agriculture. As described in Chapter 7, under *Assessment of Conservation Methods*, other programs could provide support for the acquisition of conservation easements beyond the County's required.

Future Policy Considerations

As described in Chapter 4, *Methodology*, the Plan focuses on the future need for agricultural land conservation for mitigation. Based on the projected buildout of general plans and the development of city spheres of influence, in combination with other land uses that could require mitigation, the demand for mitigation lands to provide mitigation for future development was estimated at up to roughly 14,000 to 18,000 acres, with more than 10,000 acres of that just for prime farmland.

The recommendations in Chapter 6 and in Chapter 7, under *Identification of High-Priority Agricultural Areas for Conservation,* are that the County's land acquisition focus on lands as near as possible to urban growth boundaries, which would multiply the value of conservation by reducing the development potential for lands on the other side of the conserved areas.

While future reductions in water availability, cost of labor, and other restrictions or demands on farming practices described in Appendix B, *Agricultural Trends*, could lead to fallowing of agriculture; however, should high-priority prime farmland be conserved, these lands could be returned to agriculture when such disincentives to farming are eased. The history of farming in California and in Yolo County specifically involves changes in both crops planted and changes in farming practices to respond to the variety of forces affecting farmers, from the availability of water or labor to changing markets and competition for specific types of produce.

Chapter 2
Vision and Mission of This Plan

Yolo County has long been a leader in farmland preservation. The policies of the Agriculture and Economic Development Element of the 2030 Countywide General Plan sets the foundation for the County's preservation of farmland through a variety of methods, including, as stated in Policy AG-1.14:

> Preserve agricultural lands using a variety of programs, including the Williamson Act, Farmland Preservation Zones (implemented through the Williamson Act), conservation easements, an Agricultural Lands Conversion Ordinance and the Right-to-Farm Ordinance.

The County recognizes that preserving farmland provides many benefits in addition to the agricultural value of the land. It also recognizes that the price of land in the county is rising. To ensure that lands preserved through the mitigation fees of the Agricultural Lands Conversion Ordinance are of high value and comprise parcels large enough to be viable for farming, the County is considering establishing a mitigation bank, or a similar instrument, as allowed in the ordinance, that could be used for mitigating farmland conversion and that focuses on high-value agricultural areas most at risk for conversion.

By accomplishing the following major objectives, this Plan will support the County's goals of orderly growth and the preservation of high-value farmland:

- Identify intrinsic values of farmland, in addition to food production, that are of high value.
- Identify high-priority agricultural areas for conservation.
- Identify limiting factors for conservation of farmland.
- Recommend conservation methods either by geography or crop or by soil type.

Chapter 3
Background

Agricultural Mitigation Required by General Plan Policies and Section 8-2.404 of the Yolo County Code

Reflecting the challenges arising in other areas of California near and adjacent to expanding urban footprints, Yolo County is under growth pressure as the Sacramento metropolitan region continues to grow (Yolo County 2020). However, the land appropriate for development, including residential development, is limited by availability of services, floodplain development regulations, and land use designations. While County policies exist to concentrate residential development in the four cities (Davis, West Sacramento, Winters, and Woodland), economic pressure to convert agricultural land to nonagricultural uses is intensifying. To minimize conversion of agricultural land, Yolo County has developed a conservation and mitigation program that will require agricultural conservation easements for converted farmland or land zoned for agricultural use.

The Yolo County General Plan (Yolo County 2009b, AG-22; 2020) includes agricultural land conservation policies that discourage conversion of agricultural land to nonagricultural uses. Among those are including several requirements for mitigating conversion of farmland or land zoned for agriculture (Policies AG-1.14, AG-Policy AG-1.16, and Policy AG-1.17). Section 8-2.404 of the Yolo County Code implements these General Plan policies.

Under Section 8-2.404, the following ratios generally pertain to mitigation for conversion of agricultural land. Mitigation ratios vary depending on the location of the land to be converted and the mitigation land as described below.

Table 3-1. Yolo County Standard Mitigation Ratio Requirements

Classification	Ratio	Requirements
Prime farmland	3:1	For each acre changed to a predominantly nonagricultural use or zoning classification, 3 acres of agricultural land must be preserved.
Non-prime farmland	2:1	For each acre changed to a predominantly nonagricultural use or zoning classification, 2 acres of agricultural land must be preserved.
Mix of prime farmland and non-prime farmland	Blended	For a project that converts both prime and non-prime farmland, mitigated land must be determined using a blended ratio that reflects the percentage of converted prime and non-prime farmland within project boundaries.

Variations in requirements are described below.

mitigation lands must generally be within 2 miles of the sphere of influence of one of the four cities or within 2 miles of the General Plan urban growth boundary of the town of Esparto; however, if presented with substantial evidence that the mitigation lands consist predominantly of prime farmland or that they are vulnerable to conversion to nonagricultural use in the foreseeable future, the Board of Supervisors has the power to approve mitigation in any other area by resolution. Such a

resolution must specify the ratio at which the mitigation would occur, and the ratio can exceed the applicable base ratio shown in Table 4-2.

The mitigation ratio prescribed by the Board can vary from the applicable base ratio if the conversion is subject to specified adjustment factors. If the mitigation occurs within a priority conservation area, mitigation would occur at a reduced ratio of 1:1 or, if mitigating the conversion of prime farmland, 2:1. Priority conservation areas eligible for the 1:1 ratio include parcels partly or entirely within 0.25 mile of the sphere of influence of a city or the Esparto Urban Growth Boundary and, when mitigating projects that convert an area comprising more than 50 percent non-prime farmland, parcels within 1 mile of that sphere or boundary. Parcels partly or entirely within the area bounded by County Roads 98 and 102 on the west and east, respectively, and by County Roads 29 and 27 on the north and south, respectively, require a 2:1 ratio.

Other factors affect mitigation ratios and permissibility of payment of in-lieu fees. These factors include size of the area to be converted. Specifics are described in Section 8-2.404(d)(3) of the Yolo County Code, which can be found in Appendix A, *Excerpts of Relevant County and State Code*.

Information on which factors are considered when determining whether land is eligible or ineligible for use in agricultural land mitigation can be found in Section 8-2.404(e) and (f), respectively, which can be also found in Appendix A.

Appendix A also includes the minimum requirements for conservation easements outlined in Section 8-2.404(g).

Increasing agricultural land values and decreasing fair market values for conservation easements have made it more difficult to provide adequate incentives that will motivate landowners to participate in voluntary enrollment of agricultural conservation easements.

Other Efforts by the County and Other Entities

Related planning efforts interact with the proposed Agricultural Conservation Priority Plan. These include planning documents and programs related to land use, agriculture, open space, and reducing greenhouse gas emissions.

Land Use Planning

Continued agricultural viability is currently threatened by development and the conversion of agricultural land to nonagricultural purposes associated with it, which could outpace actions taken to protect and preserve agricultural land in the greater Sacramento area. Multiple organizations have established programs and projects to identify geographies that are of particular value or those that need both strategies to maintain agricultural use and related conservation plans with a focus on agricultural land. Among these strategies and plans are the Yolo County General Plan, and the general plans of the cities of Davis, and West Sacramento, Winters, and Woodland, reflecting a collaboration between the County and the cities to achieve compact urban development and maintain agriculture in unincorporated areas; the Sacramento Area Council of Governments (SACOG) Rural-Urban Connections Strategy (RUCS); SACOG's Coordinated Rural Opportunities Plan (CROP); and the Yolo Habitat Conservancy's Yolo County Habitat Conservation Plan and Natural Communities Conservation Plan (Yolo HCP/NCCP).

Yolo County General Plan

Going back at least 50 years, Yolo County's planning process has required that new development (growth) be directed toward the cities as infill rather than sprawl (Yolo County n.d.). As a result of the County's efforts, and collaboration with the cities, approximately 85 to 90 percent of county residents live in one of the four incorporated cities (Davis, West Sacramento, Winters, and Woodland). Infill development leads to substantially lower greenhouse gas emissions by reducing vehicle miles traveled and by slowing conversion of agricultural land to nonagricultural purposes. (See also *Reduction of Greenhouse Gas Emissions* later in this chapter.)

The Yolo County General Plan (Yolo County 2009b, AG-22; 2020) includes the Agricultural and Economic Development Element, which is not one of the seven mandatory elements of a General Plan. The County has voluntarily adopted this element because agriculture has been its economic and social engine, it defines the community's values, and it is the leading industry of the county. This element contains Goal AG-1, which is an overarching goal to preserve and defend agriculture as fundamental to the identity of Yolo County. Agricultural land conservation policies (Policies AG-1.2, 1.3, 1.5, 1.6 and 1.9) discourage conversion of agricultural land to nonagricultural uses. Policies AG-1.14, 1.15, 1.16, 1.17, and 1.21 relate specifically to farmland conservation.

Policy AG-1.2 Maintain parcel sizes outside of the community growth boundaries large enough to sustain viable agriculture and discourage conversion to non-agricultural home sites.

Policy AG-1.3 Prohibit the division of agricultural land for non-agricultural uses.

Policy AG-1.5 Strongly discourage the conversion of agricultural land for other uses.

Policy AG-1.6 Continue to mitigate at a ratio of no less than 1:1 the conversion of farm land and/or the conversion of land designated or zoned for agriculture, to other uses.

Policy AG-1.9 Work with the Local Agency Formation Commission (LAFCO) on issues of mutual concern including agricultural preservation policies and the establishment and maintenance of logical boundaries for service districts that support existing and planned community growth.

Policy AG-1.14 Preserve agricultural lands using a variety of programs, including the Williamson Act, Farmland Preservation Zones (implemented through the Williamson Act), conservation easements, an Agricultural Lands Conversion Ordinance and the Right-to-Farm Ordinance.

Policy AG-1.15 Advocate for maintenance and improvement of the Williamson Act Land Conservation (Agricultural Preserve) Program.

Policy AG-1.16 Encourage the coordinated acquisition of agricultural conservation easements by local, State and federal agencies and private conservation organizations with established records of responsible stewardship to protect agriculture, from willing sellers or donors.

Policy AG-1.17 Encourage the coordinated placement of agricultural conservation easements on land most threatened by development, particularly those lands located close to cities and unincorporated communities.

Policy AG-1.21 Within conservation easements, preclude the practice of fallowing fields for the purpose of water export. Fallowing as a part of normal crop rotation is not subject to this policy.

SACOG Rural-Urban Connections Strategy (RUCS)

SACOG developed the RUCS to focus on rural landscapes and strategies for their protection and preservation (Sacramento Area Council of Governments n.d.). Mindful of how traditional planning oversimplifies the value of rural landscapes and the complexities of life in rural communities, SACOG

designed RUCS to provide an economic and environmental sustainability strategy for rural areas—enhancing the viability of the rural economy and the resilience of the natural resources that support it. The program offers a platform for rural planning, which otherwise is largely overlooked in the planning processes. The RUCS toolkit provides a parcel-level crop map with a comprehensive profile per acre of cost and return metrics for each crop. This toolkit enables users to identify the inputs and outputs of the agricultural system, including costs and profits, and to run scenarios for varying market shifts or cropping changes. It also enables growers and policymakers to identify trade-offs between land uses, forecast potential outcomes, proactively plan for the future, and pursue strategies to enhance competitive edge.

SACOG Coordinated Rural Opportunities Plan (CROP)

SACOG is also proposing CROP (Sacramento Area Council of Governments 2020), a project that will create a regional strategy for supporting agricultural lands. Drawing on an inventory of SACOG's previous RUCS research related to agriculture, agricultural plans, strategies, and programs, the project will develop a thorough understanding of challenges facing the six-county greater Sacramento region and the strategies currently being used to address them. The project will then identify themes and geographies where existing strategies are not working as planned or where no strategies are currently in place. Finally, the project will create a framework to identify and coordinate infrastructure investments that are needed to support continued viability of agriculture in the six-county region. Work on this project is expected to occur in the next few years.

Open Space Conservation

Yolo County Habitat Conservation Plan and Natural Communities Conservation Plan (Yolo HCP/NCCP)

The Yolo Habitat Conservancy's Yolo County Habitat Conservation Plan and Natural Communities Conservation Plan (Yolo HCP/NCCP) provides Endangered Species Act permits for 12 species to covered infrastructure and development activities over a 50-year permit term (Yolo Habitat Conservancy n.d.b). The Yolo HCP/NCCP relies on the participation of landowners—especially those with actively cultivated agricultural land, rangeland, or natural lands (Yolo Habitat Conservancy n.d.a)—and encourages landowners to sell or donate conservation easements on their properties to fulfill the goals and objectives of the Yolo HCP/NCCP conservation strategy (Yolo County 2015).

Yolo Land Trust's Yolo County Agricultural Conservation Priority Plan

Yolo Land Trust (YLT) is a private nonprofit organization whose purpose is to protect and preserve important land resources for the public benefit. YLT has been active in conserving farmland, habitats, and open space since its inception in 1988, and its first easements transactions were completed in 1995. YLT currently holds 77 conservation easements on approximately 12,917, acres of farmland, in addition to three parcels totaling 684 acres owned in fee title by YLT (Figure 1). Some of its easements are co-held with the City of Davis and the City of Woodland.

In 2010, YLT prepared an Agricultural Conservation Priority Plan for Yolo County through a grant from the California Department of Conservation. YLT's plan and data were reviewed in preparation of this Plan.

YLT's plan provided a GIS-based analysis of farms in Yolo County that should be given the highest priority for protection. Specifically, the plan analyzed parcel data to identify farms, determined and mapped key criteria within farms, determined the relative importance of the criteria and assigned values to the criteria, and summed the values assigned to each farm to identify which farms have the highest values and therefore have highest preservation priority. Key criteria included soil quality; water availability; location, including within the Davis-Woodland buffer, within a city's sphere of influence, in floodplains, and adjacent to riparian corridors and oak woodlands; number of internal parcels, number of adjacent parcels; and farm size.

The YLT plan recommended that the County periodically review conservation values and, if values have shifted, rerun the GIS model to reassess farm priority for conservation protection. For example, grasslands could be assigned a higher value in the future if carbon sequestration becomes a higher conservation priority; smaller organic farms may in future have a higher priority than that established at the time of the initial run of the GIS model.

The YLT plan was intended by YLT as an aid to decision making and an indicator for priorities, and was not intended to substitute for or dictate decisions.

Reduction of Greenhouse Gas Emissions

Yolo County has a long history of commitment to reduction of greenhouse gas emissions, including an understanding of the role agriculture plays in reducing greenhouse gas emissions. If preserved by easement or land contract for either agriculture or habitat, cultivated agricultural land can provide opportunities for more permanent carbon sequestration.

Early efforts by the County that acknowledged the role of agriculture in reducing greenhouse gas emissions were its 1982 countywide Energy Plan and its 2007 resolution to support the Cool Counties Climate Stabilization Declaration, which committed to a reduction of greenhouse gas emissions by 80 percent by 2050.

The County's General Plan expanded on this foundational work by including many more policies and actions focused on addressing climate change. The goals and policies of the General Plan Agricultural and Economic Development Element emphasize wildlife-friendly farming, local food preference, community revitalization, creation of jobs and economic health, business outreach, and collaboration with project partners. Overall, these policies support agricultural use and discourage the type of development that results in increased vehicle miles traveled.

In addition, the County's policies align with the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) for the Sacramento region, which contains policies that are relevant to agriculture and acknowledges the link between land use, air quality, and transportation.

Figure 1. Yolo County Land Easements

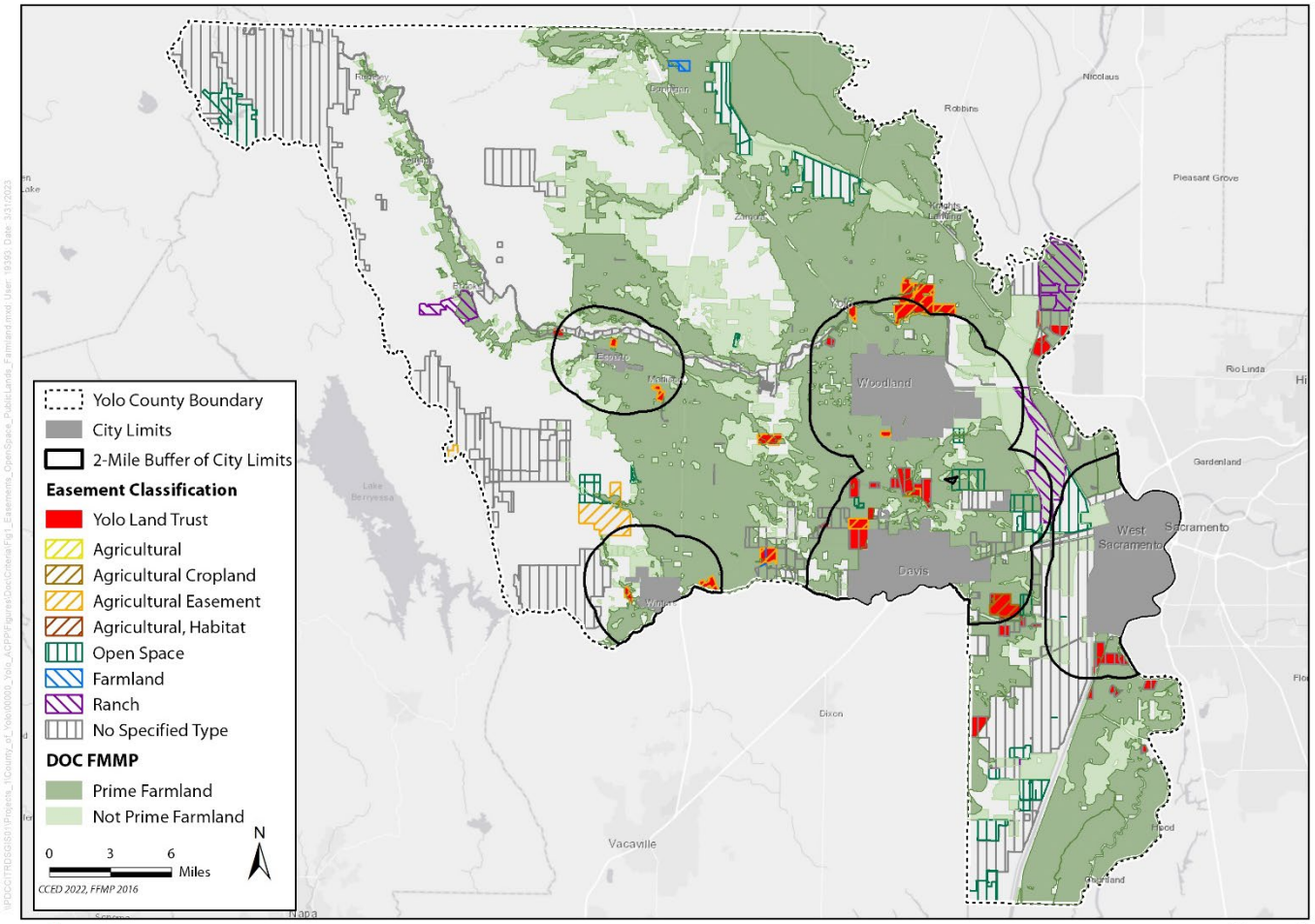

Figure 1
Yolo County Land Easements

County staff were in the process of developing a countywide Sustainability Plan, in support of the Yolo County 2016-2019 Strategic Plan, when the County Board of Supervisors, in response to local community groups, approved a Climate Emergency Declaration (Resolution No. 20-114) in September 2020. The Resolution set a goal for the County to achieve a carbon negative footprint by 2030, while ensuring a just transition to an inclusive, equitable, sustainable, and resilient local economy. The Board subsequently created the Yolo County Climate Action Commission (YCCAC). This eleven-member advisory body is charged with developing and implementing a Climate Action and Adaptation Plan (CAAP) to meet the 2030 goal and ensuring vulnerable, marginalized, and historically underserved communities are centered in the process.

The County's CAAP includes specific voluntary goals to reduce greenhouse gas emissions by 2030 and 2050. Today, the YCCAC is charged with guiding the development and implementation of a new 2030 CAAP, that will chart a path toward achieving a Countywide goal of reaching net-negative Carbon emissions by 2030, and ensuring vulnerable, marginalized, and historically underserved communities are centered in the process. This plan was first adopted in 2011 and is currently being updated with

Outreach

To educate constituents about the Plan and solicit input, the planning team held meetings with entities focused on preserving agricultural land (e.g., Yolo Land Trust, Yolo Habitat Conservancy), the Yolo County Planning Commission, the Farm Bureau, and the Yolo County Board of Supervisors. In addition, notification of the Plan will be provided through email, and social media.

Stakeholder Meetings

The planning team, along with County staff, held conversations with a variety of stakeholders to obtain information about current and future trends in local agriculture and to discuss ideas about and attitudes toward farmland conservation. The following is a list of those stakeholders.

- Yolo County Agricultural Commissioner and staff
- Yolo Land Trust
- Yolo County Farm Bureau, including grower/property owner members
- Yolo County of Community Services, Planning Division
- Yolo County Administrator's Office

Outreach to Inform Others About the Plan

Information about the process of creating this Plan will be circulated in advance of the April 13, 2023, Yolo County Planning Commission meeting considering the draft Plan. County staff anticipate taking the Plan to the Yolo County Board of Supervisors in May 2023.

Chapter 4
Methodology

Introduction

Together, ICF and the County reviewed available data for agricultural resources and key indicators of lands that could potentially be used to satisfy the County's agricultural land conservation and mitigation program requirements, focusing on lands of high agricultural value and high vulnerability to conversion.

The ICF team prepared a report on agricultural trends and economic impacts of agriculture in Yolo County. This report is found in Appendix B, *Agricultural Trends*.

These indicators were mapped as a basis for identifying key areas that met specific criteria developed for this Plan, as described in Chapter 6, *Selection Criteria*.

In order to develop an estimate of the future demand for agricultural land mitigation, the team mapped lands designated for development per the County General Plan—especially agricultural land that would be converted to nonagricultural use and land within the spheres of influence of the cities. The team then used this information to generate an assessment of alternatives that could meet the estimated mitigation demand, which could be used to support recommendations on future actions.

Data sources are listed in Chapter 5, *Data*.

Key Indicators

The following information was reviewed to develop the key indicators assessment.

- Lands not in public ownership or under conservation easement
- Whether lands are under the Land Conservation Act of 1965 (Williamson Act)
- Prime and non-prime farmland
- Agricultural lands near developed areas, including cities and unincorporated communities

Key Indicators

Lands Not in Public Ownership or under Conservation Easement

As noted in Chapter 3, *Background*, the Yolo Land Trust currently holds 77 conservation easements on approximately 12,917, acres of farmland, in addition to three parcels totaling 684 acres owned in fee title by YLT (Figure 1). Additionally, approximately 45,229 acres in Yolo County are in other forms of conservation easements, for the benefit of both agriculture and other resources, protected from conversion to other types of land use (GreenInfo Network 2022a).

Whether Lands Are under the Land Conservation Act of 1965 (Williamson Act Contract)

The Land Conservation Act of 1965, known as the Williamson Act, is a program created to help local governments preserve agricultural and open space by entering contracts with private landowners that preserve land and provides property tax incentives. Within the Williamson Act, there is an option to create Farmland Security Zones, which are areas created within an agricultural preserve by a board of supervisors.

Yolo County has 427,953 acres—80 percent of its land base—under the Land Conservation Act of 1965, also known as being under Williamson Act contract (Figure 2). This accounts for 186,112 acres or 43 percent of lands considered to be prime farmland and 180,828 acres or 42 percent of lands considered to be non-prime farmland.

The 2-mile buffer area from the spheres of influence of incorporated cities and the urban growth boundary of the town of Esparto (an unincorporated community) consists of 152,605 acres. Of the total acreage within the buffer area, there are 64,339 acres under Williamson Act contract (Figure 2). Of these 64,339 acres of land under Williamson Act contract, 42,393 acres or 66 percent are prime farmland and 15,554 acres or 24 percent are non-prime farmland.

Being under Williamson Act contract is not a permanent form of protection for farmland, but it does serve as a long-term method of protection and provides a deterrent, in the form of the cost and effort, to either nonrenew or cancel Williamson Act contracts.

Prime Farmland and Non-Prime Farmland

In Yolo County, approximately 245,252 acres or over a third its land base is categorized as prime farmland. Non-prime farmland, which includes farmland of statewide importance, unique farmland, and grazing land, comprises approximately 229,858 acres (Figure 3).

Figure 2. Yolo County Land under Conservation Act of 1965 (Williamson Act) Land

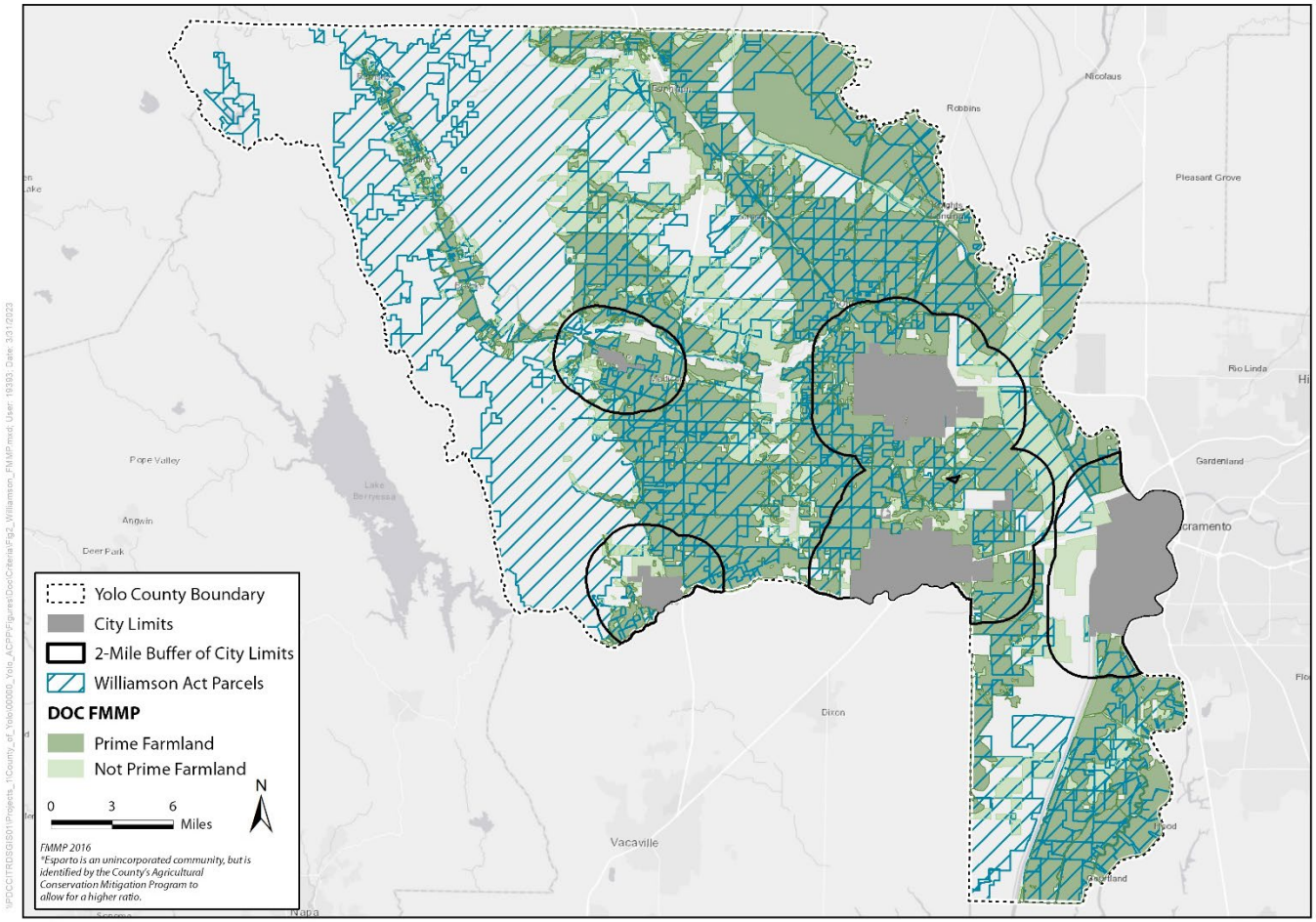

Figure 2
Yolo County Williamson Act Land

Figure 3. Prime and Non-Prime Farmland

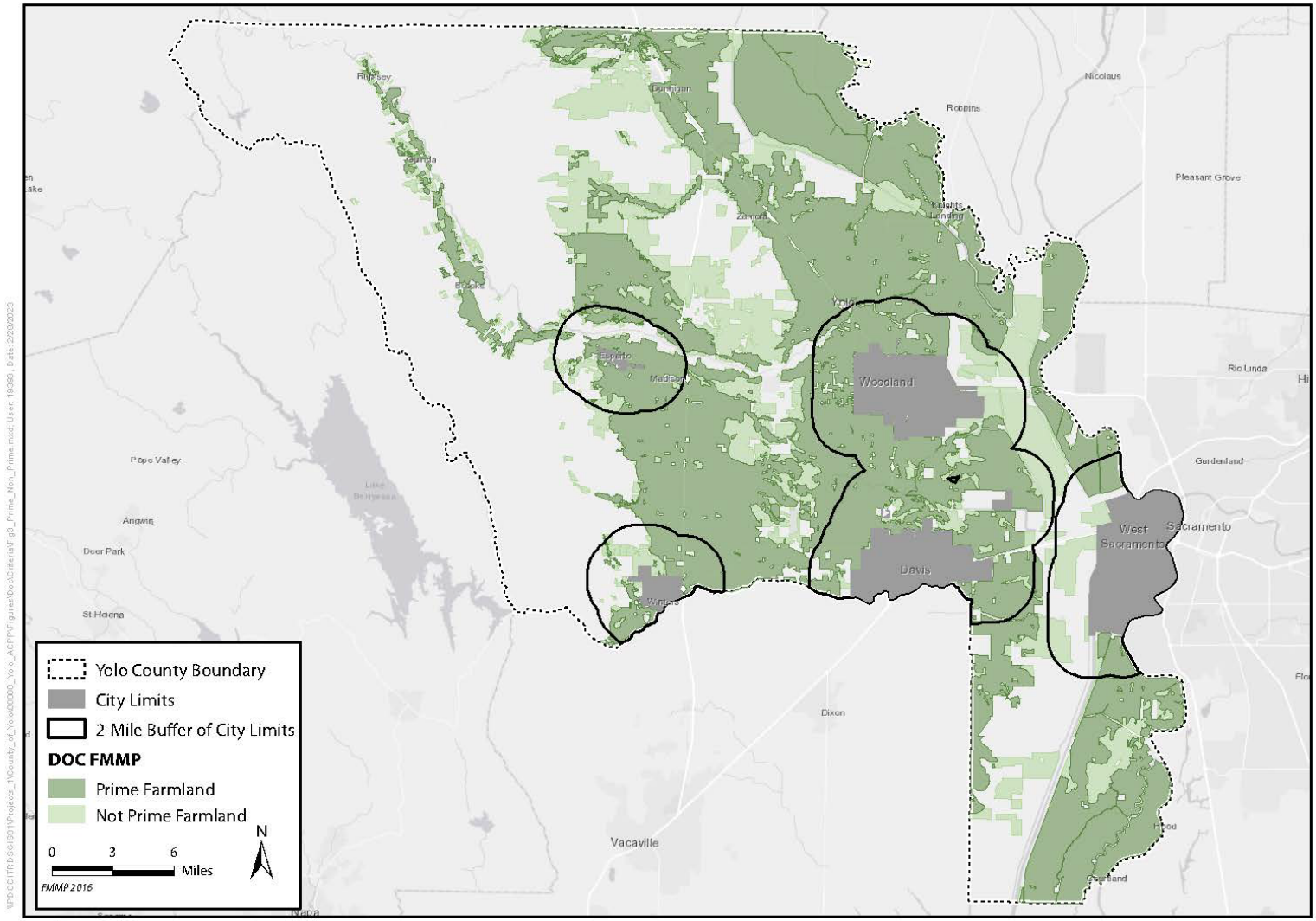

Figure 3
Prime and Non-Prime Farmland

Protection of Agricultural Lands near Developed Areas, Including Cities and Unincorporated Communities

As described in Chapter 3, mitigation for conversion of agricultural land to nonagricultural uses is required within 2 miles of a city's sphere of influence or of the town of Esparto's Urban Growth Boundary (Figure 4). Table 4-3 presents information on acres of prime and non prime farmland within and outside of the 2-mile buffer area. Approximately 61,632 acres of prime farmland are located in this 2-mile buffer across Yolo County. Approximately 7,660 acres, or 12.4 percent of the prime farmland within the buffer, are protected by conservation easement, open space (land owned by the City of Davis and managed for agriculture or open space), or other public ownership. In addition, there are 26,949 acres of non-prime farmland in this 2-mile buffer. Approximately 3,926 acres, or 14.5 percent of the non-prime farmland within the buffer, are protected either by conservation easement, open space, or public ownership.

Projected Need for Agricultural Mitigation Lands

Several sources were evaluated to determine whether a need for agricultural mitigation land could be projected and quantified. The following were evaluated:

- Yolo HCP/NCCP projections of impacts on cultivated lands
- Lands in unincorporated areas designated for growth
- Lands in city spheres of influence

Yolo HCP/NCCP Projected of Permanent Impacts on Cultivated Lands

Over the 50-year permit term, the Yolo HCP/NCCP allows for up to 9,910 acres net loss due to permanent impacts to cultivated lands (non-rice) and 87 acres of permanent impacts to rice; most but not all of that land would be prime or non-prime farmland. Figure 5 is from the Yolo HCP/NCCP and depicts the lands projected by the plan to be converted from agricultural use to nonagricultural uses over the term of the permit. The projections in the Yolo HCP/NCCP were largely based on buildout anticipated in the 2030 Yolo County General Plan, including forecasts from the Cities and the County. The Yolo HCP/NCCP 50-year term also assumes protection of 6,275 acres of rice lands and 20,756 acres of non-rice cultivated lands to preserve habitat and species values (Yolo 2015, 5.6.2.3).

Lands in Unincorporated Areas with Nonagricultural Zoning

Buildout of the 2030 Yolo County General Plan would result in the conversion of approximately 4,807 acres of agricultural land to urban development (including roadways). Table 4-1 shows the acres of prime and non-prime farmland that exist outside the city spheres of influence that could be converted to nonagricultural uses. Approximately 15 percent of these lands are already developed (Figure 6). The potential for more agricultural land conversion could arise, however, if market conditions and policy decisions result in changes to the General Plan's land use designations and to the implementation of corresponding zoning such that lands not currently designated for growth could be developed in the future. For example, additional demand could be created for new mining

projects or solar projects—uses that are permitted in the agricultural zones but that would require mitigation for conversion of farmland. Data is not available to forecast how extensive these types of uses could be in the future. However, the assessment of the availability of land for mitigation, below, showed that there was substantial land available to address mitigation demand beyond what was feasible to forecast in this assessment. For these reasons, the amount of already developed land was not subtracted for these calculations.

Using the County's current requirements for conservation ratios, the amount of land that could be required for agricultural mitigation is shown in Table 4-1.

Figure 4. Parcels Adjacent to Developed Land Uses

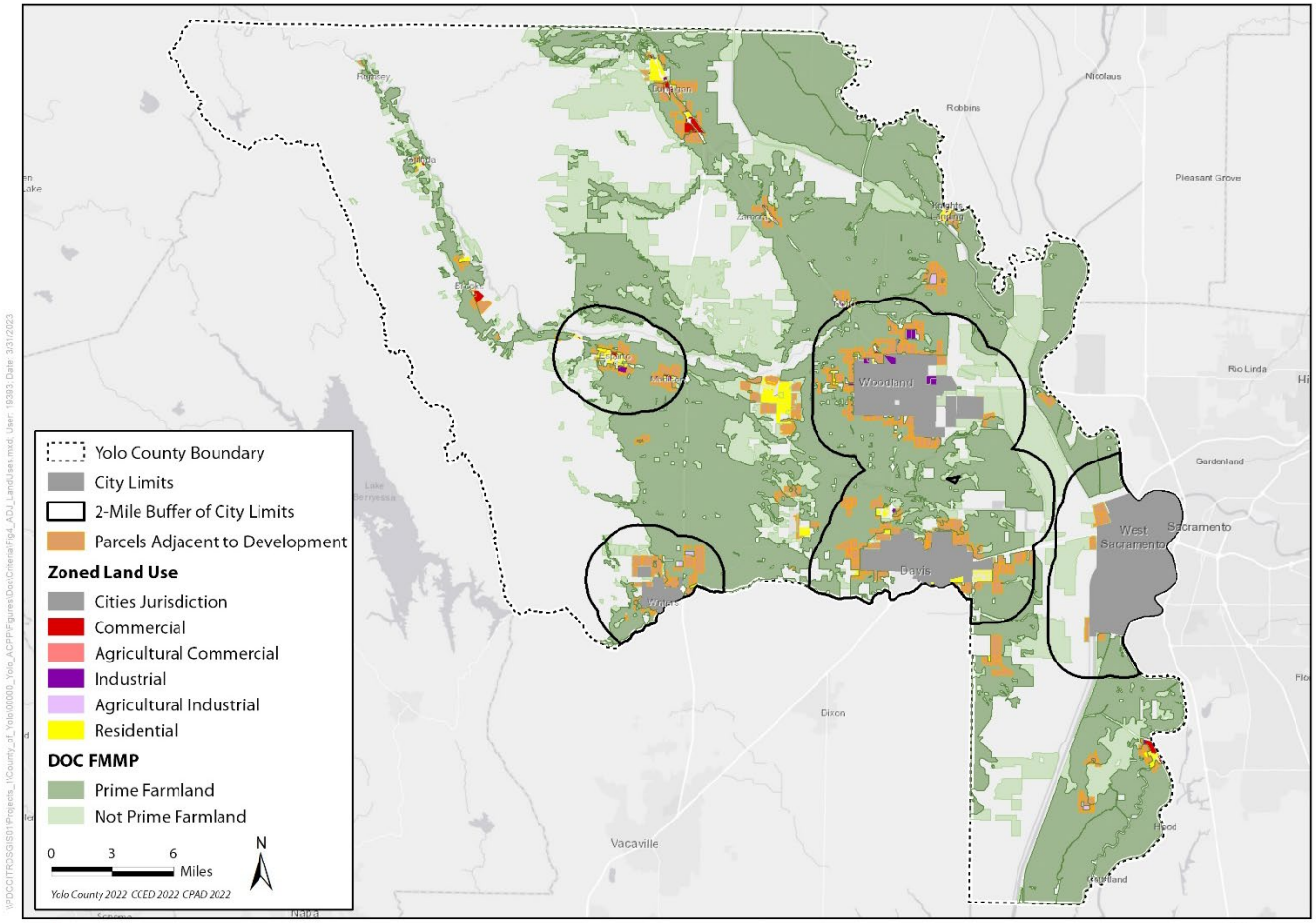

Figure 4
Parcels Adjacent to Developed Land Uses

Figure 5. Yolo HCP/NCCP: Cultivated Lands Seminatural Community and Covered Activities Footprints

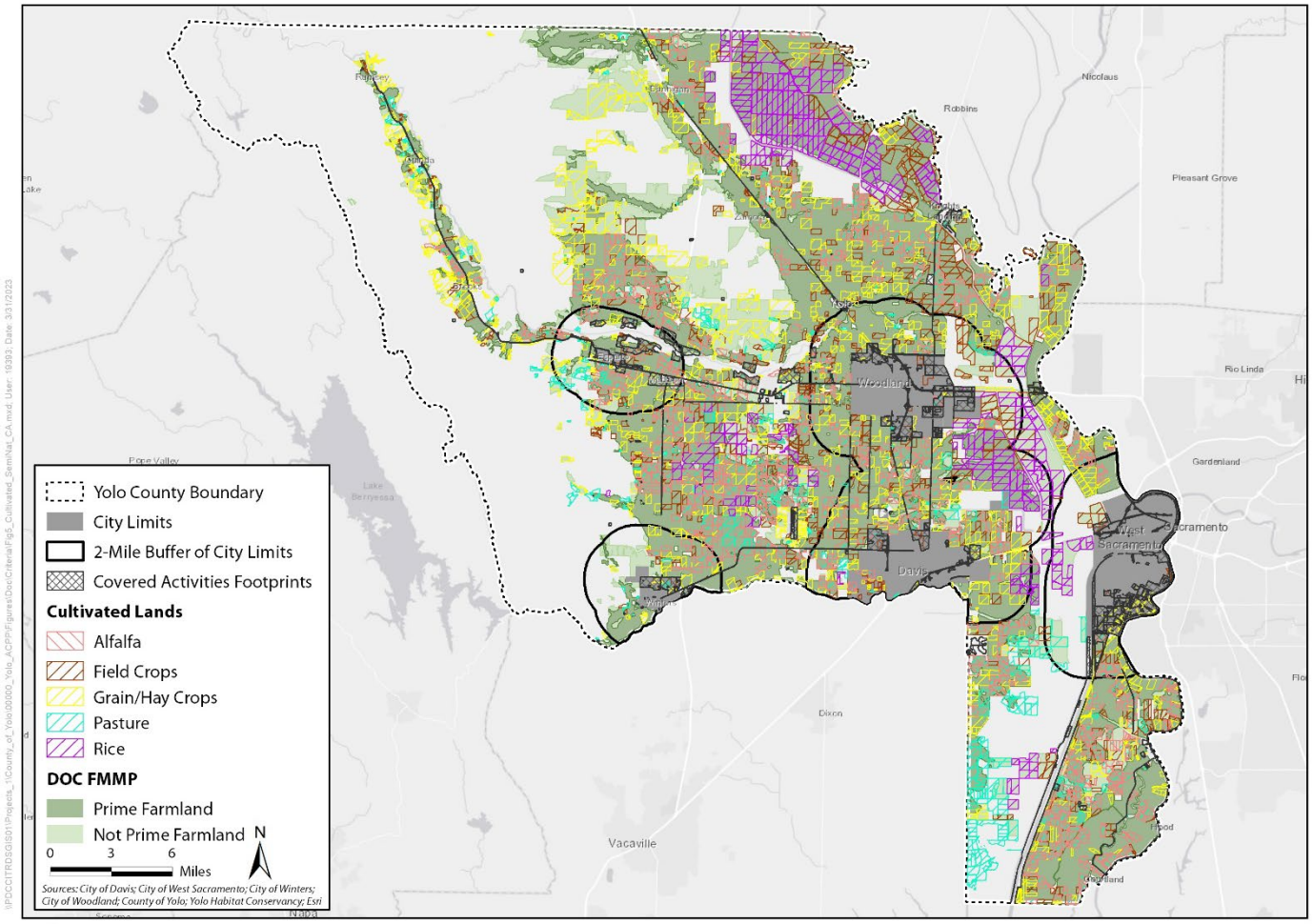

Figure 5
Yolo HCP/NCCP: Cultivated Lands Seminatural Community and Covered Activities Footprints

Figure 6. Prime Farmland Zoned for Development

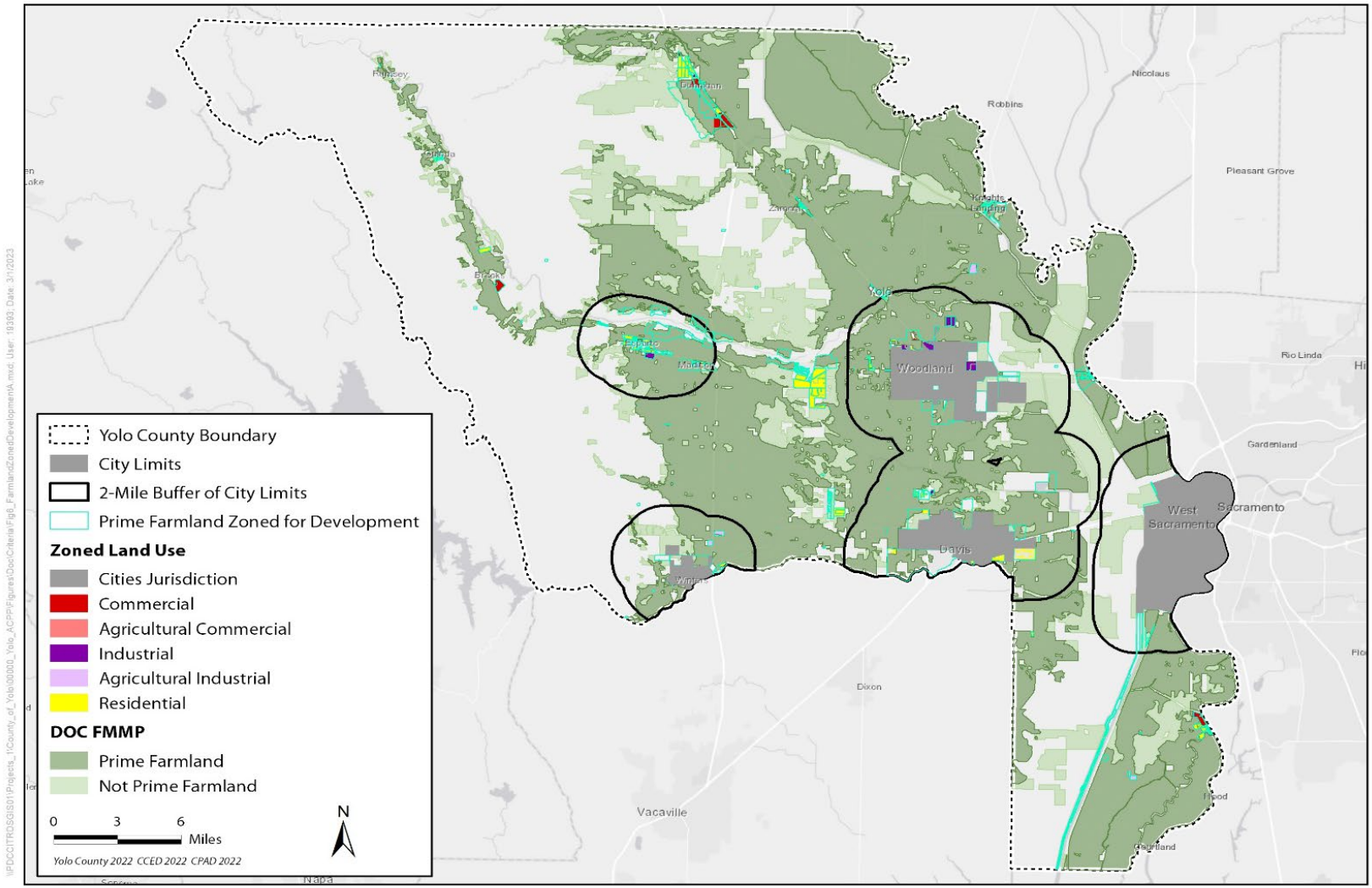

Figure 6
Prime Farmland Zoned for Development

Table 4-1 County General Plan Development Land Use Designations and Projected Mitigation Required

Yolo County General Plan Land Use Designation	Acres	Mitigation Acres (1:1)	Mitigation Acres (2:1)
Non-Prime Farmland			
Commercial General	6	6	11
Commercial Local	1	1	2
Residential Medium	6	6	11
Residential High	1	1	2
Residential Low	40	40	80
Residential Rural	66	66	133
Total Non-Prime Farmland	**119**	**119**	**239**
Prime Farmland			**Mitigation Acres (3:1)**
Commercial General	216	216	649
Commercial Local	2	2	6
Industrial	78	78	234
Residential Medium	4	4	12
Residential Low	31	31	93
Residential Rural	38	38	114
Specific Plan	1	1	3
Total Prime Farmland	**369**	**369**	**1,111**

Lands in City Spheres of Influence

For the purposes of this assessment, it was assumed that all land within city spheres of influence would be converted to nonagricultural uses. This is consistent with the County General Plan policies to focus development within urban growth boundaries, which are the spheres of influence for the incorporated cities. Table 4-2 shows the acres of prime and non-prime farmland that could be converted within city spheres of influence and, using the County's current requirements for conservation ratios, the maximum amount of land that could be required for mitigation for that conversion. The County's Agricultural Conservation and Mitigation Program requires a 3:1 mitigation ratio for the conversion of prime farmland, and 2:1 for non-prime farmland, unless mitigation occurs in a specified priority acquisition area, in which case it would be a 1:1 ratio. For this reason, the range of mitigation demand was calculated at a range from 1:1 to 3:1. (See also Table 3-1, Yolo County Mitigation Ratio Requirements.)

Table 4-2 Land in City Spheres of Influence and Projected Mitigation Required

Sphere of Influence (SOI) Area	Farmland Acres	Mitigation Required (acres at 1:1 ratio)	Mitigation Required (acres at 2:1 ratio for non prime and 3:1 ratio for prime)
Davis SOI non-prime farmland	480	480	961
Davis SOI prime farmland	1,718	1,718	5,153
Winters SOI non-prime farmland	74	74	149
Winters SOI prime farmland	189	189	567
Woodland SOI non-prime farmland	734	734	1,469
Woodland SOI prime farmland	1,156	1,156	3,467
Total non-prime farmland	**1,288**	**1,288**	**2,576**
Total prime farmland	**3,063**	**3,063**	**9,189**

Mitigation Requirement expresses the range of potential mitigation requirements (3:1 for prime and 2:1 for non-prime unless in specific areas as described above)

Available Land for Mitigation

Table 4-3 shows the total farmland—prime and non-prime farmland acreages as well as land currently under conservation easement—within the buffer for each city and the town of Esparto. Substantial areas of farmland appropriate for conservation to mitigate for conversion of agricultural lands are located within this buffer area.

Table 4-4 summarizes available land by prime and non-prime quality.

Table 4-3. Important Farmland under Public Ownership or Conservation Easement within 2 Miles of Urban Growth Areas (acres and percentage)

Region	Farmland[a] (acres)	Prime Farmland[b] (acres)	Protected Prime Farmland (acres)	Proportion of Prime Farmland in Protected Status (percentage)	Not Protected Prime Farmland (acres)	Proportion of Prime Farmland Not in Protected Status (percentage)	Non-Prime Farmland[c] (acres)[b]	Protected Non-Prime Farmland (acres)	Proportion of Non-Prime Farmland in Protected Status (percentage)	Not Protected Non-Prime Farmland (acres)	Proportion of Non-Prime Farmland not in Protected Status (percentage)
Within 2 Miles of Urban Growth Areas											
City of Davis	26,695	22,007	5,419	24.6%	15,822	71.9%	4,158	1,537	37.0%	2,604	62.6%
City of West Sacramento	11,042	3,693	588	15.9%	3,091	83.7%	7,192	1,986	27.6%	1,246	17.3%
City of Winters	11,665	6,297	335	5.3%	5,962	94.7%	5,368	249	4.6%	3,946	73.5%
City of Woodland	28,275	21,118	1,062	5.0%	20,039	94.9%	7,011	136	1.9%	6,871	98%
Town of Esparto	12,096	8,517	256	3.0%	8,226	96.6%	3,220	18	0.6%	3,187	99.0%
TOTAL WITHIN BUFFERS	**89,773**	**61,632**	**7,660**	**12.4%**	**53,140**	**86.2%**	**26,949**	**3,926**	**14.5%**	**17,854**	**66.3%**
Outside of 2 Miles of Urban Growth Boundaries	404,375	183,620	8,083	4.4%	171,921	93.6%	202,909	19,082	9.4%	183,260	90.3%
Total	494,148	245,252	15,743	6.4%	225,061	91.8%	229,858	23,008	10.0%	201,114	87.5%

[a] Farmland totals include prime farmland, farmland of statewide importance, farmland of local importance, unique farmland, and grazing land.

[b] Prime Farmland is defined by Yolo County as farmland that meets the criteria applied by the Farmland Mapping and Monitoring Program (FMMP) from the California's Department of Conservation. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Food and Agriculture. Farmland is also considered Prime Farmland if it meets the definition of "prime agricultural land" in California Government Code Section 51201c, which can be found in Appendix A.

[c] Non-Prime Farmland is defined by Yolo County as land that is used for agricultural purposes and that is not Prime Farmland. This includes FMMP categories Statewide Importance, Unique, and Local Importance.

Table 4-4 Summary of Lands Available for Mitigation

Farmlands Not Currently Protected (acres)	Prime	Non-Prime
Within 2 miles of Urban Growth Boundary (cities and town of Esparto)	53,140	17,854
Outside of 2-mile buffer	171,921	183,260

Meeting Mitigation Demand

Using the County's current requirements for agricultural conservation ratios, up to 11,765 acres Table 4-2) could be required for lands in spheres of influence, and up to 1,350 acres (Table 4-1) for lands developed through buildout of the County General Plan. The total requirement for mitigating for the loss of prime farmland would be up to approximately 10,300 acres, or approximately 6 percent of the total 183,620 acres of prime farmland in the county; the total requirement for mitigating for the loss of non-prime farmland would be up to approximately 2,815 acres, or approximately 1 percent of the total 202,909 acres of non-prime farmland in the county.

As shown in Table 4-5, the agricultural lands not currently protected in the areas within 2 miles of the urban growth boundaries of the cities and the town of Esparto could easily accommodate the amount of mitigation lands that would be needed for buildout of the County General Plan, all the land within the spheres of influence, and a 15 percent buffer for other land uses, as described earlier in this chapter.

Table 4-5 Summary of Lands Available for Mitigation Compared to Projected Demand

Farmlands Not Currently Protected (acres)	Prime	Non-Prime
Within 2 miles of urban growth areas (cities and town of Esparto)	53,140	17,854
Outside of 2-mile buffer	171,921	183,260
Potential mitigation demand	*3,432–10,300*	*1,407–2,815*

Note: Mitigation demand is the sum of land in spheres of influence and General Plan buildout.

As shown in Figure 7, some of the Yolo HCP/NCCP high-priority acquisition areas overlap with areas located within 2 miles of urban growth boundaries. Eligible land, however, is not necessarily available land. For although the land areas eligible for mitigation and easement are quite large, not all are held by landowners who are willing to sell them—and such willingness is a requirement of both the Yolo HCP/NCCP and the County's agricultural lands mitigation program. Because the amount of land available from willing sellers is limited, there may be a conflict between acquisition of lands for species and habitat conservation and acquisition of lands for agricultural mitigation.

Figure 7. Yolo HCP/NCCP Priority Acquisition Parcels

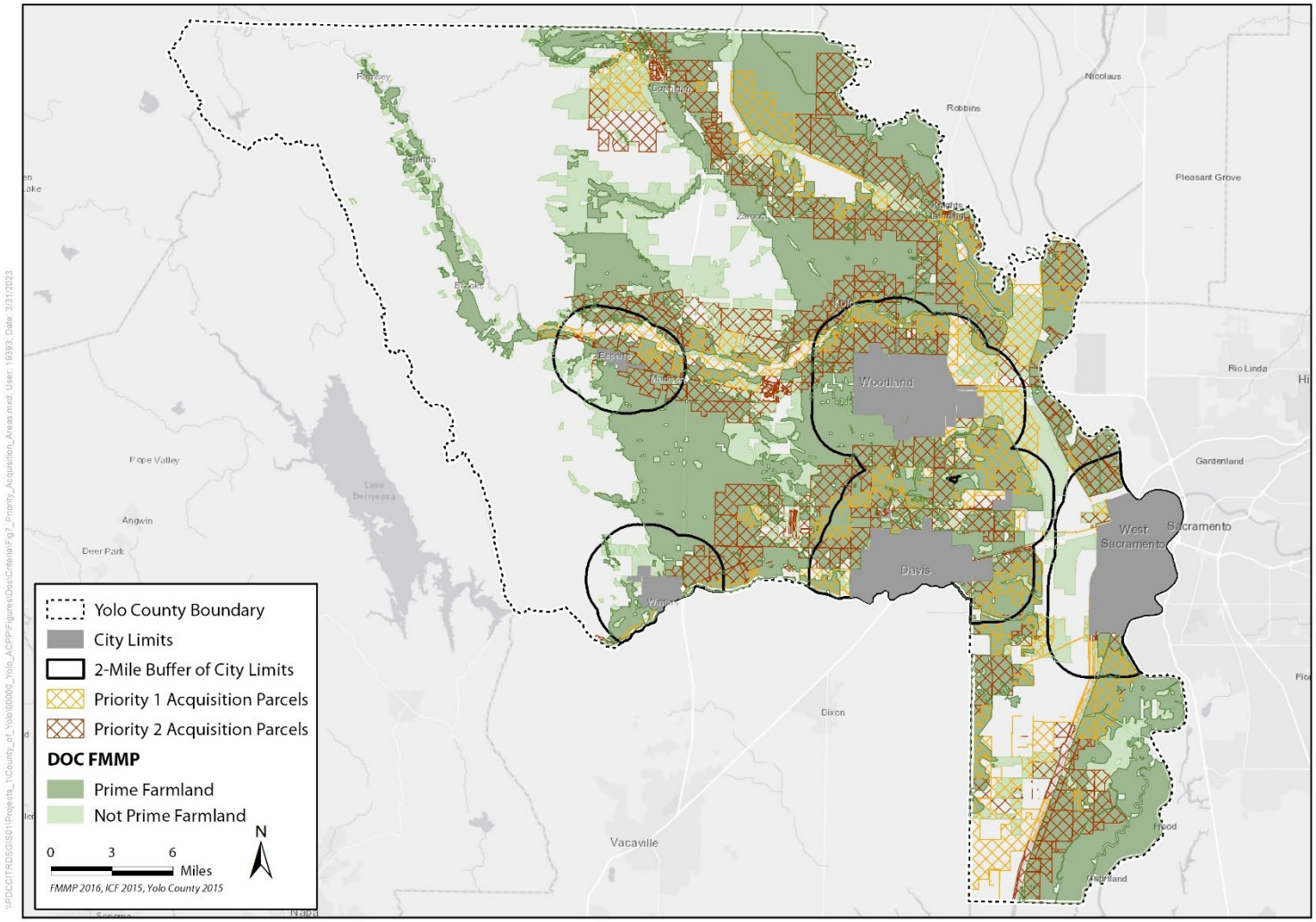

Figure 7
HCP/NCCP Priority Acquisition Parcels

Chapter 5
Data

Data used in the development of this Plan was derived from a variety of sources. GIS information from the following sources was used for mapping and geographic analysis.

Baseline public and private agricultural conservation easements, habitat easements, and Williamson Act Contract Status:

- Williamson Act Parcels from Yolo County ArcGIS Server (Yolo County 2022a)
- California Protected Areas Database (GreenInfo Network 2022b)
- California Conservation Easement Database (GreenInfo Network 2022)
- National Conservation Easement Database (U.S. Endowment for Forestry and Communities 2022)

Crops and parcel size:

- Yolo County Agricultural Commissioner

Land use policies for the County and Cities, including zoning ordinances and existing conservation and open space plans by the County, Cities, other agencies or conservation organizations:

- Land Use Layer from Yolo County ArcGIS Server (Yolo County 2022c)
- Zoning Layer from Yolo County ArcGIS Server (Yolo County 2022d)
- General Plan Land Use from Yolo County ArcGIS Server (Yolo County 2022b)
- Yolo County General Plan Land Use (Yolo County 2023a)
- Programs that result in additional preservation of agricultural lands, such as the Yolo HCP/NCCP and other federal and state priority acquisition parcels from Yolo County Habitat Conservation Plan (Yolo County 2022)
- Farmland Mapping and Monitoring Program 2016 (California Department of Conservation 2022)

Development projections and agricultural data:

- Yolo County Parcels—Q4 2022 based on County Assessor (Yolo County 2023b)

Other criteria:

- Land Cover ArcGIS database (ICF 2022)
- Yolo County Street Centerlines Q4 2017 (Yolo County 2023c)
- FEMA Flood Hazard Zones (FEMA 2023)

Chapter 6
Selection Criteria

Introduction

In this section, recommended criteria are proposed for the County to consider in selecting lands to be conserved. Because the data show no shortage of prime farmland that is both not under conservation easement and located in areas near urban development (see Chapter 4), quality of farmland and location near developed areas should continue to be important criteria.

Selection Criteria

Criteria 1—Quality of Farmland

Land should be prime farmland as currently defined in the Yolo County agricultural mitigation ordinance (Sections 8-2.404(d)(3) to (g)) See Appendix A.

Criteria 2—Location Adjacent to Spheres of Influence or Community Growth Boundaries

Land should be located in those areas identified in the ordinance as priority conservation area:

- Parcels partly or entirely within one-quarter (0.25) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary, or, for projects that convert primarily non-prime farmland, one (1) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary. For the purposes of this subsection, the word "primarily" shall mean greater than fifty (50) percent.
- Parcels lying partly or entirely within the area bounded by County Roads 98 and 102 on the west and east, respectively, and by County Roads 29 and 27 on the north and south, respectively. For mitigation of impacts to prime farmland, the ratio shall be 2:1 within this area.

Highest priority should be given to those lands directly adjacent to spheres of influence or community growth boundaries.

Criteria 3—Adjacent to Other Conservation Easements or Publicly Owned Lands

High priority should also be given to lands adjacent to other lands that will remain in agriculture or open space due to easements or public ownership.

Continuation of active agriculture is more difficult where adjacent lands are used for incompatible land uses. Working to create larger preserves will reduce incompatible land uses and also strengthen the demand for agricultural infrastructure in a given area.

Co-benefits of farmland conservation (discussed in greater detail in Chapter 7, *Results of Analysis*), including scenic views and rural/bucolic setting, are more strongly supported by larger preserves.

Criteria 4—Developable Land

Lands that are not desirable for development for nonagricultural uses are not substantially vulnerable to conversion. A potential method to determine growth potential was prepared for this Plan and is described below.

The developability rating contemplated below would determine the development potential of parcels in the conservation plan. This rating includes factors selected to support the County in making decisions that depend on evaluating which parcels in the conservation plan may be at higher risk of conversion from agricultural to nonagricultural uses.[1]

Because the potential developability rating is based on a general set of factors and is designed to support the County in strategic planning only, the factors selected reflect attributes that developers consider when evaluating a property prior to purchasing, obtaining approvals, or preparing land for sale. The selection process for the factors in the rating is not, however, meant to be exhaustive. Land development involves a rigorous set of evaluations and involves multiple parties.

The factors selected are organized into two categories. One set of factors measures site-specific qualities, and the other set assesses community incentives or limitations that affect the parcel's developability.

- **Site-specific factors** measure existing physical conditions and other tangible characteristics within the bounds of a site.
- **Community factors** assess community values—codified in policies, strategies, and plans— that affect the site.

Table 6-1 lists these factors and describes how County staff may score each factor based on desirability for development. Scoring refers to the process of assigning a value to the units of a factor. The score is scaled from 0 to 100, with a score closer to 100 signifying a greater likelihood of a given parcel's development. This process will allow County staff to place a value on a parcel's developability and compare the likelihood of development between parcels using the resulting scores.

Table 6-1: Factors for Development Rating

Parcel Factors	Description
Parcel size in acres	Larger parcels are more desirable for development for nonagricultural uses. The smaller the site, the less efficient and feasible it is to develop (Figure 8).
Parcel shape	Oddly shaped parcels are less desirable. Unconventionally shaped parcels typically have difficulty meeting development requirements such as internal circulation, parking, and drainage requirements. Larger parcels, however, are less affected by the shape of the site.

[1] A *factor* describes a unique parcel attribute, such as zoning or land use designation. Factor selection and scaling references the U.S. Department of Agriculture Land Evaluation and Site Assessment (LESA) system.

Parcel Factors	Description
Topography or terrain	Flat parcels involving minimal earthwork movement are more desirable. Landforms and natural features such as hills, trenches, and any uneven terrain require costly earthwork and soil movement, which may result in adverse offsite drainage impacts.
Distance to public sewer	Parcels with available municipal services or with proximity to existing utility infrastructure are more desirable. Parcels with no utility hookup may be subject to additional fees and require additional review that translate to longer development timelines and higher costs. Availability of water, sewer, and other utilities has been shown to correlate with high development readiness.
Distance to public water	Parcels with proximity to existing utility infrastructure are more desirable (including a public water system) are more desirable.
Distance to electric infrastructure	Parcels with proximity to existing utility infrastructure are more desirable (including electricity service) are more desirable.
Availability of telecom infrastructure	Parcels with proximity to existing utility infrastructure are more desirable (including telecom service) are more desirable.
Adjacent to public roads	Parcels with public road frontage are more desirable. Existing public road access requires no processing of easement, covenants, or documentation permitting access to the property. Infrastructure costs are also avoided (Figure 9).
Distance to freeways or major arterial roads	Parcels closer to high-capacity roads are more desirable. These types of roads indicate existing development pressure and render parcels highly accessible.
Adjacent land uses	Parcels adjacent or proximate to nonagricultural uses are more desirable. This factor measures the intensity of nonagricultural use. Nonagricultural uses include commercial, residential, industrial, or mixed uses. This may be measured by simply identifying the land uses in neighboring parcels or by calculating the percent of surrounding land that is in nonagricultural use.[2] In addition to considering adjacency, the County may consider the proximity of parcels to an urban growth boundary identified in the unincorporated communities. Parcels proximate to the outside edges of a community's growth boundary should be considered less desirable for development, as they tend to be farther from urban areas and amenities.[3]
Community Factors	**Description**
Not proximate to protected farmland	Parcels adjacent or closer to protected farmlands are less desirable for development. Protections may include conservation easements or ownership by a land trust.
No presence of historic or cultural or archaeological features	Parcels that are occupied by certain assets, such as buildings or open space with historic or cultural or archaeological classification, are less desirable. Public policies typically apply strong protection of historic

[2] To make this calculation for a given parcel, identify the land uses of neighboring parcels and their areas and then calculate the ratio of nonagricultural versus agricultural uses surrounding the given parcel. An alternative method for measuring the intensity of nonagricultural uses is to measure the impervious surface ratio or the percentage of land covered by roads, parking lots, buildings, and pavements.

[3] The Yolo Local Agency Formation Commission evaluates the need for growth boundaries. The City of Winters established an urban growth boundary in 2020, whereas the City of Woodland allows for the consideration of growth within the Urban Limit Line consistent with polices in the General Plan updated in 2017 (City of Woodland 2017).

Parcel Factors	Description
	landmarks or conservation landmarks. Any alterations to or new development in areas with this distinction often require historic resource review that can be time and resource intensive.
No scenic values or designation[4]	Parcels that are located within or proximate to scenic byways or similar designations are less desirable. Developments often face pushback from communities that identify and promote the visual values of scenic designations.
No educational values or designation	Parcels adjacent or close to sites that have existing education values sucj as those that serve as demonstration farms for sustainable practices or innovations in agricultural technologies, are less desirable for development. This may be measured by proximity agricultural research sites, or farms that host educational programs.[5]
No wetland or riparian protection	Parcels within or adjacent to wetland or riparian protection areas, if eligible for development, are less desirable. These are often protected against development activity by planning documents and strict municipal code requirements.[6] Parcels adjacent to protected lands are shown in Figure 10.
Not located within a floodplain or flood hazard areas	Parcels within a floodplain or within high-risk flood zones are less desirable for development. Like wetland or riparian protection areas, planning documents as well as federal and state regulation exist to restrict development in floodways and floodplains (Figure 11).[7]
Not a fish, game, or wildlife habitat area	Parcels that are habitats of fish, game, or wildlife—including animals with seasonal habitat needs and especially species considered endangered or threatened by federal agencies—are less desirable for development.[8]

The County may choose to weigh factors as some may be more important than others. A typical approach to weighting factors is to use a multiplier between 0 to 1.00, with all factor weights adding up to 1.00. The weights are then multiplied to each factor scoring which results to weighted factor ratings. Table 6-2 illustrates how to compute two example parcels' developability rating using scores and weights.

- **Sample Parcel A** is a large site rectangular in shape but with a slanted corner and a trench from previous digging. Both utility and public infrastructure are available. Access to roads is ideal

[4] Route 160 following the county line is an officially designated scenic highway; however, this designation is for Sacramento County. Route 128 is designated as "eligible"; however, the route ends at the intersection with Route 505, so only a very small portion is in Yolo County. Also "eligible" is Route 16 running through the county (California Department of Transportation n.d.).

[5] Several educational programs relating to agriculture and conservation exist in the county and are managed between the County and institutions. This includes the UC Davis Agricultural Experiment Station, the California Agricultural Issues Lab, and the UC Cooperative Extension Partnership.

[6] Many parcels in the county are designated as or are adjacent to freshwater emergent wetlands or freshwater forested or shrub wetlands according to the U.S. Geological Survey's National Wetlands Inventory (U.S. Geological Survey n.d.).

[7] Many parcels in the county have been designated as flood hazard zones by the Federal Emergency Management Agency (Federal Emergency Management Agency 2018).

[8] An alternative mode of measuring habitat area is a local planning designation for environmentally sensitive areas. The County has the Yolo HCP/NCCP, which conserves 12 sensitive species and their habitats (Yolo Habitat Conservancy n.d.a).

given its proximity to existing residential development. Parcel A is near some protected farmland, but there is no cultural or environmental sensitivity determined onsite.

- **Sample Parcel B** is identical to Parcel A in physical attributes and zoning; however, migratory birds are known to use the wetland areas of the site once a year and a historical landmark sits adjacent to the site.

Figure 8. Parcel Size

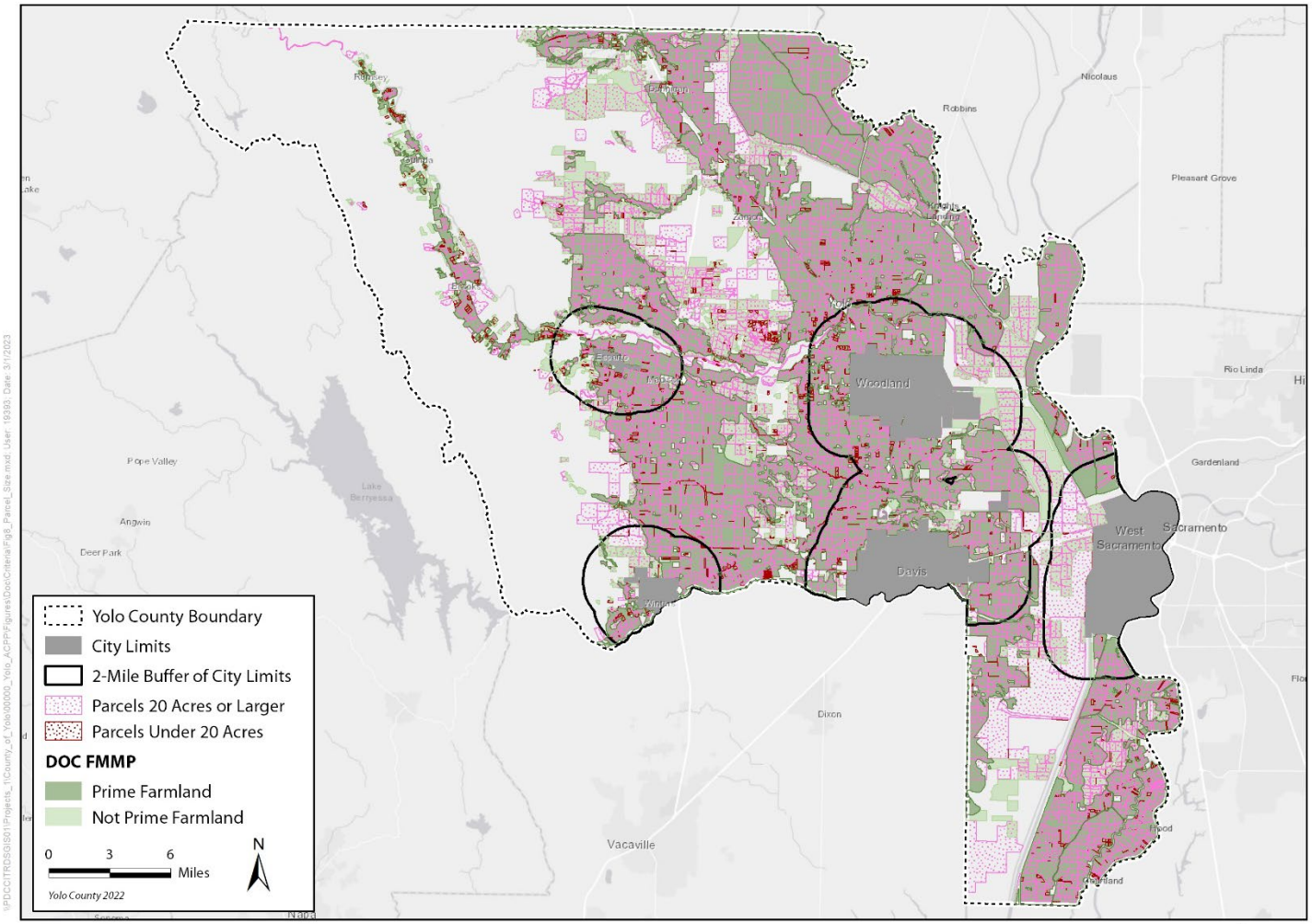

Figure 7
Parcel Size

Figure 9. Parcels Along Roads

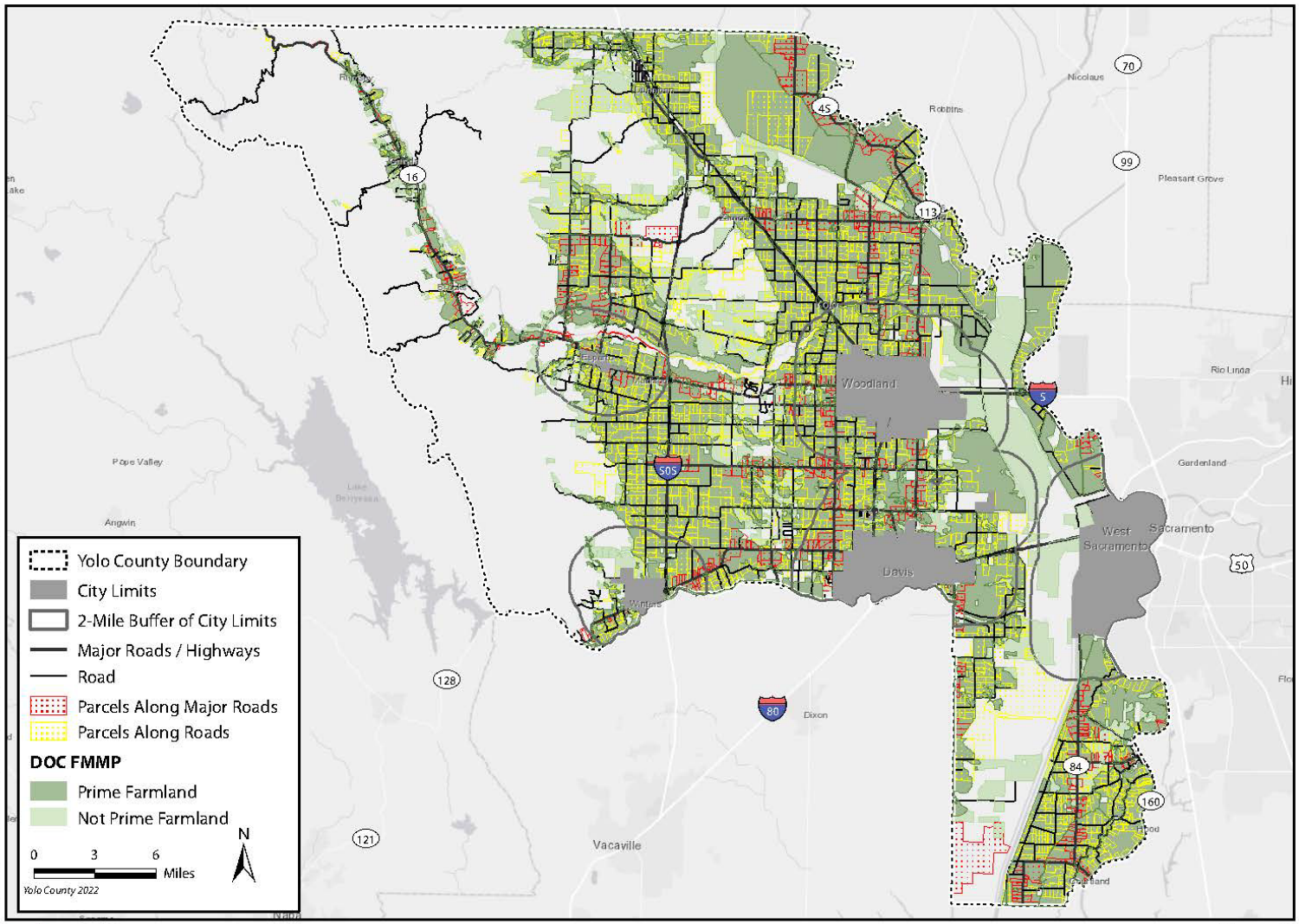

Figure 9
Parcels Along Roads

Figure 10. Parcels Adjacent to Protected Lands

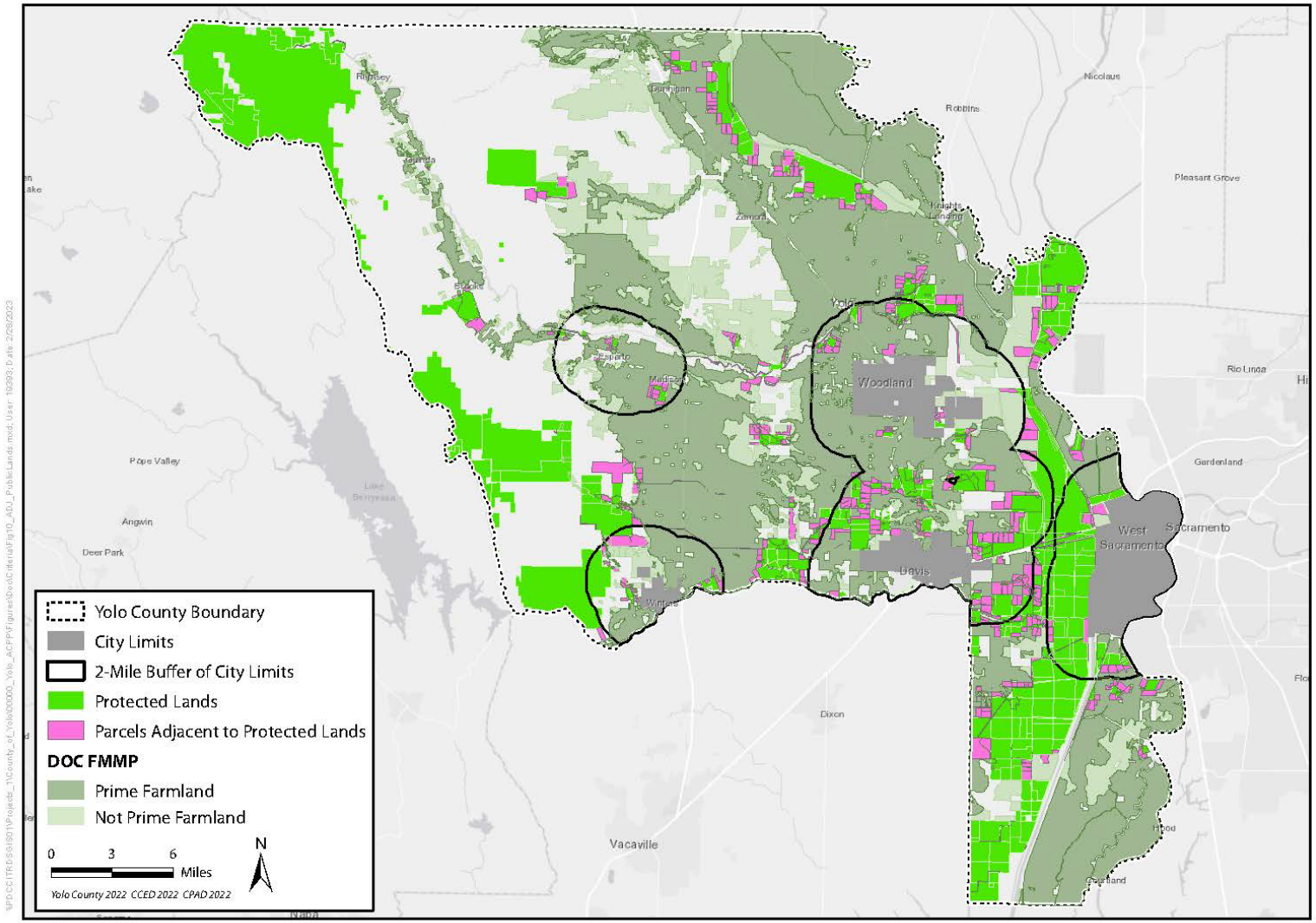

Figure 10
Parcels Adjacent to Protected Lands

Figure 11. Flood Hazard Areas

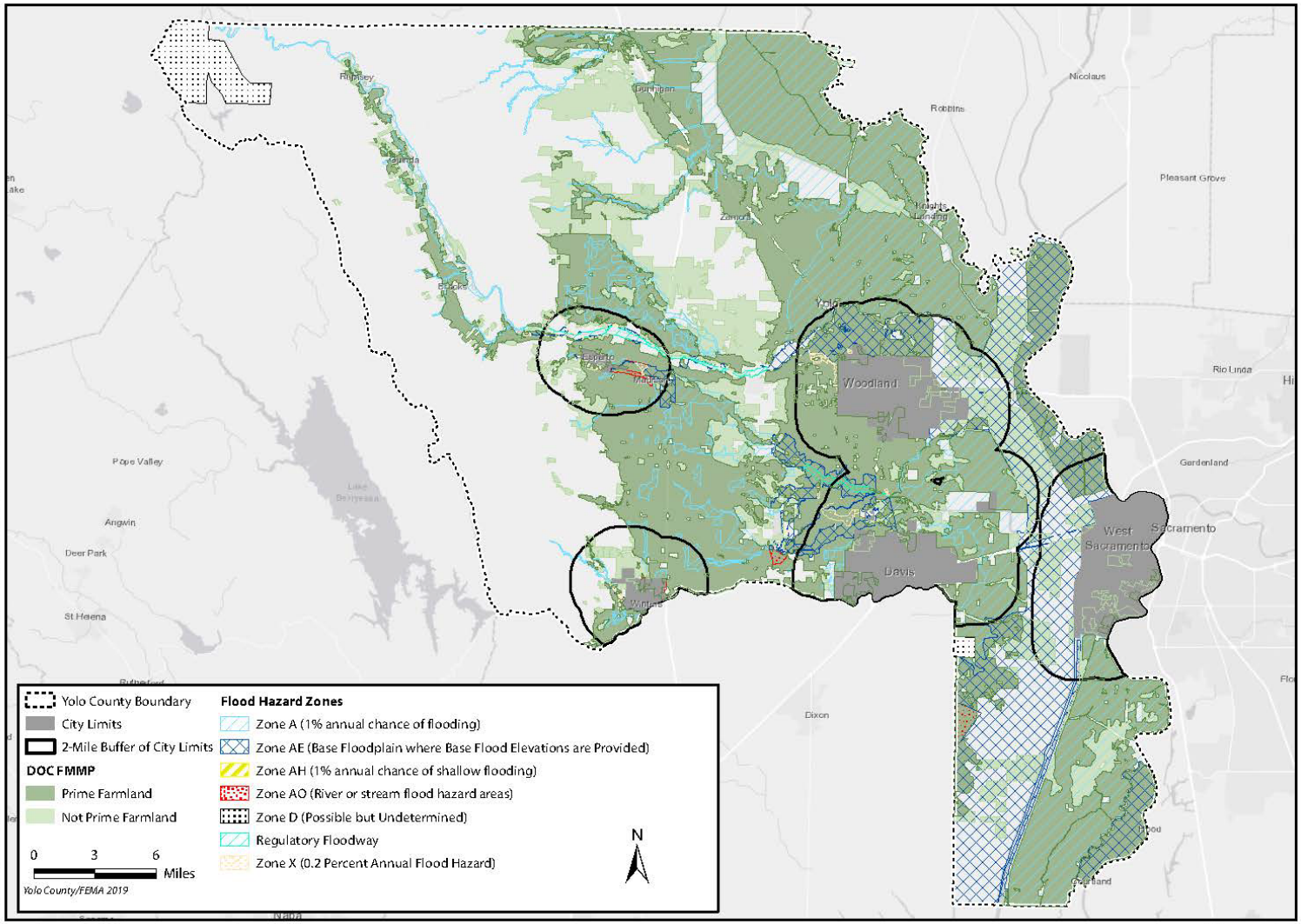

Figure 11
Flood Hazard Areas

Table 6-2: Sample Developability Rating

Factors	Factor Weighting	Parcel A		Parcel B	
		Score	Weighted Score (weighting x score)	Score	Weighted Score (weighting x score)
Parcel Factors					
Parcel size in acres	0.1	80	8	80	8
Parcel shape	0.05	80	4	80	4
Topography or terrain	0.06	50	3	50	3
Distance to public sewer	0.05	100	5	100	5
Distance to public water	0.05	100	5	100	5
Distance to electric infrastructure	0.05	100	5	100	5
Availability of telecom infrastructure	0.05	100	5	100	5
Adjacency to public roads	0.02	100	2	100	2
Distance to freeways or major arterial roads	0.02	100	2	100	2
Adjacent land uses	0.1	80	8	80	8
Community Factors					
Compatible zoning or land use designation	0.1	100	10	0	0
Distant to protected farmland	0.07	60	4.2	60	4.2
No presence of historic or cultural or archaeological features	0.06	100	6	0	0
No scenic values or designation	0.04	100	4	100	4
No educational values or designation	0.03	100	3	100	3
No wetland/riparian protection	0.05	100	5	0	0
Not within a floodplain or flood hazard areas	0.1	100	5	100	5
Not a fish, game, or wildlife habitat area	0.05	100	5	100	5
Total Developability Rating:			**Parcel A: 89.2**		**Parcel B: 68.2**

Assuming the factors have been weighted appropriately, a higher developability rating indicates which parcel is more desirable for development and conversion into nonagricultural uses. In the rating comparison demonstrated in Table 6-2, the County should try to develop the more desirable parcel, Parcel A, first.

Chapter 7
Results of Analysis

Co-Benefits (Multi-Benefits) of Conservation of Agricultural Land

Economic Co-Benefits of Conservation Planning

Communities across the globe have studied and observed a wide range of economic benefits related to farmland preservation and conservation, including continued food security, stable food supply, and the continuance of agricultural economies, with the latter being of particular value for Yolo County. Preserving the land helps to protect economic activities such as crop sales and agricultural labor, which are important sources of economic activity in Yolo County.

Jobs in Related Industries

Farmland preservation also indirectly benefits agricultural-related industries such as processing operations, advanced manufacturing, biotechnology companies, and farmland-supported contractors. These include a variety of locally processed food and beverages (e.g., almonds, grapes, and tomatoes), animal processing, high technology equipment and machinery producers, food and seed development companies, wineries, and breweries. Many of these industries are recognized as critical to the national economy and are supported through state and federal funds. California's Central Valley is home to an array of businesses within these sectors, comprising more than 200,000 jobs in agricultural processing alone. These jobs demand a variety of skill levels and include positions such as food-processing technicians, quality-control inspectors and compliance officers, farm-machinery mechanics, food scientists and technologists, and supervisors. High skill jobs, particularly those in research and development, or innovative agricultural technologies, provide the County with high paying jobs which contribute to local economic vitality. Companies like Bayer, a research and development food development site in Yolo County, employees approximately 250 employees alone. Consequently, jobs in food and beverage processing are 3.9 times more concentrated in the Central Valley than elsewhere in the nation (California Central Valley Economic Development Corporation n.d.).

Bio tech (seed companies, food development, labs, bio pesticide development) and other high tech (robots for harvesting) industries that are located in Yolo County also contribute to the ag economy, but also to the county's general economic development through high paying jobs for scientist and engineers.

Operations in this sector often exist in proximity to farmlands where crops are produced. With a time-sensitive supply chain, efficient storage and transportation of products are important to maintain positive profit margins (TriStar Plastics n.d.; Martinez 2017). Because the beverage and food-processing industry depends on accessible crops, conversion of farmland to other uses could result in escalating costs due to increased transportation needs and crop spoilage; it could also lead to businesses relocating to other regions in the state. Transporting food over increased distances also increase the carbon footprint of food processing. For example, transporting just one ton of food

via flight, which is more common as farm to table distances increase, is nearly 70 times more carbon intensive than transporting the same weight via cargo. The preservation of agriculture has the benefit of preserving the economic prosperity not only for farmers and ranchers, but also for farmworkers, industry employees, and the local economies in which they live (California Central Valley Economic Development Corporation n.d.).

Technological Innovation and Skills Development

Farmland preservation in Yolo County may also help further agricultural technological innovation and skill development. A 2004 survey found that farmers who participated in farmland preservation were more likely to invest in their farms, attend workshops to improve their skills, or learn new technologies (Lynch and Duke 2004). Yolo County has the advantage of proximity to and working relationships with institutions that provide the County with emerging research to further agricultural innovation, like the University of California Cooperative Extension (University of California Cooperative Extension n.d.). Ensuring the continuation of agriculture in the county as both a community value and a policy consideration may further the advancement of such innovation.

Rural Amenities and Recreation

By prioritizing farmland conservation, Yolo County also provides benefits related to rural amenities and maintaining open space. Farmland preservation provides opportunities for residents and visitors to engage in a variety of activities that may otherwise be unavailable, including pick-your-own fruits and vegetables farm attractions, community-supported agriculture and other local farm-to-table transactions, farm and ranch tours, and other recreational uses. Preserved lands also create attractive scenery, which may have the effect of attracting new visitors or potential residents or appreciating home values. An economic impact study of Pennsylvania's Chester County analyzed over 90,000 homes and found that proximity to protected land, including agricultural land, contributes to higher residential property values (ESI Consult Solutions 2019). Another study in Mercer County, New Jersey, found similar results (ESI Consult Solutions 2021).

Some agricultural lands—such as agricultural forests, integrated farms (U.S. Department of Agriculture n.d.), or horticultural sites, provide additional ecological benefits. Ecosystem services that may be found among these benefits could include reduced air and water pollution, the maintenance of soil quality, carbon sequestration, and natural flood protection (HeadWaters Land Conservancy n.d.). Services such as these have economic implications in the form of avoided costs: That is, without these naturally occurring benefits, additional actions would be required to maintain such ecosystems (Lotze and Lozaare 2023). Further, sustainably managed agricultural operations may also help preserve critical wildlife and their habitats. Open space preservation also provides ecosystem services such as maintaining biodiversity and protecting bee populations, which are essential to pollinating crops (World Wildlife Fund n.d.). The preservation of agricultural sites provides these co-benefits and cost savings to the surrounding communities.

Retaining agriculture through farmland conservation in Yolo County is important not only because it is a community value, but also because it preserves economic activities related to agriculture and related industries in the form of jobs, economic output, ecotourism, rural amenities, and industry innovation.

Identification of High-Priority Agricultural Areas for Conservation

As described in more detail in Chapter 3, *Background*, Yolo County ordinance Sections 8-2.404(d)(2)(i) identifies priority conservation areas as follows:

> (A) Parcels partly or entirely within one-quarter (0.25) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary, or, for projects that convert primarily non-prime farmland, one (1) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary. For the purposes of this subsection, the word "primarily" shall mean greater than fifty (50) percent.
>
> (B) Parcels lying partly or entirely within the area bounded by County Roads 98 and 102 on the west and east, respectively, and by County Roads 29 and 27 on the north and south, respectively.

One of the questions posed as this Plan was prepared is whether there is still substantial land available in Yolo County that is not currently conserved within this existing priority conservation area. As described in Chapter 4, *Methodology*, the extent of lands under conservation easement in this area is only 12.4 percent of the prime farmland in this area. Much of the remaining land is under Williamson Act contract (see Figure 2), although enrolling in the Williamson Act is not a permanent method of conservation; and because landowners can seek nonrenewal or cancellation, Williamson Act contracts do not protect farmland that is subject to high development pressures in perpetuity as an agricultural easement does.

Therefore, as described in Chapter 6, *Selection Criteria*, it is recommended that conservation efforts be directed at those areas currently identified by the County as high-priority areas, with a strong focus on those areas directly adjacent to the urban growth boundaries.

By establishing substantial farmland conservation areas immediately adjacent to city spheres of influence and to the Esparto Urban Growth Boundary, the County would implement General Plan Policy CC-1.7:

> Reinforce the growth boundaries for each community through appropriate mechanisms including greenbelts, buffers, conservation easements and other community separators. (Yolo County 2009a)

Where a substantial area is conserved adjacent to the urban boundaries, parcels on the other side of that area would become less attractive for nonagricultural development because they are farther from urban services and other infrastructure, including utilities and roadways with capacity to serve development. In addition to discouraging urban development of prime farmland, establishing an effective greenbelt system would provide substantial co-benefits to the communities located within the developed urban areas.

Assessment of Conservation Methods

Creation of an Agricultural Mitigation Bank

The County's ordinance recognizes the possibility of the creation of an agricultural mitigation bank in code Section 8-2.404(d)(3)(iii), found in Appendix A, *Excerpts of Relevant County and State Code.* By creating one or more agricultural mitigation banks, the County would have the power to decide where conservation lands should be located, because the current implementation of the ordinance depends on having applicants identify and propose lands to serve as mitigation.

The County could acquire sufficient lands to meet projected demand and establish a mitigation fee program as outlined in the County code. In general, mitigation banks streamline permitting for individual applicants, who can pay an in-lieu fee to obtain credits from the mitigation bank, rather than attempt to negotiate conservation easement acquisitions. As described in Chapter 4, the total projected mitigation requirement for prime farmlands would be up to approximately 10,297 acres, as shown in Table 7-1; however, if land was mitigated in the areas closest to the urban growth boundaries, that requirement could be as low as 3,433 acres, as shown in Table 4-5.

Table 7-1 Prime Farmland Agricultural Mitigation Land Requirements by Location of Development

Location of Development	Mitigation Required (acres)
Development in unincorporated areas outside of city spheres of influence (SOIs)	1,108
Davis SOI prime farmland	5,153
Winters SOI prime farmland	567
Woodland SOI non-prime farmland	1,469
Woodland SOI non-prime farmland	3,467
Total	**10,297**

Establishing a single mitigation bank in an outlying area would not accomplish all the County's goals for farmland conservation. As described in Chapter 6 and in *Co-Benefits (Multi-Benefits) of Conservation of Agricultural Land*, earlier in this chapter, conserving areas closest to urban growth boundaries would have farmland conservation benefits beyond the acre-for-acre mitigation for lands converted. For this reason, establishment of several mitigation banks located in the highest priority conservation areas would be most preferable. Other advantages of a County-established bank would be the ability to acquire easements earlier in the cycle of rising land prices and creating larger conserved areas.

Privately Held Conservation Easements

Yolo Land Trust, which holds 77 conservation easements on approximately 12,917, acres of farmland, is the primary holder of farmland conservation easements in Yolo County (Yolo Land Trust n.d.). This is an effective method of managing lands conserved through conservation easement and recognized in the County's existing ordinance.

Co-Benefit Conservation Easements with Yolo Habitat Conservancy

As described in Chapter 4, the Yolo HCP/NCCP will result in conservation for habitat and species values of 6,275 acres of rice lands and 20,756 acres of non-rice cultivated lands over the permit term. Conservation easements are intended to ensure the continued agricultural use of the lands and to maintain the habitat values required for the implementation of the conservation strategy of the Yolo HCP/NCCP. As shown in Figure 7, some of the HCP/NCCP high-priority acquisition areas are within 2 miles of urban growth boundaries.

The County ordinance does not allow the stacking of agricultural mitigation credits such that lands conserved for open space or habitat could simultaneously meet mitigation requirements for conversion of agricultural lands. However, location of lands conserved specifically for agriculture within the same areas as lands conserved for open space and habitat could potentially provide benefits of compatibility of uses. To the extent that lands under conservation easement are also located in the high-priority areas described above, open space and habitat easements could support the development of greenbelts.

Carbon Sequestration Programs

The U.S. Department of Agriculture (USDA), including the Natural Resources Conservation Service (NRCS), has substantial funding and many programs aimed at soil and water conservation that can result in lowering carbon emissions and increasing carbon sequestration. The programs most relevant to the Plan are those that encourage no-till or reduced-till practices, which allow carbon and nitrogen to remain in the soil instead of being disturbed and released through tilling. Other relevant programs relate to irrigation management, especially for rice growers.

Most of these programs are designed to assist farmers, both through technical assistance and through funding, who are establishing farming practices that reduce greenhouse gas emissions and increase carbon sequestration. For example, the USDA's Partnerships for Climate-Smart Commodities has provided grant-funding opportunities for projects that, according to USDA, "expand markets for climate-smart commodities, leverage the greenhouse gas benefits of climate-smart commodity production, and provide direct, meaningful benefits to production agriculture, including for small and underserved producers" (U.S. Department of Agriculture 2022). Directly funding agricultural land conservation through the acquisition of conservation easements or direct fee acquisition is not a goal of these programs.

A local effort by the Center for Land-Based Learning, the Carbon Cycle Institute, Yolo Land Trust, and Yolo County RCD—working together as the Yolo Carbon Farming Partnership—will educate growers on methods for sequestering atmospheric carbon (carbon farming) and will develop model Carbon Farm Plans (Yolo County Resource Conservation District n.d.). The County could also consider some form of incentives for conserved farmlands that employ practices to increase carbon sequestration.

Programs that Result in Additional Preservation of Agricultural Lands

As described elsewhere, Williamson Act contracts are not permanent and, therefore, are not as protective of agricultural land that may be subject to high development pressures. The existence of a Williamson Act contract is a disincentive to development in the near term, but with nonrenewal and cancellation procedures available, this program does not provide substantial protection for lands that are desirable for nonagricultural development. The Farmland Security Zone (FSZ) contract provides additional protection, as the initial period is for 18 years. Yolo County has adopted regulations that specify that establishment of a FSZ and subsequent FSZ Contracts can include only those lands located within three miles of a LAFCo-adopted city sphere of influence. Existing Williamson Act contracts can, with County approval, be converted to a FSZ contract.

The Farmland Protection Policy Act (FPPA) applies to actions of federal agencies (but not to permitting and licensing by federal agencies). For this reason, the FPPA would not apply to most of Yolo County, as there is little federal land that is also prime farmland in the county. According to the USDA,

> The FPPA is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years. (U.S. Department of Agriculture, 2022)

Other relevant federal programs administered by the USDA include the Conservation Stewardship Program, which helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns, and the Agricultural Conservation Easement Program, which provides cost share funding for acquisition of conservation easements (U.S. Department of Agriculture n.d.b, n.d.a).

Chapter 8
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Appendix A

Excerpts of Relevant County and State Code

Appendix A
Excerpts of Relevant County and State Code

Yolo County Code of Ordinances

Sections 8-2.404(d)(3) to (g)

(d) *Agricultural Mitigation Implementation.* Agricultural mitigation required by this section shall be implemented as follows:

(1) Location, Generally. Mitigation lands shall be located within two (2) miles of sphere of influence of a city or within two (2) miles of the General Plan urban growth boundary of the town of Esparto ("Esparto Urban Growth Boundary"). Mitigation may also occur in any other area designated by the Board of Supervisors based on substantial evidence demonstrating that the parcel at issue consists predominantly of prime farmland and/or is subject to conversion to non-agricultural use in the foreseeable future. Any such designation shall be made by resolution and shall specify whether the designated area is a priority conservation area subject to a 1:1 mitigation ratio. For all other designated areas, the resolution shall specify the mitigation ratio for any mitigation occurring in the covered area, which may exceed the applicable base ratio.

(2) Adjustment Factors. The following adjustment factors shall be applied, where relevant, to modify the base ratio:

(i) Priority Conservation Areas. Mitigation occurring within a priority conservation area shall occur at a reduced 1:1 ratio unless otherwise specified below. The following areas shall be deemed priority conservation areas for purposes of this section:

(A) Parcels partly or entirely within one-quarter (0.25) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary, or, for projects that convert primarily non-prime farmland, one (1) mile of the sphere of influence of a city or the Esparto Urban Growth Boundary. For the purposes of this subsection, the word "primarily" shall mean greater than fifty (50) percent.

(B) Parcels lying partly or entirely within the area bounded by County Roads 98 and 102 on the west and east, respectively, and by County Roads 29 and 27 on the north and south, respectively. For mitigation of impacts to prime farmland, the ratio shall be 2:1 within this area.

(3) Other Factors.

(i) If the area to be converted is twenty (20) acres or more in size, subject to the exception in (iii), below, by granting, in perpetuity, a farmland conservation easement to a qualifying entity with the County as a third party beneficiary, together with the provision of funds sufficient to compensate for all administrative costs incurred by the qualifying entity and the County as well as funds needed to establish an endowment to provide for monitoring, enforcement, and all other services necessary to ensure that the

conservation purposes of the easement or other restriction are maintained in perpetuity.

(ii) If the area to be converted is a small project less than twenty (20) acres in size, by granting a farmland conservation easement as described in subsection (i), above, or payment of the in-lieu fee established by the County to purchase a farmland conservation easement consistent with the provisions of this section; and the payment of fees in an amount established by the County to compensate for all administrative costs incurred by the County inclusive of endowment funds for the purposes set forth in subsection (i), above. The in-lieu fee, paid to the County, shall be used for agricultural mitigation purposes only (i.e. purchases of conservation easements and related transaction and administrative costs).

(iii) If Yolo County or a qualifying entity establishes a local farmland mitigation bank and sufficient credits are available at a total cost not exceeding the in lieu fee (and all related transactional and similar costs), small projects shall satisfy their farmland mitigation requirement by purchasing credits from the mitigation bank in a quantity sufficient to discharge the mitigation obligations of the project under this section. Other local projects converting twenty (20) or more acres of farmland may also purchase credits to discharge their farmland mitigation requirements, in lieu of providing an easement under subsection (i), above.

A farmland mitigation bank must be approved by the Board of Supervisors for local (i.e., within Yolo County) mitigation needs based upon a determination that it satisfies all of the farmland mitigation requirements of this section.

Landowners and project applicants that conserve more farmland than necessary to satisfy their mitigation obligations may seek approval of a farmland mitigation bank through an application process to be developed by the Planning, Public Works, and Environmental Services Department.

(iv) Agricultural mitigation shall be completed as a condition of approval prior to the acceptance of a final parcel or subdivision map, or prior to the issuance of any building permit or other final approval for development projects that do not involve a map.

(e) *Eligible lands*. Land shall meet all of the following criteria in sections (1) through (6), below, to qualify as agricultural mitigation:

(1) Agricultural conservation easements resulting from this program shall be acquired from willing sellers only;

(2) The property is of adequate size, configuration and location to be viable for continued agricultural use;

(3) The equivalent class of soil, based on the revised Storie index or NRCS soil survey maps, for the agricultural mitigation land shall be comparable to, or better than, the land which is converted;

(4) The land shall have an adequate water supply to maintain the purposes of the easement, i.e., to irrigate farmland if the converted farmland is irrigated or capable of irrigation. The water supply shall be sufficient to support ongoing agricultural uses;

(5) The mitigation land shall be located within the County of Yolo in a location identified for mitigation in accordance with this section;

(6) It is the intent of this program to work in a coordinated fashion with the habitat conservation objectives of the Yolo Habitat Conservancy joint powers agency and the developing Habitat Conservation Plan/Natural Communities Conservation Plan. The mitigation land may not overlap with existing habitat conservation easement areas; the intent is to not allow "stacking" of easements, except for habitat conservation easements protecting riparian corridors, raptor nesting habitat, wildlife-friendly hedgerows, or other restored or enhanced habitat areas so long as such areas do not exceed five percent (5%) of the total area of any particular agricultural conservation easement.

(f) *Ineligible lands*. A property is ineligible to serve as agricultural mitigation land if any of the circumstances below apply:

(1) The property is currently encumbered by a conservation, flood, or other type of easement or deed restriction that legally or practicably prevents converting the property to a nonagricultural use; or

(2) The property is currently under public ownership and will remain so in the future, except to the extent it is included within a mitigation bank that may subsequently be established by the County or other public agency; or

(3) The property is subject to physical conditions that legally or practicably prevent converting the property to a nonagricultural use.

(g) *Minimum conservation requirements*. The following minimum requirements shall be incorporated into all conservation easements recorded to satisfy the requirements of this mitigation program. Nothing in this subsection is intended to prevent the inclusion of requirements that require a higher level of performance from the parties to a conservation easement or other instrument to ensure that the goals of this mitigation program are achieved.

(1) It is the intent of the County to transfer most, if not all, of the easements that are received from this program to a qualifying entity, as defined above, for the purpose of monitoring compliance with easement terms and taking any necessary enforcement and related actions. Estimated costs of any such transfer may be recovered from the applicant at the time of easement acceptance by the County.

(2) All farmland conservation easements shall be acceptable to County Counsel and the qualifying entity that will receive the easement, and signed by all owners with an interest in the mitigation land.

(3) The instrument shall prohibit any uses or activities which substantially impair or diminish the agricultural productivity of the mitigation land, except for the restoration or conversion to habitat uses of up to five percent (5%) of the total easement land, or that are otherwise inconsistent with the conservation purposes of this mitigation program. The instrument shall protect the existing water rights and retain them with the agricultural mitigation land; however, the instrument shall not preclude the limited transfer of water rights on a temporary basis (i.e., not to exceed two (2) years in any ten (10) year period) to other agricultural uses within the County, so long as sufficient water remains available to continue reasonable and customary agricultural use of the mitigation land.

(4) The instrument shall prohibit the presence, construction, or reconstruction of homes or other non-agricultural uses except within a development envelope designated in an exhibit accompanying the easement. Any such development envelope(s) shall not count toward the acreage totals of the conservation easement for mitigation purposes. The easement shall specify that ancillary uses must be clearly subordinate to the primary agricultural use.

(5) Conservation easements held by a qualifying entity shall name the County as a third party beneficiary with full enforcement rights.

(6) Interests in agricultural mitigation land shall be held in trust by a qualifying entity and/or the County in perpetuity. The qualifying entity or the County shall not sell, lease, or convey any interest in agricultural mitigation land which it shall acquire except in accordance with the terms of the conservation easement.

(7) The conservation easement can only be terminated by judicial proceedings. Termination shall not be effective until the proceeds from the sale of the public's interest in the agricultural mitigation land is received and used or otherwise dedicated to acquire interests in other agricultural mitigation land in Yolo County, as approved by the County and provided in this chapter.

(8) If any qualifying entity owning an interest in agricultural mitigation land ceases to exist, the duty to hold, administer, monitor and enforce the interest shall pass to the County or other qualifying entity as acceptable and approved by the County.

California Code, Government Code

Section 51201(c)

(c) "Prime agricultural land" means any of the following:

(1) All land that qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability classifications.

(2) Land which qualifies for rating 80 through 100 in the Storie Index Rating.

(3) Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture.

(4) Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars ($200) per acre.

(5) Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars ($200) per acre for three of the previous five years.

Appendix B
Agricultural Trends

HATCH

Agricultural Trends Memorandum

Yolo County

April 2023

FINAL

TABLE OF CONTENTS

Economic Impact and Trends in Agriculture

The agricultural economy is critical to the economic and social vitality of communities across the country, as well as communities within the State of California (the State). As an essential market, California counties rely heavily on farming and ranching for economic activity. This memo also reviews current political, economic, ecological, and technological trends that are influencing agriculture in the State and in Yolo County.

Economic Impact of Agriculture in Yolo County

Agriculture is core to Yolo County (the County). Nestled in the Central Valley, agriculture is the County's dominant source of economic vitality. As an important agricultural partner for the City of Sacramento, as well as for the four incorporated cities within the County, Woodland, Winters, West Sacramento, and Davis, the County prioritizes the viability of agriculture and agricultural services Agricultural workers in the County hope to maintain the deep existing culture of family farming for years to come.

Farming Operations and Land

Over 90% of land is dedicated to agriculture or open-space preservation in Yolo County. The County has over 250,000 acres of prime farmland, which is land with an optimal combination of chemical and physical characteristics that sustain long term farming.[1] In addition to prime farmland, the County also has roughly 19,000 acres of farmland of Statewide importance, over 40,000 acres of unique farmland, and over 25,000 acres of farmland of local importance.[2]

The number of farming operations in Yolo County has continued to grow since 2007, reaching 737 operations in 2017.[3] These operations span over approximately 350,000 acres of land.

Top Commodities

Top commodities in gross value in the County include almonds, processing tomatoes, grapes for wine, organics, rice, sunflower seeds, vegetables, walnuts, alfalfa, pistachios, and apiary products.[4] In 2021, the total gross value of all agricultural products in Yolo County reached $811 million. Almonds, valued at $137 million, contributed most to this total, which recovering from a 46% decrease in prices in 2020 that bumped to commodity below tomatoes and grapes for total value.[5]

Among all counties in the State, Yolo County ranked 20th in total value of production, totaling $680 million in gross value in 2020 Fresno, Kern, and Tulare were the top three counties in California for total production value, totaling $7.96 billion, $7.57 billion, and $7.25 billion, respectively. Within, Sacramento Valley region, Yolo County produced the third highest agricultural value in 2020.

[1] Ag is Key in Yolo County, Ag Is Key in Yolo County – Yolo Land Trust (theyololandtrust.org)
[2] The United States Department of Agriculture (USDA) defines unique farmland as land able to sustain high yields when properly managed and is used for production of specific-high value crops. Farmland of State importance is determined by State agencies and does not meet criteria for prime or unique farmland, but produces high yield, and has soil quality that nearly meets national criteria; California Important Farmland Finder, DLRP Important Farmland Finder (ca.gov)
[3] USDA National Agricultural Statistics Service, USDA/NASS Quick Stats Ad-hoc Query Tool; 2022 data is not yet available to the public.
[4] California Agricultural Statistics Review 2020-2021, https://www.cdfa.ca.gov/Statistics/PDFs/2021_Ag_Stats_Review.pdf
[5] Yolo County Agricultural Crop Report 2020 637656560657770000 (yolocounty.org)

Top Commodities by Production Value

County	State Ranking	Export Value
Colusa	16	$943 million
Glenn	17	$719 million
Yolo	20	$680 million
Butte	21	$605 million
Sutter	22	$551 million
Sacramento	23	$466 million
Solano	27	$396 million
Tehama	30	$282 million
Yuba	32	$220 million

Economic Impact of Agriculture in California

The agricultural economy in California is essential to the United States food supply. California is a leading producer of over 400 commodities and provides more than a third of the country's vegetables and over two thirds of the country's fruits and nuts. Top commodities include almonds, grapes, tomatoes, berries, and more. Additional top agricultural commodities include dairy products, rice, and cattle livestock.

In 2020, California accounted for $49 billion of $357 billion national total crop cash receipts. This is nearly double the value of cash receipts in the second leading State of Iowa.[6] Nearly 29% of California farms generated over $100,000 in 2020, which is significantly greater than the national average of 18.5%.

Farming Operations

There were 69,000 farms operating in the State of California in 2021.[7] While the Census of Agriculture reported that the number of farms has generally decreased in the past 10 years, the number of farm operations in California have remained relatively stable[8]. In 2021, 24.2 million acres of land were devoted to farming and ranching in California, with an average farm size of 351 acres. The State is dominated by family farms, which make up 93% of all farming operations. Even in the most economically important regions, the average farm in California is smaller than the national average of 444 acres.

Top Commodities

The State of California is a leading producer of over 400 commodities. California provides more than a third of the country's vegetables and over two thirds of the country's fruits and nuts. The table below lists the top commodities in the State by sale value.[9]

[6] California Agricultural Statistics Review 2020-2021, https://www.cdfa.ca.gov/Statistics/PDFs/2021_Ag_Stats_Review.pdf
[7] 2021 State Agriculture Overview, USDA/NASS 2021 State Agriculture Overview for California
[8] National decline in the number of farms may be attributed to a shift from many small diversified farms in the 20th century to a smaller number of large farms, Farming and Farm Income USDA ERS - Farming and Farm Income
[9] California Agricultural Statistics Review 2020-2021 California Ag Statistics

Top State Commodities by Sale Value

Commodity	Sale Value	Percent of Total U.S. Value
Milk and Cream	$7.47 billion	19%
Almonds	$5.62 billion	99%
Miscellaneous Crops	$5.05 billion	-
Grapes	$4.48 billion	69%
Pistachios	$2.87 billion	99%
All Lettuce	$2.28 billion	30%
Strawberries	$1.99 billion	76%
All Tomatoes	$1.20 billion	72%
Floriculture	$967 million	20%
Walnuts	$958 million	99%+

Exports

California is economically important in the national and international agricultural marketplace. The State is a lead exporter in the United States (U.S.) and is the sole exporter for many agricultural products. California farms are responsible for 14% of the total U.S. agricultural exports. More specifically, the State supplies 61% of fruit exports, 100% of tree nut exports, and 52% of vegetable exports for the nation. Exported commodities include almonds, pistachios, walnuts, olives and olive oils, prunes, grapes, tomatoes, dates, figs, garlic, artichokes, and raisins.

In 2020, California exports provided $20.77 billion in value. This value represents a 40% increase over 2010 ($14.75 billion). This value continues to grow. Exports in the State continue to increase 3.7% each year. Continued interest in California's agricultural products from domestic and international markets indicates that the State's agricultural industry will continue to expand in coming years.

Top exports include almonds, dairy products, pistachios, walnuts, wine, rice, table grapes, orange products, tomatoes, and beef products.[10]

[10] California Agricultural Statistics Review 2020-2021, https://www.cdfa.ca.gov/Statistics/PDFs/2021_Ag_Stats_Review.pdf

Top State Commodities by Export Value

Commodity	Export Value	Percent of Total U.S. Exports
Almonds	$4,659 million	99%
Dairy and Products	$2,037 million	31%
Pistachios	$1,668 million	99%
Walnuts	$1,246 million	97%
Wine	$1,143 million	89%
Rice	$832 million	44%
Table Grapes	$731 million	72%
Oranges and Products	$597 million	71%
Tomatoes	$618 million	99%
Beef and Products	$413 million	54%

Jobs

California's agricultural industry is an important job provider across the State. Employing 546,000 workers in 2021, California has the highest number of farm workers in the country. The State also has the highest number of hired and migrant workers.[11]

Ecologically Important Farmland

The agricultural landscape in California is uniquely diverse and is composed of seven distinctive regions. The top 10 counties in California by total commodity value are concentrated largely in the San Joaquin Valley agricultural region within the ecologically important Central Valley[12]. The top three, Fresno, Tulare, and Kern Counties, produce over $700 million worth of agricultural products. These three counties, along with Monterey, Santa Barbara, and Ventura Counties, employ the largest number of agricultural workers in the State, each employing between 20,000 and 70,000 annually.[13]

Economic Impact of Agriculture in Yolo County

Agriculture is core to Yolo County (the County). Nestled in the Central Valley, agriculture is the County's dominant source of economic vitality. As an important agricultural partner for the City of Sacramento, as well as for the four incorporated cities within the County, Woodland, Winters, West Sacramento, and Davis, the County prioritizes the viability of agriculture and agricultural services Agricultural workers in the County hope to maintain the deep existing culture of family farming for years to come.

[11] West Agriculture 2021 Data and Trends Report, West-agricultural-trends-report.pdf (agamerica.com)
[12] The Central Valley region is the most agriculturally productive region in California and consists of the Sacramento Valley region in the north and the San Joaquin Valley in the south
[13] California Agricultural Employment 2021 Annual Average, ca-ag-employ-map-2021.pdf

Farming Operations and Land

Over 90% of land is dedicated to agriculture or open-space preservation in Yolo County. The County has over 250,000 acres of prime farmland, which is land with an optimal combination of chemical and physical characteristics that sustain long term farming.[14] In addition to prime farmland, the County also has roughly 19,000 acres of farmland of Statewide importance, over 40,000 acres of unique farmland, and over 25,000 acres of farmland of local importance.[15]

The number of farming operations in Yolo County has continued to grow since 2007, reaching 737 operations in 2017.[16] These operations span over approximately 350,000 acres of land.

Top Commodities

Top commodities in gross value in the County include almonds, processing tomatoes, grapes for wine, organics, rice, sunflower seeds, vegetables, walnuts, alfalfa, pistachios, and apiary products.[17] In 2021, the total gross value of all agricultural products in Yolo County reached $811 million. Almonds, valued at $137 million, contributed most to this total, which recovering from a 46% decrease in prices in 2020 that bumped to commodity below tomatoes and grapes for total value.[18]

Among all counties in the State, Yolo County ranked 20th in total value of production, totaling $680 million in gross value in 2020 Fresno, Kern, and Tulare were the top three counties in California for total production value, totaling $7.96 billion, $7.57 billion, and $7.25 billion respectively. Within, Sacramento Valley region, Yolo County produced the third highest agricultural value in 2020.

Top Commodities by Production Value

County	State Ranking	Export Value
Colusa	16	$943 million
Glenn	17	$719 million
Yolo	20	$680 million
Butte	21	$605 million
Sutter	22	$551 million
Sacramento	23	$466 million
Solano	27	$396 million
Tehama	30	$282 million
Yuba	32	$220 million

[14] Ag is Key in Yolo County, Ag Is Key in Yolo County – Yolo Land Trust (theyololandtrust.org)
[15] The United States Department of Agriculture (USDA) defines unique farmland as land able to sustain high yields when properly managed and is used for production of specific-high value crops. Farmland of State importance is determined by State agencies and does not meet criteria for prime or unique farmland, but produces high yield, and has soil quality that nearly meets national criteria; California Important Farmland Finder, DLRP Important Farmland Finder (ca.gov)
[16] USDA National Agricultural Statistics Service, USDA/NASS Quick Stats Ad-hoc Query Tool; 2022 data is not yet available to the public.
[17] California Agricultural Statistics Review 2020-2021, https://www.cdfa.ca.gov/Statistics/PDFs/2021_Ag_Stats_Review.pdf
[18] Yolo County Agricultural Crop Report 2020 637656560657770000 (yolocounty.org)

Drivers and Trends Impacting Agriculture

There are several trends influencing agriculture nationally, in the State of California, and locally in Yolo County. These trends are driven by changes in consumer preferences, government regulations, and environmental circumstances. These trends are likely to impact the amount, type, and location of land agriculture land that will be in demand in the future.

Organics

Consumer preference for organic foods is widespread and increasingly in popularity with consumers. To match changing consumer preferences, grocery retailers have steadily increased their organic product offerings, with 56% of all organic sales coming from conventional grocery store retailers and club stores.[19] Consequentially, organics production is a growing segment in agriculture. The sale of organic products has tripled in the past 10 years, reaching nearly $10 billion in 2021. Top organic commodities include milk and eggs, vegetables, and fruits, nuts, and berries.[20]

The Census of Agriculture reported a 17% increase in the number of certified United States Department of Agriculture (USDA) organic farms from 2016 to 2019. In a 2019 survey conducted by the USDA, 44% of organic farmers said they planned to maintain their current level of organics production, and 29% said they planned to increase their level of organics production in the next five years. As organics production is expected to expand, prices are also expected to remain high for organic commodities compared to conventional counterparts.[21]

Organic farming practices have also evolved to meet demand. To receive the USDA organic designation, farms and ranches must follow strictly regulated guidelines. These guidelines include omission of synthetic fertilizers and pesticides during growing, natural living conditions for livestock, avoidance of artificial processing elements, and other farming methods.[22]

Compliance with such requirements, however, is costly and has been shown to decrease yield. As a result, farmers nationwide adopt practices to improve productivity such as using buffer strips or border rows to isolate organic products from conventional crops, using animal and green manures, and water management practices.[23]

The State of California is home to 36% of all national organics production.[24] It has 965,000 acres dedicated to organic agriculture which translate to nearly $3.60 billion in annual sales, $2.0 billion of which may be attributed to crops.

Activity in Yolo County is reflective of current conditions for organics production within the State. As of 2020, organic production spanned across 72 farms, representing roughly 5% of total agricultural land and 9% of total farms in the County. In 2021, organic production was the fourth top commodity covering 19,260 acres. Top organic commodities by acreage in Yolo County included cattle beef, pasture and rangeland, tomatoes, and propagation. Organics production has grown substantially in Yolo County. In 2000, total organic crop production value was $6.8 million covering 3,335 acres, increasing to $26.2 million in 2010 covering 6,694 acres, and recently reaching $50.8 million in 2021 across 19,260 acres. This represents a 16% annual increase from 2020 to 2021, and a compounded annual growth rate (CAGR) of 9.57% since 2000.[25] For harvest to be considered organic, farmland must meet a number of National Organic Plan requirements. These include the absence of prohibited substances, clear boundaries and buffer zones, rigorous soil management, and free of water contamination.[26]

[19] Organic Agriculture Overview, USDA ERS - Organic Agriculture
[20] Organic Farming Highlights census-organics.pdf (usda.gov)
[21] Organic Agriculture Overview, USDA ERS - Organic Agriculture
[22] Organic 101: What the USDA Organic Label Means, Organic 101: What the USDA Organic Label Means | USDA
[23] Organic Farming Highlights, census-organics.pdf (usda.gov)
[24] California Agricultural Statistics Review 2020-2021, https://www.cdfa.ca.gov/Statistics/PDFs/2021_Ag_Stats_Review.pdf
[25] Yolo County Crop Reports, Crop Statistics Starting in 1937 | Yolo County
[26] Organic Regulations | Agricultural Marketing Service (usda.gov)

With high-quality soil and a commitment to agriculture, Yolo County is well positioned to contribute to the growing demand for organic products. Yolo County Code 10-6.301 and the Yolo Certified Organic Agriculture program promotes organic agriculture through certification services that enhance organic credibility in the County, facilitating organics commerce, and prioritizing environmental preservation.[27] It is expected that organics production sales will continue to increase as prices for these commodities remain high. Yolo County Agricultural Commissioner's office is the governing entity dedicated to promoting high quality organic agriculture in the County.

Climate and Natural Resources

The agricultural landscape in California is diverse and sensitive to environmental changes. Several environmental stressors exacerbated by climate change, including extreme heat, weather variability, and drought have the potential to impact agricultural markets in the State. These impacts include but are not limited to reduced quality (including for high value commodities), decreased productivity in temperature sensitive crops such as avocadoes, increased flood risk, soil degradation, water variability, and increased presence and invasion by insects, pests, and disease.[28] Further, this will likely result in farmers and ranchers changing the makeup of crops on their land. Agricultural workers will be forced to adjust to growing conditions in order to maintain profit margins.

Climate and Temperature Change

In Yolo County, climate change impacts are varied across crops. One outcome of climate change is an increase in minimum temperatures which decreases crop yields that require more chill hours, such as walnuts and winter wheat. This same effect could also extend the season for rice, tomato, and alfalfa crops that require warm temperatures. Farmers in Yolo County and across the State react to changing climate conditions in their choice of crops and cultivators.[29] This would have the impact of expanding certain crop markets while shrinking others. The County may consider increasing acreage for high value crops that favor warming conditions grown in the County such as alfalfa, tomatoes, and rice; while also decreasing crop production for winter wheat. [30]

Pests and Disease

With regards to pest invasions and disease induced by climate change, the Yolo County Agricultural Commissioner has reported increasing concerns. The University of California Cooperative Extension (UCCE) farm advisors for Yolo County raised concern for pests on nuts, tomatoes, corn, and alfalfa. These diseases are largely a result of higher minimum temperatures in the winter. However, this circumstance can have the opposite effect of reducing survival of the olive fly which could increase yields.[31]

Yolo County has already seen abnormal pests in crops as a result of temperature changes. Diseases these pests carry have contributed to some damage in tomato crops, a top commodity grown in the County.[32]

In addition to changes in the natural environment, land management is also an important aspect in creating breeding grounds for unwanted pests. Changes in land ownership to less experienced farmers, increasingly popular due of economic and political factors, has also resulted in more unmaintained or mis-maintained farmland which increases pest risk.

Water and Precipitation Variability

Along with changes in temperature, another critical outcome of climate change is variability in precipitation. With the most variable weather conditions in the nation, California is at risk of intensified extreme droughts and floods as

[27] Yolo Certified Organic Agriculture, Yolo Certified Organic Agriculture | Yolo County (govaccess.org)
[28] 2018, Pathak et. al. Climate Change Trends and impacts on California Agriculture: A Detailed Review
[29] How is Climate Change affecting agriculture?, https://www.davisenterprise.com/news/local/
[30] Agricultural Economic Impacts of Climate Change in Yolo County, YoloClimateChange.pdf (ucdavis.edu)
[31] Adaptation Strategies for Agricultural Sustainability in Yolo County (uc-ciee.org)
[32] Yolo County Agricultural Commissioner Interview, 10/25/2022

a consequences of climate change. Weather conditions have had significant impacts to agricultural outputs in California farms.

In both 2015 and 2021, limited water supply resulting from drought had detrimental effects on crop production value and acreage. In the Sacramento Valley alone, it is estimated that the record 2022 drought has caused a $50 million reduction in direct farm and ranch output, representing a 20% aggregate decrease as well as a loss of 5,000 on-farm jobs. When considering indirect and upstream farm operations, these losses increase to a $1.32 billion loss in economic value and 4,300 jobs compared to a normal year.[33]

In Yolo County, severe drought led to a 17% decrease in total gross value from 2014 to 2015, and total value reached as low as $662 million in 2016 before rebounding. Significantly, rice acreage in 2015 dropped to 23,000 acres from 39,325 in 2014. While the 2021 drought in Yolo County did not result in the same loss in total gross value, rice acreage loss was similarly severe. In 2020, almost 35,000 acres of rice were harvested, however, in 2021, this number was more than halved to 15,475 total acres.

Top County Commodities by Production Value

Year	2014[34]	2015[35]	2016[36]	2020[37]	2021[38]
Total Gross Value	$801 million	$665 million	$662 million	$670 million	$811 million[39]
Field Crop Value	$185 million	$107 million	$99 million	$138 million	$116 million
Field Crop Acreage	175,960	143,304	145,810	146,970	125,549
Value per acre	$1051.38	$746.66	$678.97	$938.97	$923.94
Vegetable Crop Value	$174 million	$162 million	$152 million	$141 million	$163 million
Vegetable Crop Acreage	45,544	45,154	42,260	37,050	38,909
Value per acre	$3820.48	$3587.72	$3596.78	$3805.67	$4189.26

The State Water Project, built and managed by the California Department of Water Resources, operates a water storage and supply system reaching over 700 miles and supplying water to roughly 100 million acres of farmland. Water supply is maintained through dams, the California Aqueduct, and the Sacramento-San Joaquin Delta. Water is stored through both above ground and underground reservoirs. The Sustainable Groundwater Management Act signed in 2014, bringing new regulation to underground reservoirs in California, aimed to replenish the reserves through recharge, which includes percolation of water into the ground, spreading basins, and stormwater capture.[40]

[33] Continued Drought in 2022 Ravages California's Sacramento Valley Economy, norcalwater.org
[34] Current year crop numbers referenced from 2014. Yolo County 2014 Crop Report (yolocounty.org)
[35] Current year crop numbers referenced from 2015. Yolo County 2015 Crop Report (yolocounty.org)
[36] Current year crop numbers referenced from 2016. Yolo County 2016 Crop Report (yolocounty.org)
[37] Current year crop numbers referenced from 2020. Yolo County 2020 Crop Report (yolocounty.org)
[38] Current year crop numbers referenced from 2021.Yolo County 2021 Crop Report (yolocounty.org)
[39] Huge price drop in almonds contributed to reduction in total commodities and while crop values grow, strong pricing helped to keep gross value high as well as almond production increase from maturing trees. A 45% decrease in rice acreage was also experienced in 2021 from 2020.
[40] Water Storage & Supply (ca.gov)

Emphasis on underground water storage may provide an eco-friendlier alternative to other storage mechanisms like dams. This focus may also aid in flood risk mitigation by capturing runoff to store underground. Further, expanding groundwater storage may provide a cost-effective option in the form of water banking and trading.[41]

Both the County at large and individual farms have responded to water risks as a result of climate change. A 2012 case study found that farmers concerned about drought due to climate change were more likely to implement practices for water conservation. Policies that increase awareness of climate change outcomes may assist the County in effective water conservation in response to drought threats. For example, the Yolo County Sustainability Plan prioritizes water conservation in agriculture through the implementation and monitoring of action.[42]

Flood Mitigation

While climate change increases drought risk, it also increases flood risk. Melting snowpack in the Sierra Nevada creates a flood hazard to communities along the Sacramento River.[43] Flood risks threaten the agricultural suitability of land, can damage growing crops, and may contaminate crops meant for human consumption.[44]

Water diversion and storage, a strategy that both reduces flood risk and increases water conservation, is only one of many flood mitigation strategies undertaken throughout the State of California. Other strategies include floodplain and stream restoration, low-impact development, and green infrastructure. Yolo County flood protection program, Flood Safe Yolo 2.0, was re-instated to decrease flood risk for all residents with a special focus on minimizing risk from flooding in rural Western Yolo County. Numerous flood mitigation projects are underway.[45]

Regulations

In 2016, the passage of AB1066 created a series of changes to agricultural labor over a nine-year timetable. Changes include overtime and workweek requirements, minimum wage, and worker accommodations. These factors increase the cost of labor, which may pressure the industry to automate work.

Other regulations add pressure to the agriculture industry with regards to food security. The Food Safety Modernization Act (FSMA) increased farms' responsibility to enforce food safety. It may also have the unintended consequence of disproportionately straining small scale farms in the State compared to large scale operations. With the State being heavily reliant on small-scale farmers, this could have a significant impact on the industry. [46] Additional sustainability and natural resource regulations create a need for the industry to respond by increasing water efficiency, creating and implementing ground water management plans (SGMA), adapting to restrictions on insecticides and other chemical applicators (AB1788), using renewable fuel sources, and improving of air quality (AAQS). These conditions can also be drivers for advancement in technology and innovation across the industry.

With ever changing regulations for natural resource use, chemical supplies, pest management, and other farming or agriculture related requirements, training workers is a necessary aspect of agricultural work. Quasi-governmental and nonprofit organizations assist farmers and ranchers in staying compliant with regulations in California and avoid expensive fines by providing trainings and education on a variety of topics. Organizations like the Yolo County Farm Bureau provide continuing education programming on regulatory requirements, resource management, and

[41] California tries to harness megastorm floods to ease crippling droughts | Reuters; Improving California's Water Market - Public Policy Institute of California (ppic.org)
[42] Action measure: WA-2.2: Reduce agricultural water use through alternative irrigation techniques
[43] Flooding is a significant hazard for regions along the Sacramento River due to climate change. A decrease in snowpack in the Sierra Nevada due to climate change could have the effect of increasing water flows by at least 25% by 2050 (Cayan et. Al. 208b).
[44] The Growing Prevalence of Flood Damage in Agriculture aquaoso.com
[45] Flood Safe Yolo 2.0 (yolocounty.org)
[46] Former AIC researcher John Bovay and AIC director Dan Sumner published implications of the US Food safety regulations, California Agricultural Issues Lab (ucdavis.edu)

safety. Programs include the mandated Irrigated Land Program and pesticide regulation.[47] Members also benefit from cost-savings by distributing the cost of training among other members in the Bureau.[48]

Agricultural representatives across the State and in Yolo County have expressed concern about the disconnect between agricultural legislation and agricultural practices. Representatives warn that farmers and ranchers are asked to uphold unrealistic requirements mandated by policymakers with no experience in the industry.[49]

Labor and Operations Costs

Intensifying labor shortages and growing operational costs have created stress on farmers. Increasing wages and obstacles with agriculture labor programs continue to provoke a labor crisis in farming as well as factors such as education, immigration policy, and waning interest in physically demanding work.[50] Growing labor costs could have the effect of growers' switching to less labor-intensive crops or crops where the labor can be more readily mechanized.[51]

The COVID-19 pandemic further fueled the labor shortage. Agricultural employment in the State dropped 20 to 30% from 2019 to 2020.[52] A combination of changing demands for crops, and quarantine measures made employment exceptionally challenging. While the lasting impact of COVID-19 is still largely unknown, some projections estimate that employment in agriculture could remain low,[53] though this may be due to trends other than those directly related to COVID-19 such as immigration work and H2-A Temporary Agricultural Workers program challenge.

Many crops in California are highly labor intensive, such as fruits and vegetables. Recent policies in the State (AB1947 and SB1159) have increased employee wages and protections that consequentially increased the cost of labor on farms. In addition, the political climate around immigration has the effect of discouraging immigrants to find agricultural work.[54]

Labor and other operational costs also disproportionately affect the financial health of small farms compared to their larger counterparts. In the most recent decade, nearly 70% of small family farms had an operating profit margin of less than 10%, positioning them with critical financial risk. Growing concerns about these pressures have driven emphasis on innovation and technologies in recent years.

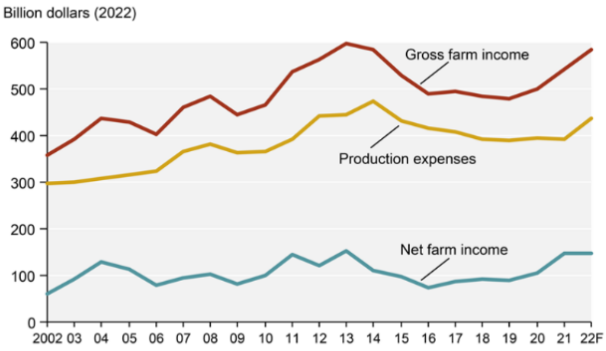
Farmers and ranchers are also seeing rising costs elsewhere. Increasingly popular is the practice of pension funds, hedge funds, and other investors buying farmland in agricultural regions of the U.S. The Oakland Institute estimated that up to $10 billion in institutional capital was looking to purchase farmland in 2015.[55] This is also true in Yolo County, where farmers and ranchers compete with institutional and private investors to purchase land, driving prices up. This has the effect of pricing aspiring farmers out of the market. The 2022 National Young Farmers Survey identified access to affordable land as a top challenge for young farmers. Additionally, land access was also found to be a major reason farmers stopped farming.[56]

[47] Yolo County Farm Bureau - PROTECTING YOLO COUNTY AGRICULTURE SINCE 1914 (yolofarmbureau.org)
[48] Yolo County Farm Bureau Interview, 11/18/2022
[49] Yolo County Farm Bureau Interview, 11/18/2022; Yolo County Agricultural Commissioner Interview, 10/25/2022
[50] Farm Labor Shortage, agamerica.com/farm_labor_shortage_digest.pdf
[51] Supplement to Adjusting to Higher Labor Costs in Selected U.S. Fresh Fruit and Vegetable Industries: Case Studies, usda.gov
[52] California Agricultural Employment in 2020, Rural Migration News Blog | Migration Dialogue (ucdavis.edu)
[53] The Future of Work after COVID-19, mckinsey.com
[54] Farmers nervous about a labor shortage, yourcentralvalley.com
[55] farmlandgrab.org | Wall Street investors buying up farmland
[56] National Young Farmers Coalition | RELEASE: 2022 National Young Farmer Survey Reveals a Generation Defying The Odds

Aside from land costs, recent inflation trends are also affecting agriculture. Input costs, including fuel, seed, and chemical costs, have increased 30 to 40% in the past 12 months. Diesel fuel prices increased almost 60% from 2021 to 2022.[57] These increases are due to numerous factors including uncertainty in food supply consequential to international military action and resulting in high demand, as well as COVID-19 related government spending contributing to rising inflation. While food prices have also increased as a result, they do not reflect the same margin, increasing only 10 to 20%. As a result, farmers and ranchers carry the loss in tighter profit margins. This is a change from previous production expense trends, which remained relatively steady after peaking in 2013 until production costs began to increase in 2020.[58]

The adjacent figure created by the US Department of Agriculture Economic Research Service illustrates trends in gross farm income, production expenses, and farm income for farms in the United States.[59]

U.S. gross farm income, production expenses, and net farm income, 2002–22F



Note: F = forecast. Values are adjusted for inflation using the U.S. Bureau of Economic Analysis Gross Domestic Product Price Index (BEA API series code: A191RG) rebased to 2022 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of September 1, 2022.

Cannabis

Cannabis for recreational use is legal in 20 States throughout the United States. California legalized the substance for recreational use in 2016. Political reform on marijuana for both medical and recreational use continues on both the State and federal level. The global demand for cannabis is predicted to grow at least 17% each year through 2025.[60] This rapidly growing industry, totaling nearly $25 billion in the national market and $30 billion in North America,[61] has serious implications for the national agricultural industry and California.

In California, an estimated 1,137 acres of land, compared to the statewide total of 24.2.8 million acres of agricultural land, is permitted for cannabis. Few large-scale farms dominate this agricultural land, however, while several smaller scale farms, mostly in rural regions of the State, continue to operate illicitly. In an anonymous survey conducted by the University of California, Berkeley (UC Berkeley), many farms continue to operate illegally largely due to high financial barriers into legal markets as well as high administrative costs.[62]

Due to the quasi-legal nature of the emerging cannabis industry, research on the economic and environmental impact of cannabis is incomplete. A 2019 study by UC Berkeley found that current cannabis cultivation is concentrated in remote and ecologically sensitive areas, which can lead to intensified negative outcomes of habitat loss, pollution, and wildfire exposure. The study also estimates that potential impacts of industry expansion could include forest fragmentation, leading to loss of related environmental services, high energy usage, particularly for indoor cultivation.[63]

California is actively taking political measures to streamline cannabis cultivation licensing and strengthen the cannabis market. Cannabis-related bills were signed in September 2022 which provide pathways to grow consumer demand of cannabis and minimize barriers to access cannabis cultivation.[64]

Projections for the Sacramento region estimate an economic impact of cannabis industry as high as $4.2 billion annually. Calaveras County, a rural agricultural county east of Sacramento, for example, is involved in cannabis

[57] 2022 farm input costs rapidly rising (farmprogress.com)
[58] Analyzing Farm Inputs: The Cost to Farm Keeps Rising (fb.org)
[59] USDA Releases Farm Production Expense Forecast for 2020, farmoffice.osu.edu/news
[60] Cannabis Industry Predictions: 2020-2025|Cannabis Sector Market Growth, pharmout.net
[61] North America Cannabis Legal Market Size Projections, cannabusinessplans.com
[62] Why comply? Farmer motivations and barriers in cannabis agriculture, berkeley.edu
[63] Cannabis and the Environment: What Science Tells Us and What We Still Need to Know, berkeley.edu
[64] New cannabis bills signed by Governor Newsom to strengthen the legal market, Department of Cannabis Control

cultivation. Analysis estimated the economic impact of cannabis in Calaveras County to be $251.5 million in direct sales value, 2,605 in direct employment, and $148.4 million in direct labor income. These outcomes equate to 15% of County gross regional product and 16% of County employment.[65] Yolo County operates under the same regulatory conditions for cannabis dictated by the State and has ecological conditions like Calaveras County that are distinctive of the Central Valley. Therefore, Yolo County could experience similar economic outcomes should farmers choose to grow cannabis.

Ecological concerns around cannabis cultivation are widely debated. Concerns include water usage, which is of particular concern in California where water supply can be limited and is heavily regulated. Other concerns include the use of pesticides, entrance of non-agricultural workers to the market, poaching at illegally operated cannabis farms, and disruption of quality of life to farmers and ranchers. This has already had the effect in many counties across California of increasing regulations around the industry, and these compliance requirements may continue to be adopted as more data is available on ecological impacts of cannabis.[66] While regulations are a challenge cannabis growers face in maximizing sales value, counties across the State, including Yolo County using policy to prioritize sustainable growth.

The Yolo County Cannabis Program was adopted in 2016 to address environmental risks and neighbor complaints related to cannabis cultivation. In 2021, Yolo County adopted the Cannabis Land Use Ordinance (CLUO), which outlined permitting, zoning, buffer, and other regulatory requirements, to allow growers to cultivate cannabis in Yolo County.[67] The maximum grow size for commercial cannabis is 2 acres with a Cannabis Use Permit. Permits are prohibited from being overly concentrated in any region of the County, and the number of licenses is capped at 65[68] As of 2017, there is a moratorium on cannabis licenses in Yolo County as a review of existing licenses is underway.

Positions on cannabis cultivation in Yolo County are mixed. The Yolo County Farm Bureau believes that the impact on cannabis growth in the County was not adequately assessed prior to CLUO. While some members of the Yolo County Farm Bureau grow cannabis, the organization does not support cannabis grown outside and in agriculturally zoned lands. This is because the Farm Bureau has seen cultivators grow the maximum 1 or 2 permitted acres of cannabis while leaving their remaining farmland unmaintained, creating a breeding environment for unwanted pests, which threatens surrounding agriculture production.[69]

Automation and Technology

Many technologies have emerged in response to trends in the agriculture industry in California. These technologies are widespread and support a multitude of challenges to the industry including cost savings, climate resilience, ease of regulatory compliance, and technologies specific to emerging industries within agriculture.

Due to concerns around water supply, technologies that improve water-efficiency and precision irrigation have emerged throughout the agricultural sector in California. These practices employ a range of technologies including improved forecasting through satellite weather data, evapotranspiration and soil moisture data use, precision irrigation systems, and geospatial data use. Economically important and water-intensive crops in the State, such as almonds, have seen an overwhelming adoption of demand- based irrigation systems. Over 70% of almond growers in the State use micro-irrigation systems to improve water-efficiencies, reducing the water inputs by 33%.[70] These technologies not only improve the resilience of water supply for farmers, but also support farmers in complying with water use regulations and reducing costs.

[65] An Economic Impact Assessment of the Cannabis Cultivation Industry in Calaveras County, d3ciwvs59ifrt8.cloudfront.net
[66] The environmental impacts of marijuana in California, FSI | FSE - stanford.edu
[67] Yolo County Cannabis Program Background, govaccess.org
[68] Supervisors adopt Yolo County Cannabis Land Use Ordinance, dailydemocrat.com
[69] Yolo County Farm Bureau Interview, 11/18/2022
[70] Almonds & Water 101, Almond Board of California

The industry has also seen a rise in aerial data gathering and satellite imagery. These technologies help farmers analyze changes in crops and crop health, which can inform decisions about fertilizers, watering, and improve yield forecasting. These technologies have the co-benefit of cost saving for farmers by increasing precision as well as improve resource management.

Various technologies that automate aspects of crop cultivation and harvesting have also emerged in the industry, largely due to a desire to reduce costs and navigate workforce shortages. These technologies are focused on crop-specific mechanization techniques. For example, the wine grape industry in California has adopted technologies to guard against the risk of rising labor costs which include mechanical pruning, leafing, shoot thinning, and harvesting. By fully implementing mechanization technologies, per acre cost of wine grape production can be lowered by 17%.[71]

Significant innovation in crop-specific technologies also improve growing for top commodities that exist in Yolo County such as almonds and tomatoes. The Almond Board of California has invested millions of dollars in research to develop micro-irrigation technologies to improve water efficiency in growing almonds. Micro sprinklers and drip irrigation developments have reduced water usage 33% per pound of almonds in California farms.[72] Tomato harvesting mechanization, developed in California at the University of California Davis, as well as the development of tomato plants that are able to withstand mechanical picking has saved California farms significant labor costs. Some estimates speculate up to 52 hours of labor per acre are saved for tomato farms through these innovations.[73] The widespread advancements of machinery, farming techniques, fertilizers, and other technological advancements have created pathways for California farmers in the face of environmental, regulatory, and financial challenges.

Renewable Energy in Farmland

California has bold targets to convert the state's electricity to renewable or zero carbon by 2045. Such an ambitious target requires a significant, and unprecedented, amount of land for renewable energy infrastructure including solar farms. The State is the national leader in distributed generation, with over 1.6 million solar projects installed. A 2007 ratepayer funded initiative has transformed the market of solar energy by reducing costs to below $6.00 per watt.[74] Counties throughout the Central Valley have demonstrated its leadership in working towards these goals as well. For example, Westlands Solar Park, the biggest solar project in the San Joaquin Valley, has been developed in phases across lands, including barren agricultural land, and spans several counties. Other similar projects have created a divisive discussion around competition between farmland and solar farmland.[75]

Pressures of renewable energy development may be accelerating loss of agricultural lands.[76] The widespread state-promoted interest and demand may lead to the conversion of vacant land, agricultural land, and open space to solar farms, particularly in regions where other renewables are not feasible.[77] Farmers in drought prone areas, including in the Central Valley, may consider looking to alternative value streams for land. While the monetary value of converting agricultural land to solar may vary based on variety of specific circumstances, landowners may be incentivized to complete such a switch to achieve higher income. Landowners may also be attracted by incentives such as tax credits for solar projects.[78] In many cases, agricultural land is attractive for large scale solar projects, as

[71] UC releases new cost studies for mechanized wine grape production, California Agricultural Issues Lab (ucdavis.edu)
[72]California Almond Farming, AgAmerica
[73]California Tomato Production, californiaagmuseum
[74] California Distributed Generation Stats, www.californiadgstats.com
[75]Westlands Solar Park, California, United States of America, power-technology.com; California farmers are planting solar panels as water supplies dry up, More California farmers say planting solar panels makes sense - Los Angeles Times (latimes.com)
[76] The New Agriculture: From Food Farms to Solar Farms, The New Agriculture: From Food Farms to Solar Farms | Columbia Journal of Environmental Law
[77]Converting Cropland Would Create Jobs and Revenue for landowners, www.ucsusa.org
[78] Federal Solar Tax Credits for Businesses, www.energy.gov

these lands are generally flat land with unobstructed sun light, relatively close to transportation networks, and a feasible level of proximity to energy users.[79]

The conversion of farmland to solar production, however, may have risks. In communities such as Yolo County, the conversion of farmland may negatively impact the local economy, which relies heavily on agricultural production as well as food security. The energy produced on this land is directed out of the locality to power nearby urban areas creating an imbalance of costs-to-benefit within the community. Imperial County in Southern California has experienced this, where climate stricken agricultural workers have converted their barren land to solar farms which brings power to nearby San Diego.

Additionally, changing the land classification from agricultural land to commercial creates additional opportunities for future land development across a range of uses.[80] Large scale solar facilities also may increase competition with agricultural workers for water, which is already scarce in the region.[81] While the discussion of agricultural land conversion to solar farming is still evolving, the impact on jobs, tax revenue, and other economic indicators have varied across communities.[82]

[79] The New Agriculture: From Food Farms to Solar Farms, 2019, View of The New Agriculture: From Food Farms to Solar Farms | Columbia Journal of Environmental Law

[80] Considerations for Transferring Agricultural Land to Solar Panel Energy Production, ncsu.edu

[81] The New Agriculture: From Food Farms to Solar Farms: View of The New Agriculture: From Food Farms to Solar Farms | Columbia Journal of Environmental Law

[82] California's climate change fix? Imperial Valley solar panels , latimes.com

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