CALIFORNIA FARMLAND CONVERSION REPORT 2015

September 2015

Summarizing land use conversion between 2010 and 2012, with comparisons to historic data.

Edmund G. Brown Jr., Governor

John Laird, Secretary, Natural Resources Agency

David Bunn, Director, Department of Conservation

California Department of Conservation
Division of Land Resource Protection (DLRP)

Our Mission:
The Department of Conservation balances today's needs with tomorrow's challenges and fosters intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.

The Legislature has stated that the preservation of open-space land is necessary for the maintenance of the state's economy, assures the availability of land for the production of food and fiber, and provides for the enjoyment of scenic beauty, recreation, and natural resource values.

DLRP's programs provide landowner incentives, technical assistance to local governments, and research that contribute to this goal. This work ranges from fifty years of discouraging premature and unnecessary conversion of open-space land to urban uses under the Land Conservation (Williamson) Act, to twenty years of funding permanent agricultural conservation easements under the Farmland Conservancy Program, to its newest role in incentivizing carbon sequestration on agricultural land under the Sustainable Agricultural Land Conservation Program. Since 1984, the Farmland Mapping and Monitoring Program (FMMP) has contributed by providing consistent, timely, and accurate land resource data. FMMP data is used for assessing present status, reviewing trends, and planning for the future of California's agricultural land resources.

The California Farmland Conversion Report 2015:
This report contains county, regional, and statewide land use conversion data for the FMMP 2010-2012 reporting period, as authorized under Government Code Section 65570.

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Figure 3: Field Data Collection and Navigation (Photo by Mike Kisko)
Figure 7: Solar Facility Surrounded by Farmland (Aerial image by the National Agriculture Imagery Program)
Figure 10: Almond Orchard Expansion in Yolo County (Photo by Mike Kisko)

Back Cover: Cattle brands used at California missions. The 21 missions from San Diego to Sonoma brought livestock husbandry to the state, along with many crops important in California today. For more on the California Mission Trail, see: www.parks.ca.gov/?page_id=22722

California Farmland Conversion Report 2015

CALIFORNIA DEPARTMENT OF CONSERVATION

DIVISION OF LAND RESOURCE PROTECTION

FARMLAND MAPPING AND MONITORING PROGRAM

SEPTEMBER 2015

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MANY INDIVIDUALS AND ORGANIZATIONS HAVE CONTRIBUTED TO THIS REPORT AND THE GIS DATA FROM WHICH IT WAS DERIVED.

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Edmund G. Brown Jr., *Governor*
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September 2015

Dear Land Conservation Partner:

On behalf of the Department of Conservation (Department), I am pleased to present the California Farmland Conversion Report 2015. This analysis of agricultural land use conversion trends is the fourteenth biennial report of the Farmland Mapping and Monitoring Program (FMMP). It is based on detailed geographic information system mapping from the 2010 and 2012 FMMP update cycles, along with comparisons to historic information.

The FMMP was established in 1982 to document the location and extent of California's important farmlands, and to report on how they change over time. The Important Farmland Maps are used in the planning process to gauge the impact of planning decisions on agricultural land throughout the State. Population projections and today's environmental challenges make this information more important than ever.

On a net basis, irrigated farmland in California decreased by more than 91 square miles (58,587 acres) between 2010 and 2012. The highest-quality agricultural soils, known as Prime Farmland, comprised 81 percent of the decrease (47,555 acres). Long-term land idling was the largest factor contributing to irrigated land decreases, primarily in the southern San Joaquin Valley and in counties surrounding the San Joaquin-Sacramento Delta. The planting of orchards and other crops—primarily focused in northern San Joaquin Valley and Sacramento Valley—partially offset the impacts on agricultural production from land idling, ecological restoration, and urbanization.

Urban land increased by 29,342 acres, a 34 percent decrease relative to the 2008-2010 reporting period. This was the lowest urbanization rate recorded in the program's history, reflecting the impact of the recent economic recession. Land idling has exceeded the impact of urbanization on irrigated land totals for the past three Important Farmland update cycles.

The California Farmland Conversion Report contains county and regional summaries of the dynamics that occurred beyond the urban edge, providing context for larger planning issues.

Identifying strategic farmland resources is an important first step in maintaining California's agricultural vitality. The Department of Conservation thanks the agricultural organizations and local governments that work with us to produce these useful tools for conservation planning.

Sincerely,

David Bunn
Director

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California Farmland Conversion Report 2015

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Executive Summary, 2015

RECORD LOW URBANIZATION AND LESS SEVERE IRRIGATED FARMLAND LOSSES THAN IN THE TWO PRIOR UPDATES. IRRIGATED LAND INCREASED IN SOME LOCATIONS DUE TO ORCHARD DEVELOPMENT, PARTIALLY OFFSETTING THE IMPACT OF LAND IDLING.

Irrigated farmland in California decreased by more than 91 square miles (58,587 acres) between 2010 and 2012 as documented by the Farmland Mapping and Monitoring Program (FMMP). The highest-quality agricultural soils, known as Prime Farmland, comprised 81 percent of the loss (47,555 acres). Urban development, which totaled 29,342 acres, decreased by 34 percent compared with the 2010 update. The 2012 urban land increase was the lowest recorded in the program's history, reflecting impacts of the recent recession.

The FMMP biennial mapping survey covers approximately 98 percent of the privately owned land in the state (49.1 million acres) in 49 counties. Land use information is gathered using aerial imagery and land management data, which is combined with soil quality data in a geographic information system (GIS) to produce maps and statistics. The earliest data for most counties is from 1984.

Urban Development

Of the nearly 46 square miles of new Urban and Built-up Land in the state, 43 percent occurred in the Southern California region (12,554 acres). Three out of the top ten urbanizing counties were in Southern California. San Diego County accounted for 20 percent of the state total (5,775 acres). Riverside County ranked second in urbanization with 3,852 acres, and San Bernardino ranked ninth (1,036 acres). The San Joaquin Valley comprised 30 percent of statewide urban increases (8,706 acres). The urban footprints of Fresno, Kern, Madera, and San Joaquin counties expanded in the range of approximately 1,200 to 1,900 acres each. Counties in the Sacramento area also ranked in the top ten, with Sacramento and Placer counties totaling just under 2,500 acres of conversion. Monterey County rounded out the top ten list, owing mostly to various types of construction on military facilities and oil fields.

THIS REPORT CONTAINS COUNTY, REGIONAL, AND STATEWIDE LAND USE CONVERSION DATA FOR THE FMMP 2010-2012 REPORTING PERIOD, AS AUTHORIZED UNDER GOVERNMENT CODE SECTION 65570.

2012 URBANIZATION: 29,342 ACRES

- *34 PERCENT LOWER THAN IN 2010*
- *21 PERCENT WAS FROM IRRIGATED FARMLAND AND 29 PERCENT FROM DRYLAND AGRICULTURE*
- *43 PERCENT WAS IN SOUTHERN CALIFORNIA, 30 PERCENT IN THE SAN JOAQUIN VALLEY*

Statewide, irrigated farmland was the source of 6,020 acres or 21 percent of all new urban land. Prime Farmland was impacted at more than twice the rate of lesser quality soils (4,383 acres and 1,837 acres, respectively). Another 29 percent of new urban land came from dryland farming and grazing uses, some of which may have been idled in anticipation of development. The remaining 50 percent was derived from natural vegetation or vacant lands.

Keeping with historic precedent, the San Joaquin Valley region had the largest proportion of direct irrigated land to urban land conversion (33 percent of its total urban increase). Fresno County had the highest acreage conversion from irrigated farmland to urban (944 acres).

Solar facilities construction was a significant component of the urban increases in multiple counties, including Stanislaus (51 percent) San Luis Obispo (45 percent), Fresno (35 percent), and Imperial (33 percent). Many of these projects remain under construction. FMMP's review of solar project applications within its survey area indicate at least 205,000 acres will be dedicated to this use in the next few years.

Water infrastructure projects also contributed to the urban total—primarily water recharge ponds, storage basins, and wastewater treatment plants. Counties affected ranged from Mendocino to Riverside, and sizes likewise ranged from 30 to over 1,000 acres. Landfill expansions were limited compared with prior updates, with the largest located in San Diego County (170 acres total).

Residential development examples were led by the City of San Diego area, with approximately 300 acres of new homes spread among a number of project sites. Other notable housing expansions included the cities of Roseville (260 acres), Fresno (250 acres), Chula Vista (215 acres), Sun City Shadow Hills in Indio (130 acres), and the City of Santa Clarita (125 acres). The impact of the recession and early phases of the drought were evident, with few examples of historically common conversions into retail centers, distribution centers, or golf courses. Examples of more unusual urban conversions included 85 acres for the Department of Corrections California Health Care Facility (San Joaquin County), Fresno Police Department Regional Training Center (50 acres), and early phases of the Miramar National Cemetery in San Diego County (25 acres, of an anticipated 315 acres).

Agricultural Trends

While urbanization is an important component of agricultural land conversion, economic and resource availability factors also lead to more intensive farming or cessation of irrigated uses. Conversions to irrigated categories totaled 98,296 acres between 2010 and 2012, an increase of slightly more than 1 percent from the prior cycle. Eight counties had irrigated land expansions in excess of 5,000 acres, which included seven of the San Joaquin Valley counties, as well as Yolo County. New plantings exceeded 10,000 acres each in Madera and Stanislaus counties. Many of the San Joaquin Valley additions were almond orchards along the Sierra Nevada foothills, and in Yolo County along the interior coast range. Elsewhere in the state, additions to irrigated lands were more modest, with only Monterey County and Riverside County expansions exceeding 3,000 acres each. The counties have high value vineyard and vegetable crop increases in common, despite the differing climates of their coastal and inland locations. Sixty-eight percent of the land brought into irrigated uses in 2012 did not meet Prime Farmland criteria.

2012 IRRIGATED LAND TRENDS

- *LAND IDLING FOCUSED ON SOUTHERN SAN JOAQUIN VALLEY AND DELTA COUNTIES*
- *NEW IRRIGATED LANDS WERE MOST COMMON IN THE NORTHERN SAN JOAQUIN AND SOUTHERN SACRAMENTO VALLEYS*
- *ALMONDS, VINEYARDS, OLIVES, AND ROW CROPS WERE THE PREDOMINANT NEW USES*

Land was removed from irrigated categories—to uses aside from urban—at a rate 41 percent lower than compared with the prior update (252,473 acres in 2010, and 149,577 acres in 2012). Land idling and reversion to dry farming were responsible for 82 percent of this type of conversion. The remaining 18 percent were conversions to Other Land, which includes miscellaneous uses such as wetland restoration, abandoned development projects, and rural residences.

The southern San Joaquin Valley and counties in the Sacramento-San Joaquin Delta were most impacted by land idling. Three counties had 10,000 or more acres of this conversion type: Fresno, Kern, and Kings. Kings County's reclassification of 25,753 acres led all counties, representing 21 percent of the statewide total for

this conversion type. Tulare County's downgrades totaled nearly 7,800 acres. Most of the conversions that occurred in the southern San Joaquin Valley were associated with drought and salinity-related land iding. The largest single example was a reclassification in western Fresno County of approximately 4,200 acres. The cessation of irrigation resulted in land being reclassified to Grazing Land or Farmland of Local Importance, which could be reversed if environmental factors change.

Sacramento-San Joaquin Delta area counties were also prominent in land idling. Sacramento County's land idling (5,677 acres) was primarily focused near the City of Elk Grove and on certain Delta islands that are the subject of flood control and habitat mitigation efforts. San Joaquin and Yolo counties have similar restoration projects, resulting in reclassifications out of irrigated land (4,882 acres and 4,233 acres, respectively).

In Southern California, Riverside County had the highest rate of land left fallow for three or more update cycles, with 4,929 acres being downgraded during the 2012 map update. These conversions were focused in the Coachella Valley.

Conversion data from 28 years of Important Farmland mapping indicates that for every five acres leaving agricultural use, four convert to Urban Land and one converts to Other Land. This update cycle, conversions to Other Land declined by 33 percent relative to the 2010 period (from 39,208 acres to 26,303 acres). Sacramento and San Joaquin Valley counties accounted for 38 percent and 37 percent of the total, respectively. Large examples of this conversion type included wetland expansions in Sutter and Yolo counties (multiple projects totaling 3,500 acres and 2,000 acres, respectively). Low density rural residential expansion totaled nearly 5,200 acres in the San Joaquin Valley, similar to the rate during the 2010 update.

Program Improvements

Each update cycle provides the opportunity to make improvements to the Important Farmland data, in order to achieve increased accuracy, process efficiency, or better reporting capabilities. The 2012 mapping cycle was conducted in large part during the recession, pointing to the need to improve technology as a way to offset FMMP staff limitations. During the 2012 update, FMMP developed a new field data acquisition process that eliminated procedural redundancies and the use of paper, as well as improving staff safety. In place of paper maps for notations and navigation, analysts now employ a tablet computer and cloud-based access to GIS data. Edits to GIS data and site-specific notations can be made while on site, reducing data entry upon return to the office. Gathering data in the field is important in cases where available data cannot resolve the current status of disturbed areas and agricultural sites that appear to have been idled for multiple update cycles.

2012 IRRIGATED LAND NET DECREASE: 58,587 ACRES

- *65 PERCENT LOWER THAN IN 2010*
- *56 PERCENT WAS IN THE SAN JOAQUIN VALLEY, 21 PERCENT IN THE SACRAMENTO VALLEY*
- *KINGS COUNTY'S DECREASE WAS 44 PERCENT OF THE STATEWIDE TOTAL*

Net Change

Statewide, irrigated farmland decreased by 58,587 acres in 2012, an amount 65 percent lower than the record decline reported in 2010 (168,039 acres). The San Joaquin Valley accounted for 56 percent of the statewide decrease. Land idling was a major contributing factor to irrigated land decreases during recent map updates, particularly in central and southern San Joaquin Valley counties. Land idling's impact on the amount of irrigated acreage has exceeded that of urbanization for the past three FMMP update cycles.

Counties with the largest net decreases of irrigated land highlight land idling and habitat restoration effects, including the southern San Joaquin Valley counties (Kings, Kern, Fresno, and Tulare), counties in proximity to the Delta (Sacramento, San Joaquin), Southern California (Imperial, Los Angeles, and Riverside), and Sacramento Valley's Sutter County. Kings County's 25,769 acre decrease comprised 44 percent of the statewide net irrigated land loss.

Countervailing the net loss of irrigated farmland in most counties, a few locations saw net increases in their irrigated farmland totals during the 2012 update. These were clustered in the northern San Joaquin Valley: Madera, Stanislaus, and Merced counties had irrigated land increases characterized by large plantings of orchards, and to a lesser extent vineyards and row crops. Siskiyou County had a resurgence in alfalfa plantings, while the Sacramento Valley counties of Tehama, Colusa, and Yuba had expansions in olives and other orchard crops. Coastal winegrowing counties (Monterey, Santa Barbara, and Sonoma) comprised the remaining locations with net positive irrigated totals.

1984-2012 Summary

- *1.4 million acres have been removed from farming uses*
- *78 percent of farmland conversions were to urban land (1.1 million new urban acres)*
- *49 percent of the conversions were from prime farmland*

1984-2012 Net Land Use Change

During the 14 biennial reporting cycles since FMMP was established, more than 1.4 million acres of agricultural land in California were converted to nonagricultural purposes. This represents an area larger in size than Merced County, or a rate of nearly one square mile every four days.

In total, 78 percent of this land was urbanized, 21 percent became one of the miscellaneous land uses grouped into the Other Land category. New water bodies represent the remaining 1 percent of farmland conversion.

The largest losses in agricultural land have been from the Prime Farmland category (709,852 acres). The only agricultural category to increase over the 28 year period has been Unique Farmland (27,106 acres) due to expansion of high value crops—mostly orchards and vineyards—on hilly terrain.

FMMP historic data also illustrates trends in agricultural and urban conversion since 1984. Urbanization declined in the periods of recession—the early-to-mid-1990's and the late 2000's. Irrigated farmland acreage decreased in almost every update cycle. Dryland farming and grazing have frequently moved in the opposite direction of irrigated land, as multi-year hydrologic and economic factors influence how much land growers put into production. Although housing is only one aspect of land use conversion, FMMP urbanization statistics track closely with those for housing starts in the western states that are published by the US Census Bureau.

As 2014 mapping proceeds, the development of infrastructure to support the next generation of Californians is anticipated to impact its agricultural land resources. The Department of Conservation will continue to support informed planning decisions with timely and accurate agricultural land resource data, capturing these trends as they evolve.

Chapter 1: The Farmland Mapping and Monitoring Program

DOCUMENTING CHANGES IN AGRICULTURAL LAND USE SINCE 1984

The goal of the Farmland Mapping and Monitoring Program (FMMP) is to provide consistent, timely, and accurate data to decision makers for use in assessing agricultural land resource status in California. An example of urbanization since mapping was initiated is illustrated below for the Clovis-Fresno area of Fresno County (Figure 1).

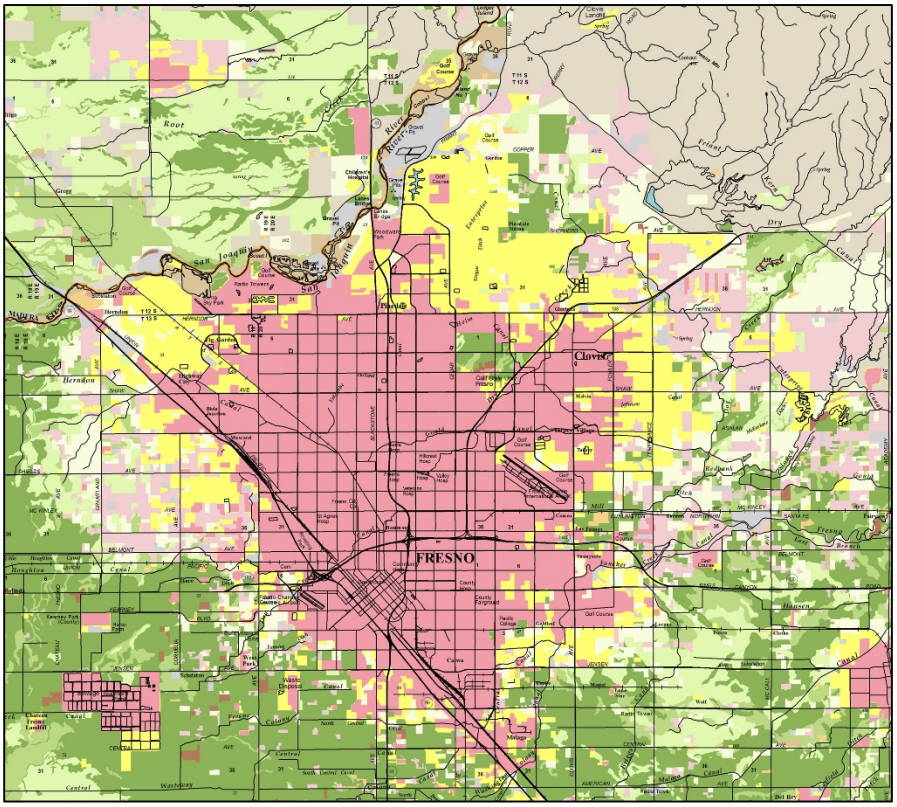
Approximately 98 percent of the privately owned land in the state (49.1 million acres) was mapped by FMMP during the 2012 update cycle. The survey area is shown on page 8 (Figure 2). Each map is updated every two years, providing an archive to track land use change over time.

Using a geographic information system (GIS), aerial imagery, comments from local agencies, and other information, FMMP combines soil quality data and current land use information to produce Important Farmland Maps. This program is mandated under Government Code Section 65570, and funded through the state's Soil Conservation Fund. This fund receives revenues from Land Conservation Act (commonly referred to as the Williamson Act) contract cancellation fees.

Advances in technology have supported significant FMMP data improvements over the years. Most recently, the California Important Farmland Finder allows users to locate their area of interest on mobile devices and desktops using many different search features. This allows use of the data in the field, complementing the Program's printed maps, PDF maps, statistics, field reports, and GIS data. The maps and data are used in environmental studies to assess the impacts of proposed development on agricultural and open space land. A number of jurisdictions base their agricultural land mitigation requirements on the amounts of Important Farmland affected by development project conversions. FMMP data is also used in urbanization and environmental modeling, and comparative land cover studies.

FIGURE 1: URBANIZATION IN THE CLOVIS-FRESNO AREA, FRESNO COUNTY, 1984-2012

NEW URBAN LAND IN YELLOW



In addition, only land that is classified in one of the four main agricultural categories on Important Farmland Maps is eligible for enrollment in Land

Conservation Act Farmland Security Zone (FSZ) contracts. Under FSZ contracts, landowners receive substantial property tax benefits in exchange for their commitment to keep their land in agricultural use for 20-year periods.

The 2015 California Farmland Conversion Report is the fourteenth produced by FMMP since the Program's inception; focused on the 2010-2012 cycle with comparisons to prior data.

Important Farmland Map Categories

FMMP's study area coincides with boundaries of U.S. Department of Agriculture (USDA) modern soil surveys. Technical soil ratings and current land use information are combined to determine the appropriate map category. The minimum land use mapping unit for all categories is 10 acres unless otherwise noted. Soil units as small as one acre are maintained to most accurately represent the original USDA data.

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

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

Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. The definitions for this category are detailed in Appendix E of this report.

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

Urban and Built-up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, prisons, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.

Water is defined as perennial water bodies with an extent of at least 40 acres.

Other Land is land not included in any other mapping category. Common examples include low density rural developments, vegetative and riparian areas not suitable for livestock grazing, confined animal agriculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. More detailed data on these uses is available in counties containing the Rural Land Use Mapping categories.

Rural Land Use Mapping Categories

The Rural Land Mapping project provides more map and statistical detail than standard Important Farmland Map products by classifying Other Land into five subcategories, as described below. This data is only available in the eight San Joaquin Valley counties and Mendocino County at this time; please see page 22 and the Appendix D tables.

Rural Residential Land includes residential areas of 1 to 5 structures per 10 acres.

Semi-Agricultural and Rural Commercial includes farmsteads, small packing sheds, unpaved parking areas, composting facilities, firewood lots, and campgrounds.

Vacant or Disturbed Land consists of open field areas that do not qualify for an agricultural category, mineral and oil extraction areas, and rural freeway interchanges.

Confined Animal Agriculture includes aquaculture, dairies, feedlots, and poultry facilities.

Nonagricultural and Natural Vegetation covers heavily wooded, rocky or barren areas, riparian and wetland areas, grassland areas that do not qualify for Grazing Land due to their size or land management restrictions, small water bodies, and recreational water ski lakes. Constructed wetlands are also included in this category. The Rural Land classes are not designed for interpretation as habitat. Geographic data on the extent of habitat for various species may be available from other state and federal entities.

Optional Designation

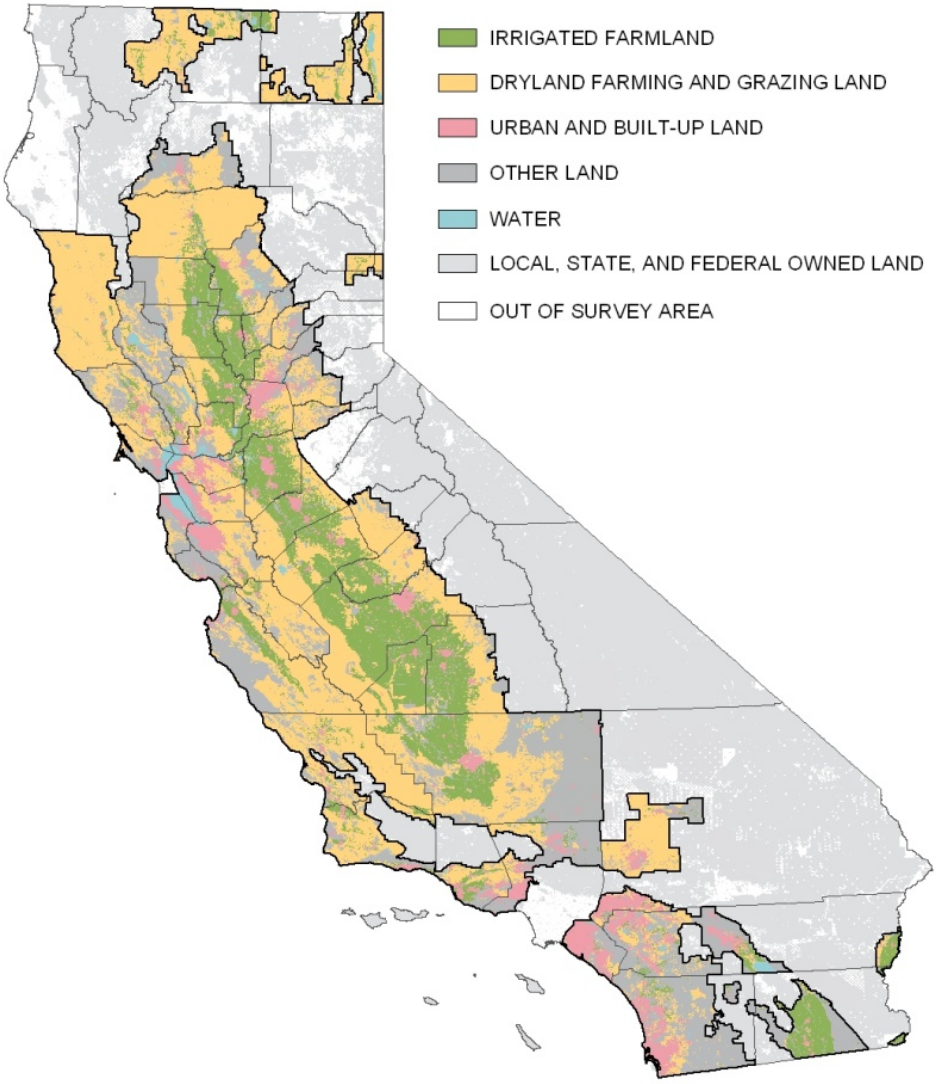
Land Committed to Nonagricultural Use is defined as existing farmland, grazing land, and vacant areas that have a permanent commitment for development. This optional designation allows local governments to provide detail on the nature of changes expected to occur in the future. It is available both statistically and as an overlay to the Important Farmland Map. Due to staff reductions during the 2012 update, compilation and analysis of this optional designation was suspended. Jurisdictions interested in updating this information should contact FMMP for assistance.

Survey Area Coverage

In Figure 2, the 'Irrigated Farmland' area includes the Prime Farmland, Farmland of Statewide Importance, and Unique Farmland categories. The 'Dryland Farming and Grazing Land' designation includes the Farmland of Local Importance and Grazing Land categories.

Locations shown as 'Out of Survey Area' may be added in the future, while those indicated as 'Local, State, and Federal Owned Land' are not planned for incorporation. Examples of government-owned land include National Parks and Forests and Bureau of Land Management property. Please note that small areas of public land are included within the Important Farmland survey area—generally appearing as 'Other Land' on the map.

FIGURE 2: 2012 IMPORTANT FARMLAND SURVEY AREA



Chapter 2: Program Improvements and Challenges

CLOUD-BASED FIELD DATA ACQUISITION

Each update cycle provides the opportunity to make improvements to the Important Farmland data, in order to achieve increased accuracy, process efficiency, or better reporting capabilities. The 2012 mapping cycle was conducted in large part during the recession, pointing to the need to improve technology as a way to offset FMMP staff limitations. Field data acquisition changes facilitated process improvements while increasing staff safety.

ArcGIS Online Field Data Collection

As the Important Farmland maps are being updated on the GIS system, disturbed areas and agricultural sites that appear to be undergoing conversion are flagged. Irrigated agricultural fields that appear dry or unmaintained for three update cycles may be reclassified to a dryland agricultural category, but an idle period may also represent a transition between crop types. When all available data, including Google Streetview, cannot assist in making current land use determinations, the areas remains flagged for field investigation.

FIGURE 3: FIELD DATA COLLECTION AND NAVIGATION
USING ARCGIS ONLINE AND THE COLLECTOR APP

Historically, FMMP analysts generated paper 'field sheets' containing the GIS information and the question(s) that need to be answered; while routing from site to site relied on paper maps and notes. The management of paper maps was time consuming and redundant, because any handwritten field notes had to be converted to digital entries in the GIS upon return to the office. Safety of the analysts was also a concern as they wrote field notations and determined navigation to the following site while the car was parked along the roadside.

Using ESRI ArcGIS Online, the field verification sites are exported as a separate data layer, and published to the ESRI ArcGIS Online secure cloud based server (Cloud). This allows the analysts to incorporate the field sites into a web map. Base data for the web map can include streets, topography, or imagery, which can be changed at any time. The web map limits access to only FMMP staff while posted to the Cloud.

Utilizing the ESRI Collector app on a tablet computer (Figure 3), the analyst can securely connect to the Cloud and open their web map of field sites. The system takes advantage of the voice navigation capabilities of

the Google maps app, and road navigation in the Collector app, providing direction to each site. This is particularly helpful because much of the mapping work occurs away from urban areas; street addresses are not typically an option in terms of navigation start and stop points. Within the Collector app, the GIS spatial and table attributes can be edited, allowing the analyst to change boundaries and notes on the sites that can be immediately updated to the Cloud.

Once the field check is complete, the field sites are exported from the Cloud to the Department's network server where it can be incorporated into the normal desktop GIS software procedures.

Infrastructure for the Next Generation of Californians

Planners at the state and local level are working toward development of new energy, transportation, and water infrastructure to support the next generation of Californians. The goals of maintaining a vibrant agricultural economy and resource base while meeting today's renewable standards are of concern to many decision makers. Interest in Important Farmland data has remained high as proposals for solar projects come forward. Due to the number of internal and external data requests, FMMP compiled a database of commercial solar developments within its survey area that are proposed, under construction, or completed. The database's primary focus areas are the San Joaquin and Imperial valleys; other regions of the state are being added on a time-availability basis. As of summer 2015, there are more than 205,000 acres within the database.

Groundwater recharge basins, California High Speed Rail, and the Bay-Delta Conservation Plan are similarly anticipated to change the landscape. FMMP analysts provide technical assistance to lead agencies and conduct evaluations of these proposals through the California Environmental Quality Act (CEQA) process on behalf of the Department.

Chapter 3: Understanding the Data

LOCATING AND INTERPRETING THE CALIFORNIA FARMLAND CONVERSION REPORT'S TABULAR DATA AND GRAPHICS.

Important Farmland information is developed on an individual county basis, taking two years to map the 49.1 million acre survey area. The statewide and regional summaries in Chapter 4 are the result of compiling individual county data in various ways to provide a larger perspective on land use conversion.

Source Data: County Conversion Tables - Appendix A

These tables include acreage tallies and conversion statistics for individual counties.
Figure 4 depicts how conversion tables are constructed.

Statewide Conversion – Chapter 4, Table 3

This table summarizes material from all three sections of the Appendix A tables and has the same structure as the individual county tables.

2010 and 2012 County Acreage Tallies – Appendix B

Values for the individual years (Tables B-1 and B-2) are extracted from Part I of the tables in Appendix A. These tables also indicate the proportion of each county that lies within the FMMP survey area—mapping typically ends at the boundaries of National Forests, for example. Table B-3 shows this same information for 2012, grouped by region.

FIGURE 4: CONVERSION TABLE STRUCTURE
FOR COUNTY AND STATEWIDE DATA

PART I
Land Use Totals and Net Changes

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED 2008	TOTAL ACREAGE INVENTORIED 2010	2008-2010 ACREAGE CHANGES: ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
Prime Farmland (2)	5,249,116	5,146,562	134,394	31,840	166,234	-102,554
Farmland of Statew						-61,972
Unique Farmland (3						-3,513
Farmland of Local						65,739
IMPORTANT FARM						-102,300
Grazing Land						-24,646
AGRICULTURAL LAND SUBTOTAL	31,564,310	31,486,656	447,624	369,970	817,594	-77,654
Urban and Built-Up Land	3,574,195	3,618,699	8,132	52,636	60,768	44,504
Other Land	13,216,983	13,252,338	50,602	85,957	136,559	35,355
Water Area	716,701	714,496	2,705	500	3,205	-2,205
TOTAL AREA INVENTORIED	49,072,189	49,072,189	509,063	509,063	1,018,126	0

PART I:
Indicates county area mapped & overall change in each category.

PART II
Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE
AGRICULTURAL LAND SUBT	99,125
Urban and Built-Up Land	0
Other Land	45,362
Water Area	0
TOTAL ACREAGE REPORTE	144,487

PART II:
Land expected to be developed (voluntary submission by local governments).

PART III Land Use Conversion from 2008 to 2010

LAND USE CATEGORY		Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-Up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland (2)	to:	--	116	1,548	60,406	62,070	42,915	104,985	8,414	20,994	1	134,394
Farmland of S												34,340
Unique Farmla												49,153
Farmland of L												91,110
IMPORTANT F												38,997
Grazing Land												38,627
AGRICULTURA												47,624
Urban and Bu												8,132
Other Land												50,602
Water Area	to:	1	0	45	86	132	924	1,056	11	1,638	-	2,705
TOTAL ACREAGE CONVERTED	to:	31,840	22,368	45,640	156,849	256,697	113,273	369,970	52,636	85,957	500	509,063

PART III:
Raw data from GIS provides detail on every acre of change that occurred. Changes result from revising the two-year-old land use data based on new imagery and field verification. In addition, any changes made by USDA to its digital soil survey data (SSURGO data) will appear in Part III.

1. This tab
2. Figures

FOOTNOTES:
Information on large or unusual conversions and other descriptive material.

County and Regional Conversion Summaries – Appendix C

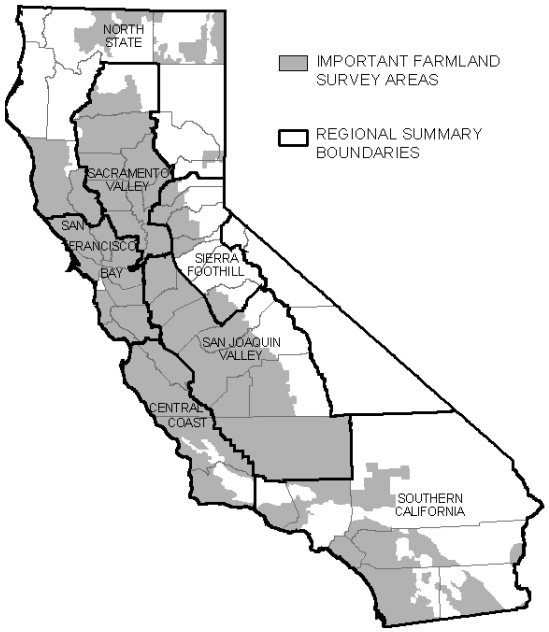
The counties are grouped into geographic regions as seen in Figure 5. Much of the analysis in Chapter 4 is based on the data in Appendix C.

Table C-1	Classifies sources of new urban land for the period, by county and region.
Table C-2	Identifies conversions in or out of agriculture aside from urbanization, capturing the ebb and flow of agricultural land use change over time.
Table C-3	Documents net agricultural change from all factors, grouped by region and ranked by acreage.

Rural Land Use Mapping Tables – Appendix D

These tables contain data on changes associated with a more detailed subdivision of the Other Land category. Data is available for nine project counties at this time.

FIGURE 5: REGIONS USED FOR FMMP ANALYSIS



Simplifying Assumptions

In order to conduct comparative analysis, certain simplifying assumptions have been made. For example, Unique Farmland is considered to be an irrigated farmland category, even though a small percentage of land within the Unique Farmland category supports high value nonirrigated crops, such as some coastal vineyards. Conversely, Farmland of Local Importance is considered to be a nonirrigated category although it also supports some irrigated pasture on lower-quality soils.

Statistical Notes

As changes are made to the land use data, there are instances where residual pieces of land are left that are smaller than the 10- or 40-acre minimum land use mapping unit. In order to maintain map unit consistency, these small units are absorbed into the most appropriate adjacent land use type. This process may result in small shifts among categories that appear anomalous in the conversion statistics—such as urban to Other Land or Prime Farmland to Farmland of Statewide Importance.

Once land use and digital soil data are merged to create the Important Farmland data, units of less than 1.0 acre are reclassified into the next most appropriate category to optimize the data files. Tabular data is reported in whole numbers; small variations in category totals may result from rounding to whole numbers.

Particularly large or anomalous changes are footnoted at the bottom of each table. Additional detail is available in the field analyst report produced for each county, which are posted on the FMMP web site.

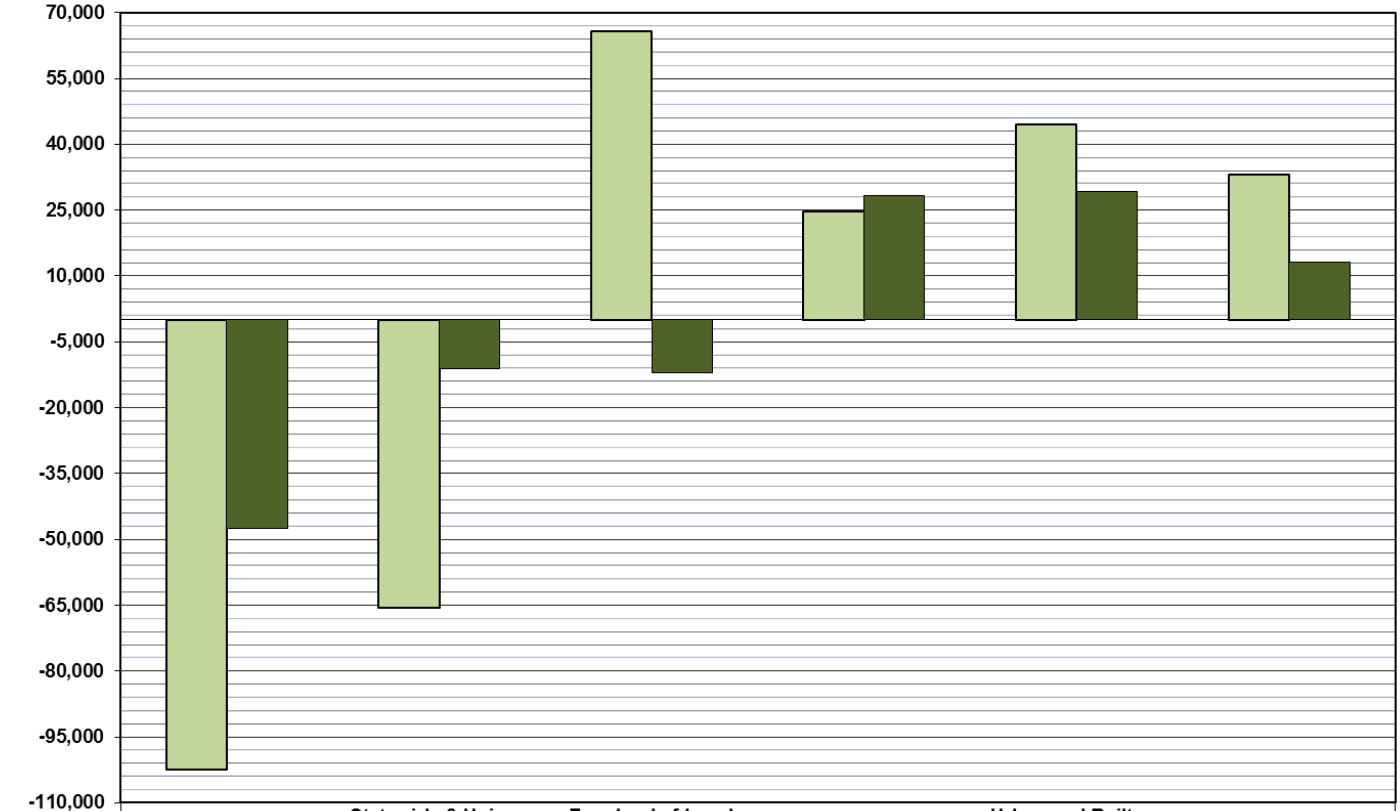
Chapter 4: Land Use Conversion, 2010-2012

MAPPING DOCUMENTS RECORD LOW URBANIZATION DURING THE RECESSION, WHILE AGRICULTURAL CONVERSIONS REFLECT REGIONAL TRENDS. LARGE AREAS REMAIN FALLOW AS CALIFORNIA'S DROUGHT TOOK HOLD.

California's agricultural landscape continues to evolve in conjunction with economic and resource-related factors. Between 2010 and 2012, urban development impacted 29,342 acres, 34 percent fewer than the 44,504 acres urbanized between 2008 and 2010. This was the lowest urbanization amount in a biennial mapping cycle since the FMMP began in 1984. Approximately 21 percent of urban conversions were derived from irrigated farmland, and 29 percent from dryland farming and grazing land. The statewide 2010-2012 conversion summary, Table 3, is located on page 15. Comparative changes in important farmland categories for the two most recent update cycles are shown in Figure 6 below.

A total of 58,587 acres were removed from irrigated land uses during the 2012 update; a 65 percent decrease compared with the 168,039 acre irrigated land loss posted in 2010. These totals include the impact of all factors—urbanization, land idling, habitat conversion, and low density rural development. As was the case during the past two update cycles, conversions from irrigated land to Grazing Land and Farmland of Local Importance exceeded urban land conversions by a wide margin. Land idling in some locations was partially offset by development of new irrigated lands, as discussed later in this chapter.

FIGURE 6: STATEWIDE IMPORTANT FARMLAND CONVERSION SUMMARY (ACRES)



	Prime Farmland	Statewide & Unique Farmland	Farmland of Local Importance	Grazing Land	Urban and Built-up Land	Other Land & Water
2008-2010	-102,554	-65,485	65,739	24,646	44,504	33,150
2010-2012	-47,555	-11,032	-12,045	28,192	29,342	13,098

Urbanization

2010-2012 Source Data: Appendix Table C-1

Southern California, San Joaquin Valley, and Sacramento area counties comprised much of the top ten urbanizing list during the 2012 Important Farmland update. The top ten counties hosted 70 percent of statewide urban growth during the period, similar to the proportion they claimed during the 2010 update. San Diego and Riverside counties have been the top two urbanizing counties for multiple FMMP update cycles (Table 1). San Diego County was the source of 20 percent of statewide urban development during this time period. San Bernardino County was also among the top ten this update. Due to greater activity in other locations, Southern California had two fewer counties among the top ten list than during the prior update. San Joaquin Valley counties have become more common on the top ten list in recent years, with Kern, Fresno, Madera, and San Joaquin counties among the 2012 list. Sacramento and Placer counties returned to the top ten list this update, after experiencing very little conversion earlier in the recession.

TABLE 1: COUNTY URBANIZATION RANKS

Urbanization from All Categories

Top Ten Counties - net acres

2008-2010		2010-2012	
Riverside	5,874	San Diego	5,775
San Diego	4,646	Riverside	3,852
Los Angeles	4,024	Fresno	1,973
Kings	3,627	Kern	1,829
Kern	3,203	Sacramento	1,464
Fresno	3,186	San Joaquin	1,349
San Bernardino	2,180	Madera	1,235
Tulare	1,997	Monterey	1,146
San Joaquin	1,400	San Bernardino	1,036
Orange	1,249	Placer	994

The most unexpected county on the 2012 list was Monterey. Only about 5 percent of the urban change involved irrigated land; most of the conversions were attributed to increasing housing or structural density throughout the County (representing approximately one quarter of the 1,146 acre increase), along with new infrastructure at locations such as Fort Hunter Liggett, Camp Roberts, and the San Ardo oil field. Development of homes, schools, parks, and commercial facilities was responsible for approximately 15 percent of the overall urban conversion.

Regional rankings were again dominated by Southern California and the San Joaquin Valley (Table 2). These regions, along with the San Francisco Bay and Sacramento Valley, showed significant declines in urbanization relative to the 2008-10 period, ranging from a 27 percent decline in the Sacramento Valley to a 42 percent decrease in the San Joaquin Valley. Only the Central Coast and Sierra Foothill regions experienced an increase in urbanization. In the Sierra Foothills, much of the growth can be attributed to the resurgence of development in Placer County. The Central Coast's increase represented relatively stable land use conversion patterns in San Luis Obispo and Santa Barbara counties, coupled with the increase in Monterey conversions described above. The North State's statistic returned to that of historic update cycles—just 190 acres region-wide—after an anomalous 2010 urbanization bump associated with golf and recreational facilities.

TABLE 2: REGIONAL URBANIZATION RANKING

Urbanization From All Categories

net acres

2008-10		2010-12	
Southern California	19,702	Southern California	12,554
San Joaquin Valley	15,132	San Joaquin Valley	8,706
San Francisco Bay	3,735	Central Coast	2,427
Sacramento Valley	2,973	San Francisco Bay	2,208
Central Coast	1,419	Sacramento Valley	2,176
North State	1,224	Sierra Foothill	1,081
Sierra Foothill	319	North State	190

TABLE 3
CALIFORNIA FARMLAND CONVERSION SUMMARY
2010-2012 Land Use Conversion

CALIFORNIA DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

PART I
Land Use Totals and Net Changes

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED (1)		2010-12 ACREAGE CHANGES			
	2010	2012	ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
Prime Farmland	5,146,564	5,099,009	79,606	32,051	111,657	-47,555
Farmland of Statewide Importance	2,621,594	2,599,222	46,050	23,678	69,728	-22,372
Unique Farmland	1,331,876	1,343,216	32,973	44,313	77,286	11,340
Farmland of Local Importance	3,186,013	3,173,968	85,455	73,410	158,865	-12,045
IMPORTANT FARMLAND SUBTOTAL	12,286,047	12,215,415	244,084	173,452	417,536	-70,632
Grazing Land	19,200,595	19,228,787	65,973	94,165	160,138	28,192
AGRICULTURAL LAND SUBTOTAL	31,486,642	31,444,202	310,057	267,617	577,674	-42,440
Urban and Built-up Land	3,618,697	3,648,039	7,155	36,497	43,652	29,342
Other Land	13,252,330	13,263,954	45,789	57,413	103,202	11,624
Water Area (1)	714,499	715,973	426	1,900	2,326	1,474
TOTAL AREA INVENTORIED	49,072,168	49,072,168	363,427	363,427	726,854	0

PART II
Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE 2012
Prime Farmland	DATA NOT AVAILABLE (1)
Farmland of Statewide Importance	
Unique Farmland	
Farmland of Local Importance	
IMPORTANT FARMLAND SUBTOTAL	
Grazing Land	
AGRICULTURAL LAND SUBTOTAL	
Urban and Built-up Land	
Other Land	
Water Area	
TOTAL ACREAGE REPORTED	

PART III Land Use Conversion from 2010 to 2012

LAND USE CATEGORY		Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland	to:	--	82	591	27,326	27,999	33,404	61,403	5,142	13,018	43	79,606
Farmland of Statewide Importance	to:	69	--	260	21,205	21,534	17,460	38,994	1,499	5,557	0	46,050
Unique Farmland	to:	528	216	--	10,892	11,636	12,987	24,623	665	7,678	7	32,973
Farmland of Local Importance	to:	18,167	11,601	15,641	--	45,409	22,624	68,033	5,356	12,065	1	85,455
IMPORTANT FARMLAND SUBTOTAL		18,764	11,899	16,492	59,423	106,578	86,475	193,053	12,662	38,318	51	244,084
Grazing Land	to:	7,937	5,926	22,211	10,533	46,607	--	46,607	4,739	14,593	34	65,973
AGRICULTURAL LAND SUBTOTAL		26,701	17,825	38,703	69,956	153,185	86,475	239,660	17,401	52,911	85	310,057
Urban and Built-up Land (2)	to:	759	167	160	720	1,806	886	2,692	--	4,387	76	7,155
Other Land	to:	4,520	5,686	5,447	2,718	18,371	6,623	24,994	19,056	--	1,739	45,789
Water Area (1)	to:	71	0	3	16	90	181	271	40	115	--	426
TOTAL ACREAGE CONVERTED	to:	32,051	23,678	44,313	73,410	173,452	94,165	267,617	36,497	57,413	1,900	363,427

(1) Data for optional Land Committed to Nonagricultural Use was not compiled due to staff reductions.
(2) Conversion out of Urban due to factors including abandonment of urban uses for three or more update cycles, and the use of more detailed imagery to delineate more distinct Urban boundaries.
(3) Conversions involving water were primarily due to aligning land use data to the current course of the Sacramento River, wetland restoration, and infrastructure changes along parts of the San Pablo and Suisun Bay shoreline.

Energy, water, and waste infrastructure was the most notable category of urban land use conversion. Solar facilities constructed during the update contributed to the urban totals in multiple counties (Figure 7). Projects ranged in size, with many in the 80 to 160 acre range. In Stanislaus County, 51 percent of the new urban acres were for a photovoltaic solar facility; while in San Luis Obispo County just over 45 percent of the new urban land was occupied by solar projects. Other examples included Fresno and Imperial counties, where about 35 percent and 33 percent of the urbanization, respectively, was specific to solar projects. Many of these projects remain under construction. FMMP's review of solar project applications within its survey area indicates at least 205,000 acres will be dedicated to this use in the next few years.

FIGURE 7: SOLAR FACILITY SURROUNDED BY FARMLAND SACRAMENTO COUNTY

Large water facilities included recharge pond construction and enhancements in Riverside and Kern counties (1,060 acres and 300 acres, respectively), and water storage basins in San Joaquin County (220 acres). In Mendocino County, the bulk of new urban land countywide was the result of the City of Willits Wastewater Treatment Plant expansion (30 out of 36 acres). Landfill expansions were limited compared with prior updates, with the largest located in San Diego County (170 acres total). Other land uses that have contributed to the urban total in prior updates but were uncommon during 2010-2012 were golf course expansions, retail centers, and distribution centers. The peak of golf course development occurred between 2000 and 2002, as large percentages of new urban land in Riverside and San Diego counties (25 percent and 14 percent, respectively) consisted of golf-related communities.

Examples of more unusual urban conversions included 85 acres of buildings at the Department of Corrections California Health Care Facility (San Joaquin County), Fresno Police Department Regional Training Center (50 acres), early phases of the new Miramar National Cemetery (25 acres, of an anticipated 315 acres) and a reclassification of the polo fields at Indio from irrigated farmland to Urban (350 acres).

LAND USE CONVERSION EXAMPLES

EXAMPLES IN THIS REPORT DESCRIBE LARGE OR PARTICULARLY NOTABLE CHANGES, AND DO NOT FULLY ACCOUNT FOR THE EXTENT OF CHANGE OCCURRING IN EACH COUNTY.

PLEASE REFER TO FIELD ANALYST REPORTS ON THE FMMP WEB SITE FOR MORE DETAILED INFORMATION.

Residential development examples were led by the City of San Diego area, with approximately 300 acres of new homes spread among a number of project sites. Other notable housing expansions included the cities of Roseville (260 acres), Fresno (250 acres), Chula Vista (215 acres), Sun City Shadow Hills in Indio (130 acres), and the City of Santa Clarita (125 acres). Increased density and infill contributed to the totals in many counties. Prior to the recession, residential communities of 400 to 640 acres were relatively common in these and other locations.

Urbanization's impact on irrigated farmland was significantly lower during the 2012 mapping cycle (Table 4 and Appendix Table C-1). More than 55 percent of the direct irrigated to urban conversions in Fresno County were due to solar facilities development; while residential and commercial uses occurred surrounding the cities of Fresno, Clovis, and Kerman. Kern County's conversions to urban included groundwater recharge basins as well as homes and commercial uses. In San Joaquin County, approximately 70 acres of new homes were built in the City of Manteca. Commercial developments, water infrastructure, and food processing facilities also were found in San Joaquin County.

TABLE 4: IRRIGATED FARMLAND TO URBAN RANKS

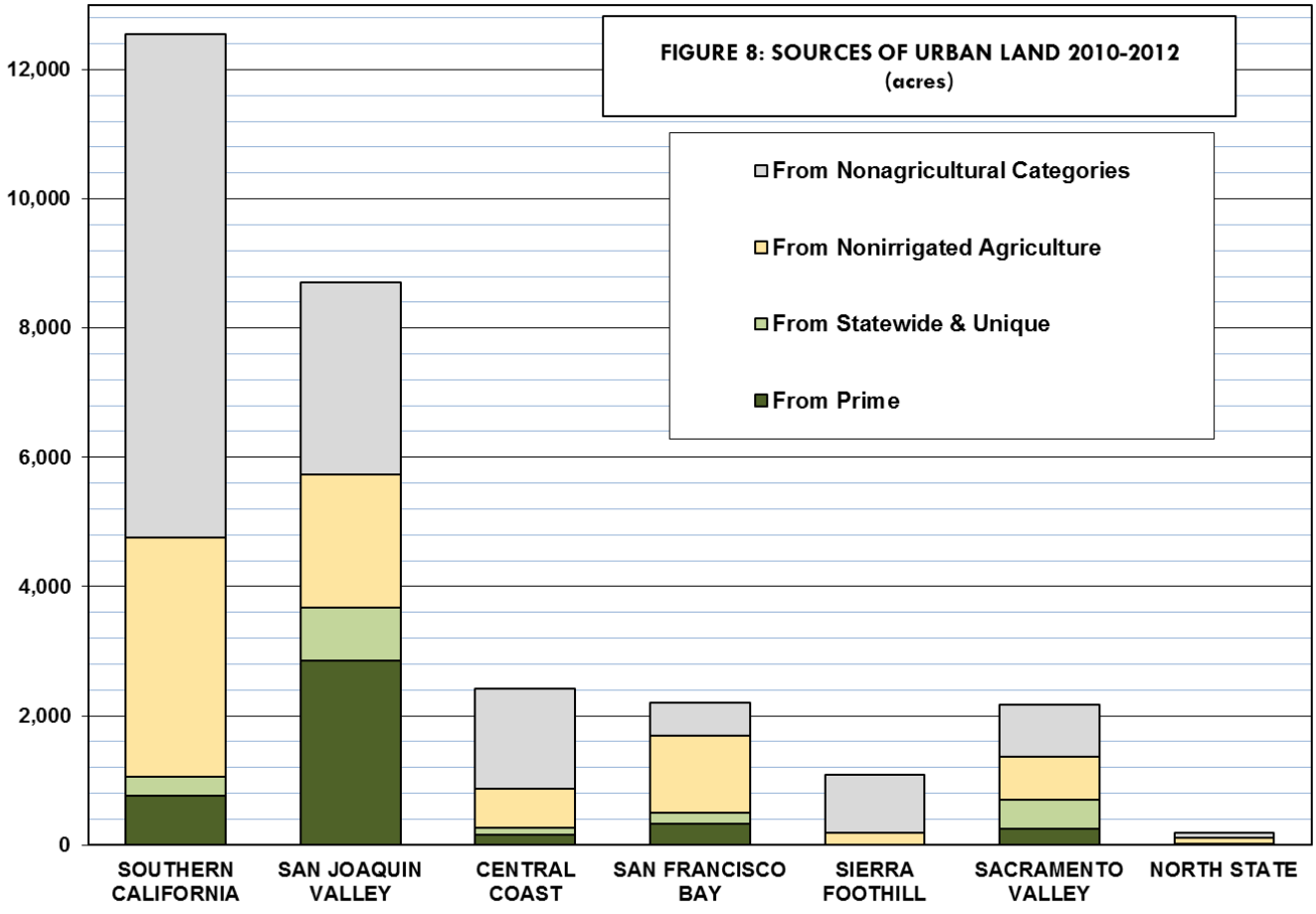
Irrigated Farmland to Urban

Top Ten Counties - net acres

2008-2010		2010-2012	
Riverside	1,178	Fresno	944
Kern	1,661	Kern	652
Tulare	1,634	San Joaquin	635
Fresno	1,246	Tulare	490
Kings	1,004	Sacramento	478
San Joaquin	824	Kings	426
San Bernardino	331	Riverside	394
Stanislaus	328	Stanislaus	269
Imperial	280	Contra Costa	246
Ventura	267	Orange	218

Glenn County was notable as having the highest proportion of urban development on Prime Farmland statewide (100 percent, totaling 15 acres), followed by Stanislaus County (96 percent, totaling 281 acres).

All told, 33 percent of new urban land in the San Joaquin Valley came from Prime Farmland, and an additional 9 percent came from Farmland of Statewide Importance and Unique Farmland during the 2010-12 period. The relative location and type of land converted to urban uses is shown graphically in Figure 8.



These statistics continue a trend in which Prime and irrigated farmland are being impacted at lower proportions compared to prior updates. As recently as FMMP's 2002-04 report, 48 percent of urbanization in the San Joaquin Valley region was derived from Prime Farmland, and 13 percent came from Farmland of Statewide Importance and Unique Farmland. However, the proportion of new urban lands in the Valley located on idled farmland and grazing land has increased, from 18 percent during the 2008 cycle to 24 percent in the 2012 update. This may reflect a recession-induced lag time in the project development process.

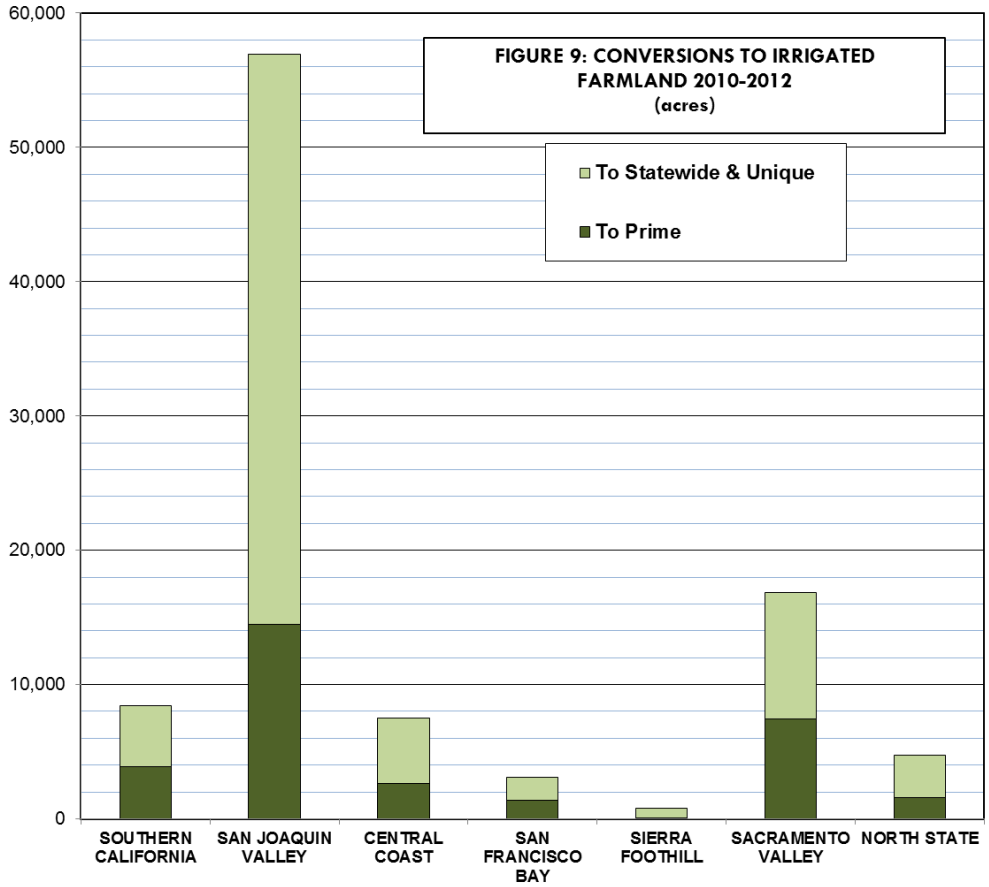
Statewide, 21 percent of urbanization took place on irrigated farmland (15 percent Prime Farmland, 6 percent on lesser quality soils). Another 29 percent came from dryland farming and grazing uses, some of which may have been idled in anticipation of development.

Other Changes Affecting Agricultural Land

2010-2012 Source Data: Appendix Table C-2

A major goal of the Important Farmland mapping project is to track long-term trends in agricultural land resource use. The biennial reporting of these trends to the Legislature is statutorily mandated under Government Code Section 65570. While urbanization is an important component, economic and resource availability factors also lead to lands being more intensively farmed or being taken out of irrigated use. Appendix Table C-2 documents the extent to which these factors affected the data during the 2010-12 mapping cycle.

Land is converted to irrigated agricultural use when dry pastures or natural vegetation are converted, or when idled land is brought back into production. Conversions to irrigated categories totaled 98,296 acres



between 2010 and 2012 (Figure 9), an increase of just over 1 percent from the prior cycle. Sixty-eight percent of the land brought into agricultural use did not meet the criteria for Prime Farmland. Throughout the history of the Program, newly irrigated land has ranged between 65 percent and 70 percent non-Prime Farmland. San Joaquin Valley counties accounted for 58 percent of the land brought into irrigated uses, while the Sacramento Valley and Southern California comprised 17 percent and 8 percent, respectively.

Eight counties had irrigated land expansions in excess of 5,000 acres, which included Yolo County and all of the San Joaquin Valley counties except Kings County. New plantings exceeded 10,000 acres each in Madera and Stanislaus counties. Many of the San Joaquin Valley additions were almond orchards along the Sierra Nevada foothills, and in Yolo County along the interior coast range (Figure 10). Almond acreage has continued to expand throughout the past decade due to strong market conditions. The California Almond Board reports a statewide increase from 605,000 planted acres in the year 2000 to 835,000 acres in 2012.[1] County Agricultural Commissioner Reports document new almond plantings between 2010 and 2012 of 12,000 acres in Madera County and more than 10,400 acres in Stanislaus County.[2] Not all of these conversions represent newly developed irrigated uses—the countywide totals discussed in the Agricultural Commissioner Reports also include changes from less productive irrigated uses such as pasture or annual crops.

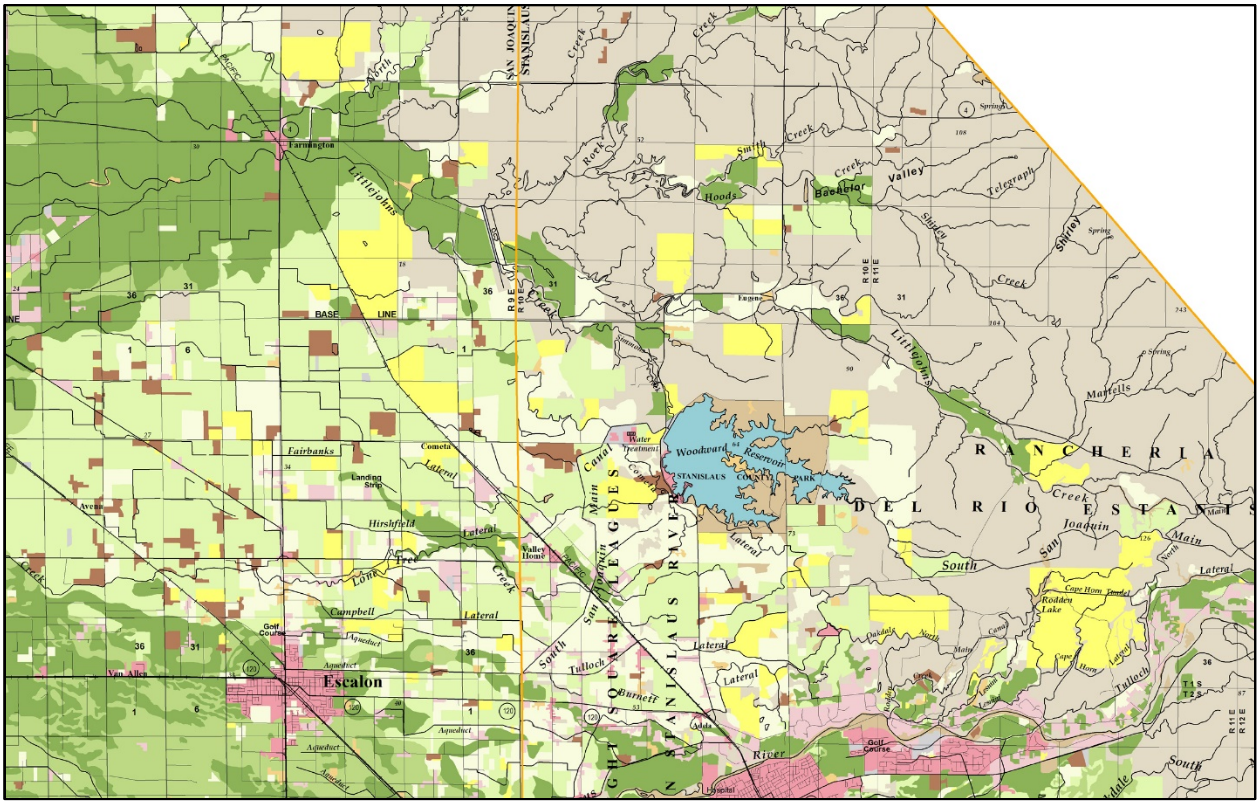
FIGURE 10: ALMOND EXPANSION IN YOLO COUNTY

Other crops contributed to the irrigated land increases, such as vineyards, pistachio and walnut orchards, and vegetable crops. Grape plantings, for example, increased by 5,200 acres in Madera County between 2010 and 2012. Stanislaus County's grape acreage increased by nearly 3,000 acres during the same time frame, along with nearly 8,700 acres of new walnut production. Alfalfa acreage expanded to serve large dairies in various counties. In Merced County, for example, more than 1,500 acres converted to this agricultural use as reported by FMMP field analysts.

[1] http://www.almonds.com/sites/default/files/content/attachments/2012_almond.pdf
[2] http://www.madera-county.com/index.php/publications/crop-reports and http://www.stanag.org/crop-reports.shtm

FIGURE 11: LAND RECLASSIFIED FROM DRYLAND FARMING TO IRRIGATED CATEGORIES, NORTHERN SAN JOAQUIN VALLEY

CONVERSIONS TO IRRIGATED LAND SHOWN IN YELLOW



In the Sacramento Valley, Yolo County exemplifies similar conversion patterns, with Agricultural Commissioner Reports reporting almonds, walnuts, and grapes increasing by nearly 3,200 acres, 1,600 acres, and 800 acres, respectively. Olive orchards have also become more common in Sacramento Valley counties; Yolo County's increase was approximately 1,900 acres during this update cycle. The National Agricultural Statistics Service cites statewide olive plantings increased by 8,000 acres between 2010 and 2012.[3] The olive industry estimates that 3,500 acres of this relatively drought tolerant crop will be planted each year until 2020.[4]

Elsewhere in the state, additions to irrigated lands were more modest, with only Monterey County and Riverside County expansions exceeding 3,000 acres each. The counties have high value vineyard and vegetable crop increases in common, despite the differing climates of their coastal and inland locations.[5]

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3 http://www.nass.usda.gov/Statistics_by_State/California/Publications/California_Ag_Statistics/Reports/2012cas-all.pdf

4 http://plantingseedsblog.cdfa.ca.gov/wordpress/?p=6416

5 http://ag.co.monterey.ca.us/resources/category/crop-reports and http://www.rivcoag.org/Resources/Publications.aspx

Land is removed from irrigated categories through urbanization, conversion to Other Land, or reclassification to a dryland agriculture class (Grazing Land and Farmland of Local Importance). Urban reclassifications were discussed at the beginning of Chapter 4.

Reclassifications to Grazing Land or Farmland of Local Importance due to land idling or long-term dryland farming decreased by 42 percent compared with the 2010 mapping cycle. Reclassifications of this type stood at more than 213,000 acres in both the 2008 and 2010 updates. During all three mapping cycles, the San Joaquin Valley experienced the vast majority of the long-term land idling (Figure 12).

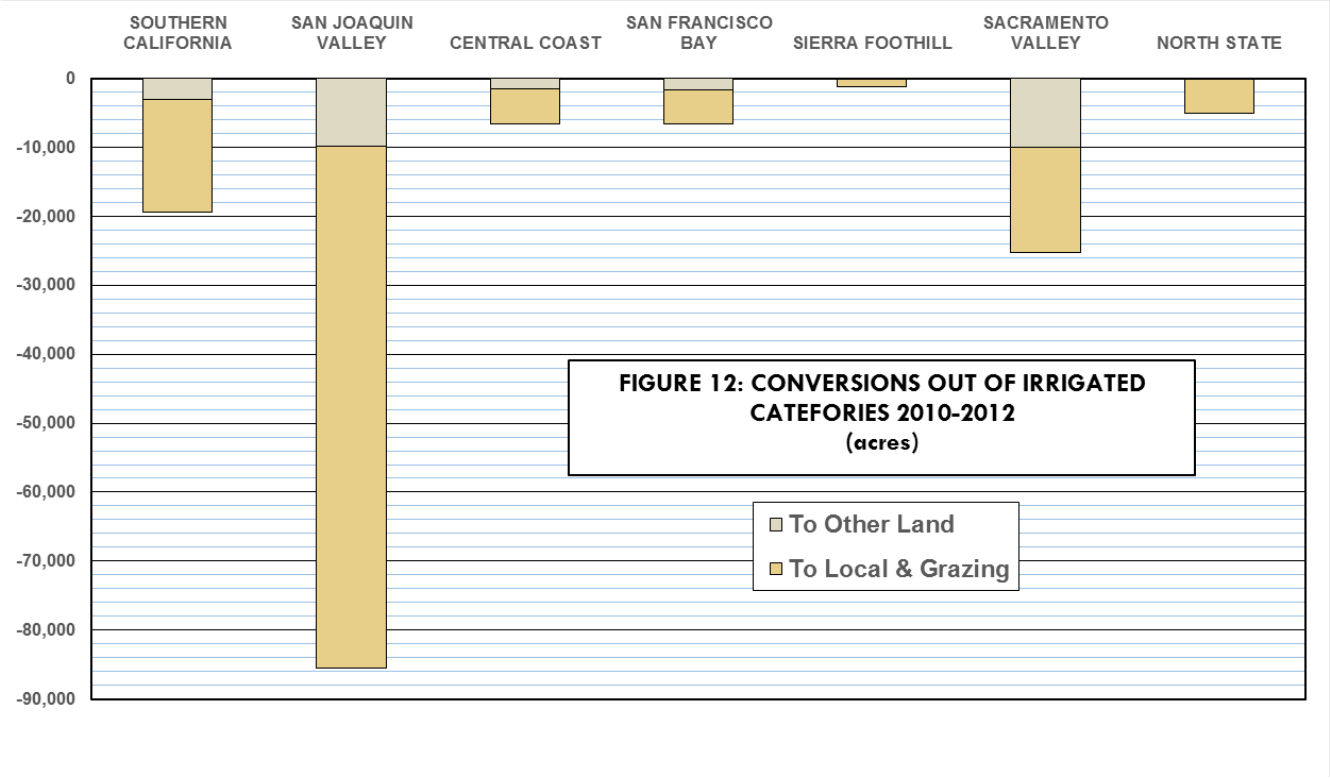


FIGURE 12: CONVERSIONS OUT OF IRRIGATED CATEFORIES 2010-2012 (acres)

Three counties had 10,000 or more acres of this conversion type: Fresno, Kern, and Kings. Kings County's reclassification of 25,753 acres led all counties, representing 21 percent of the statewide total for this conversion type. Tulare County's downgrades totaled nearly 7,800 acres. Most of the conversions that occurred in the southern San Joaquin Valley were associated with ongoing drought and salinity-related land iding. The largest single example was a reclassification in western Fresno County of approximately 4,200 acres. Deliveries of irrigation water to federal water districts south of the Sacramento-San Joaquin Delta have fluctuated along with drought conditions, dropping from 100 percent in 2006 to less than 50 percent in each of the subsequent years—including a 10 percent allocation in calendar year 2009.[6] Allotments during this Important Farmland update cycle were 45 percent in 2010, 80 percent in 2011, and 40 percent in 2012. State Water Project deliveries were set at 50 percent, 80 percent, and 65 percent for the same time period.[7]

Water delivery uncertainties and other resource constraints raise the possibility of additional land retirement or conversion. As of the 2012 update, FMMP field analysts have flagged nearly 150,000 acres in the San

[6] http://www.usbr.gov/mp/cvo/vungvari/water_allocations_historical.pdf
[7] http://www.water.ca.gov/swpao/deliveries.cfm

Joaquin Valley as being in dryland or fallow status for two update cycles. Should these conditions continue, this land will be removed from irrigated farmland categories during the 2014 map update.

Sacramento-San Joaquin Delta area counties were also prominent in land idling. Sacramento County's land idling (5,677 acres) was primarily focused in the southern part of the County, near Elk Grove and on certain Delta islands that are the subject of flood control and habitat mitigation efforts by the California Department of Water Resources.[8] San Joaquin and Yolo counties have similar restoration projects under way, contributing to the reclassifications out of irrigated land of 4,882 acres and 4,233 acres, respectively.

In Southern California, Riverside County had the highest rate of land left fallow for three or more update cycles, with 4,929 acres being downgraded during the 2012 map update. Three conversions in the Oasis area tallied to 1,400 acres, and 1,900 acres were downgraded in the Coachella Valley.

Reclassification of irrigated land to Other Land is less frequent but is typically more permanent in nature than land idling. This is because many of the new uses involve low density residential development, mining, ecological restoration, or similar changes.

Between 2010 and 2012, 26,303 acres statewide were reclassified from irrigated agriculture to Other Land. This was a 33 percent decrease from the prior update cycle. Sacramento Valley and San Joaquin Valley counties accounted for 38 percent and 37 percent of the total, respectively. The most active county for conversion to Other Land this update, at 4,155 acres, was Sutter. Wetland restorations totaling 3,500 acres occurred within the County, including a single restoration of approximately 1,000 acres. Yolo County had more than 3,000 acres of irrigated to Other Land conversions, two-thirds of that amount due to habitat restoration in the Yolo Bypass Wildlife Area and other sites along the Sacramento River.

In the San Joaquin Valley, Kern and San Joaquin counties conversions to Other Land exceeded 2,000 acres each (2,173 and 2,625 acres, respectively). Wetland conversions were responsible for 26 percent of the change in Kern County and 18 percent in San Joaquin County. Land leveling initiated for urban development, but still lacking infrastructure, was responsible for more than 20 percent of this conversion type in Kern County.

In a possible indicator of the recession's effect, large rural estate construction and aggregate mine expansions were not as frequent or large as examples during prior update cycles.

Counties with Rural Land Mapping Enhancements

2010-2012 Source Data: Appendix D

Approximately 27 percent of the Important Farmland survey area is classified as Other Land. While urbanization has historically been the driving force in agricultural land loss, FMMP's statistics indicate that for every five acres exiting crop or grazing uses, four convert to Urban Land and one converts to Other Land. Because the Other Land category encompasses a disparate group of land uses, and conversions to Other Land are most often geographically separated from urban centers, users requested more specific information about this conversion type. A 2002 pilot project created five subcategories for Other Land: Rural Residential, Semi-Agricultural and Rural Commercial, Confined Animal Agriculture, Vacant or Disturbed Land, and Nonagricultural Vegetation. The pilot effort expanded on a funds-available basis to include all eight San Joaquin Valley counties. Mendocino County was added to the FMMP survey area in 2006 upon the release

[8] http://www.water.ca.gov/floodmgmt/dsmo/ecb/maep/sherman.cfm and http://ccrm.berkeley.edu/resin/pdfs_and_other_docs/background-lit/hanson_5yr-plan.pdf

of its USDA soil survey, and is also mapped using the more detailed classifications. Definitions for the Rural Land Mapping categories are shown on page 7. County-level data and summaries discussed here are located in Appendix D.

Between 2010 and 2012, expansion of Rural Land Mapping categories totaled 3,196 acres (Appendix Tables D-1 and D-2), significantly less than the acreage converted during the prior update (12,055 acres). The most notable difference was in the Nonagricultural and Natural Vegetation category, which gained more than 1,100 acres during the prior update, and decreased by just over 4,900 acres in the 2012 update. The net decreases in Nonagricultural Vegetation were specific to Kern and Tulare counties; with conversions primarily to irrigated and dryland farming. Conversely, San Joaquin County's total for this category increased by approximately 1,000 acres due to habitat restoration efforts in the Delta.

Rural Residential Land increased by nearly 3 percent, and totaled above 5,000 net acres among the nine counties during both the 2010 and 2012 updates. The counties of San Joaquin and Madera increased by the largest amount. San Joaquin County's increase derived nearly equally from irrigated and dryland farming, while in Madera County the vast majority of Rural Residential Land had been classified as Grazing Land. It is also notable that increased structural density resulted in conversion of more than 1,900 acres of Rural Residential Land to Urban Land among the counties during the 2012 update.

Expansions of the Semi-agricultural and Rural Commercial category totaled just over 1,700 acres, a 4.2 percent increase. This land use type has the smallest footprint of the Rural Land Mapping categories, less than 43,000 total acres. The 2012 increases were widely distributed among the nine counties; San Joaquin County had the most conversions of this type with an increase of 775 acres.

Confined Animal Agriculture acreage expanded by only 47 acres this update, decreasing nearly 98 percent compared with the 2010 acreage increase. The footprint of this use actually decreased in Fresno, Kern, Merced, and Stanislaus counties because smaller dairies were abandoned or converted to cropland. Statewide, the number of dairies continues to decrease, from 1,710 in 2010 to 1,650 during 2012.[9] Table 5 depicts the 9 percent decrease in the number of dairies operating in the San Joaquin Valley during the two year period, according to the California Department of Food and Agriculture. Conversions to Confined Animal Agriculture facilities have been decreasing since a high of 2,579 acres during the 2004-06 update.

TABLE 5
NUMBER OF LICENSED DAIRIES, SAN JOAQUIN VALLEY COUNTIES

	2010	2012
Fresno	106	86
Kern	54	54
Kings	143	124
Madera	56	46
Merced	258	243
San Joaquin	127	119
Stanislaus	248	216
Tulare	311	296
Total	1,303	1,184

Vacant or Disturbed Land can be a category of transition. While more than 8,500 acres were placed in this category during the update, more than 7,300 acres converted out of disturbed land uses—primarily to irrigated farmland (44 percent), urban (29 percent), and dryland agricultural use (16 percent). In total there was a 1,167 net increase in acreage in the Vacant or Disturbed Land class during the 2012 update. While FMMP analysts attempt to determine the use to which disturbed land will be put using planning and other data, it is not always possible to determine the future of a

[9] http://www.cdfa.ca.gov/dairy/pdf/Annual/2012/2013_Annual_2012_Data.pdf and http://www.cdfa.ca.gov/dairy/pdf/Annual/2011/Annual_2011_Data_2010.pdf

site in the span of a single FMMP update cycle. This is particularly true of disturbances resulting in new agricultural uses. The long-term biennial tracking of conversion provides a time series that ultimately captures what occurs to these transitional areas.

Net Irrigated Farmland Change

2010-2012 Source Data: Appendix table C-3

Statewide, irrigated farmland decreased by a net 58,587 acres during the 2012 update (Appendix Table C-3). This figure is 65 percent lower than the 168,039 acre net loss during 2010. The San Joaquin Valley accounted for 56 percent of the statewide decrease. Land idling was a major contributing factor to irrigated land decreases during recent map updates, particularly in central and southern San Joaquin Valley counties. Net irrigated land decreases in the San Joaquin Valley totaled nearly 276,000 acres during the 2006 through 2010 updates. The decrease in the rate of land idling during the 2012 update may be a pause on a longer trajectory, as drought has tightened on California in subsequent years.

At the same time, statewide urbanization declined from 102,010 acres in 2006, to a record low of 29,342 acres in the 2012 cycle. Land idling's impact on the amount of irrigated acreage has exceeded that of urbanization for the past three FMMP updates. The Southern California region accounted for 21 percent of statewide net irrigated land decreases, while the Sacramento Valley comprised 13 percent, and the Bay Area followed at 7 percent of the total. Land idling and ecological restoration had greater affects than urbanization in all regions of the state.

The predominance of land idling and habitat restoration factors among counties is highlighted in Table 6. The list is distributed among southern San Joaquin Valley counties (Kings, Kern, Fresno, and Tulare), counties in proximity to the Delta (Sacramento and San Joaquin), Southern California (Imperial, Los Angeles, and Riverside), and Sacramento Valley's Sutter County.

Countervailing the net loss of irrigated farmland in most counties, a few locations saw net increases in their irrigated farmland totals during the 2012 update (Table 7). These were clustered in the northern San Joaquin Valley: Madera, Stanislaus, and Merced counties had irrigated land increases characterized by large plantings of orchards, and to a lesser extent vineyards and row crops. Siskiyou County had a resurgence in alfalfa plantings, while the Sacramento Valley counties of Tehama, Colusa, and Yuba had expansions in olives and other orchard crops. Coastal winegrowing counties (Monterey, Santa Barbara, and Sonoma) comprised the remaining locations with net positive irrigated totals.

TABLE 6: DECREASES OF IRRIGATED LAND RANKS

Net Losses of Irrigated Land

Top Ten Counties - net acres

2008-2010		2010-2012	
Fresno	-32,622	Kings	-25,769
Kern	-25,137	Kern	-13,751
Kings	-17,133	Fresno	-5,414
San Joaquin	-11,777	Sacramento	-5,256
Sacramento	-11,483	Tulare	-4,146
Tulare	-8,801	Sutter	-3,707
Solano	-5,835	Los Angeles	-3,297
Yolo	-5,612	Imperial	-2,859
Riverside	-5,609	Riverside	-2,544
Imperial	-5,333	San Joaquin	-1,798

TABLE 7: INCREASES OF IRRIGATED LAND RANKS

Net Increases of Irrigated Land

Top Ten Counties - net acres

2008-2010		2010-2012	
Merced	5,964	Madera	7,648
Stanislaus	3,455	Stanislaus	6,242
Madera	1,181	Merced	4,148
San Luis Obispo	946	Siskiyou	2,377
Tehama	721	Tehama	1,341
Monterey	476	Colusa	1,219
Santa Barbara	402	Monterey	707
Mendocino	399	Yuba	660
San Mateo	52	Santa Barbara	639
Mariposa	9	Sonoma	120

Long Term Net Land Use Change

During the 14 biennial reporting cycles since FMMP was established, more than 1.4 million acres of agricultural land in California were converted to nonagricultural purposes (Table 8). This represents an area larger in size than Merced County, or a rate of nearly one square mile every four days.

In total, 78 percent of this land was urbanized, 21 percent became one of the miscellaneous land uses grouped into the Other Land category, and approximately 1 percent represents new water bodies.[10]

TABLE 8
NET IMPORTANT FARMLAND CONVERSION
1984-2012

	Total Change	Annual Average
	(acres)	
Prime Farmland	-709,852	-25,352
Farmland of Statewide Importance	-370,449	-13,230
Unique Farmland	27,106	968
Additional Irrigated Farmland (1)	-32,576	-1,163
Farmland of Local Importance	-17,696	-632
Grazing Land	-333,687	-11,917
Urban and Built-up Land	1,114,076	39,788
Other Land	302,480	10,803
Water	21,172	756

(1) Represents irrigated land conversions in counties that were without soil surveys in early years of FMMP mapping.

Although housing is only one aspect of land use conversion, FMMP urbanization statistics track closely with those for housing starts in the western states that are published by the US Census Bureau (Figure 13).

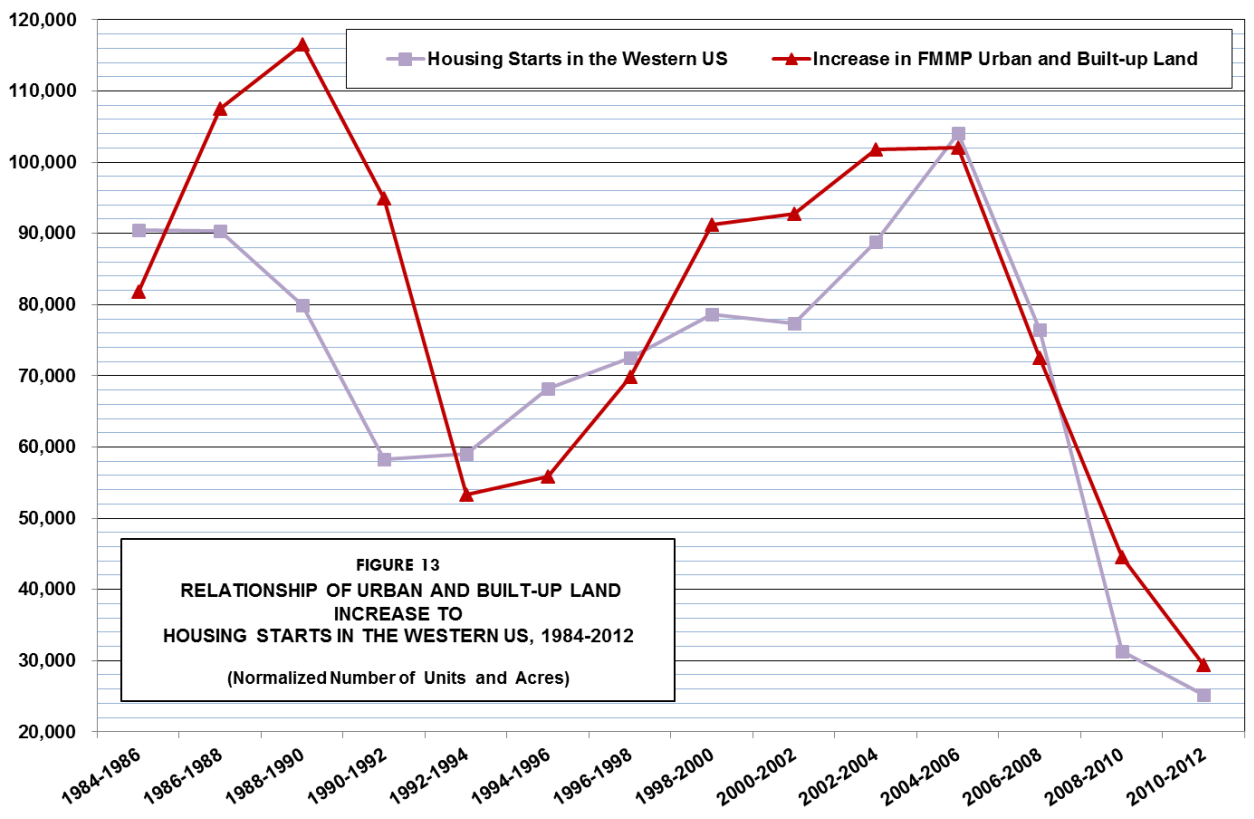


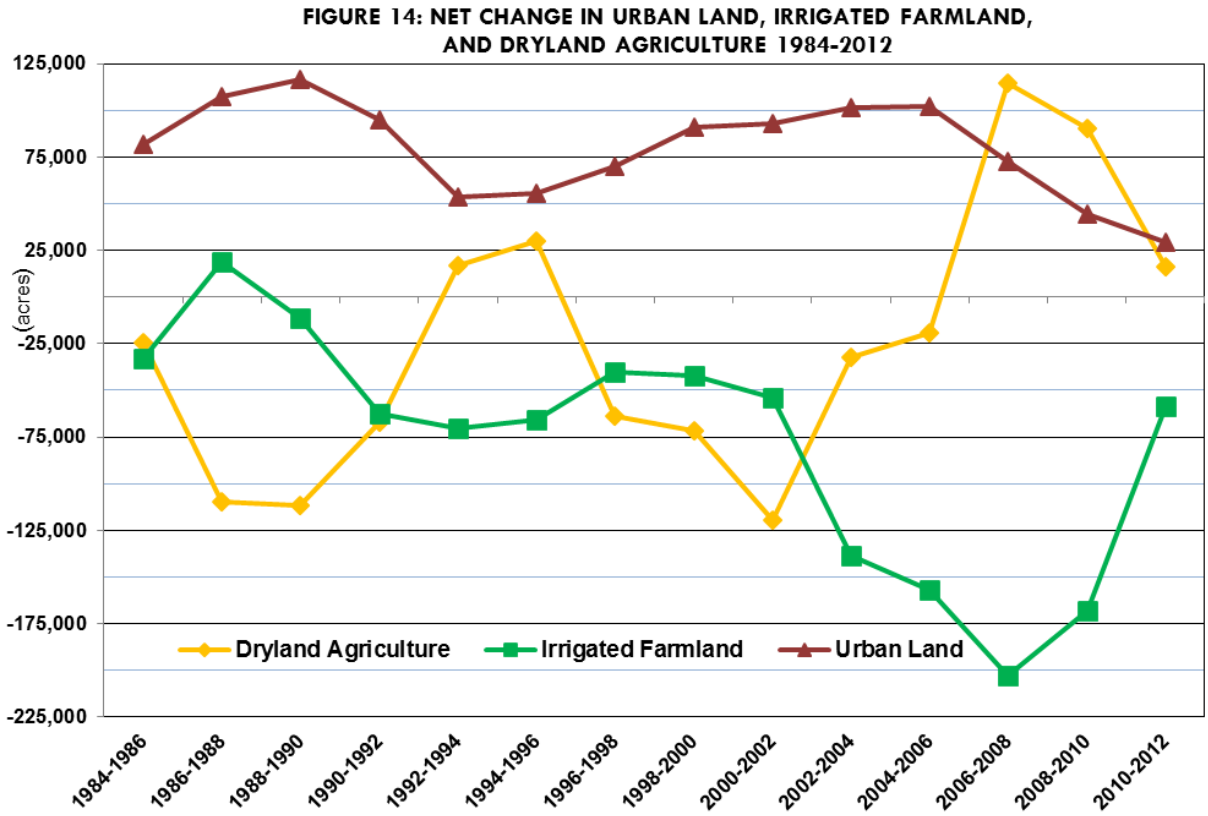
FIGURE 13
RELATIONSHIP OF URBAN AND BUILT-UP LAND INCREASE TO HOUSING STARTS IN THE WESTERN US, 1984-2012
(Normalized Number of Units and Acres)

[10] Water body increases included Diamond Valley Lake, Lake Sonoma, and Los Vaqueros Reservoir (Riverside, Sonoma, and Contra Costa counties, respectively) and flooding of San Joaquin Delta islands for habitat (Contra Costa and Solano counties).

The largest losses from agricultural land has been from Prime Farmland, Farmland of Statewide Importance, and Grazing Land. Urbanization at the periphery of cities in California's agricultural valleys led to the loss of Prime and Statewide Farmland, while grazing losses have been more prevalent in the coastal zone and interior Southern California. Unique Farmland registered a net increase of 27,106 acres over the 28-year period due to expansion of high value crops—mostly orchards and vineyards—on hilly terrain.

Irrigated farmland acreage decreased in almost every update cycle, most notably since the 2004. Dryland farming and grazing have frequently moved in the opposite direction of irrigated land, as multi-year hydrologic and economic factors influence how much land growers put into production.

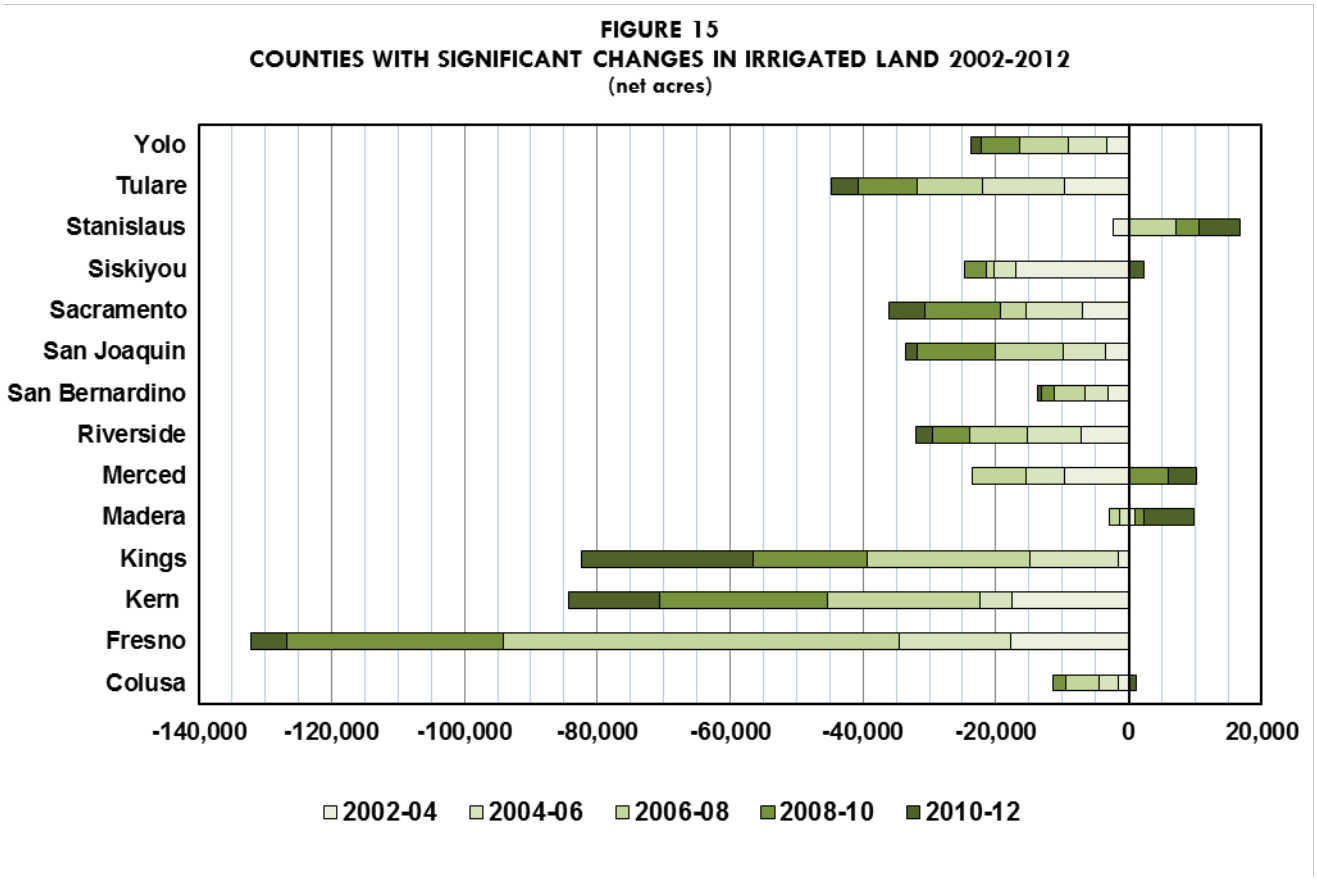
The biennial data (Figure 14) illustrates trends in agricultural and urban conversion since 1984. Urbanization declined in the periods of recession—the early-to-mid-1990's and the late 2000's.



The recent trend of orchard planting in parts of the state fits within a larger context of farmland conversion over time. Figure 15 (next page) depicts the counties that have had the largest flux in irrigated land over the past decade. In all but a few cases, the trend has been uniformly lower. Only Madera, Merced, and Stanislaus counties have shown significant increases during this period. Most unique is Merced County, whose losses earlier in the decade were more recently being offset by the orchards and other high value crops discussed earlier in the chapter. Merced County Agricultural Commissioner reports[11] describe trends in the dairy and poultry industry, other commodities, and weather factors, which contributed to shifts among crops over the past decade.

[11] http://www.co.merced.ca.us/Archive.aspx?AMID=36

As 2014 mapping proceeds, drought conditions and the development of infrastructure to support the next generation of Californians is anticipated to impact its agricultural land resources. The Department of Conservation will continue to support informed planning decisions with timely and accurate agricultural land resource data, capturing these trends as they evolve.



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