

Saving Farmland, Growing Cities

**A Framework for Implementing
Effective Farmland Conservation Policies
in the San Joaquin Valley**



American Farmland Trust is a nonprofit organization established in 1980 to conserve the nation's agricultural resources. Its planners, policy experts and agricultural specialists work cooperatively with the farm community and government decision-makers to encourage better planning and land use policies – the kind that will minimize the loss of farmland and help maintain the economic viability of agriculture. For almost two decades, AFT has had a continuous presence in the San Joaquin Valley, which, because of its unique productivity and growth pressures, is our highest priority in California.

Saving Farmland, Growing Cities is the latest in a series of AFT updates on what is happening to Valley farmland as its cities grow. It outlines a new framework for land use policy choices that affect farmland and agriculture. It identifies six key challenges that must be addressed to conserve farmland and for each proposes specific, measurable outcomes by which to evaluate success. These performance measures provide a meaningful way to compare policy alternatives and to choose those that can minimize – if not entirely avoid – farmland loss while promoting sustainable community growth.

All land data are from the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP). In this data, "other land" may include everything from farmland has been fallowed for several years (possibly in anticipation of its development) to large-lot rural residences, confined animal operations and irrigation canals. Only recently has FMMP begun to differentiate them. Thus, it is possible that the data underestimate the amount of agricultural land that has been urbanized.

This report was written by Serena Unger, AFT Senior Planner and Policy Consultant, and Edward Thompson, Jr., AFT California Director. The authors wish to acknowledge the contributions of our colleague Daniel O'Connell, AFT San Joaquin Valley Field Representative; Molly Penberth, director of the Farmland Mapping and Monitoring Program at the California Department of Conservation; Nate Roth at the Information Center for the Environment at UC Davis; Dave Davis for superb editing and design of the report; planners and officials from the San Joaquin Valley who reviewed data and drafts; and the financial support of AFT's members and special donors to our San Joaquin Valley campaign. Report printed by Capital Graphics, Inc., Sacramento, CA.





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Executive Summary: New Strategies for Conserving Farmland

Agriculture is the economic mainstay of the San Joaquin Valley. No sector of the Valley's economy has a greater stake in how and where communities grow than agriculture. Every acre of farmland needlessly sacrificed for urban development weakens its foundation. But because most cities in the Valley are surrounded by farmland, and will have to grow to accommodate the region's burgeoning population, conserving this resource is a challenge.

American Farmland Trust has actively promoted farmland conservation in the San Joaquin Valley for nearly two decades. This report is the latest in a series of AFT updates on what is happening to Valley farmland as its cities grow. It outlines a new framework for land use policy choices that affect farmland and agriculture.

It also identifies six key challenges that must be addressed to conserve farmland and for each proposes specific,

measurable outcomes by which to evaluate success. These performance measures provide a meaningful way to compare policy alternatives and to choose those that can minimize – if not entirely avoid – farmland loss while promoting sustainable community growth.

The six objectives that address key farmland conservation challenges are:

- 1** Avoid development of high quality farmland.
- 2** Minimize farmland loss with more efficient development.
- 3** Ensure stability at the urban edge.
- 4** Minimize rural residential development.
- 5** Mitigate the loss of farmland with conservation easements.
- 6** Encourage a favorable agricultural business climate.

Using the latest available data and information, the report evaluates the performance of the Valley as a whole and each of its eight counties in meeting these challenges. Though it does not evaluate each individual city and county government, it gives examples of how the performance of selected local jurisdictions compares to the intentions of their land use plans and policies as they address farmland conservation.

Finally, the report makes recommendations for improving the performance of local governments in conserving farmland. All of the analysis and recommendations in the report are offered, not to criticize local government, but to equip planners, decision makers and their constituents with the information they need to succeed in conserving the irreplaceable farmland of the San Joaquin Valley as its cities continue to grow.

Introduction: Planning for Sustainability

The San Joaquin Valley is beginning to plan for growth in a new and different way. During the past few years, there has been unprecedented regional cooperation on the San Joaquin Valley Blueprint and Smart Valley Places, which will shape future urban development. More recently, Sustainable Community Strategies are starting to address climate and a “greenprint” aims to increase the benefits the region derives from its rural areas.

All of these efforts recognize that the kind of positive changes communities want — more economic opportunity, greater mobility with less traffic, lower household and government costs, and a cleaner environment and abundant open space — are more likely to occur if the way we plan for growth also changes. Rather than promoting development for its own sake, as we have done in the past, the new direction in planning emphasizes greater efficiency, quality and “sustainability” in how communities grow.

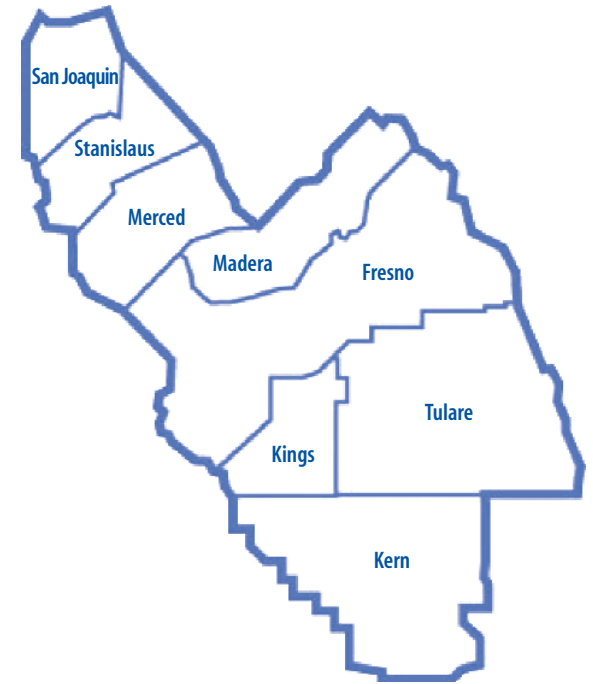
No sector of the Valley’s economy has a greater stake in how — and where — communities grow than agriculture. Land is the foundation of farming and ranching, and every acre of agricultural land converted to urban use is an acre that will never again sustain food production. It is also an acre that will no longer yield benefits of nature such as wildlife habitat, groundwater recharge or the beauty of a peach orchard in full bloom.

Though it may seem like there is plenty of farmland in the San Joaquin Valley, it is, in fact, a finite resource. And demands on that land continue to grow, not only for urban development but, just as importantly, to feed a growing population, provide renewable energy, and safeguard the environment. Conserving this irreplaceable resource — saving farmland while growing our cities — is an imperative for truly sustainable planning in the years to come.

■ American Farmland Trust in the San Joaquin Valley

American Farmland Trust (AFT) is a nonprofit organization established in 1980 to conserve the nation’s agricultural land and water resources. Its planners, policy experts and agricultural specialists work cooperatively with the farm communities and government decision-makers to encourage better planning and land use policies — the kind that will minimize the loss of farmland and help maintain the economic viability of agriculture.

For almost two decades, AFT has had a continuous presence in the San Joaquin Valley, which, because of its unique productivity and growth pressures, is our highest priority in California.



In 1995, AFT published *Alternatives for Future Urban Growth in California’s Central Valley: The Bottom Line for Agriculture and Taxpayers*, which first called attention to the economic consequences of urban sprawl in the region. It led in 1998 to the Fresno Growth Alternatives Alliance that produced *A Landscape of Choice*, a primer on compact, efficient growth, and to the Agricultural Task Force for the Central Valley, which concluded “traditional methods of planning and growth management . . . will lead to significant loss

of farmland in the nation's richest agricultural region." AFT thereafter served on the Land Use, Housing and Agriculture committee of the California Partnership for the San Joaquin Valley (2004), which recommended a regional planning process that became the San Joaquin Valley Blueprint, and on the Regional Advisory Committee for the Blueprint itself (2005).

In the meantime, we worked with the Great Valley Center to establish local farmland trusts and negotiated the first agricultural conservation easements in the Valley. In 2006, we updated *Alternatives for Future Urban Growth* in an online publication, *The Future Is Now*, and in 2010 inaugurated Groundswell San Joaquin Valley, a network of organizations promoting efficient growth in the region (groundswellsjv.org). AFT's most recent initiative is the San Joaquin Valley Greenprint, inaugurated by the Regional Policy Council on our recommendation.

■ A Framework for Farmland Conservation Planning and Policy

As a guide to sustainable planning, this American Farmland Trust report outlines a new framework for formulating and evaluating land use policy choices that affect farmland and agriculture. It poses six key challenges that must be addressed to effectively conserve farmland and for each identifies specific, measurable outcomes by which to evaluate success.

These performance measures provide a meaningful way to compare policy alternatives and choose those that can minimize farmland loss while promoting sustainable community growth. To illustrate how local jurisdictions can apply these

performance measures, the report highlights those measures for which data are readily available for the period from 1990 through 2008.

The data will also enable counties to determine where they stand among their neighbors and how they stack up against the region as a whole. We recognize, of course, that the performance of counties as a whole is a result of the collective actions of individual cities and county governments themselves. Though AFT did not have the resources to collect data for each of the dozens of local jurisdictions in the Valley, we encourage them to take the initiative and do so on their own.

This framework of challenges and performance measures is the result of decades of experience that American Farmland Trust has in working with cities and counties across the country. We are eager to discuss our findings and recommendations with local planners and officials in the Valley, and offer our assistance to help them integrate farmland conservation into their ongoing planning and land use policy initiatives.

At the same time, we urge the agricultural community and other constituencies that have a stake in how communities grow – which is to say nearly everyone – to use this report to engage local officials in their own discussions of how to grow cities while conserving farmland.

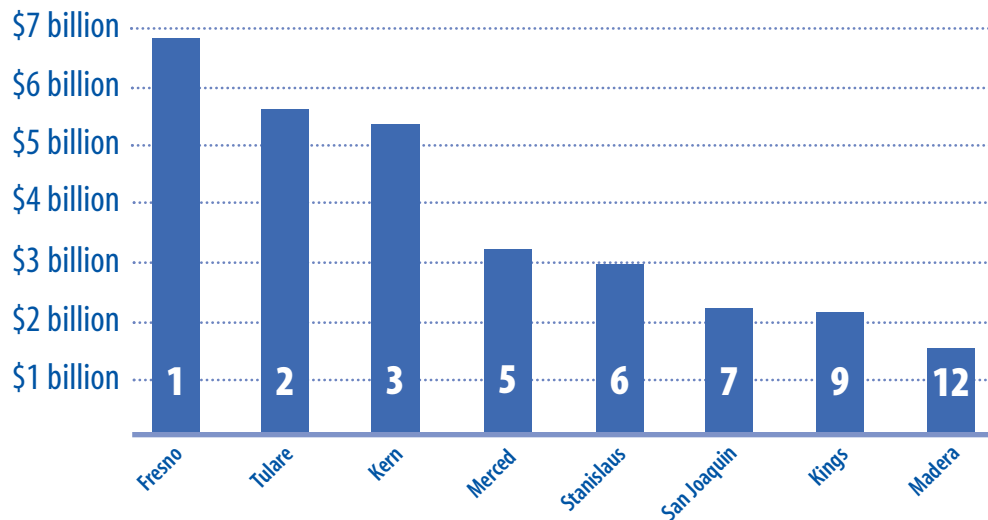
Experience teaches that the most successful farmland conservation efforts in the United States are the result of genuine local initiative and good faith collaboration among private and public leaders.



An Overview of Agriculture in the San Joaquin Valley

Figure A. Annual Value of Agricultural Production and Rank within California

Six of the nation's top 10 agricultural counties are located in the Valley, and the region's farmers produce more than \$30 billion worth of agricultural products annually.



Source: California Agricultural Commissioners Crop Reports, 2011
Numbers on bars represent county rank within California.

■ A Major Economic Sector

The San Joaquin Valley is an irreplaceable agricultural resource with a Mediterranean climate in which fruit, vegetable and nut crops flourish. Many of the nation's top producing agricultural counties are located in the Valley, with Fresno, Tulare and Kern in the top three statewide.

The region's farmers take advantage of this climate, as well as fertile soils, developed water supplies and their own ingenuity and hard work, to produce more than \$30 billion worth of agricultural products annually (Figure A).

The overall impact of this production on the Valley's economy is estimated to be three times as large due to all of the goods and services farmers and ranchers purchase, and the value added by processing, distribution and marketing.

■ The Land Base

While the San Joaquin Valley has 10.6 million acres of agricultural land, only about half is highly productive irrigated farmland and only 27% of the total is prime farmland (Table B). But these statistics do not account for conditions such as problematic water supplies, soil salinization or environmental sensitivity that could jeopardize the long-term economic viability of some farmland.

An analysis completed for AFT by the Information Center for the Environment at UC Davis found that as much as 44% of the region's 5.3 million acres of irrigated cropland has one or more of these limitations. It also shows that most of the land that does not have such limitations is directly in the path of the Valley's growing cities.

Between 1990 and 2008, the acreage of high-quality (prime, unique and statewide important) farmland declined by 443,000 acres. Much of this decrease was due to land being taken out of irrigated production, often temporarily, because of water shortages and other causes. But, nearly 100,000 acres – 8.5 square miles a year – were converted permanently to urban uses.

At this rate, the Valley will lose an additional 500,000 acres of land to development by 2050 and more than 300,000 acres of it will have been highly productive irrigated cropland.

In addition to the urbanization of farmland, additional acreage is being converted to rural residential uses. Typically ranging from 2 to 20 acres, "ranchettes" may look like they remain in agriculture – a small orchard or a horse or two on pasture – but most of them are no longer producing commercial crops or livestock. And it is unlikely that they ever will because the land has been priced out of the reach of those who farm for a living.

In the San Joaquin Valley today, "ranchettes" occupy 146,000 acres, compared with 475,000 acres of urban land.

Thus, it appears that for every three acres developed for urban use at least one additional acre of farmland has been permanently removed from commercial agriculture to accommodate rural lifestyles.

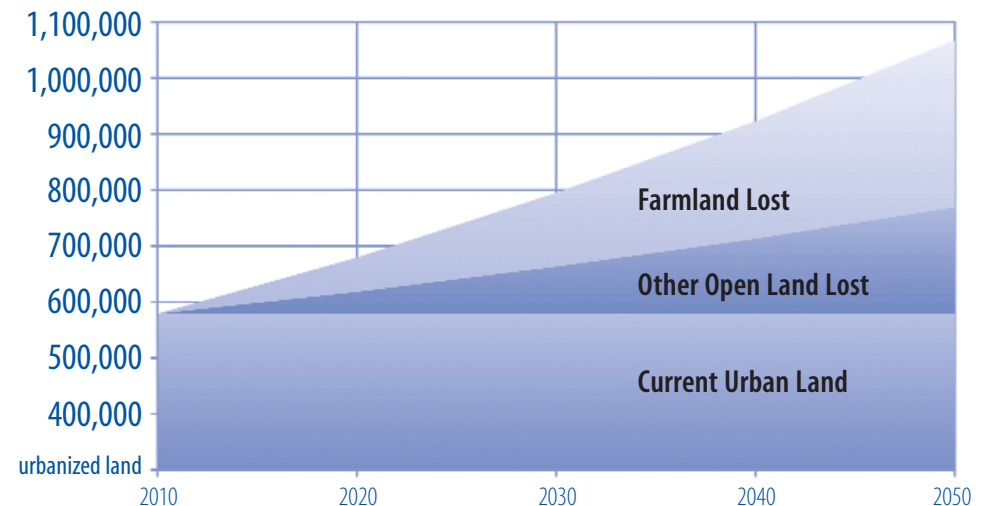
Table B. Existing Agricultural Land, San Joaquin Valley

Acres	2008	1990-2008
High Quality Farmland *	5,228,902	(443,085)
Farmland of Local Importance	491,199	163,290
Grazing Land	4,875,106	30,839
Agricultural Land Total	10,595,207	(248,956)

*"High Quality Farmland" (HQF) is Prime, Farmland of Statewide Importance, Unique and Irrigated Farmland.
Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008

Figure C. Future Loss of Farmland to Urban Development, 2010-2050

If status quo development patterns continue, more than 300,000 acres of high quality farmland will be permanently lost by 2050.



Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008

■ Population Growth and Its Implications

Behind the loss of farmland in the San Joaquin Valley is population growth. In 1990, the Valley's population was 2.7 million. It is now almost 4 million people and is expected to increase by another 89% within the next 40 years – proportionately two-and-a-half times the growth rate of the state as a whole.

According to the Demographic Unit of the California Department of Finance, the population of every county in the Valley will grow by at least two-thirds. Kern, Madera and Tulare counties will grow by the largest percentage, while the greatest increase in the number of residents will be in San Joaquin, Fresno and Kern counties.

The implications of this growth for planning and development are tremendous. Unless cities grow much more efficiently – consuming less land for every new resident and their economic activities – the toll on the region's farmland and agriculture will be significant.

The good news is that cities can choose to grow in ways that minimize farmland loss. Demographic trends should help. As the Urban Land Institute has noted, an expected increase in the numbers of seniors and young families will create a demand for houses on smaller lots (Nelson, 2011). There is no need to sacrifice more farmland than necessary to accommodate the growth in Valley's population and economy.

But to minimize farmland loss while growing the economy counties and cities will have to do a better job of, first, recognizing what it takes to conserve farmland and, second, adopting and implementing policies that will actually make it happen. This report establishes a context and provides information that will help them succeed.

Table D. San Joaquin Valley Population Projections, 2010-2050

There are almost 4 million people living in the Valley now, and that number is expected to increase by 89% within the next 40 years – two-and-a-half times the rate of California's population growth statewide.

■ COUNTY	Population 2010	Projected 2050	Increase 2010-2050	% Change 2010-2050
San Joaquin	685,306	1,288,854	603,548	88%
Stanislaus	514,453	863,254	348,801	68%
Merced	255,793	506,666	250,873	98%
Madera	150,865	314,546	163,681	108%
Fresno	930,450	1,535,761	605,311	65%
Tulare	442,179	884,646	442,467	100%
Kings	152,982	281,866	128,884	84%
Kern	839,631	1,823,277	983,646	117%
■ REGIONAL AND STATEWIDE TOTALS				
San Joaquin Valley	3,971,659	7,498,870	3,527,211	89%
California	37,253,956	51,013,984	13,760,028	37%

Source: California Department of Finance, Report 84 E-4, E-5 and Interim Population Projections, 2010-2050, 2012

To minimize farmland loss while growing the economy counties and cities will have to do a better job of recognizing what it takes to conserve farmland, and adopting and implementing policies that will actually make it happen. This report establishes a context and provides information that will help them succeed.

Framework for Tracking Farmland Conservation Performance

AFT's experience with farmland conservation in California and throughout the U.S. has led us to the conclusion that there are six basic challenges that local communities must address to successfully maintain an adequate land base for agricultural production.

These six challenges define the objectives that communities should strive to achieve and these objectives, in turn, are the framework for our analysis of the region's existing farmland conservation efforts. For each objective except one (agricultural economic viability), we propose specific performance measures for evaluating how successfully communities are addressing the challenge.

Some of the performance measures require more research than AFT was able to do. For example, we did not attempt to obtain data for every individual city within each county. So this report concentrates on how counties as a whole are doing at conserving San Joaquin Valley farmland (see Appendix 1). Further analysis is necessary to determine how each city and the counties themselves are contributing to the countywide results and the overall performance of the San Joaquin Valley.

A useful way to consider the results of our analysis is to compare them with the intentions expressed in the land use plans and policies of cities, counties, LAFCOs and councils of government. Many of these official documents incorporate farmland conservation as a goal, but often there is a gap between the goal and the decisions local governments make that determine their actual performance.

Examples that compare specific local plans with the performance measures can be found throughout this report. We encourage local officials and citizens to make their own comparisons.

Ultimately, our purpose is not to be critical, but to encourage a dialogue about improvements in land use planning and policy across jurisdictions and agencies that will protect the incomparable agricultural resources of the region.

We invite the counties and cities to adopt these objectives and set corresponding goals in their general plans. We also encourage them to track our suggested performance measures on an ongoing basis to help guide future land use decisions.



■ Objectives and Performance Measures for High Quality Farmland Conservation

1 Avoid development of the best farmland by guiding development away from it.

- Percentage of land developed that is “high quality farmland” (prime, unique or statewide important farmland), compared to percent of total land in the county that is “high quality farmland.”
- Amount of each classification of farmland that would be converted under the general plan and alternatives.

2 Minimize farmland loss with more efficient urban development.

- Overall number of people accommodated per acre of new development in general plans and any subsidiary plans.
- Amount and proportion of land zoned for low density rather than higher density residential development.
- Density of residential subdivisions actually built compared with what was planned.
- Floor-to-area ratios of commercial and institutional development and number of jobs and dollars of economic activity generated per acre of such development.

3 Ensure stability at the urban edge.

- Years of future development that could be accommodated within spheres of influence and within city limits compared with reasonable 20-year general plan needs.

- Portion of undeveloped land within planned growth area that is “high quality farmland.”
- Number of general plan amendments, city annexations, and sphere of influence boundary changes that will cause loss of agricultural land.
- Percentage of development occurring in unincorporated areas (both within and outside spheres of influence).

4 Minimize rural residential development.

- Number of rural residential lots permitted in agricultural areas and percentage of jurisdiction’s population housed on these lots.
- Total acreage of rural residential lots permitted and percentage this represents of all land to be developed for residential use.
- Acreage and percentage of large-scale energy development on high quality agricultural lands.

5 Mitigate the loss of farmland with conservation easements.

- Cumulative acreage of farmland permanently protected by easements as compared with farmland developed.
- Adequacy of conservation easement funding as measured by the number of landowners able to sell conservation easements in any given year compare with the number who desire to sell easements (2 to 5 transactions per year target).

- Percentage of increase in land values due to entitlement of farmland for development devoted to mitigation fees or conservation easement purchases.
- Amount of money invested in the agricultural economy through conservation easement purchases.

6 Encourage a favorable agricultural business climate.

- Increase economic impact of agricultural and related sectors through value-added enterprises.
- Include in general plan an agricultural element that establishes goals and policies addressing key opportunities and challenges facing agriculture.
- Adopt economic development policies that prioritize and support the agricultural economy.
- Local regulations do not place an unnecessary burden on agricultural production and related activities.
- Provide adequate housing and services for the agricultural workforce.
- Ensure that irrigation water supplies are sufficient to support ongoing agricultural production.

1. Avoid Development of Best Farmland

Where possible, we should avoid development of high quality farmland that produces the most food at the lowest cost and with the least environmental impact. The alternative is to guide development toward less productive land or, better still, land that is not suitable for agriculture. This performance measure tracks how much high quality farmland is being developed in comparison with available alternatives.

■ How Is the Valley Doing?

Between 1990 and 2008, more than 161,000 acres of land were converted to urban uses in the San Joaquin Valley. Of that, nearly 100,000 acres were high quality farmland (prime, unique, and statewide important farmland).

Of the total acreage converted, 78% was agricultural land and 61% was high quality farmland (Figure 1.1). Put another way, three quarters of all the land urbanized in the Valley was agricultural land and of that, nearly four out of five acres were the most fertile, well-watered farmland in the region.

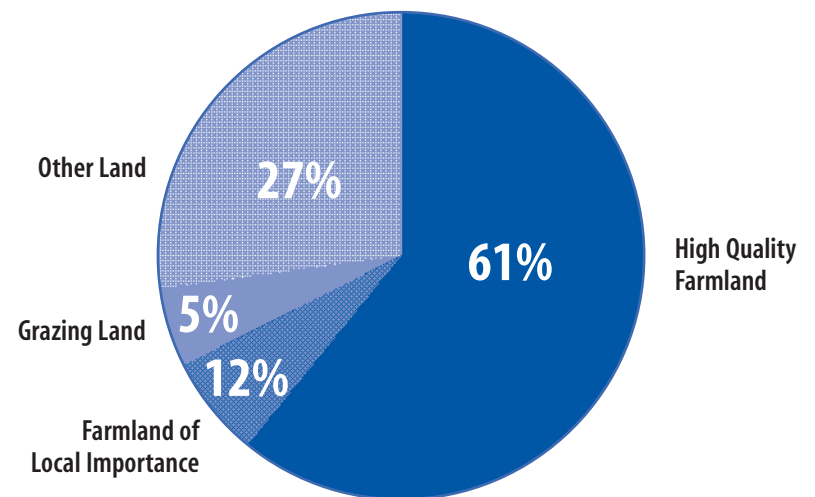
Moreover, high quality farmland is being disproportionately developed compared to how much area it covers in the region. High quality farmland comprises about 39% of the total area of the Valley's eight counties (Table 1.2). Yet, 61% of all land converted to urban uses has been farmland of this high quality. The "conversion index" shows this relationship. The index of 1.57 for the Valley as a whole indicates that high quality farmland is being consumed at a rate 57% greater than its proportion of all land in the region.

A similar comparison is given for each county in the region, with Stanislaus scoring lowest (i.e., highest conversion index), and Madera highest in terms of how much development has been concentrated on the best farmland (Table 1.2).

The reason for the disproportionate development of high quality land in the region seems fairly straightforward. Most development in the San Joaquin Valley occurs immediately around the Valley's cities and almost all the cities are located in the midst of the highest

Figure 1.1. Land Converted to Urban Uses, San Joaquin Valley, 1990-2008

Three-quarters of all the land urbanized in the Valley was agricultural land, and of that, 4 out of 5 acres were the most fertile, well-watered farmland.



"Other" land may include everything from farmland that has been fallowed for several years to large-lot rural residences, confined animal operations and irrigation canals. Only recently has FMMP begun to differentiate them. Thus, it is possible that the data underestimate the amount of agricultural land that has been urbanized.

Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008

quality farmland, which generally follows the Highway 99 corridor (map at conservation.ca.gov/dirp/fmmp/products/Pages/FMMP-MapProducts.aspx). This poses a real challenge for farmland conservation. As Table 1.3 shows, if Valley communities continue to develop land at the same intensity – consuming an acre of land for every 6.4 people, as explained below – the region will lose another 300,000 acres of high quality farmland by 2050. This underscores the importance of the next objective: encouraging more efficient development.

■ Plans v. Performance

The general plans of most counties in the San Joaquin Valley call for avoiding development of the best farmland. But high quality farmland is still being disproportionately developed in every county. For example, the Stanislaus County General Plan declares that, “While all agricultural land in the County cannot be preserved, it is possible to protect our most productive agricultural areas through a combination of agricultural zoning and policies that clearly direct growth to less productive areas” (Agricultural Element, 1994). Yet, in Stanislaus County, 87% of all the land developed between 1990 and 2008 was high quality farmland. For comparison, only 41% of the county’s undeveloped territory is comprised of high quality farmland, an indication that the intention of the county’s plan is not being fulfilled.

■ Recommendation

All local jurisdictions should understand where high quality land is located in relation to their city limits, spheres of influence and other areas where they intend to expand. They should choose options for directing growth away from this land and, where possible, modify their plans and policies to achieve this objective to the maximum extent possible.

Table 1.2. High Quality Farmland as a Percentage of Land Urbanized and All Land, 1990-2008

	% of Urbanized Land on HQF ^a	% of County That Is HQF ^b	Conversion Index ^c
San Joaquin	77%	68%	1.13
Stanislaus	87%	41%	2.11
Merced	67%	43%	1.55
Madera	47%	42%	1.12
Fresno	63%	53%	1.20
Tulare	65%	47%	1.38
Kings	97%	65%	1.49
Kern	38%	19%	2.07
San Joaquin Valley	61%	39%	1.57

(a) HQF is High Quality Farmland (Prime, Farmland of Statewide Importance, Unique and Irrigated Farmland)

(b) This comparison indicates the extent to which high quality farmland is being developed disproportionately to its share of total land in the county or region.

(c) If ratio is greater than 1.0, farmland is being consumed at a rate greater than its proportion in the county.

Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008

Table 1.3. Projected Urbanization of San Joaquin Valley Farmland – Status Quo

Total Land Urbanized, 1990-2008	161,801
• Percentage of New Urbanized Land That Was High Quality Farmland (HQF)	61%
• Compare to Percentage of Undeveloped Land That Was HQF in 2008	39%
Farmland Conversion Index	1.57
Projected Urbanization of All Land, 2008-2050, at Marginal Efficiency	501,658
• As Percentage of Existing Urban Land	89%
Projected Urbanization of HQF, 2008-2050, at Marginal Efficiency	304,645

Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008; California Department of Finance, Demographic Unit, 2010

2. Minimize Farmland Loss with More Efficient Urban Development

In places like the San Joaquin Valley, where most cities are surrounded by farmland, it is critical that new development occur on vacant or repurposed land within existing cities and, if more farmland has to be sacrificed, that development use it as efficiently as possible, consuming less land for every new resident, job and dollar of economic growth. (An apt comparison is to “yield per acre,” which is how farmers measure the success of their crops.) This performance measure tracks the historic (1990) and current (2008) population per acre (average efficiency) and the recent trend, i.e., how many new residents were accommodated for each additional acre of farmland developed between these dates (marginal efficiency). A comparison of these measures shows whether development is getting more or less efficient.

The fact that most of the San Joaquin Valley's cities are located in the midst of high quality farmland places a premium on the efficiency with which land is developed. Inefficient development – the consumption of excessive amounts of land for each person – causes more farmland loss than is necessary for attractive, economically vibrant communities.

Development that spreads out over the land also leads to more traffic, energy consumption and air pollution, while increasing the cost of providing basic public services like water and sewer, police and fire protection. Thus, efficiency of development is the key challenge for communities in the Valley that want to preserve farmland and improve their economies and quality of life.

■ How Is the Valley Doing?

Urban development in the San Joaquin Valley is not very efficient. The current average efficiency is only 6.0 people per urbanized acre (Table 2.1). This an improvement over the efficiency of 5.8 people per acre that existed in the Valley

in 1990, due to the fact that, as the urban footprint in the Valley grew by 47% from 1990 to 2008, the “marginal efficiency” (also called “marginal population density”) of new development was 6.4 people per acre.

Figure 2.2 shows both current average efficiency and the marginal efficiency of development in all eight counties in the region.

Nevertheless, the Valley's growth has been less efficient than in any region of California other than the remote mountains and deserts, and is roughly one-third to one-half as efficient as in the urban areas on the coast (*Paving Paradise: A New Perspective on California Farmland Conversion*, AFT, 2007).

Compared to other important agricultural areas that also face significant growth pressures, most of the Valley's counties have significantly lower marginal efficiencies.

For example, Ventura County, which ranks 8th in agricultural production in the state, had a marginal efficiency of 8.9 people



“People per acre” seems to be easier to visualize than the more often used “people per square mile.” An acre is about the size of a football field. So, to visualize how spread out six people per acre is, think of two 3-person teams playing on all that real estate. All of this report's people-per-acre statistics count not just residential areas (which comprise only 40% of urban land uses in the Valley), but also all commercial, industrial and public land uses that support the population.

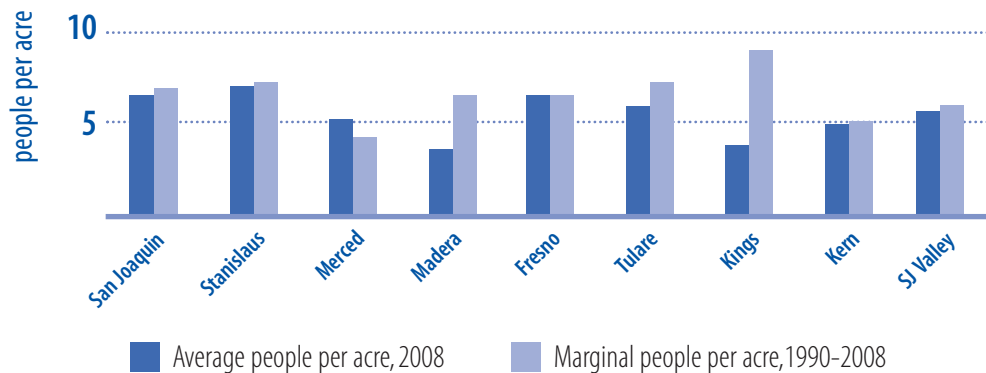
Table 2.1. Urban Growth and Efficiency Trends – San Joaquin Valley, 1990-2008

	1990	2008	% Change 1990-2008
Total Urban and Built-up Land (FMMP)	383,546	565,360	47%
Total Population	2,742,000	3,885,963	42%
Urban Population *	2,209,170	3,369,601	53%
People Per Urbanized Acre (Average Efficiency)	5.8	6.0	3%
People Per New Urbanized Acre, 1990-2008 (Marginal Efficiency)		6.4	

* The urban population figures assume that the percentage of 2008 population remains at 2000 level.
Sources: U.S. Census; California Department of Finance 2010; California Department of Conservation, 2008

Figure 2.2. Development Efficiency in San Joaquin Valley Counties

Development efficiency has not been improving fast enough to make a significant difference in the amount of farmland urbanized.



Sources: U.S. Census, 1990; California Department of Finance 2012; California Department of Conservation, 2008; Blueprint Report to San Joaquin Valley Regional Policy Council, March 20, 2009

per acre from 1990-2008. Riverside County, ranking 14th in agricultural production, had a marginal efficiency of 8.7 in the same period. In the Central Valley, Sacramento County, which ranks 25th in the state for agricultural production, had a marginal efficiency of 8.7 people per acre.

Another way to look at the efficiency of urban development over time is to compare the increase in population with the increase in the size of the urban footprint over the same period. Table 2.3 shows the “efficiency trend index” of each county in the Valley.

This index is the ratio of the percentage population increase to the percentage increase in the size of the urban footprint over the same period of time. If both increase in the same proportion, the efficiency trend index is 1.0. An index greater than one indicates that efficiency is increasing, while an index less than one means that development efficiency is decreasing – that urban sprawl is getting worse.

■ Plans v. Performance

Most jurisdictions in the San Joaquin Valley have general plan goals and policies that encourage urban infill and efficient development of farmland. However, the majority of counties have an efficiency trend index hovering around 1.0, indicating they aren't making much progress at actually increasing development efficiency. Instead, cities and counties continue to build outward on new land as their populations grow, instead of directing growth to existing communities.

Some counties did show improved efficiency. For example, Kings County has the Valley's highest marginal efficiency of 9.3 people per acres and has an efficiency trend index of 3.2 for the period 1990-2008. This was the result of an 82% increase in the urban population, but only a 26% gain in urban land.

A number of city, county and LAFCO policies, all aimed at more compact growth and farmland conservation, seem to account for this. The land use element of the Kings County General Plan, for one, states that "to prevent uncoordinated, sprawling growth and to delay costly expansion of district facilities, [the county will] encourage infilling of vacant or underutilized parcels where water and sewer area available by providing incentives such as reduction of development application fees of 25%" (Land Use Policy 1.8d).

Kings County is also known for the success of its LAFCO in reducing the size of city spheres of influence, which has taken development pressure off of 11,000 acres of farmland and effectively constrained the ability of cities to sprawl outward.

Table 2.3. Efficiency Trend Index – San Joaquin Valley, 1990-2008

One way to look at the efficiency of urban development over time is to compare population growth with the increase in the size of the urban footprint over the same period. If the percentage increase in both population and the urban footprint grow in the same proportion, the "efficiency trend" index is 1.0. If it is more than 1.0, that efficiency is increasing – development is more compact. If it's less than 1.0, urban sprawl is getting worse.

■ COUNTY	URBAN POPULATION 1990-2008		URBAN LAND 1990-2008		EFFICIENCY TREND INDEX	
	Population Increase	% Change	Acre Change	% Change	Status Quo	Blueprint B+
San Joaquin	192,174	45%	26,572	42%	1.1	2.4
Stanislaus	146,099	46%	18,987	42%	1.1	1.7
Merced	73,420	50%	16,050	75%	0.7	3.1
Madera	48,881	97%	7,189	36%	2.7	2.1
Fresno	238,058	41%	36,156	44%	0.9	2.7
Tulare	138,723	59%	18,637	47%	1.2	1.7
Kings	60,792	82%	6,555	26%	3.2	3.9
Kern	262,285	52%	51,488	59%	0.9	2.3
San Joaquin Valley	1,160,431	53%	181,814	47%	1.1	2.2

Sources: U.S. Census, 1990; California Department of Finance 2010; California Department of Conservation, 2008

■ Recommendation

All local jurisdictions should determine the average efficiency of existing development, the marginal efficiency of their recent development trend and of development that is planned for the future (within the period of their general plans). They should review this information and their current plans with the intention of identifying opportunities to

increase development efficiency and thereby save farmland. At a minimum, they should strive to achieve the marginal efficiency called for by the Blueprint adopted by their county's Council of Governments. They should modify their current plans to incorporate the new goal as well as implementation measures that will actually help achieve it.

3. Ensure Stability at the Urban Edge

Areas around cities designated for future development should not expand more than necessary to accommodate reasonable future growth. Otherwise, it creates uncertainty that leads to land speculation and price inflation, and to disinvestment in farming operations. All of these weaken the economic viability of agriculture, increasing the likelihood that farmland will be lost. Boundaries that are too large also discourage cities from growing efficiently by creating a sense that there is no need to do so. This performance measure tracks the amount of developable land within city limits and spheres of influence, and compares this with the amount of land reasonably needed for future growth.

■ How Is the Valley Doing?

The San Joaquin Valley currently has more than 900,000 acres of land within its city limits and spheres of influence, the areas officially earmarked for future development. About 400,000 acres of this total are already developed, leaving 533,000 acres available for future growth – 195,000 undeveloped acres within city limits and an additional 338,000 undeveloped acres within the spheres of influence (Figure 3.1). Almost 70% of the undeveloped land contained in the spheres of influence is high quality farmland. (See Appendix 2 for details.)

The actual amount of undeveloped land within the city limits and spheres of influence in the Valley is higher, closer to 700,000 acres than 533,000. The larger figure includes the spheres of influence of several small cities in Kern County that are so large that only a tiny fraction of them could ever be developed. For this report, we eliminated them from our calculations because they would have exaggerated the

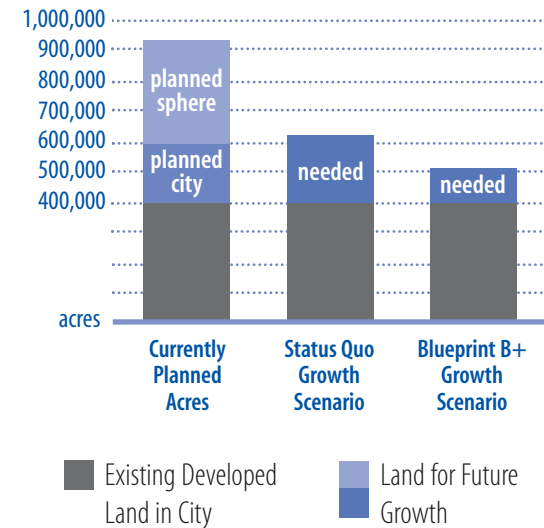
amount of farmland subject to the pressures created when plausible development boundaries are established.

If the region continues to grow at the current marginal efficiency of 6.4 people per acre, the Valley will need an additional 216,000 acres of land to accommodate the population growth through 2035. The planned area within the existing city limits, which is nearly 200,000 acres, is almost large enough to accommodate all of this development (Figure 3.1). However, if cities and counties grow at the higher marginal efficiency of the preferred Blueprint B+ Scenario, the Valley would need only 117,000 additional acres to accommodate growth. Under this scenario, all future growth could be accommodated within existing city limits. This would result in a savings of 103,000 acres of land – most of it high quality farmland.

Another way to compare the size of the area designated for development with how much of that land will actually be needed is to look at how many years worth of growth city

Figure 3.1. Acres of Land Needed to Accommodate Growth by 2035

Under the Blueprint B+ Scenario, only 117,000 more acres would be needed to accommodate growth, and it could all be within existing city limits, not farmland.



Notes and Assumptions: The majority of population 2010 and 2035 projections are from 2011 Regional Transportation Plans which may overestimate projected growth. Therefore, this analysis overestimates the amount of land needed for growth and underestimates the number of years of projected growth that the area can accommodate.

Population increase based on base year of 2010 and projection year of 2035. San Joaquin Valley Blueprint Scenario B+ Marginal Population Density = 16. Four Kern County cities are excluded from this analysis since their spheres of influence are disproportionately large compared to all other cities in the San Joaquin Valley.

Sources: California Department of Conservation, 2008; California Department of Finance, 2012; San Joaquin Council of Governments, 2011; Stanislaus Council of Governments, 2012; Merced Council of Governments, 2011; Madera County Transportation Commission, 2011 Regional Transportation Plan; Kings County, 2035 General Plan; Kern Council of Governments, 2011.

limits and spheres can accommodate. Figure 3.2 shows the estimated number of years of projected population growth that designated development areas can accommodate under two different scenarios.

At status quo urban densities, land within existing city limits will be sufficient to accommodate approximately 22 years of projected population growth, and land within existing spheres of influence will accommodate an additional 39 years – for a total of 61 years of population growth, or until 2073.

If cities grow at the higher Blueprint B+ densities, the land within these areas will accommodate the same population growth for a total of 117 years, or until 2129.

The typical land use planning horizon for California cities is 20 to 25 years. Beyond that, it is almost impossible to predict the needs and demands of community growth. Yet, the areas designated for future growth by the cities in the San Joaquin Valley exceed that planning benchmark by a factor of 2.5 to 6 times, depending on the assumption made about how efficiently cities will grow. This suggests that a comparable amount of farmland in the region has been needlessly subjected to the uncertainty and destabilizing effects that occur when it is earmarked for growth.

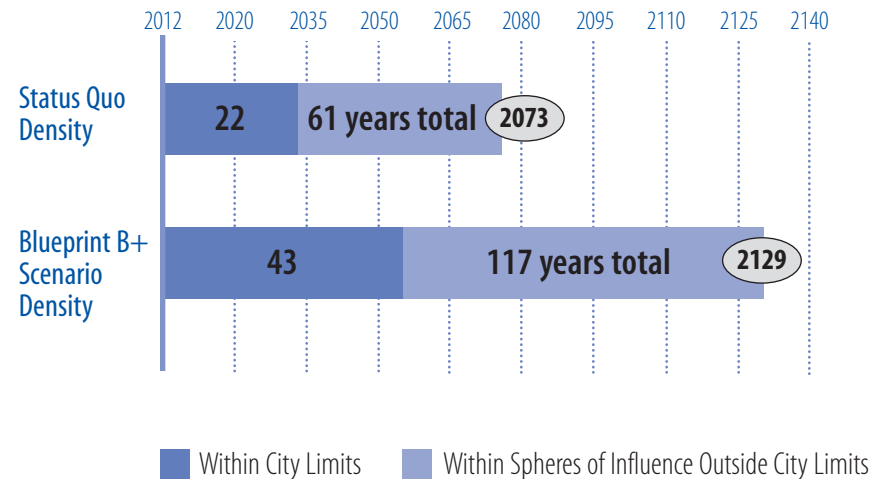
■ Plans v. Performance

Though cities propose their official boundaries, they must be approved by the Local Agency Formation Commission (LAFCo) that exists in every California county. LAFCo's mandate includes the preservation of agricultural and other open lands.

An example of how their performance often does not match their policies is the Merced County LAFCo. It calls upon "Cities [to] adopt phasing policies in their General Plans

Figure 3.2. Years of Projected Growth Cities and Spheres of Influence Can Accommodate in the San Joaquin Valley

At status quo urban densities, land within existing city limits and spheres of influence will accommodate 61 years of population growth, or until 2073. If cities grow at the higher Blueprint B+ densities, this land will accommodate that growth for 117 years, or until 2129.



Notes and Assumptions: The majority of population 2010 and 2035 projections are from 2011 Regional Transportation Plans which may overestimate projected growth. Therefore, this analysis overestimates the amount of land needed for growth and underestimates the number of years of projected growth that the area can accommodate.

Population increase based on base year of 2010 and projection year of 2035.

San Joaquin Valley Blueprint Scenario B+ Marginal Population Density = 16.

Four Kern County cities are excluded from this analysis since their spheres of influence are disproportionately large compared to all other cities in the San Joaquin Valley.

Sources: California Department of Conservation, 2008; California Department of Finance, 2012; San Joaquin Council of Governments, 2011; Stanislaus Council of Governments, 2012; Merced Council of Governments, 2011; Madera County Transportation Commission, 2011 Regional Transportation Plan; Kings County, 2035 General Plan; Kern Council of Governments, 2011.

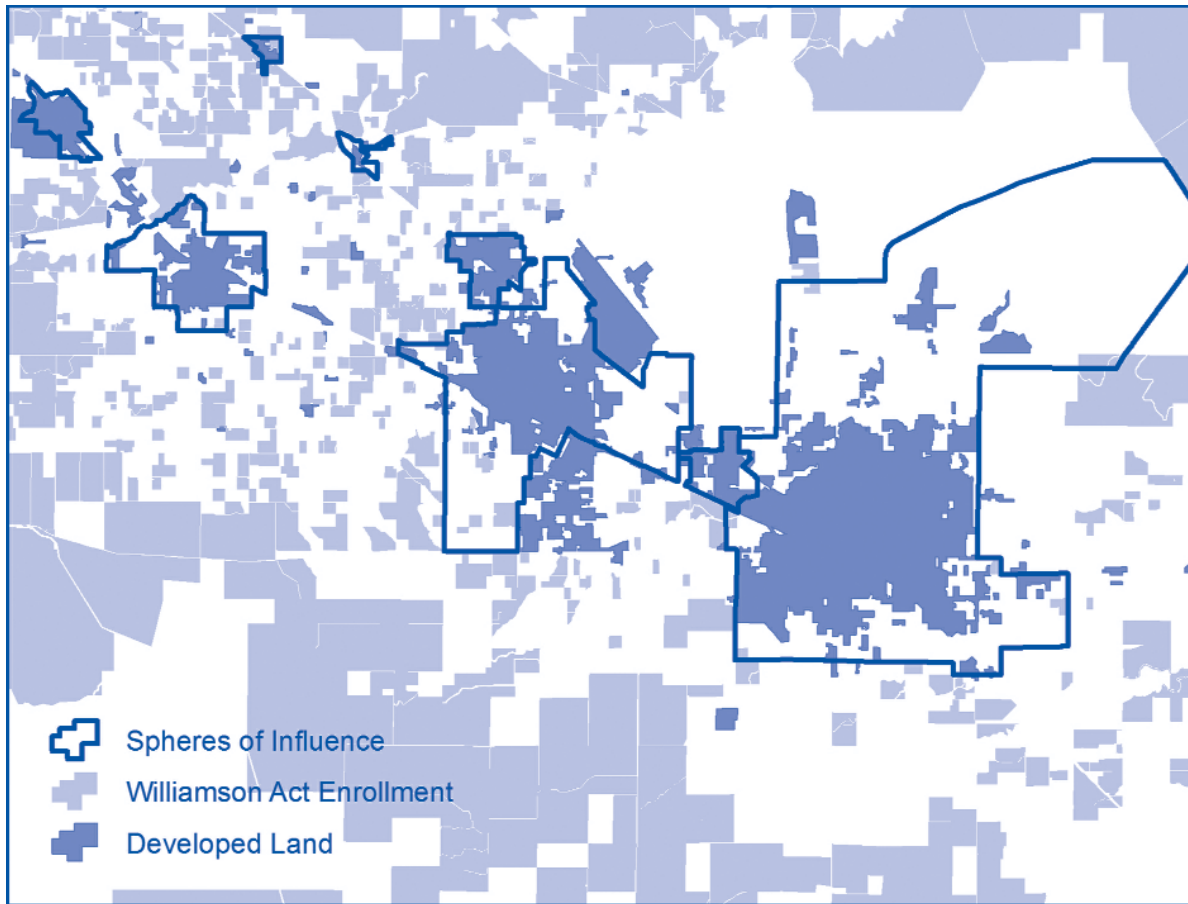


Figure 3.3. Williamson Act Enrollment around Cities in Merced County, 2006

Sources: County of Merced, 2010 Williamson Act Land, for "Williamson Act enrollment," www.co.merced.ca.us/index.aspx?NID=1624; California Department of Conservation, Farmland Mapping and Monitoring Program, 2010, for "Developed Land;" and Merced County Association of Governments, February 2012, for "Spheres of Influence."

Maps of Williamson Act enrollment in every California county is available at www.conservation.ca.gov/dlrp/Pages/qh_maps.aspx

which identify priorities for growth and annexation which meet the joint objectives of extending urban services in an economic and efficient manner and avoiding the premature conversion of prime agricultural lands or other valuable open space resources" (Objective II. A. Policies 1 and 3).

According to AFT's analysis, the spheres of influence that have been approved by LAFCO can accommodate up to 78 years of growth at today's densities and 188 years of growth if the cities in Merced County implement the Blueprint B+ scenario.

One possible effect of this is that, as Figure 3.3 shows, farmer participation in the Williamson Act, which requires a 10-year commitment of the land to agricultural use in exchange for tax benefits, is almost nonexistent around the major cities in Merced County. Is this a precursor to "premature conversion?" A similar pattern can be seen in every San Joaquin Valley county.

■ Recommendation

LAFCOs should review the size of spheres of influence in comparison to the legitimate development needs of cities during the period covered by their current general plans. They should, as the Kings County LAFCO has done, reduce the size of spheres that have more capacity than can realistically be used within that period.

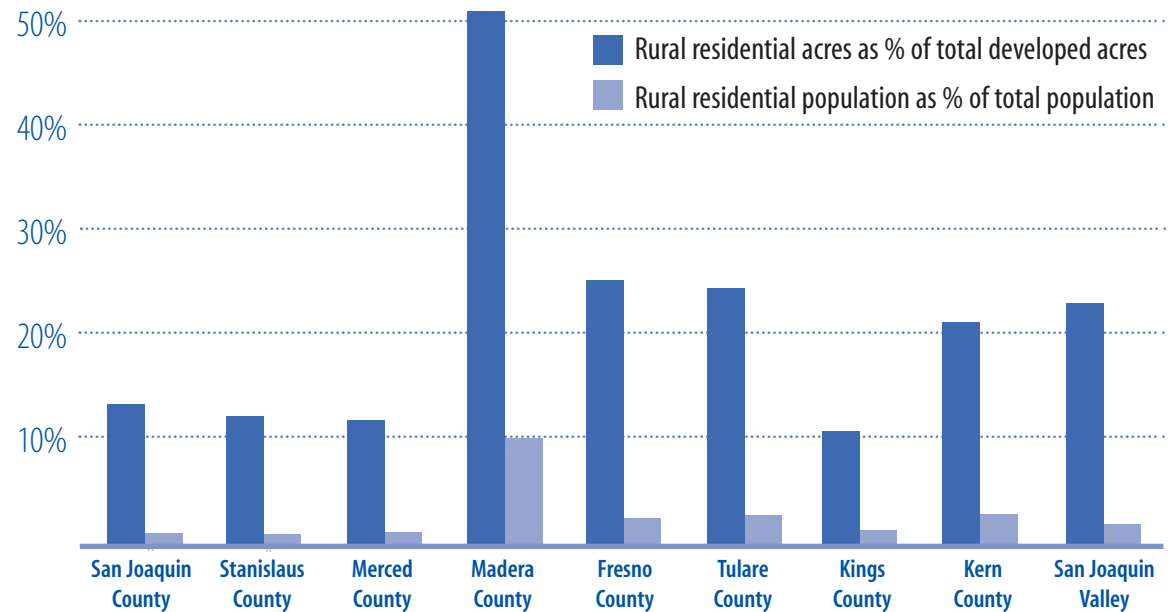
In reviewing proposals for annexation and expansion of spheres, LAFCOs should consider the efficiency of future development and approve only those proposals that are at least as efficient as what is called for in the San Joaquin Valley Blueprint.

4. Minimize Rural Residential Development

Rural residences on large lots are the least efficient type of non-farm land use. A family living on five acres, for example, occupies 20 times as much land per person as a comparable family living in a suburban home on a quarter-acre lot. This type of development should be kept to a minimum, not only because it wastes farmland but because it tends to create conflict with nearby agricultural operations. This performance measure tracks the amount of rural residential land compared to the county's urban footprint and compares this figure to the portion of the county's population living on rural residential land (an indication of the efficiency of rural residential land use).

Figure 4.1. Rural Residential Land and Population in the San Joaquin Valley

Rural residential land amounts to one-quarter of the Valley's developed area but accommodates a much smaller percentage of its population.



Note: This assumes that the rural residential footprint represents an average of 5 acres per parcel with one household per parcel and people per household counts provided by the California Department of Finance estimates for each county. The California Department of Conservation's Farmland Mapping and Monitoring Program defines rural residential "ranchettes" as parcels with 1 to 5 units per 10 acres.

Sources: California Department of Finance 2010; California Department of Conservation, Farmland Mapping and Monitoring Program, 2008

■ How Is the Valley Doing?

Rural residential development, sometimes known as “ranchettes,” are residences built on large lots (on parcels of 1.5 acres and up to 40 acres), generally located in rural areas. Some agriculture may be taking place on them – a few fruit trees, perhaps some horses – but it is seldom for commercial purposes.

They provide an attractive rural lifestyle for some. But because they remove more land from agriculture per capita than any other kind of development, they are of great concern to agriculture in the Valley (*Ranchettes: The Subtle Sprawl*, AFT, 2000). They also are a concern due to the presence of non-farming neighbors who often pose physical, economic and legal risks and challenges for the commercial farmers that are around them.

When located close to urban areas, rural residential development forecloses the possibility of expanding those areas in an efficient manner, leading to “leapfrog” growth patterns.

In 2008, the Farmland Mapping and Monitoring Program (FMMP) inventoried 146,058 acres of rural residential land in the San Joaquin Valley. This amounts to a quarter of the region’s developed land, even though it does not include “ranchettes” larger than 10 acres. Yet, this rural residential footprint accommodates only an estimated one percent of the region’s population – a disproportionately large amount of land to house such a small percentage of the county’s population. Figure 4.1 compares rural residential land in each Valley county.

■ Plans v. Performance

Most counties in the San Joaquin Valley discourage rural residential development in their general plans, but it remains

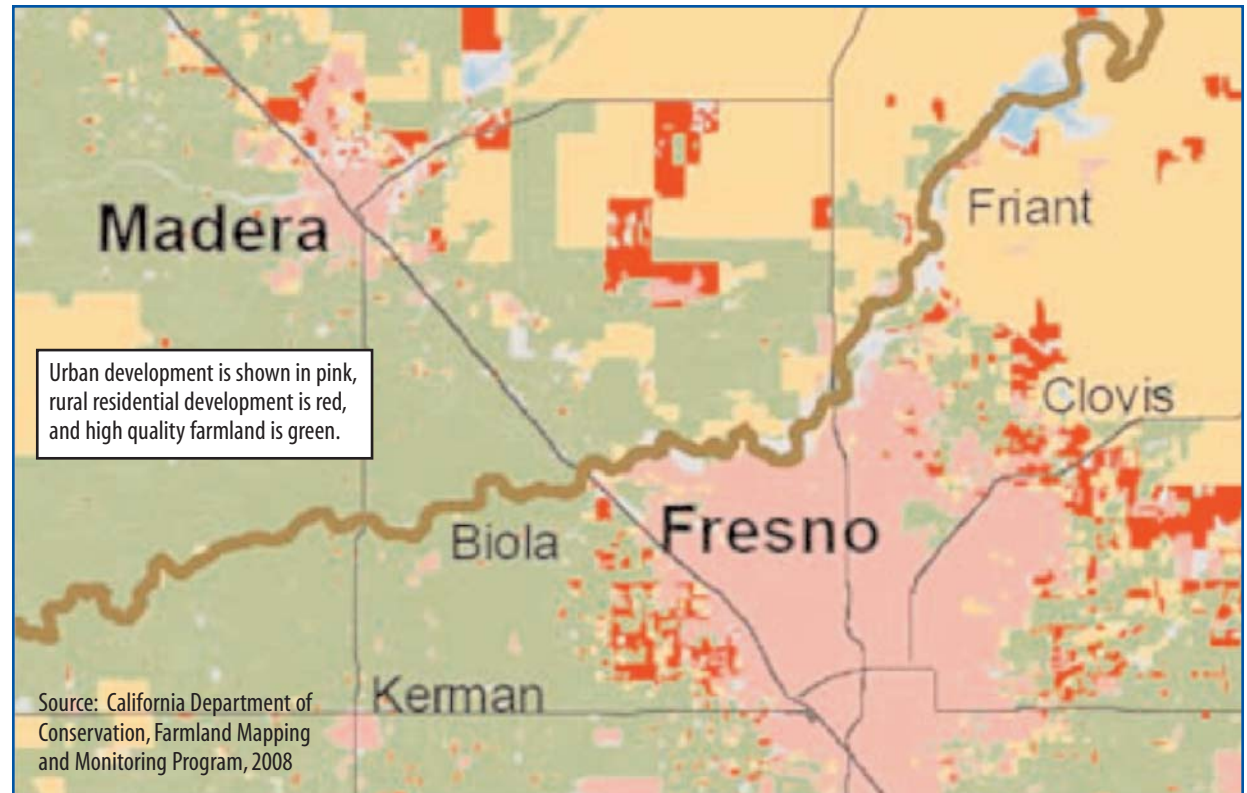


Figure 4.2. Rural Residential Development in Fresno and Madera Counties

to be seen whether this goal will be achieved. For example, Fresno County’s 2000 plan “prohibit[s] designation of new areas for non-agricultural rural-residential development, while providing for the continued development of areas already designated for such uses in a manner that minimizes environmental impacts and public infrastructure and service costs.” This represented a significant change from the previous policy of allowing “ranchettes” and was based on a recognition there was already a large inventory of vacant rural residential lots (Goal LU-E, Goals & Policy Document, at 249). Nonetheless, the area occupied by rural residences

in Fresno County increased 8% in just the two years from 2006 to 2008, and the result is easily visible on the agricultural landscape (Figure 4.2).

■ Recommendation

Counties should take inventory of existing parcels where non-farm rural residential development could occur and adopt policies that make such development more difficult on high quality farmland. They should also require buffers between new non-farm dwellings and agricultural operations.

Objective 5. Mitigate the Loss of Farmland by Giving Landowners an Opportunity to Protect their Property with Conservation Easements

The conversion of farmland to urban development permanently removes it from agricultural production. To mitigate this loss as well as to discourage needless conversion, a comparable amount of farmland should be permanently preserved by purchasing conservation easements from agricultural producers who do not want to develop their land. This will give those agricultural landowners an opportunity to recover equity from their property and result in re-investment in the farm economy. This performance measure tracks acreage of farmland permanently preserved by easements compared to acres of farmland that have been developed.

■ How Is the Valley Doing?

Conservation easements are a means of permanently preserving farmland under legal covenants voluntarily agreed to by landowners. Their purchase provides compensation to landowners who want to recover equity from their property while continue to farm it, something that would be impossible if they were to sell the land for non-agricultural purposes.

Not only does this provide an innovative solution that recognizes private property rights, but it also provides an injection of capital into the agricultural economy.

Funding for conservation easement acquisition can come from many sources, including government programs such as the California Farmland Conservancy Program and the federal Farm and Ranchland Protection Program. But these sources are shrinking as governments face deficits and revenue shortfalls.

An increasingly popular alternative is to require developers who convert farmland to pay a fee to preserve a comparable amount of land, or to acquire the land itself for preservation. This can also satisfy the requirement that environmental impacts of development be offset or mitigated under the California Environmental Quality Act.

Compared to the amount of farmland that has been converted to urban uses, the amount of land under conservation easements in the San Joaquin Valley is relatively small.

Only 10,770 acres of farmland are held under easement, compared with 109,000 acres of farmland that have been developed over the last two decades (Figure 5.1).

Though conservation easements are increasingly gaining acceptance in communities throughout the Valley, easement transactions require a great deal of time and expertise.

There are only a few land trusts actively acquiring and managing farmland conservation easements in the Valley and though cities and counties are qualified easement holders, they often find it difficult to dedicate staff and resources necessary to maintain an effective program.

■ Plans v. Performance

Mitigating the loss of farmland through conservation easements is not a widely used policy tool in the San Joaquin Valley. Only two Valley counties, Stanislaus and San Joaquin, have adopted mitigation programs and to date these programs have only been lightly implemented.

Local governments have been reluctant to charge developers additional fees, fearing that it will constrain growth or cause it to go to neighboring jurisdictions. (The highest per acre mitigation fee in the Valley, \$9,500 charged by San Joaquin County, is only a fraction of the increase in the value of land when it is rezoned from agriculture to urban use, which is typically in six figures.)

The Building Industry Association actually sued Stanislaus County for adopting a farmland mitigation program, losing at the state Supreme Court, which ruled that such programs are legal. On the other hand, a number of municipal mitigation programs in San Joaquin County resulted from litigation brought by the Sierra Club under CEQA. Nonetheless, there seems to be growing interest in farmland mitigation.

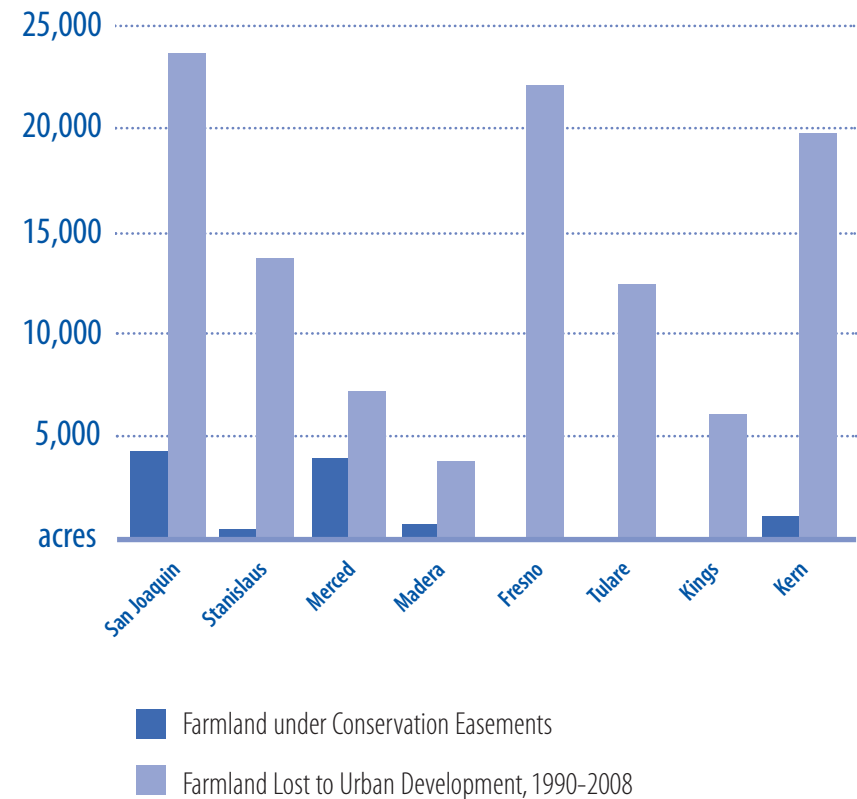
The new general plan being considered by Merced County includes a goal of “protecting productive agricultural areas from conversion to non-agricultural uses by establishing and implementing an agricultural mitigation program in cooperation with the six cities in Merced County, with consistent standards for county and city governments, that matches acres converted with farmland acres preserved at a 1:1 ratio” (Policy AG-2.2).

■ Recommendation

Local governments should adopt farmland mitigation programs aimed at preserving farmland while giving agricultural landowners the opportunity to recover equity in their property without developing it. These should be coordinated among localities so as to create a level playing field and prevent developers from playing one jurisdiction against its neighbors. LAFCOs can help do this by adopting their own policy of requiring cities to mitigate farmland loss as a condition of annexation.

Figure 5.1. Farmland Permanently Protected and Developed in the San Joaquin Valley

Only 10,770 acres of farmland are held under conservation easement, compared with 109,000 acres of farmland that have been developed over the last two decades.



Note: This does not include farmland under easement that are primarily for the purposes of habitat preservation.

Sources: San Joaquin Council of Governments, 2012; Central Valley Farmland Trust, 2012; San Joaquin River Parkway and Conservation Trust, 2012; Sequoia Riverlands Trust, 2012; California Natural Resources Agency, 2012; California Department of Conservation, 2008

6. Encourage a Favorable Agricultural Business Climate

The ultimate purpose of farmland conservation is to maintain the land base that supports food production as a commercial enterprise. The health of that enterprise must be an integral goal of farmland conservation strategies. Since agriculture operates in a global market and is subject to federal and state laws and regulations, there is a limit to what local governments can do to encourage a favorable business climate for agriculture. Nonetheless, local government decisions about land use, housing, water and on-farm activities should be made with an explicit consideration of their impact on the costs, productivity and profitability of agriculture. This performance measure shows the overall impact of agricultural production, including multiplier effects through inter-industry supplier purchases (indirect impact) and consumption spending from earnings in the industry (induced impact). Other key measures of success include local government actions that ensure a more hospitable business climate for agriculture and its related support industries.

■ How is the Valley Doing?

Creating favorable economic conditions for agricultural businesses, along with appropriate land use and land preservation policies, will help to keep farmers on the land and decrease the amount of farmland converted for development. Just as importantly, it will contribute to the creation of local jobs in one of the strongest economic sectors in the San Joaquin Valley.

The economic impact of agriculture extends far beyond on-farm output and employment. These include indirect impacts on local sectors that critically support agriculture, ranging from trucking and wholesale trade, professional services such as veterinarians and accountants, and manufacturing of fertilizers and other agricultural chemicals. There are also induced impacts as income earned in agriculture is spent on health care, retail, housing, restaurants and other consumer needs.

Typically, the economic multiplier for agricultural production is approximately 3.5, meaning for every one dollar of agricultural output, \$3.50 is circulated throughout the local economy. In 2011, agricultural production in the San Joaquin Valley was worth \$30.2 billion alone, and generated an additional

\$106 billion that made its way throughout the regional economy (Figure 6.1).

■ What Local Government Can Do

Understanding what agriculture needs to prosper is the first step local governments can take to inform the decisions they make affecting farmland and agricultural businesses. Even in the San Joaquin Valley, where agriculture is the mainstay of the economy, the population and its decision-makers are overwhelmingly from urban areas. Thus, most people have only a general appreciation of what it takes to make a living at producing food on a commercial scale.

To assure that decisions are based on a more sophisticated understanding of their impact on agriculture, local governments should proactively seek the input of agricultural producers and farm community leaders.

As we hope this report has convinced you, maintaining the land base for agriculture is essential for its prosperity. Every acre of farmland converted to other land uses is an economic sacrifice for agriculture, one that can often be avoided as communities grow and seek to diversify the economy.

Implementing and tracking the recommendations associated with the five objectives above is the foundation for ensuring agricultural lands remain economically productive. Yet there are many other opportunities for local government to support agricultural enterprise.

Local governments should adopt and implement economic development policies that promote enterprises such as processing, storage, manufacturing and transportation facilities that add value to agricultural production, keeping dollars in the community instead of sending them out of the Valley. These policies should also support both producers of, and markets for, locally grown food, the fastest-growing sector of the farm economy.

Agricultural businesses of all sizes also need a skilled workforce with adequate training that can be provided by community colleges and vocational schools, as well as adequate housing and social services that local government can help provide.

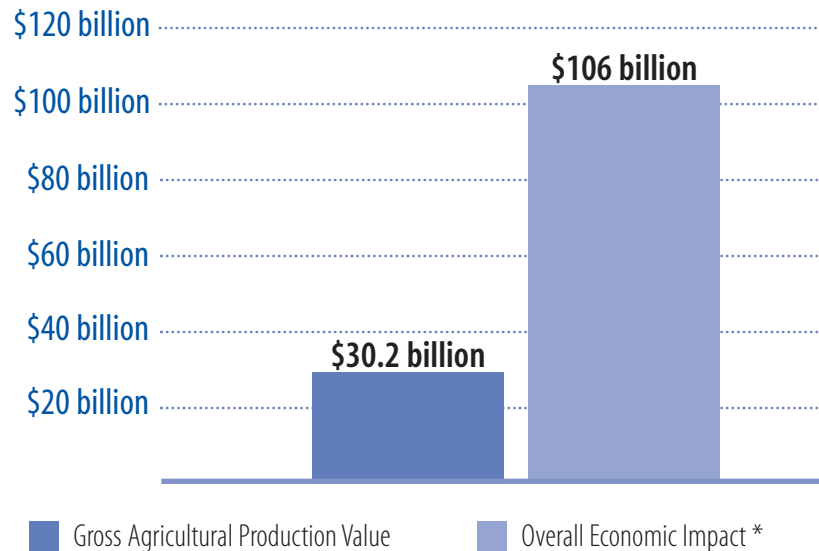
Regulations are one of agriculture's biggest challenges. The multiplicity of regulations with which agriculture and farm-related businesses must comply is often a significant barrier to expanding and improving operations.

Local governments should avoid excessive regulation of agriculture that drives up production costs and limits on-farm activities such as farm stands and commercial kitchens that can add value to what growers produce and improve their bottom line.

Reasonable tax policies, including continued participation in the Williamson Act, will also help relieve the economic pressure on farmers and ranchers.

Figure 6.1. Annual Economic Impact of Agriculture Sector, San Joaquin Valley

In 2011, agricultural production in the San Joaquin Valley was worth \$30.2 billion, and generated an additional \$106 billion that made its way throughout the regional economy.



*"Overall Economic Impact" includes direct, indirect and induced economic impacts. A common multiplier for agricultural production in California is 3.5.

Source: San Joaquin Valley County Agricultural Commissioners Reports, 2011

A sufficient, dependable water supply is another area where local government can help maintain a stable business climate for agriculture. In addition to consuming farmland, urban development also diverts water from agricultural uses, often making it more costly and the supply less dependable. Insisting that new development be as efficient as possible in

its use of water will help maintain and adequate supply for both urban communities and agriculture. Cities and counties can also work with local irrigation districts to maintain agricultural water rights and, where necessary, facilitate the transfer of water from areas of relative plenty to areas of scarcity to maintain agricultural production.

Conclusion: Tracking Progress to Make Progress

If the current recession has a silver lining, it may be that it gives communities in the San Joaquin Valley time to prepare for the next wave of economic growth that is sure to come – and with it intensified pressure on the region’s agricultural land base.

As this report documents, the loss of Valley farmland has continued more or less unabated for the past two decades. Patterns of growth have not changed much during that time. The highest quality farmland is being disproportionately converted to urban use. There has been only slight improvement in the efficiency of development, which is the absolute key to conserving farmland.

The urban edge is in constant flux, affecting farmland and destabilizing agriculture well beyond city limits. Still farther afield, rural “ranchettes” continue to proliferate, consuming far more farmland per capita than any other land use.

Despite all this, the agricultural economy of the San Joaquin Valley has continued to grow, a bright spot in the otherwise dismal economic picture. This is a tribute to the resilience of farmers and ranchers. But it has been possible only because there is still sufficient land to give producers the flexibility to adapt to changing conditions. And conditions are definitely changing.

The record shows that not much actual progress has been made in fulfilling the intention of local plans to preserve farmland. One reason for this is almost certainly that few communities actually try to measure their progress.

There is more pressure on irrigation water supplies than ever. The cost of production continues to increase, tracking the price of fossil fuels and ever more sophisticated technology. Public concern about the environmental impact of agriculture has led to the multiplication of regulations.

And while it may be too soon to conclude that the vagaries of weather are symptomatic of climate change, the consensus among experts is that climate change is coming and that it will pose new challenges for agriculture in the San Joaquin Valley. One university study predicts that there may someday be 18% less viable farmland in the Valley because of shrinking water supplies and warmer winter nights that will prevent fruit trees from setting buds.

The other huge challenge agriculture faces is a growing population. This is a two-edged sword. It means that there will be more mouths to feed as well as more pressure to develop farmland.

The population of the San Joaquin Valley, now roughly 4 million, is expected to more than double by 2050. At the same time, if the Valley keeps developing an acre of land for every 6.4 people, the amount of land available to produce food will shrink by at least 500,000 acres.

Another comparison puts this into sharper perspective: Today there are about 11 acres of high quality farmland in the Valley for every acre of urbanized land. By mid-century, there will be less than five – unless we do something different.

The land use plans and policies of communities throughout the San Joaquin Valley are well-intentioned in calling for the avoidance of high quality farmland, developing land more efficiently, stabilizing the urban edge and preventing rural “ranchettes.”

Yet the record shows that, except in a few rare cases, not much actual progress has been made. One reason for this is almost certainly that few communities actually try to measure their progress or lack thereof. They adopt plans and policies, but don’t follow through to determine how well they are working. If we are going to save San Joaquin Valley farmland, this must change.

This report can help bring about that change. But only if planners, officials and citizens in the Valley use it to begin to take the measure of how well their communities are conserving farmland. American Farmland Trust earnestly encourages them to do so and pledges its expertise and experience to helping them turn their good intentions into reality.

Appendix 1. Summary Statistics for Farmland Conservation Performance Measures

OBJECTIVE	San Joaquin	Stanislaus	Merced	Madera	Fresno	Tulare	Kings	Kern	Valleywide
1. Avoid development of the best farmland									
Percentage of all land converted to non-agricultural use:									
• High quality farmland	77%	87%	67%	47%	63%	65%	84%	38%	61%
• Farmland of local importance	12%	7%	18%	9%	15%	2%	-2%	n/a	7%
• Grazing land	2%	0%	11%	35%	2%	2%	-11%	9%	5%
• Other land (a)	10%	6%	4%	8%	20%	31%	16%	53%	27%
Percentage of total county area that is high quality farmland	68%	41%	43%	42%	53%	47%	65%	19%	39%
Conversion quality index (b)	1.13	2.11	1.55	1.12	1.20	1.38	1.49	2.07	1.57
2. Minimize farmland loss with more efficient development									
People per urbanized acre 1990	6.7	7.1	6.3	2.5	6.8	5.5	2.8	5.2	5.8
People per urbanized acre 2008	7.2	7.3	5.6	3.6	6.7	6.1	4.1	5.2	6.0
Marginal efficiency, people per acre developed 1990-2008 (c)	6.7	7.7	4.6	6.8	6.6	7.4	9.3	5.1	6.4
Efficiency trend index 1990-2008 (d)	2.4	1.1	0.7	2.8	1.0	1.1	3.4	1.0	1.1
Efficiency trend for Blueprint B+ scenario	2.4	1.8	3.1	2.1	2.7	1.7	3.9	2.3	2.2
3. Ensure stability at the urban edge									
Years of growth accommodated by:									
• City limits at marginal efficiency	24	12	15	19	14	10	43	44	22
• Spheres of influence at marginal efficiency	79	17	63	71	26	30	24	73	39
• City limits at Blueprint B+ marginal efficiency	52	19	37	23	36	14	118	77	43
• Spheres at Blueprint B+ marginal efficiency	78	27	150	86	66	46	66	127	74
4. Minimize rural residential development									
Rural residential acreage as percentage of all developed land	14%	13%	12%	51%	26%	25%	11%	22%	24%
Rural residential population as percentage of total population (e)	1.3%	1%	1%	10%	3%	3%	2%	3%	2%
5. Mitigate the loss of farmland with conservation easements									
Acres of farmland developed, 1990-2008	23,694	13,701	7,217	3,912	22,189	12,507	6,159	19,766	109,145
Acres of farmland under conservation easement	4,328	307	3,953	646	173	108	203	1,043	10,761
Mitigation ratio	18%	2%	55%	17%	1%	1%	3%	5%	10%
6. Encourage a favorable agricultural business climate									
Annual value of agricultural production (in billions, 2011)	\$2.1	\$3.1	\$3.3	\$1.6	\$6.9	\$5.6	\$2.2	\$5.4	\$30.2
Total economic contribution of agriculture to county (f)	\$7.0	\$10.7	\$11.4	\$5.5	\$24.1	\$19.7	\$7.8	\$18.8	\$105.0

(a) "Other" land may include everything from farmland has been fallowed for several years (possibly in anticipation of its development) to large-lot rural residences (see below), confined animal operations and irrigation canals. Only recently has FMMP begun to differentiate them. Thus, it is possible that the data underestimate the amount of agricultural land that has been urbanized. (b) This comparison indicates the extent to which high quality farmland is being developed disproportionately to its share of total land in the county or region. If ratio is greater than one, farmland is being consumed at a rate greater than its proportion in the county. (c) Marginal efficiency of development is measured by dividing the increase in the number of residents in urban areas during the period by the number of acres urbanized during the same period. It is a key indicator of whether more farmland than necessary is being converted to achieve economic growth. (d) Above 1.0 is a trend toward densification compared to historical development efficiency. This is a trend showing the direction the county is going toward density, not a measure of their baseline development efficiency/density. Under 1.0 is a trend toward less development efficiency, meaning they are trending toward lower density and potentially sprawl. (e) This assumes the rural residential footprint represents an average of 5 acres per parcel with one household per parcel and people per household counts provided by the California Department of Finance estimates for each county. The California Department of Conservation Farmland Mapping and Monitoring Program defines rural residential "ranchettes" as parcels with 1 to 5 units per 10 acres. (f) Includes direct, indirect, and induced economic impacts. A common multiplier for agricultural production in California is 3.5, meaning for \$1 of revenue at farm gate, \$3.50 is generated throughout the local economy.

Appendix 2. Land Planned and Needed for Urban Development in the Valley

■ Land Inventory	Spheres of Influence		Total
	Within City Limits	(Outside City Limits)	
High quality farmland	108,446	230,104	338,549
• Prime farmland	83,750	168,667	252,417
• Farmland of statewide importance	23,252	49,354	72,606
• Unique farmland	6,747	17,387	24,134
Farmland of local importance	22,840	22,657	45,496
Grazing land	38,105	43,083	81,188
Other land	33,133	50,291	83,425
• Confined animal feeding operations	3,251	5,936	9,188
• Rural residential	6,617	22,482	29,099
• Unclassified (vacant, semi-ag/commercial ag, nonag/natural veg)	28,569	27,106	55,675
Total all non-urban land	194,567	337,999	532,567
Current developed area (urban and built-up)	329,681	69,545	399,226
High quality farmland as percentage of non-urbanized land in area	56%	68%	64%
Total undeveloped land as percentage of existing developed land	59%	486%	133%
Percentage of developed land in area compared to all developed land	83%	17%	100%
Percentage of total high quality farmland within area	2.1%	4.4%	6.4%
■ Population Assumptions			
Current population, 2010	2,860,301		
Current population density, 2010 (people per acre)	9		
Projected population, 2035 (a)	4,870,965		
Projected population increase, 2010-2035 (b)	2,010,664		
■ Population that Area Could Accommodate			
At current urban population density	1,688,059	2,932,466	4,620,525
At marginal Blueprint B+ Scenario population density (c)	3,150,933	5,473,746	8,624,679
■ Land Needed to Accommodate 2035 Population Growth			
Projected need for land at Status Quo population density (acres)	216,523		
• Undeveloped land as percentage of land needed for 2035 population	90%	156%	246%
• Years of projected growth that area can accommodate			
Projected need for land at Blueprint B+ Scenario population density (acres) (c)	113,739		
• Undeveloped land as percentage of land needed for 2035 population	171%	297%	468%
• Years of projected growth that area can accommodate	43	74	117

Sources: California Department of Conservation, 2008; California Department of Finance, 2012; San Joaquin Council of Governments, 2011; Stanislaus Council of Governments, 2012; Merced Council of Governments, 2011; Madera County Transportation Commission 2011 Regional Transportation Plan; Kings County 2035 General Plan; Kern Council of Governments, 2011.

Notes and Assumptions: (a) The majority of 2010/2035 population projections are from 2011 Regional Transportation Plans which may overestimate projected growth. Therefore, this analysis overestimates amount of land needed for growth and underestimates the number of years of projected growth that area can accommodate. (b) Population increase based on 2010 base year and 2035 projection year. (c) Blueprint Scenario B+ marginal population density is 16.



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