



RURAL-URBAN CONNECTIONS STRATEGY





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OUR REGION FROM A RURAL PERSPECTIVE

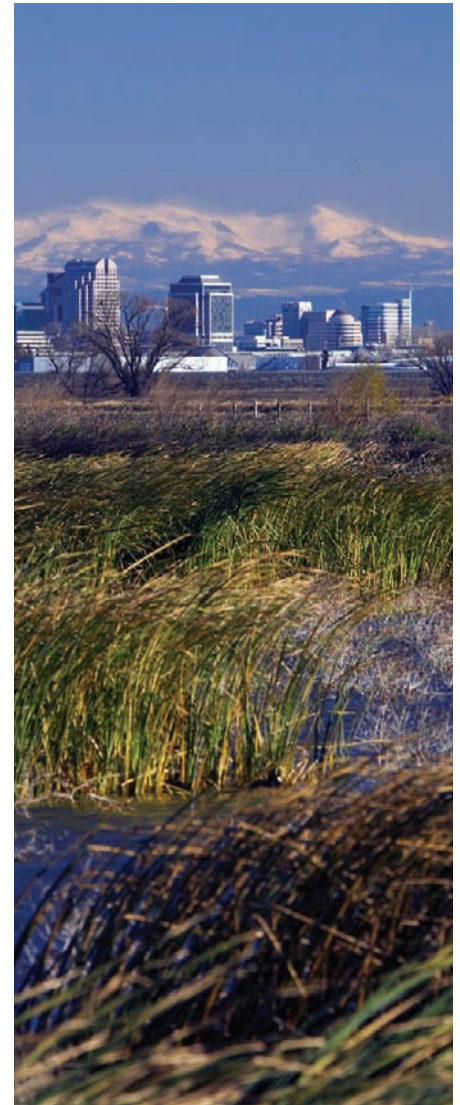
Although most of the Sacramento region's 2.3 million residents live in and work in urban job centers, the region spans an extraordinary range of landscapes. From farming communities to historic mining towns, from the Sierra forests to fields that feed the world, our region enjoys remarkably diverse lands and natural resources. Across the six counties of El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba, approximately 70 percent of our lands are agricultural, forest, or other open space. The contributions of small towns, farms and open spaces are vital to the success of our entire region.

Agriculture has deep roots in our region's history, and future. The Sacramento region has some of the most productive farmland in the world. We have great soil, high-quality water, and a Mediterranean climate that can grow almost anything. California is the fourth largest agricultural economy in the world, and our region is an important part of that. In our region alone, agriculture is a \$1.66 billion industry.

But there's more to what we get from agriculture than this billion dollar revenue. Growing food and fiber in our region also creates jobs and income off of the farm. In economic terms, we call this a multiplier effect. That means the value of agriculture here is even greater than the direct revenue it brings in.

Our open lands and forests provide clean air, clean water, timber, recreation, tourism, and wildlife habitat. We're fortunate to live in this important agricultural area and ecosystem. Our natural resources benefit from our intellectual resources in the region. We're the first to benefit from education and research activity at the renowned UC Davis School of Agriculture and Environmental Sciences, and its cooperative extension programs.

These assets benefit rural and urban residents and businesses locally, statewide, and around the world.





ABOUT RUCS



Since starting the Blueprint project, the Sacramento region has taken a new approach to addressing transportation, land use, and air quality issues.

The Blueprint, adopted in 2002 by local elected officials from 22 cities and six counties, values rural communities and agricultural lands as critical to our economy, our environmental health, and our quality of life.

How do we protect our rural assets as development from a growing population impacts where we grow our food for ourselves and the world? The answer is complex, and requires public and private stakeholders from all sectors and all parts of the region to support agricultural viability and rural communities, linking the long-term success of farms and ranches to the success of the region as a whole.

SACOG's Board of Directors kicked off the Rural-Urban Connections Strategy (RUCS) in 2007. The RUCS project is looking at the region's growth and sustainability objectives from a rural perspective. In the same way that Blueprint is a development strategy for urban areas, RUCS strives to be an economic and environmental sustainability strategy for rural areas. SACOG identified five areas of study:

- **Land Use and Conservation:** Policies and Plans that Shape Rural Areas
- **The Infrastructure of Agriculture:** Challenges to the Production Process
- **Economic Opportunities:** New Ways to Grow Revenue
- **Forest Management:** Growing Economic and Environmental Value
- **Regulations:** Navigating Federal and State Environmental Guidelines

While SACOG started RUCS, farmers, ranchers, agricultural researchers, farm bureaus, local, state, and federal officials, distributors, chefs and many other stakeholders have made the project possible. SACOG has developed tools and information geared at helping stakeholders in their efforts to keep rural areas sustainable.

RUCS Stakeholders

Local planners and engineers
Economic development
Farm bureaus
Ag commissioners
Ag interest groups
Forest managers
Forestry interest groups
Resource conservation groups
Environmental groups
Local food system groups
Health and nutrition groups
Civic engagement groups
Elected officials



THE APPROACH

To develop an understanding of the current conditions in rural areas, SACOG engaged stakeholders in several ways:

- workshops to identify issues, challenges and innovations, and later comment on findings;
- working groups to draft and review findings;
- electronic surveys to working groups to prioritize innovations for further study;
- wiki tool to facilitate public review and comment on draft papers from working groups; and
- agricultural tours to educate government representatives about the production, processing, transportation and regulatory challenges and opportunities.

The Rural-Urban Connections Strategy continues to work directly with rural residents, businesses, and public agencies to form strategies that enhance agriculture, rural economies, resource conservation, recreation, quality of life, and regional sustainability. This work will broaden understanding of how land use and transportation investments affect rural areas and the whole region.



TOOLS

SACOG's expertise in mapping and computer modeling has produced an unprecedented level of data regarding the region's rural areas. The tools have been shared and refined with many partners, including Farm Bureaus, local planners, and county agricultural commissioners. These tools include:

- Compilation of crop reports data comparing the volume and value of individual crops over 15 years
- Parcel-level crop maps showing what is grown and where in generalized agricultural "landscape types"
- Cost and revenue data for various crops to better understand agricultural viability
- Land needs for locally grown food
- Loss of farmland, actual and projected, given change in population and possible growth patterns
- Research of general plans, agricultural zoning
- Mapping of Williamson Act lands and analysis of potential land conversion impacts on air quality
- Mapping of traffic volume, safety data and key farm-to-market routes for rural roads
- Analysis of labor needs for potential changes in cropping
- Mapping of environmental data such as vernal pool locations and other protected lands
- I-PLACE³S web-based application for envisioning rural development scenarios, to help rural residents and planners evaluate and shape the long-range future of land use
- I-PLACE³S for agriculture analysis, which provides indicators on agricultural viability
- Econometric model is used to estimate changes in cropping patterns given changes in input cost or commodity prices
- Economic indicator analysis (potential costs and revenues) for varying types of agricultural land use



OUR RURAL ASSETS



AGRICULTURAL PRODUCTION

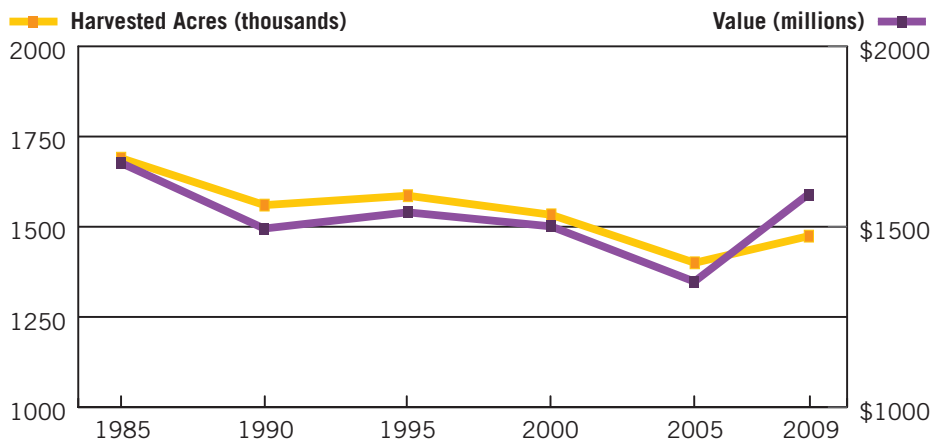
Agriculture has been one of the few bright spots in our regional economy during the recession. According to county crop reports for the six-county region, the value of agricultural production from 2005 to 2009 has increased by more than \$240 million or 18 percent. This \$1.66 billion agricultural

output is part of California's approximately \$36.5 billion industry. And the contributions don't end there. For every \$1 change in agricultural output, there is a \$2 change in total economic output. This translates to approximately \$3.3 billion in economic output related to agriculture.

Agricultural Production

Total acreage

Indexed to 2009 dollars



SMALL COMMUNITIES

Small communities are important hubs for housing and commerce in the rural parts of our region. Historically focused on supporting agriculture and forestry through supply stores, banks, restaurants, and professional services, these communities are still key components of the rural economy. Today, these communities also support recreation and tourism industries in our rural areas. Small communities also appeal to those seeking a slower pace of life, the charm of historic buildings, and easy access to recreation and other open space amenities.

However, many of these communities are having trouble maintaining public infrastructure and providing services, and population growth has increased traffic and conflicts on rural roads.

One tool SACOG has created to assist small communities is an infrastructure fiscal model. This tool can estimate infrastructure and service costs, which helps local officials evaluate the fiscal sustainability of their growth plans through balanced growth that still maintains the unique quality of life in these communities.

AGRICULTURAL LAND RESOURCES

Nearly 40 percent of the land in the SACOG region is designated as agricultural land. In addition to producing food and fiber, this land provides valuable wildlife habitat for a number of species. The map below provides a starting point for understanding rural economic and environmental systems by generalizing the landscape into four themes:

- **Large-Scale Agriculture:** Areas with larger operations growing crops that are trucked out of the

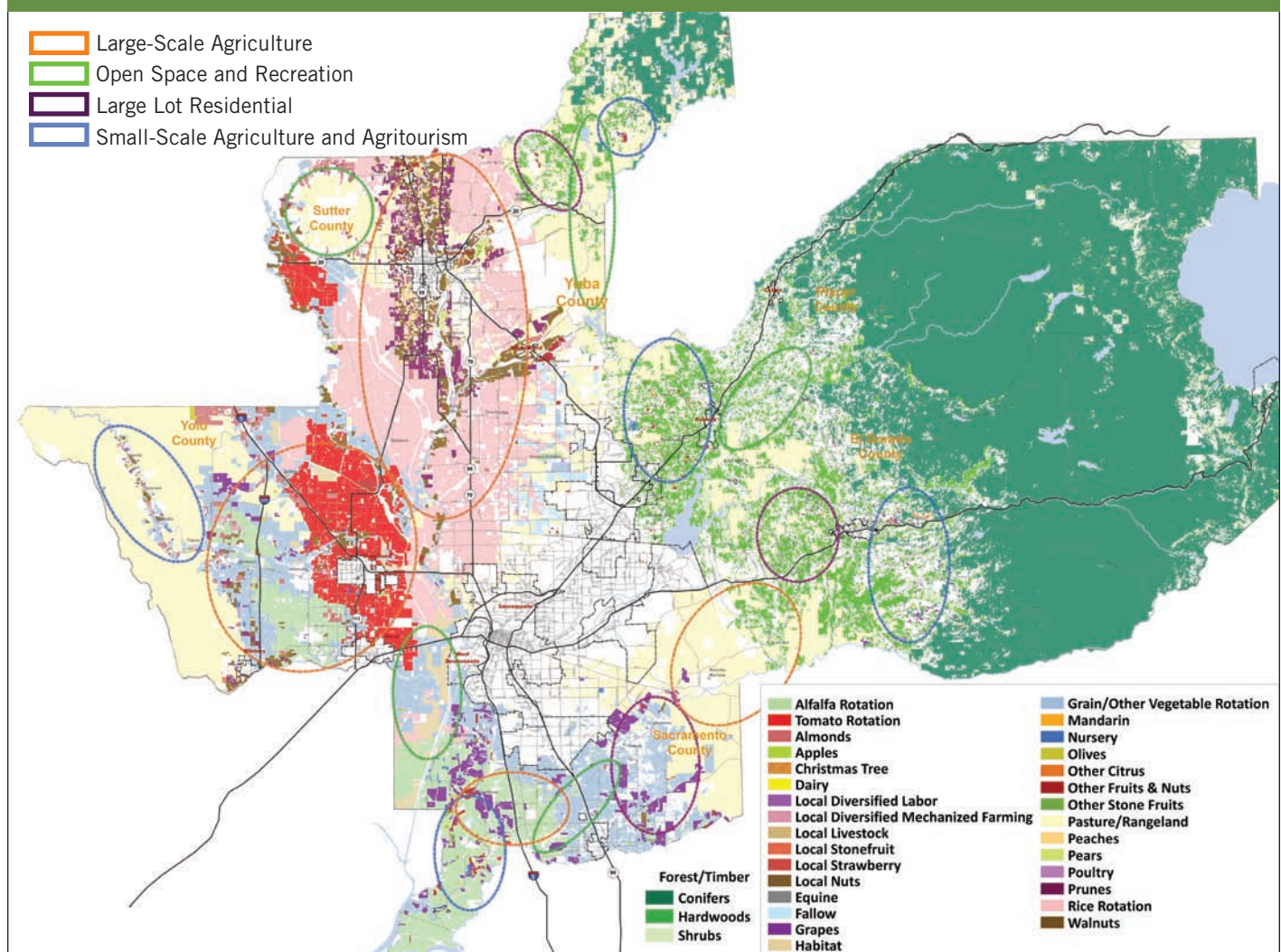
region for national and international markets

- **Small-Scale Agriculture and Agritourism:** Areas with smaller operations generally serving local markets
- **Large Lot Residential:** Areas that are mostly rural residential housing, but still have some agriculture activity
- **Open Space and Recreation:** Areas with concentrations of protected land for habitat and

other open space purposes that often also include agriculture

Focusing on one type of farmland misses the system of agriculture that grows a diversity of products for this region and the world. Keeping this perspective on the landscape can help foster supportive policies and plans that recognize all agricultural lands as important to maintaining viable agricultural production and environmental services in our region.

Agricultural Theme Map





LAND USE



CURRENT CONDITIONS

Local governments in the region have made clear their priority for preserving agriculture, habitat, and open space. Although there are many challenges to preserving these lands, development appears to pose the biggest land use challenge. Urban development is intended to be limited to spheres of influence, and other planning boundary designations. Beyond these boundaries, rural housing development is sometimes permitted; however, in both instances, proximity to agriculture can lead to land use conflicts. There are a number of existing tools to support and protect agriculture and other open space uses.

Recognizing the importance of open lands for multiple environmental benefits, the

region has turned to habitat conservation plans, conservation easements, and land stewardship programs to keep rural lands open. Easements, once thought to keep land open in perpetuity, have met challenges in other parts of the state. The future of the Williamson Act program is uncertain given state budget cuts in recent years. County-scale habitat conservation plans (HCPs) have yet to be adopted and implemented.

Still, local governments and private entities interested in agricultural viability and environmental sustainability continue to work with existing tools and create new ones to meet their particular conservation priorities.

INNOVATIONS AT THE RURAL-URBAN EDGE

Agriculture Buffers

Buffers, generally imposed on new development, can assist in reducing urban land use conflicts with farming operations.

Agricultural Parks

A combination working farm and municipal park can serve as transition or buffer zones between urban and agricultural uses.

Right-to-Farm Ordinances

Requirement of a real estate disclosure for properties in active farming areas explain farmers' rights. The intent of such an ordinance is to protect farmers from nuisance complaints and enforcement actions.

Policy Boundaries

A policy boundary designates where urban growth is to occur and where open space for agriculture, habitat and other rural uses should remain more certain. Growth boundaries can be permanent or for a set period of time.

Rural reserves aim to provide greater predictability as to where future rural uses may occur outside of an urban growth boundary for land owners, farmers, and communities.

Representing the probable ultimate physical boundary and service area of a local government agency, spheres of influence are a prominent mechanism for growth management.

Infill and Redevelopment

Policies supportive of urban infill and redevelopment might direct population growth to cities and urban communities thereby reducing pressure to convert more agricultural land to development.

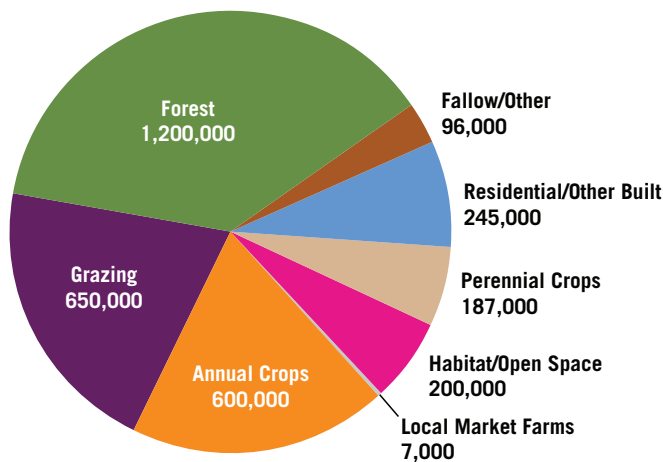
City-County Agreements

Cities and county adopt coordinated/joint policies or agreements to direct urban development to cities and preserve agricultural land in the unincorporated areas. Some agreements include shared tax revenue.

Learn more about these innovations at www.sacog.org/rucs

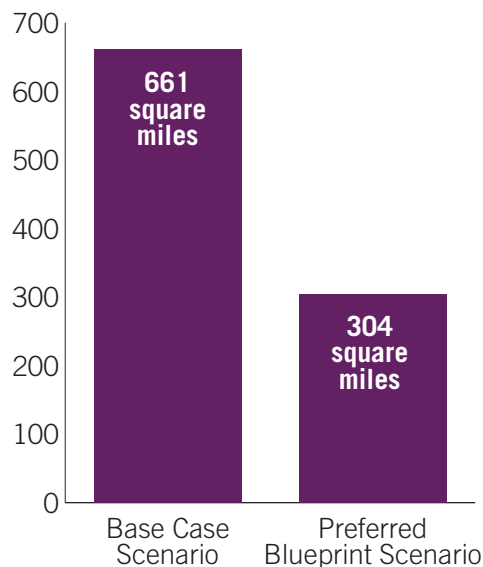
Rural Land Inventory in Acres

(total = 3,006,000)



Additional Urbanized Land

Through 2050 (in square miles)



INNOVATIONS FOR AGRICULTURAL VIABILITY AND ENVIRONMENTAL SUSTAINABILITY

Voter Initiatives

Some policies to protect agricultural lands are incorporated into general plans by initiative measures requiring a referendum for redesignation of ag land.

Supportive Zoning

Many agricultural zoning codes restrict onsite sales, processing and distribution, which limits local market opportunities. Most agricultural zoning allows for one dwelling unit per parcel; some jurisdictions have modified zoning to allow for farm home sites. This provides flexibility for farmers, farm families, and farm workers to live on the land they work. Agricultural districts are another zoning option, where agriculture is explicitly encouraged and protected.

Open Space Plans

Regional open space collaboratives involve multiple land conservation orga-

nizations to creating a regional priority for land conservation.

Habitat conservation plans can also conserve land, but may conflict with agricultural land uses if converted exclusively to habitat preservation to meet development mitigation requirements. Many habitat plans contemplate conserving lands for habitat while allowing for limited agriculture to reduce these conflicts and often enhance habitat quality.

State and federal stewardship programs fund practices that enhance the natural resources of open land, which in many cases also improves agriculture operations.

Easements, Transfer of Development Rights and Other Conservation Tools

With conservation easements, individual landowners sell easements to protect and steward important lands.

Transfer of development rights programs allow landowners to transfer the right to develop one parcel of land to a different parcel of land.

Agricultural mitigation policies require developers to purchase an agricultural conservation easement on farmland in a different part of the county, or pay an in-lieu fee when they develop on agricultural lands.

The Williamson Act encourages the preservation of agricultural lands through property tax adjustments for landowners who contract with a city or county to keep their land in agricultural production or approved open space uses for a contracted period of time.



TRANSPORTATION



CURRENT CONDITIONS

The Sacramento region includes vast rural lands and many smaller, but very distinct, urban centers. Transportation ties rural communities to each other as well as to urban communities of the region—people drive to work, send their farm produce to market, receive goods to stock their store shelves, bicycle for exercise, walk to school, car-pool to agritourism and recreation sites, take transit to the doctor, and many other trips.

Travel Behavior

The rural job market plays an important role for workers living in small urban communities. As rural lands transition into non-agricultural uses, more and more rural roads are experiencing increased commute traffic, presenting challenges as high speed auto traffic and slow moving farm vehicles come into conflict.

Mobility

How do residents in rural areas move within their communities and throughout the region? Travel by alternative

modes is limited in outlying rural areas, and most rural residents drive. With more seniors retiring in rural areas, it is important to plan for their future transportation needs when driving ceases to be an option.

Goods Movement

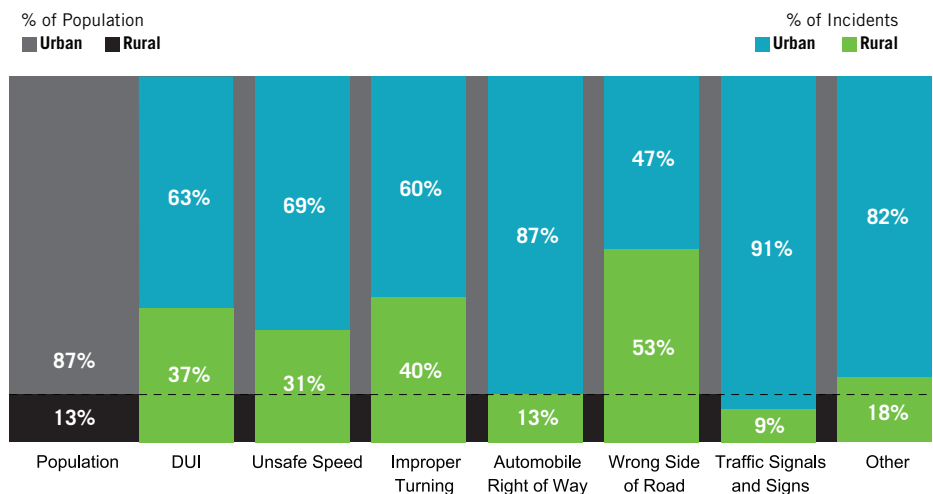
Moving products from farm to consumer requires a good transportation system. During the growing season, farmers use rural roads to move farm equipment between fields, and farm-workers use rural roads to get to work. At harvest time, large trucks use rural roads to transport raw products to post harvest and processing facilities. Finished products are then trucked to distribution facilities, retailers, direct marketers, institutions, restaurants, community food banks, or straight to consumers.

Safety and Security

Rural areas experience a disproportionate number of roadway fatalities. In 2006, 56 percent of fatal collisions in our region occurred in urban areas

Safety and Security

Rural and Urban Fatal and Severe Injury Collisions by Violation

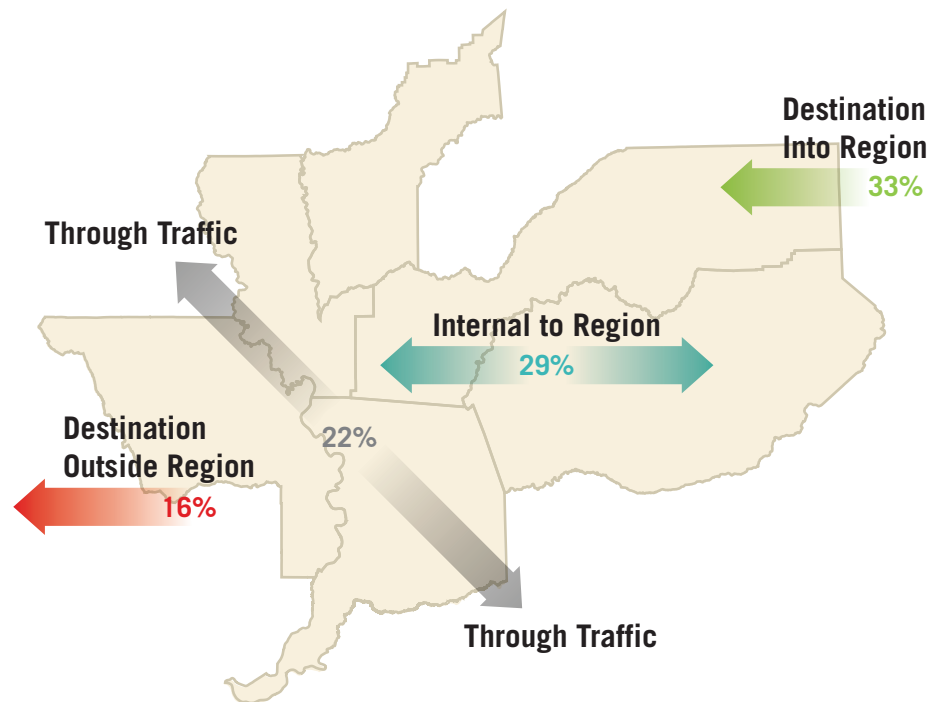


and 44 percent occurred in rural areas, despite rural areas having less than 15 percent of the population. Another safety concern comes in the form of natural disaster preparedness. The threat of forest fires and other natural disasters establishes the need for good emergency planning in urban and rural areas.

Maintenance

Even in robust economic climates, rural areas have difficulty paying for road maintenance and improvements. Though rural areas account for just 13 percent of the population, they contain 48 percent of the region's road miles. Increased heavy truck traffic, as well as more frequent commuter and agritourism traffic, drives up the cost of routine maintenance on these rural roads and leaves local agencies struggling with funding shortfalls.

SACOG Region Freight Movement



INNOVATIONS

Providing Analysis Tools, Technical Assistance, and Transportation Options

Rural transportation planning continues to evolve in response to new land use patterns, economic pressures, and infrastructure needs. Short-term strategies are outlined below, while long-term transportation strategies will be shaped by SACOG with input from stakeholders.

Goods Movement Route Network

The importance of goods movement in sustaining the region's rural economy makes it advantageous to maintain a robust network of routes that serve processing facilities, distribution centers, and farms. In developing the goods movement network, SACOG included federally designated STAA truck routes,

state and local terminal access routes, routes identified in city and county planning documents, and routes identified by stakeholders.

Agricultural Worker Transportation Program

SACOG received a \$2 million grant to study and implement an agricultural worker transportation vanpool program in Sacramento, Sutter, Yolo, and Yuba counties. This program is a step forward in providing a desperately needed transportation service that strengthens the rural economy and supports sustainable agriculture.

Safety Analysis Tools and Technical Assistance

Without detailed local data it is difficult to identify priority roads for safety

improvements. SACOG is offering technical assistance in identifying high risk roads and preparing safety grant applications. Through this technical assistance program, SACOG hopes to capture the greatest possible funding for roadway safety improvements.

Rural Transportation Funding Handbook

SACOG created the *Rural Transportation Funding Handbook* to guide grant applicants through the process of identifying, applying for, and receiving funding. The handbook focuses on programs that are geared towards or allow rural applicants, including program descriptions, eligibility requirements, deadlines, and potential SACOG assistance.



LOCAL MARKETS



CURRENT CONDITIONS

Among the 2.3 million people living in the region, there is a growing market for food from local farms. Developing a local food system presents new opportunities for economic growth, environmental benefits, and quality of life. In addition to providing more direct channels for regional products, local markets also connect consumers to their food source and increase access to fresh and healthy food.

The Rural-Urban Connections Strategy has been looking at the policies, programs, and infrastructure needed to increase local markets for farmers and ranchers in the region, including: production and consumption, processing, and distribution.

Production and Consumption

Farmers and ranchers in the region produce 3.4 million tons of food annually. While this exceeds the 2.2 million tons of total food we consume, it doesn't necessarily reflect what we eat. In fact, only about 2 percent of the food consumed in the region comes directly from local farmers and ranchers. We produce 1.8 million tons of vegetables annually—about five times our consumption—but, 93 percent of that is in tomatoes, much of which are exported beyond our region. Of the 760,000 tons of grain produced in the region, 90 percent is rice, the vast majority of which is exported to Asia and the Middle East.

Processing and Distribution

The way food reaches our tables is often indirect. The system depends on economies of scale, an array of food and farm safety regulations, and a global aggregation, distribution and processing system. The stages of distribution, from farmer to consumer, vary greatly, as shown at right.

Few products reach the consumer straight from harvest; most are processed or packaged along the way. The distribution system relies on transportation, post-harvest handling, processing, inspection, storage, shipping, sales, and other businesses to get food from the field to the fork.

Most of the processing capacity in our region is large scale for major commodities. As a consequence, small and medium-sized farming and ranching operations that focus on a local market are left with few economical processing options. Many are forced to drive long distances to process small amounts of product.

Regulations and permitting are a constant challenge to constructing or repurposing facilities for processing and distribution. Though county health codes are largely set by federal and state regulations, consistent interpretation and application of those regulations could help producers and distributors establish facilities.

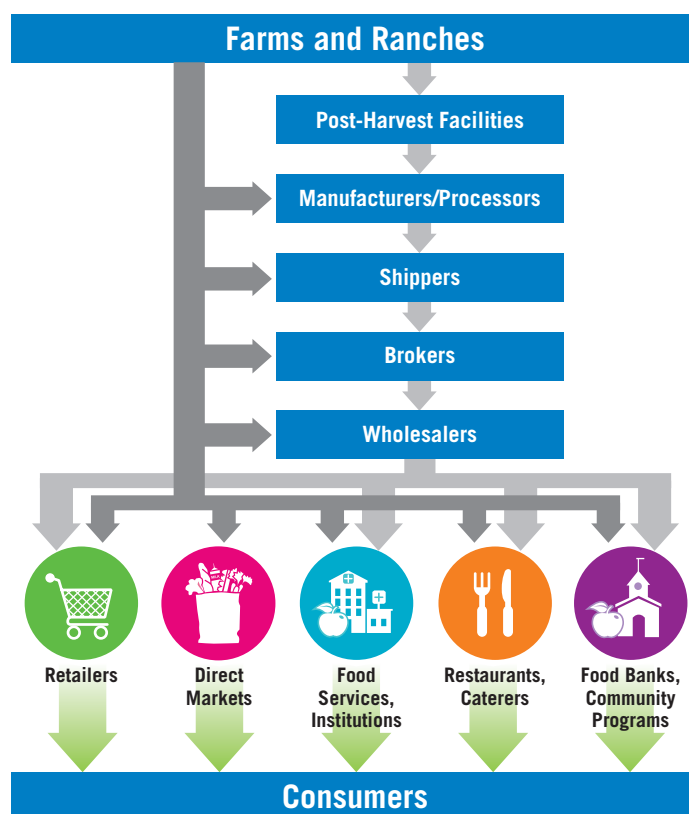
Food System Economics

This food system has tremendous economic value. The region's farm gate value—the price paid to the farmer for raw products—is roughly \$1.66 billion today. However, by the time that food reaches the consumer, its value has increased substantially. Based on the 2007 Economic Census, there were 180 wholesalers in the region making around \$3.3 billion annually, 849 retailers earning \$4.7 billion, and 4,206 food and beverage service outlets bringing in approximately \$2.1 billion annually.

Agriculture has been one of the few bright spots in our regional economy during this recession. According to county crop reports for the six-county region, the value of agricultural production from

2005 to 2009 has increased by approximately \$240 million or 18 percent. This \$1.66 billion agricultural output is part of California's approximately \$36.5 billion industry. Using the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) data, crops grown in the Sacramento region have a multiplier of roughly 2.0—for every \$1 change in agricultural output, there is a \$2 change in total economic output. This translates to approximately \$3.3 billion in economic output related to agriculture. A local food system could capture more of this economic activity within the region as more value-added processing, marketing, and distribution take place here rather than outside the region.

Food System



INNOVATIONS

Demand for local food is already growing in the region, and it's being met with more farmers' markets, Community Supported Agriculture (CSA) boxes, and stores and restaurants featuring local food. Opportunities to expand these outlets center on the region's ability to increase the volume of food grown for local markets and capacity of aggregation, distribution, and value-added processing needed to meet market demands.

Farmers, business leaders, community organizers, local governments, and food advocates are working on ways to provide

these opportunities. The following objectives and innovations were developed with regional stakeholders. The innovations are organized from production to consumption, tied together by infrastructure such as processing and distribution. Major themes heard throughout the stakeholder process include the need for more education and marketing, food system infrastructure, institutional buying, and policies supporting local markets.

Production

- Connect Farmers to Available Land
- Provide Business Training Opportunities to Farmers

Infrastructure

- Increase Local Processing Capacity
- Increase Local Distribution

Consumption

- Expand Farm-to-Institution Programs
- Increase the Number and Types of Food Outlets
- Promote Agritourism
- Increase Consumer Education and Marketing
- Consider a Regional Food and Agriculture Policy Council

Learn more about these innovations at www.sacog.org/rucs



LOCAL MARKETS



LOCAL FOOD SYSTEM ANALYSIS

SACOG is building analysis capacity to study the local food system. These data, mapping, and pro-forma analysis tools are a helpful starting point for farmers and ranchers considering growing for local markets or expanding their agricultural activities. Economic development and planning departments may find these tools helpful in their own programs.

Calculating the region's consumption

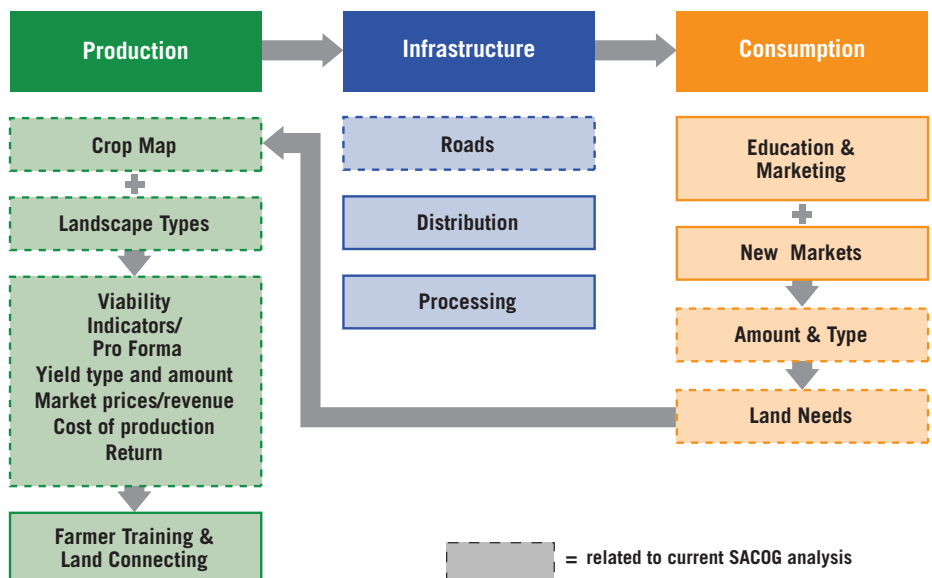
So what do we eat? Using USDA Loss Adjusted Food Availability figures, SACOG estimated food consumption in the six-county region. The market demand for food, the data shows, is over 2 million tons; however, using the U.S. Agriculture Census, SACOG estimates that less than 2 percent of that market is being met by local growers, whose products are available at farmers markets, in community supported agriculture (CSA) boxes, and a handful of restaurants and stores. Due to

the structure of our food production system and the markets they serve, the region's producers and consumers rely on producers, aggregators, processors, and in many cases distributors and wholesalers outside the region to sell and supply nearly all of the food we produce and consume.

Local market data and cost analysis for farmers

SACOG staff developed pro-forma analysis tools that can assist local farms with market development and business training efforts. A typology assembled for use in the I-PLACE³S model includes cost of production, as well as yield and revenues from various market outlets for a range of production including fruits, nuts, vegetables, and meat. Each farm type can be updated with local data and adjusted to analyze various operations and market opportunities.

Increasing our Understanding of the Local Food System



AGRITOURISM

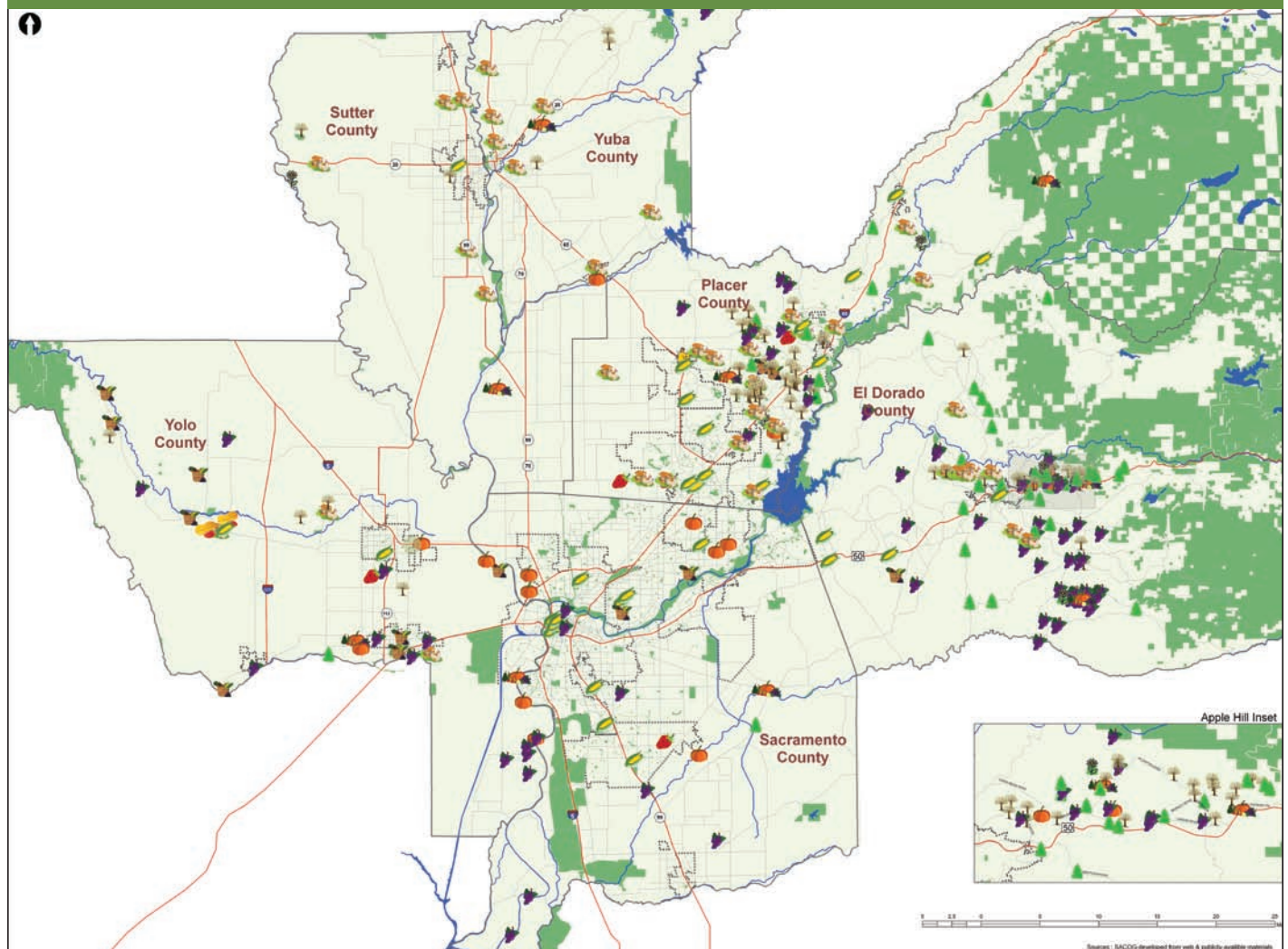
The demand for locally grown food is also creating interest in farm and ranch tours, adding a potential revenue stream to agriculture operations. Winery visits in the region continue to grow, but agritourism encompasses much more. Consumers are becoming more interested in visiting the farms and ranches where their food is grown. Local economic

development and tourism bureaus are working to develop more tours and eventually draw out-of-region travelers to these destinations.

Agritourism not only connects consumers to the source of their food, but also enable farmers to eliminate distribution costs altogether if they sell products

on-site. Produce stands have traditionally been an outlet for local fruits and vegetables, but they have also become a venue for offering value-added products. Agritourism can also include restaurants and hotels for visitors from out of the region, which keeps tourists in the region longer and increases the potential revenue for this industry.

Agritourism Map



Agritourism Themes

Berry Patch	Corn Maze	Farmer's Market	Orchard	Multiple Seasonal Produce (i.e., pumpkins, berries, orchard fruit)
Community-Supported Agriculture	Eggs	Flowers	Pumpkin Patch	Parks & Publicly Accessible Open Space
Christmas Tree Farm	Farm Stand	Honey	Winery	



FORESTRY



CURRENT CONDITIONS

The forested landscape of our region is home to an array of landowners. Historically, timber has been a major revenue source for rural communities. Today, the service industry is the main employer in forested rural communities. While the landowners that live on the forested landscape are most directly involved with managing the forest, the U.S. Forest Service, CAL FIRE, environmental groups, and industry groups are also actively involved with forest management.

Natural resources, recreation and other assets produced on forested lands are used throughout the region and beyond. The forested watersheds in Yuba, Placer, and El Dorado counties are the source of high-quality water for domestic, agricultural and hydropower uses throughout the region. These lands also provide a wide variety of recreational experiences, such as camping, water sports, hiking, skiing, bicycling, hunting, and fishing, for many thousands of residents and visitors.

Wildfires are perhaps the greatest threat to the forested landscape. Changes in the forested landscape due to climate change are likely to increase wildfire risk and force landowners to adapt their land management methods to mitigate this risk. The overall economic health and sustainability of the forested landscape will rely on the incorporation of innovative methods to efficiently use forest resources for effective mitigation of increasing wildfire risk.

Interstate 80, Highway 50, Highway 49 and Highway 20 all serve the forested parts of our region. Counties are responsible for maintaining many miles of paved and unpaved roads, and funding for road maintenance has been severely curtailed due to reduced timber harvesting. Opportunities exist for targeted road infrastructure improvement when tied to creating access to areas with high brush density or over-stocked conditions, which present good biomass harvesting potential.

INNOVATIONS

Innovations in forest management fall into three general categories that address multiple challenges and opportunities. Each innovation area has more specific ideas that public and private managers may consider for local and regional objectives.

Collaboration

- Regional and local collaborative efforts on an appropriate strategy
- Landowner cooperatives certified in sustainable management operations

- Education and outreach materials on sustainable management and regulations

Economic Viability

- Compensation tools such as ecosystem service payments or conservation easements
- Valuation techniques for quantifying resource values and monetizing societal benefits to help determine appropriate compensation
- Cooperatives focused on business development, job creation and training for forest management-related employment

Forest Management and Community Safety

- Biomass facilities in cost-effective locations near fuel sources
- Stewardship contracting that encourages resource benefits and priority to local businesses in contract bidding
- Fire Safe Community Guidelines
- Fire-threat mapping for land use and transportation planning

CURRENT CONDITIONS

Water supply sustains the agriculture industry in our region and beyond. Competition for surface water and rising pumping costs could threaten economic viability for some farmers and ranchers. While supplies are adequate for today's demand, increased needs for urban and environmental uses could affect supply. Statewide shortages and Delta ecosystem concerns may increase pressure or incentives for agriculture to help address these issues by leaving more water in the rivers for Delta and other downstream users.

Pressure on agriculture may also result from urbanization, particularly where non-irrigated lands are converted to urban uses that create new demand. Unlike agriculture's seasonal demand, urban areas need water throughout the year. This increases pressure on ground-water supplies to manage shortages. Farmers and ranchers have more difficulty than urban ratepayers in paying for the cost of pumping

increases particularly with rising fuel and electricity prices, contamination, and falling aquifers.

Water supply uncertainty is the byproduct of drought, court decisions, legislation, development, and possible climate change impacts. Preparing for the future of agriculture requires strategies that not only secure water supplies, but also use the water that is available in a more efficient manner. This saves water and money, which helps farmers and ranchers stay afloat and still meet the needs for habitat and urban uses. At the field level, irrigation technologies, such as surface and subsurface drip systems and soil moisture sensors (irrigation management services) are being employed to save water, energy and cost. At broader geography, Integrated Regional Water Management Plans—comprehensive, inter-jurisdictional studies of how to manage the supply and use of water for urban and non-urban uses—can improve the efficiency of water use and find solutions that help all stakeholders.



ISSUES

SACOG completed a background report on water resources that offers a foundation for possible future work with water agencies and purveyors in the region based on the following recommendations:

- Identify opportunities for partnership and cooperation. The Water Forum is a good example of collaboration among numerous and varied stakeholders.
- Bring together water resources, land use and agricultural managers and planners. These groups

generally do not work together or understand each other's fields and issues. Collaboration can increase awareness and improve planning and management.

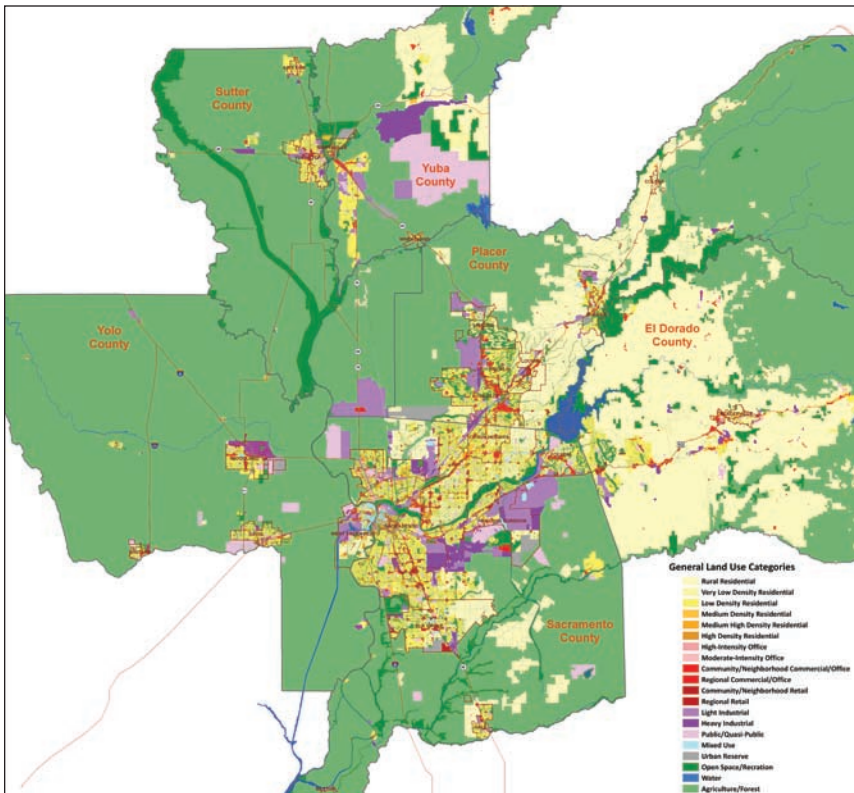
- Address data and modeling gaps on needs and supplies. A "water balance" approach to managing resources relies on better data and modeling. Regional data are lacking to describe specific end-user characteristics and unused supply.

- Use scenario-based analysis to understand water supply and management constraints. The Blueprint offers a good example of helping people understand possible future scenarios.
- Advocate for legislative change as a region. Seeking policy or regulatory reform collectively can be more effective than advocacy by individual organizations.

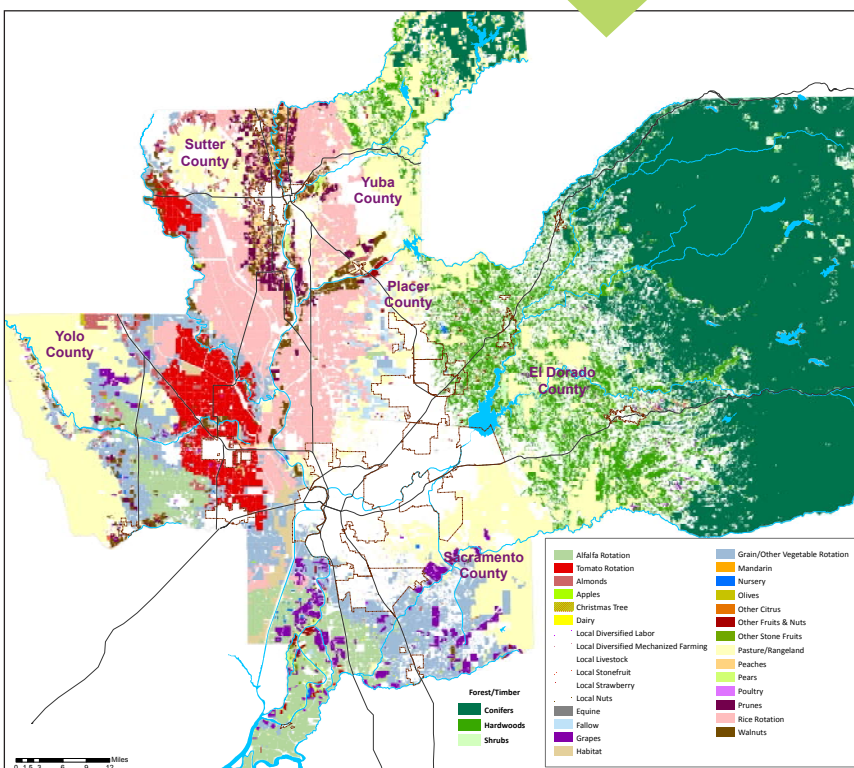


TECHNICAL TOOLS

REGIONAL GENERAL PLAN MAP



REGIONAL CROP MAP

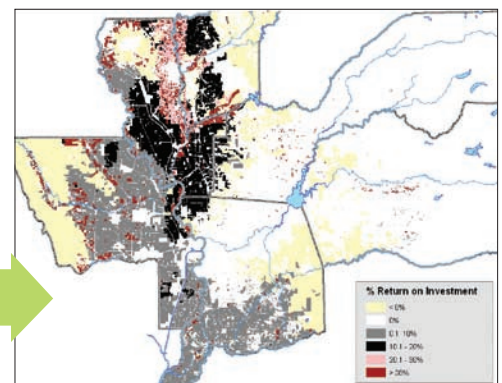


Community leaders and agricultural businesses often lack good information to make regional decisions that affect agriculture. Where do public agencies need to supply roads, water, and housing? How do the prices of inputs affect ag products? What is the economic return? SACOG has created several technical tools based on feedback from stakeholders about what would be most useful to understand the agricultural economy and improve its viability. The methodology and tools developed by SACOG are transferable and scalable, so any local, regional, state or federal organization could adapt them. SACOG is using crop maps, production data and GIS to put related data together in a set of cutting-edge, yet practical, tools.

Crop Map

While there are dozens of general plan designations for urban uses, the diverse types of agriculture—from rice fields to peach orchards to diversified farms—are all labeled “agriculture”. This simplified view makes it hard for policy makers and economic development agencies to help new growers, processors or distributors. Crop data were collected at the field level across more than 2 million acres of farmland as part of SACOG’s RUCS project.

RETURN ON INVESTMENT ANALYSIS



The map represents crops simplified into 33 landscape types. Each landscape type is backed by input cost, yield, price, and other factors such as habitat.

Return-On-Investment Calculator

Using information from the crop map, SACOG assigned production input and cost, yield, price, and non-production factors (e.g., habitat, easement value, energy production, carbon sequestration) to each crop type. These data were then uploaded into land use modeling software, I-PLACE³S, which can analyze both rural and urban changes simultaneously and in real-time. This tool can model how changing crop patterns, market conditions and policy and business decisions may affect the viability of agriculture. The specific outputs include: yield and value of production, demand for inputs (e.g., labor, water, fuel, seed, trucking), and net returns.

This analysis capacity will: help decision makers craft better policies and plans, help agricultural businesses make opera-

tional decisions, and help the public understand the importance of protecting agricultural land and supporting growers in the region.

Econometric Model

Building on the crop map and the return-on-investment calculator, SACOG worked with an agricultural economist to build an econometric model—software that combines economic theories with data to test how

growing decisions and cropping patterns would change under different conditions. The model can then predict how much land would become fallow (unused) in a variety of land use scenarios.

The econometric model is linked back into the I-PLACE³S software to depict scenarios on a map.

Factors in growing decisions and crop location:

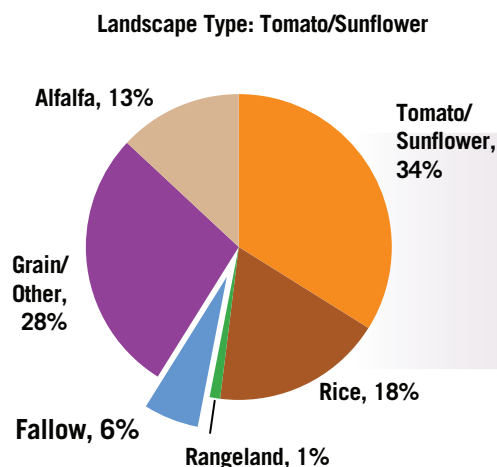
- Temperature
- Precipitation
- Soil quality
- Elevation & slope
- Proximity to roads, rivers, cities
- Prices for crops and production inputs
- Water availability/weather

Factors affecting viability:

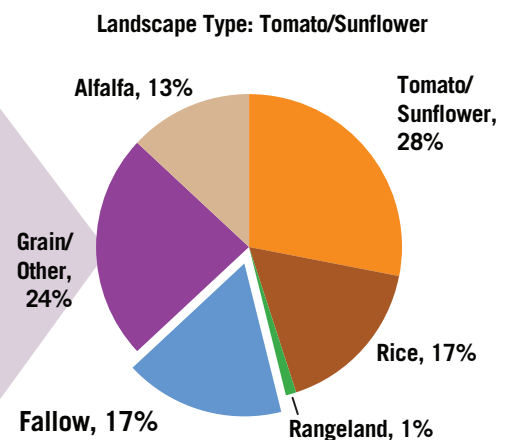
- Chemicals
- Equipment
- Fertilizer
- Fuel
- Irrigation
- Labor
- Seed
- Commodity Prices

Econometric Model Scenario: Fuel Prices Increase

FUEL PRICE STABLE



FUEL PRICE DOUBLE





FUTURE WORK FOR RUCS

Going forward, SACOG will continue to rely on the input of stakeholders from across the region as it turns to other issues critical to support rural areas and enhance economic growth. SACOG staff has begun to work on some of these issues and will move forward based on direction from the SACOG Board of Directors. As with the other areas of the project, data and tools being developed in the RUCS project will be available to local officials, businesses, and advocates to use for planning and policies that address their unique challenges and opportunities.



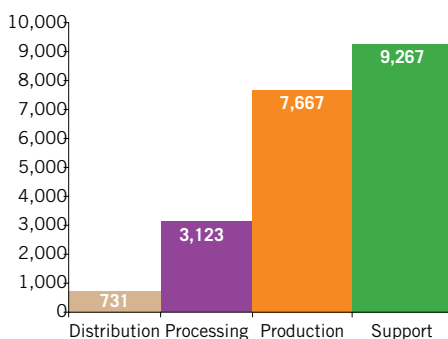
LABOR

Supply shortages and wage increases sometimes result in crops being left in the field and affect profitability.

Thin profit margins and international competition keep wages low, which, coupled with hard manual labor, make agricultural jobs unattractive to many people. National immigration policies are making it more difficult for people who are willing to do this work to enter the United States.

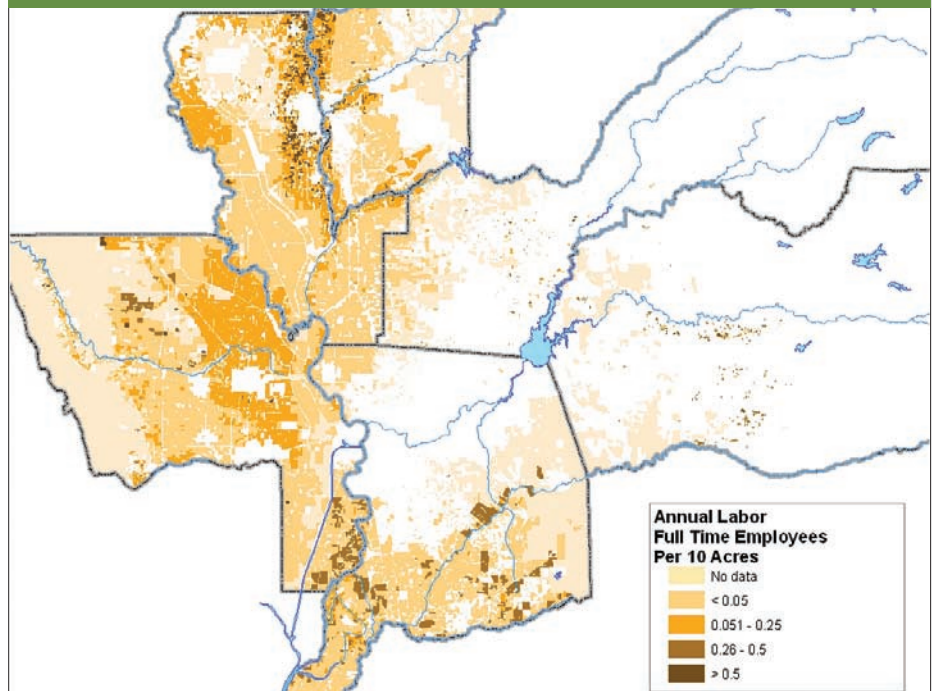
Furthermore, those that are able and willing to do farm labor are faced with a lack of affordable housing and transportation to job sites. These factors lead to shortages in farm labor, which reduces harvests and drives up wages, thereby reducing profitability. Couple this with the aging population of farmers and ranchers and a decline in young people entering the industry, and many people are beginning to wonder who will be growing and processing our food in the future.

Agriculture Industry Employment



SOURCE: EDD CREE DATA

Labor Demand



PROCESSING FACILITIES

Processing facilities are an important part of the agriculture infrastructure. However, the region has experienced a number of processing facility closures. Many economic factors—some of them international—contribute to these closures. Trucking products to facilities outside of the region increases vehicle miles of travel, emissions, transport costs, and potentially reduces product quality and therefore price. In some cases, the loss of a processing facility causes farmers to cease growing a

particular crop altogether. Such closures also eliminate direct and indirect processing jobs, as well as the economic multiplier associated with those jobs and the facility.

As local markets take hold in the region, advocates have identified local processing as a necessity to scale up the system for larger customers of local food, particularly institutions which often need pre-cut and processed food for their services.



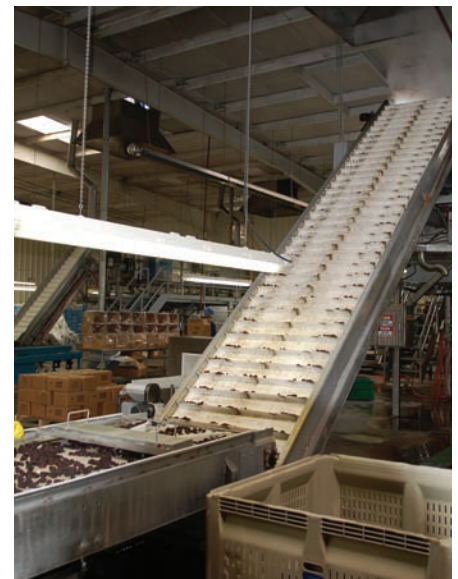
DISTRIBUTION

It takes a complex distribution system to move food from fields to consumers. Demand for local food is increasing, but local sales make up no more than 2 to 3 percent of produce distribution. Purchasing from multiple small growers, seasonal availability, limited volume, price, and food safety concerns add constraints.

Food distribution centers can provide a valuable connection between local producers and local wholesale, retail, food service, institutional and other food outlets — relieving producers of the responsibility of aggregating, marketing,

and distributing product. This would give buyers more purchasing options for local food, and give growers additional outlets and income opportunities.

Aggregation and distribution centers could also decrease vehicle miles traveled by growers who currently deliver to multiple sites, leaving more time for farming. Local aggregators can achieve the volume and consistency that larger distributors, retailers and institutions need, feeding into more conventional distribution channels.



ENERGY PRODUCTION

Forest and farm byproducts can become biomass to generate energy. UC Davis is one of the lead institutions developing biomass fuel and energy technology. Biomass can also be used in cogeneration facilities as in Placer County. Sierra Pacific Industries produces seven megawatts of power for use at their Lincoln plant and also sells up to 13 megawatts to PG&E. This effort produces energy and revenue and it cleans up the forest to help prevent wildfires.

The development of an alternative energy industry will help create economic opportunity for farmers disposing farm byproducts (e.g., rice straw), and alternative energy companies that may find the region attractive due to the research at UC Davis and the availability of abundant agriculture biomass. Add to this the growing practice of capturing methane at dairies and feedlots, and the region hosts a range of alternative energy opportunities.





FUTURE WORK FOR RUCS



CARBON SEQUESTRATION

Fast-growing forests and low-impact farming practices can take carbon out of the atmosphere. The Sierra Nevada hosts some of the fastest growing conifers on the planet, which can absorb tremendous amounts of carbon and form a large carbon “sink” or reservoir. This creates economic opportunity, as the carbon trading market becomes an increasingly important part of controlling greenhouse gases and implementing California’s Global Warming Solutions Act (AB 32). Forest management practices set by the state can maximize the potential for the forests to absorb carbon, while at the same time increas-

ing timber yields. Carbon sinks can also be developed on agriculture lands by switching from row crops to orchards or pastures, employing managed grazing, using less intensive tillage, and retiring land. At a minimum, agricultural practices can mitigate greenhouse gas emissions by reducing diesel emissions, converting to biofuels, or capturing methane from manure. These agriculture practices have the potential to create revenue for farmers and ranchers that participate in carbon trading markets, while also helping to maintain the quality of farmland.



RECREATION & OPEN SPACE

Beyond agriculture and forestry, open space includes parks, trails and wildlife areas that not only provide habitat, but also support recreational activities, educational opportunities and the connection between built and natural environments. Public parks, trails and wildlife preserves are the dominant means by which people connect with nature. This “green infrastructure” preserves our natural heritage and presents opportunities to understand how it relates with our built environment.

Private assets, such as the Nature Conservancy’s Cosumnes River Preserve, add to the inventory of public recreational and wildlife areas that are part of the region’s rural fabric. Fishing opportunities abound, while many rice fields are purposely flooded for duck hunting and other types of fields support pheasant and quail hunting. The Yolo Bypass Wildlife Area and other regional

locations provide opportunities for watching hundreds of species of birds and waterfowl. Add to that the hiking, bicycling, skiing, rafting, horseback riding, and boating opportunities and you find that the region offers a diversity of recreational activities, as well as a robust economy around those activities.

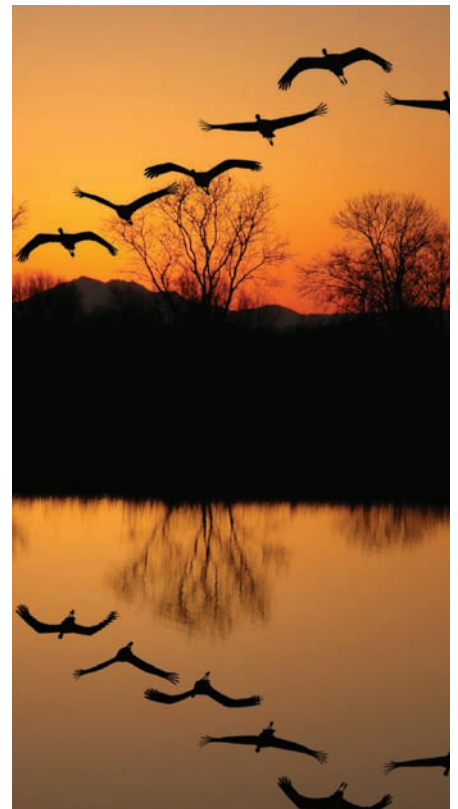
In addition to providing habitat and recreational benefits, many of these areas are also educational outlets. Roughly 4,000 students visit the Yolo Bypass Wildlife Area annually, and salmon runs on the American River are another popular field trip. These recreational and educational opportunities provide places where children can connect with their natural environment. Future work with local planners and policy makers will include identifying future opportunities to expand and enhance our network of open space.

REGULATIONS

Safety and environmental restrictions and reporting requirements can add time and cost to operations and reduce their economic viability. The Air Resources Board uses the voluntary Carl Moyer program as an incentive to convert diesel engines to cleaner technology. Other air quality regulations include burning restrictions and controls on dust particulate and methane generation.

The Irrigated Land Regulatory Program requires farmers and ranchers to monitor water quality either individually or as part of a watershed coalition. The Department of Pesticide Regulation oversees sales and use and requires regular reporting. These regulations add cost and place some limitations on operations. These types of regulations, while based on sound public policy values, can be particularly challenging for small farms.

Implementation of environmental regulations sometimes creates unintended consequences, including pushing development farther away from existing urban infrastructure. In addition to the water treatment requirement hurdles faced by small communities, the Clean Water Act also places sometimes burdensome requirements for on-site mitigation on development projects. This approach conflicts with the Fish and Wildlife Service mandate to preserve resources in a contiguous fashion. It also can cause developers to look beyond the urban edge to find lands where development and mitigation can comply with federal standards, thereby creating development that generates longer commutes and more emissions.



FOLLOW THE RURAL-URBAN CONNECTIONS STRATEGY

Learn more about the Rural-Urban Connections Strategy and the issues in this booklet at WWW.SACOG.ORG/RUCS

- Sign up for email notifications and our newsletter
- Read the white papers on transportation, land use, local markets, forestry, and water
- Zoom in on the maps in this booklet
- View slide shows of county agricultural tours and video interviews





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