



SPUR REPORT
MAY 2013

Locally Nourished

How a stronger regional food system improves the Bay Area



SPUR lead staff:
Eli Zigas

Research assistant:
Sarah Dominguez

Special thanks for research and mapping assistance:
Katherine Bell, Adam Garcia, Anna Gore, Josephine Lau, Carsten Rodin, Molly Schremmer, Mary Sek and D. Jan Visaya

Food Systems and Urban Agriculture Policy Board:
Allison Arieff, SPUR
Rosie Branson Gill, 18 Reasons
Michaela Cassidy, SPUR Board
Anthony Chang, California FarmLink & Kitchen Table Advisors
Karen Heisler, Mission Pie
Michael Janis, San Francisco Wholesale Produce Market
Paula Jones, San Francisco Department of Public Health
Sibella Kraus, Sustainable Agriculture Education
Jeremy Madsen, Greenbelt Alliance
Blair Randall, Garden for the Environment
V. Fei Tsen, SPUR Board
Francesca Vietor, San Francisco Foundation
Isabel Wade, Urban Resource Systems
Randy Wittorp, Kaiser Permanente
Heather Wooten, ChangeLab Solutions

Resources and reviewers:
Misti Arias, Morgan Bender-deMoll, Renata Brillinger,
Carle Brinkman, Richard Casale, Karen Chapple, Jennifer Dempsey,
Alex Dmitriew, Gail Feenstra, Lisa Feldstein, Adam Garcia,
Doug Henton, Melissa Hippard, Sarah Karlinsky, Kirk Lennington,
Kathryn Lyddan, Andrea Mackenzie, Brian Matthews, Albie Miles,
Miguel Monroy, Laura Moreno, Robert Reed, Stephanie Reyes,
Paul Ringgold, Tom Robinson, Don Rocha, Mark Shorett,
Diana Sokolove, Larry Strong, Laura Tam, Michael B. Teitz,
Egon Terplan, Sapna Thottathil, Rebecca Tolentino and Serena Unger



Special thanks to the Greenbelt Alliance for their assistance with mapping and GIS analysis.

Design by Supriya Kalidas, based on a design format by Exbrook Inc.
Edited by Karen Steen.

4	Executive Summary
6	Introduction
8	Preserving the Region's Agricultural Land
21	Sustaining a Thriving Food Economy in the Bay Area
32	Reducing the Regional Food System's Environmental Impacts
37	Plan of Action: SPUR Recommendations

SPUR
654 Mission Street
San Francisco, CA 94105
tel. 415.781.8726
info@spur.org

ON THE COVER

Strawberries growing at the Sunol AgPark. Photo by Eli Zigas

Locally Nourished

How a Stronger Regional Food System Improves the Bay Area

This report was made possible with the generous support of the 11th Hour Project, Clif Bar Family Foundation, Columbia Foundation, Clarence E. Heller Charitable Foundation, San Francisco Foundation, Seed Fund and TomKat Charitable Trust.

The SPUR Board of Directors reviewed, debated and adopted this report as official policy on February 20, 2013.

Executive Summary

Locally Nourished

Each day, millions of Bay Area residents shop at grocery stores and farmers' markets, cook meals at home, dine at restaurants and compost their food waste. Individually, our food choices impact our taste buds, pocketbooks and health. Collectively, though, our choices have an enormous impact throughout the region — on the future of agricultural land, the viability of thousands of food businesses and the size of our environmental footprint.

The regional food system — involving local production, processing, distribution, retail and composting — can confer unique benefits on the Bay Area that the national and global food economies cannot provide. Farms and ranches in the nine-county Bay Area cover more than 2 million acres and support a greenbelt of open space and working land that helps direct growth into urban areas and limit sprawl. Local farms, food manufacturers, distributors, grocers and restaurateurs provide more than 400,000 jobs and, when they buy from each other, help circulate more of the region's wealth locally. Residents, businesses and local governments that produce compost from food waste rather than sending that waste to landfills reduce the region's carbon footprint. Alongside these measurable benefits, the regional food system provides the intangible but powerful benefits of promoting ecological awareness, preserving cultural heritage and fostering a unique sense of place.

The Bay Area has an opportunity to capture more of these benefits by strengthening the regional food system and by preserving the 15 percent of its agricultural land that is currently at risk of being developed in the next 30 years. Cities and counties throughout the region have begun taking action on preserving agricultural land, promoting the economic development of the food industry and diverting municipal food waste. But to truly meet the challenge and take advantage of the opportunity facing the Bay Area, policymakers at the city, county and regional levels must build upon and accelerate their efforts.

SPUR's Goals and Recommendations to Strengthen the Regional Food System

Preserve the Region's Agricultural Land

1. Adopt policies to preserve remaining agricultural land, especially large, contiguous agricultural areas and high-quality farmland and rangeland.
2. Facilitate the sharing of best practices for preserving agricultural land among Bay Area cities and counties as part of land use efforts under the Plan Bay Area/Sustainable Communities Strategy.

Sustain a Thriving Food Economy in the Bay Area

3. Evaluate food system infrastructure and develop strategic plans that promote forming, retaining and expanding businesses that provide food processing, manufacturing and distribution.
4. Establish a regional agribusiness economic development entity to support the region's food industry. In addition to assisting with financing food businesses, this entity could:
 - Organize formal "trade missions" between urban food manufacturers and rural producers to encourage regional business exchange
 - Expand existing agritourism and culinary tourism initiatives
5. Give preference to locally grown food in procurement contracts.
6. Ensure that all farmers' markets and fresh food retailers can accept electronic benefits for food assistance programs.

Reduce the Environmental Impacts of the Regional Food System

7. Develop and expand the diversion of food waste from landfills through composting and similar efforts.
8. Promote organic agriculture as well as other environmentally friendly agricultural practices.
9. Provide guidance and technical assistance to farmers and ranchers on techniques for reducing their on-farm greenhouse gas emissions, sequestering carbon and adapting to climate change. Help farmers and ranchers learn how to tap into revenue from California's cap-and-trade system.

Introduction

The shelves of any Bay Area grocery store include products from 50, 500 and 5,000 miles away. Our food system, which encompasses the full cycle that food takes from field to fork and back to the field, is simultaneously regional, national and global in scale. Our region's food businesses export, import and conduct business locally. Bay Area businesses and residents benefit from this trade, whether through the growth of local wine and cheese makers distributing their products across the globe or through our access to imports, such as chocolate, coffee and sugar.

But we gain distinct, measurable benefits from a regional food system — one in which individuals and businesses prioritize purchasing and spending within the region — that we don't get from a food system focused exclusively on imports and exports. These include:

- A less expensive approach than building a greenbelt that is solely recreational open space and parkland
- Economic growth in both rural and urban areas
- A reduction in the region's carbon emissions by diverting food waste away from landfills

Alongside these measurable advantages, the regional food system provides the intangible but powerful benefits of promoting ecological awareness, preserving cultural heritage and fostering a unique sense of place.

While the food system here offers many opportunities to improve the local quality of life, the Bay Area also faces the potential loss of

15 percent of the region's remaining farmland and 7 percent of its rangeland in the next few decades. To capture more of the benefits of a regional food system, we support three broad goals:

1. Preserve the region's agricultural land with a specific focus on maintaining large, contiguous agricultural areas and high-quality farmland and ranchland
2. Sustain a thriving food economy in the Bay Area
3. Reduce the negative environmental impacts of the regional food system

In this report we take a close look at the potential these goals offer and make specific recommendations for reaching each one.

The Bay Area is rightly known for being a leader on many food issues, including sustainable agriculture, municipal composting and small to mid-size food manufacturing. In recent years, numerous initiatives — ranging from the San Francisco Urban-Rural Roundtable to the creation of food policy councils throughout the area — have reflected a growing understanding that we are in danger of losing our agricultural land, our food businesses and an aspect of our region's identity. The challenge ahead is to continue this leadership and emphasize the positive impact of a greater regional focus within the food system so that more local residents and businesses share in its benefits.

What Is a Regional Food System?

The food system includes five main stages: production, processing, distribution, retail and waste. For this study, we define the region as the nine counties adjacent to the San Francisco Bay.¹ We chose to limit our scope to the nine counties of the Bay Area because they share regional governance bodies and they are the focus of most of SPUR's work. We acknowledge, however, that this scope excludes the Central Valley and Salinas Valley, agriculturally rich areas that

provide a significant portion of our produce and are within a few hours' drive of the Bay Area. Though we chose to focus on the nine-county Bay Area, many of the recommendations in this report could apply to a more broadly defined region.

Our study also focuses on land-based food activities and includes only limited research into the region's fisheries and aquaculture economy. Seafood and aquaculture are important parts of the Bay Area food system, and we have included them in the economic analysis. But marine food production includes a set of issues that fall beyond the scope of this report.

Figure 1: Defining the Regional Food System

The food system includes five main stages: production, processing, distribution, retail and waste. Within the nine-county Bay Area, these stages can form a closed loop from farm to table and back to the farm. However, the regional food system is also linked to a national and international food system. At each stage of the food system, imports enter and exports exit the region. For example, a processor in the region may purchase some raw ingredients locally and others from across the globe, then distribute its finished product both locally and globally. The business is simultaneously part of the regional food economy and the global food economy. In this report, we emphasize the benefit the Bay Area receives when businesses focus their sourcing and sales within the region.

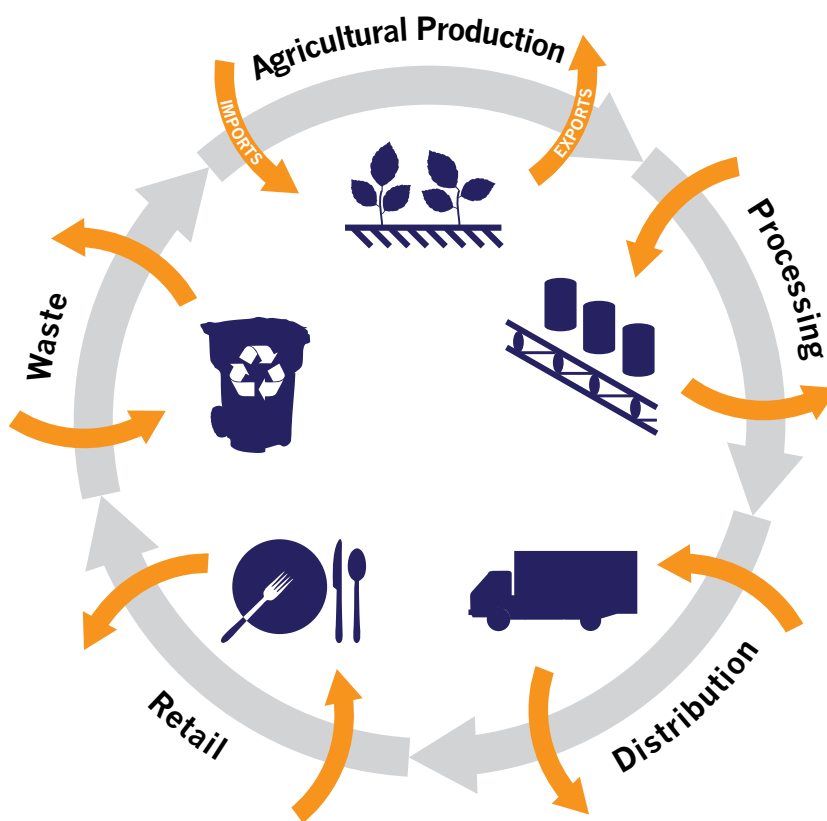


Diagram by Carsten Rodin

¹ Other alternatives have been used to define the region or its "foodshed," such as a radius of 100 miles from the Golden Gate. See Edward Thompson, Alethea Harper and Sibella Kraus, *Think Globally, Eat Locally: San Francisco Foodshed Assessment*, American Farmland Trust, 2008, p. 1.



Courtesy of Greenbelt Alliance

Preserving the Region's Agricultural Land

Agricultural Land As a Greenbelt Strategy

SPUR believes that future Bay Area growth should be directed into existing urban areas. We have long supported the preservation of our region's open space, including wilderness, parkland and working lands.² In part, this is because these areas are uniquely valuable as aesthetic, cultural and ecological resources. But our support for preserving a greenbelt of open space around the Bay Area also stems from an interest in building a buffer against sprawl. The historic pattern of spreading our homes and businesses farther and farther away from urban cores has increased our commutes and, consequently, our greenhouse gas emissions. A recent study sponsored by the California Energy Commission concluded that infill development and agricultural preservation could be a county's most effective strategy to reduce its greenhouse gas impact because of reduced transportation emissions and decreased residential energy use resulting from urban density.³

Building and maintaining a greenbelt requires investment, and agricultural land is often an economical option. Preserves and parkland frequently have high initial costs for acquiring land, as well as the ongoing expense of staff time to maintain, manage and patrol it. Agricultural land, on the other hand, can often be protected from development for less money and is managed primarily by farmers and ranchers, which can reduce the costs of land management borne by the public agency or private land trust that owns the land.

For example, the Sonoma County Agricultural and Open Space District saved money by including agricultural land as part of its greenbelt acquisitions. Over the past 20 years, the publicly financed district purchased conservation easements from landowners of

dozens of agricultural and open space parcels, restricting everything but agricultural use on the former and all development on the latter. The district's purchase of conservation easements on agriculture land — mostly rangeland — had a median cost of \$3,962 per acre compared to a median cost of \$8,681 per acre for easements on open space land (both in 2012 dollars).⁴ In other words, for the same amount of money, the district could prevent sprawl on twice as much agricultural land as open space land.

As an example of reduced maintenance costs, the Santa Clara County Parks Department encourages managed cattle grazing as a cost-effective way to control invasive species and reduce the wildfire risk on rangeland properties. Mechanical, manual, chemical or other means of controlling weeds and brush in backcountry and remote areas of parklands is estimated to cost the department between \$200 and \$800 per acre each year. By integrating cattle grazing into its strategy of managing remote areas of the park, the department has found savings that offset a portion of these maintenance costs.⁵

While there are benefits of having agricultural land in a greenbelt, there are costs as well. Poor farming practices can result in soil erosion, water contamination and habitat degradation. An active farm can produce noise and pollution that can affect neighbors. Sustainable farming practices aim to mitigate many of those impacts, but working lands can have a negative impact on the land and nearby communities. While open spaces such as parks may cost more to acquire and maintain, they may also be more valuable for environmental reasons and for the recreational amenities they offer. Evaluating greenbelt land uses by their cost is important, but cost should not be the only evaluation criterion. Recognizing this, SPUR believes that a successful greenbelt includes a balance between natural areas, recreational open space and agricultural land.

² For example, SPUR was a lead supporter of the establishment of the Golden Gate National Recreation Area in the early 1970s; see www.spur.org/publications/library/article/establishingGGNRA05011999

³ University of California, Davis and the California Energy Commission, *Adaptation Strategies for Agricultural Sustainability in Yolo County, California*, July 2012, pp. 140–167, available at www.energy.ca.gov/2012publications/CEC-500-2012-032/CEC-500-2012-032.pdf. See also California Climate and Agriculture Network, *Triple Harvest: Farmland Conservation for Climate protection, Smart Growth and Food Security in California*, February 2013, available at <http://calclimateag.org/triple-harvest>

⁴ Sonoma County Agricultural and Open Space District data and SPUR analysis.

⁵ Don Rocha, Santa Clara County Parks Department, interview and correspondence.

The Bay Area's Bounty



Allison Arief



Flickr user DennisSylvesterHurd



Eli Zigas



Bruce Shippe, courtesy of Clover Stornetta Farms



Flickr user CC Chapman



CUESA



Bruce Shippe, courtesy of Clover Stornetta Farms



CUESA



Neah Christman

The Bay Area's farms and ranches yield an enormous variety of products, including fruits and vegetables, meat, dairy and flowers. Figure 2 shows the top five products in each county, listed by their value in 2011. Because the counties report crop yields differently, the category labels vary. This listing only provides a small sampling of the food grown and raised in the nine counties.

While the Bay Area produces a significant amount and variety of agricultural products, the productivity of the counties adjacent to the nine-county Bay Area is of a different order of magnitude. No Bay Area county produced more than \$600 million in agricultural products in 2011. Monterey, San Joaquin and Stanislaus counties, in contrast, all exceeded that amount in 2011.

Figure 2: What the Bay Area Grows

Top five agricultural products by value in the Bay Area's nine counties, 2011



⁶ Field crops include grains such as oats, hay and alfalfa.

⁷ For a more in-depth, county-by-county analysis, see Sibella Kraus, Kathryn Lyddan, Jeremy Madsen, Edward Thompson and Serena Unger, *Sustaining Our Agricultural Bounty: An Assessment of the Current State of Farming and Ranching in the San Francisco Bay Area*, American Farmland Trust, Greenbelt Alliance, Sustainable Agriculture Education, January 2011.

Bay Area Agricultural Land at Risk

A good portion of the Bay Area’s farms and ranches, integral to both the region’s greenbelt and its overall food economy, are at risk. As history has shown, if unregulated market forces drive development, then sprawl will extend into more and more of the Bay Area’s land.

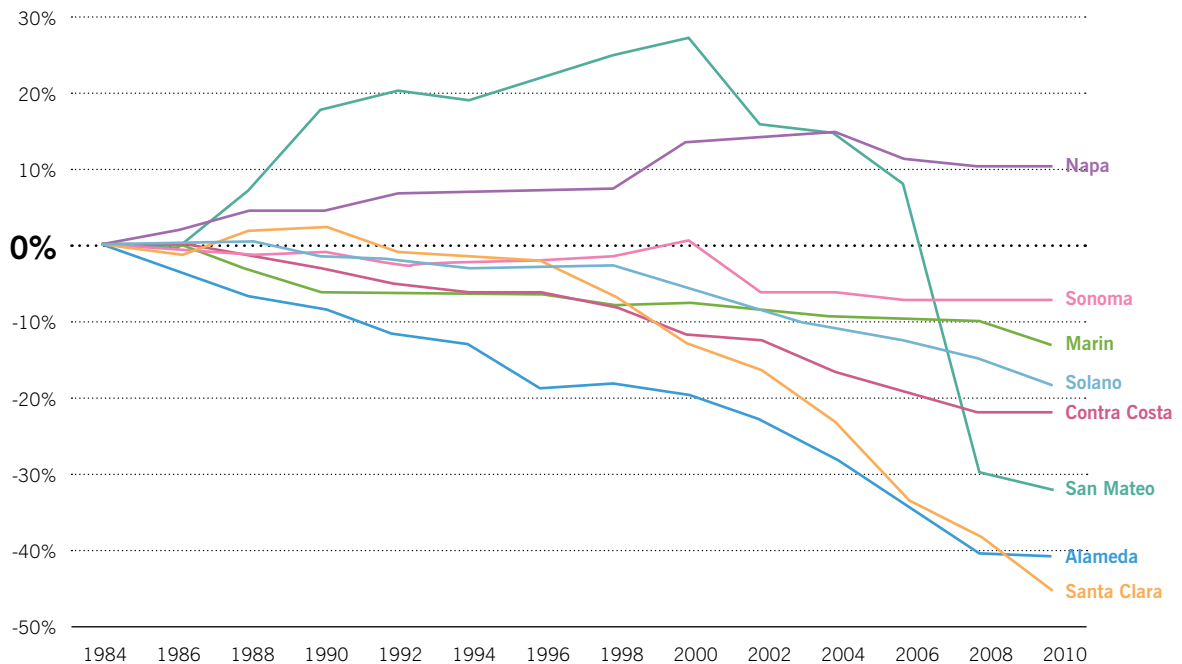
Since 1984, the region has lost more than 200,000 acres, or 8 percent, of its farmland and ranchland. During this period, the loss

of farmland has been more acute (15 percent) than the loss of ranchland (6 percent).⁸ And, in the past two decades, more than two-thirds of the development in the Bay Area took place atop agricultural land, with losses of the best-quality cropland outpacing the loss of lower-quality cropland.⁹ The severity of farmland loss has varied among counties depending on development pressure and agricultural protection measures. Between 1984 and 2010, Sonoma County lost less than 5 percent of its farmland while Santa Clara County lost 45 percent. Napa County, in contrast, proved to be an outlier and increased its cultivated acreage by 10 percent in response to growing demand for wine grapes.¹⁰

Figure 3: Farmland Loss Has Varied Among Counties

Most Bay Area counties have lost farmland in the past three decades, with Santa Clara and Alameda counties facing the steepest drops (more than 40 percent). Napa County, in contrast, has increased the amount of acreage under cultivation by nearly 10 percent in response to growing demand for wine grapes.

Percent change in farmland acres



Source: California Farmland Mapping and Monitoring Program

8 Sustaining Our Agricultural Bounty, pp. 5–7, and California Farmland Mapping and Monitoring Program data.

9 Greenbelt Alliance analysis of California Farmland Mapping and Monitoring Program data.

10 California Farmland Mapping and Monitoring Program data.



Most of the agricultural land that is at highest risk of being developed is at the urban (and suburban) edge. This picture of the Brentwood area in eastern Contra Costa County was taken in the late 1990s, as thousands of acres of farmland were converted to residential subdivisions. Today 17 percent of the county's farmland and 12 percent of its grazing land remain at risk.

Today, according to the California Department of Conservation's Farmland Mapping and Monitoring Program, 578,000 acres of important farmland and 1,700,000 acres of grazing land remain in the region's nine counties. While this represents a majority of the Bay Area's land, historic trends of agricultural land loss may well continue unless we take action. According to the Greenbelt Alliance, 15 percent of the region's farmland and 7 percent of its grazing land is at either high or medium risk of development in the next 30 years. (See page 15 for more detail about this analysis.) Every Bay Area county except San Francisco (for which data is not tracked by the state) has land at risk, but the areas with the highest concentrations are central Sonoma County, eastern Contra Costa County and southern Santa Clara County.

Agricultural land is particularly vulnerable to future development when it is near existing development. Imagine, for instance, that a piece of farmland at the edge of an urban area with a growing population goes up for sale. Absent regulation preventing development, and given historic trends of sprawl, a developer will almost always outbid

a farmer in purchasing the land because the developer can make a larger profit from the land. As a result, high land prices at the urban edge then make it difficult for a farmer to expand operations or for new farmers to enter the market in these areas.¹¹

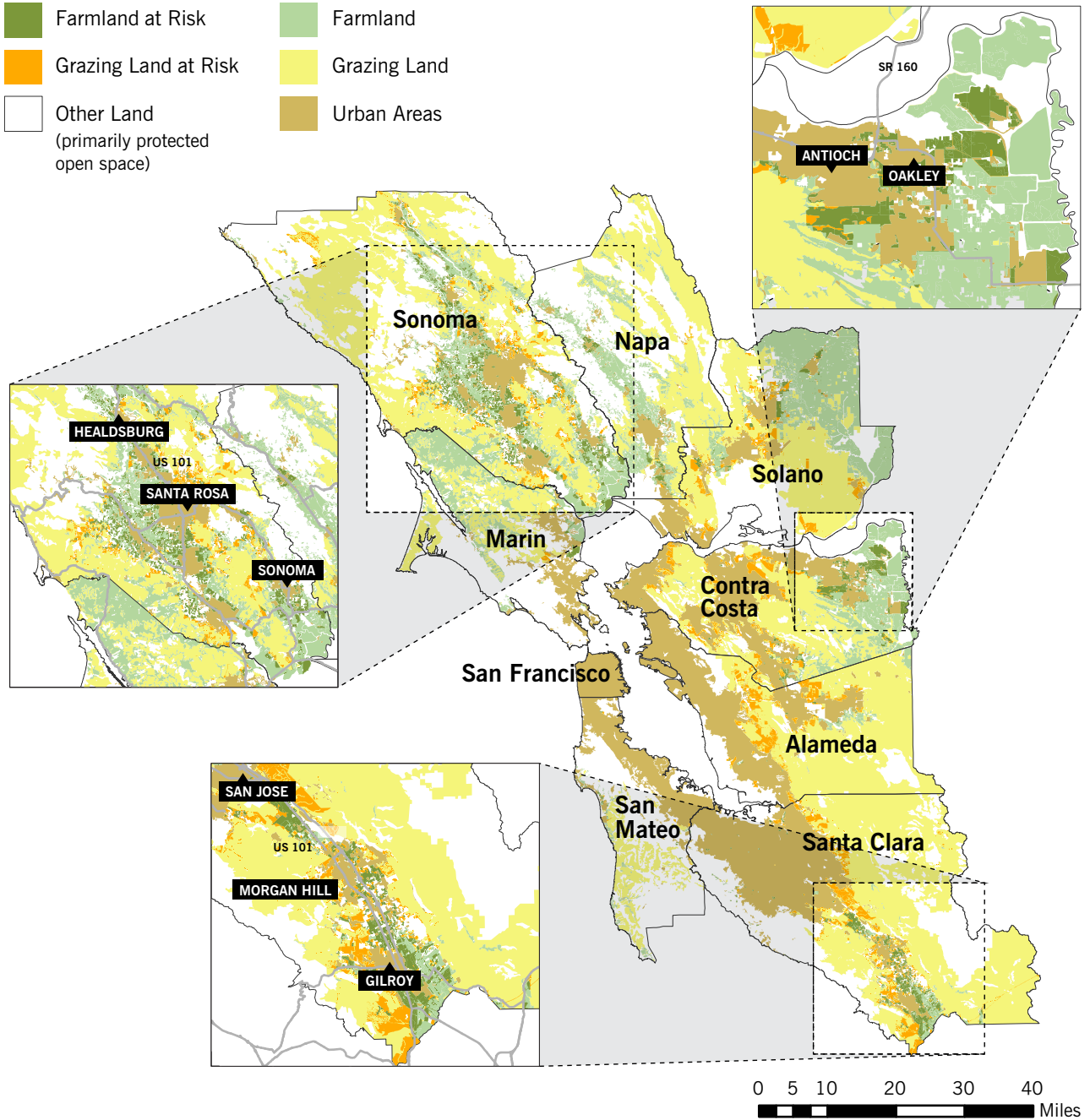
For example, in a 2011 study of the city of Morgan Hill in southern Santa Clara County, a survey of real estate sales examined smaller parcels of land that were purchased for development and larger parcels that were sought for agricultural use. The parcels intended for development commanded prices of \$150,000 to \$200,000 per acre, whereas the land purchased for agricultural use sold for \$30,000 to \$50,000 per acre.¹²

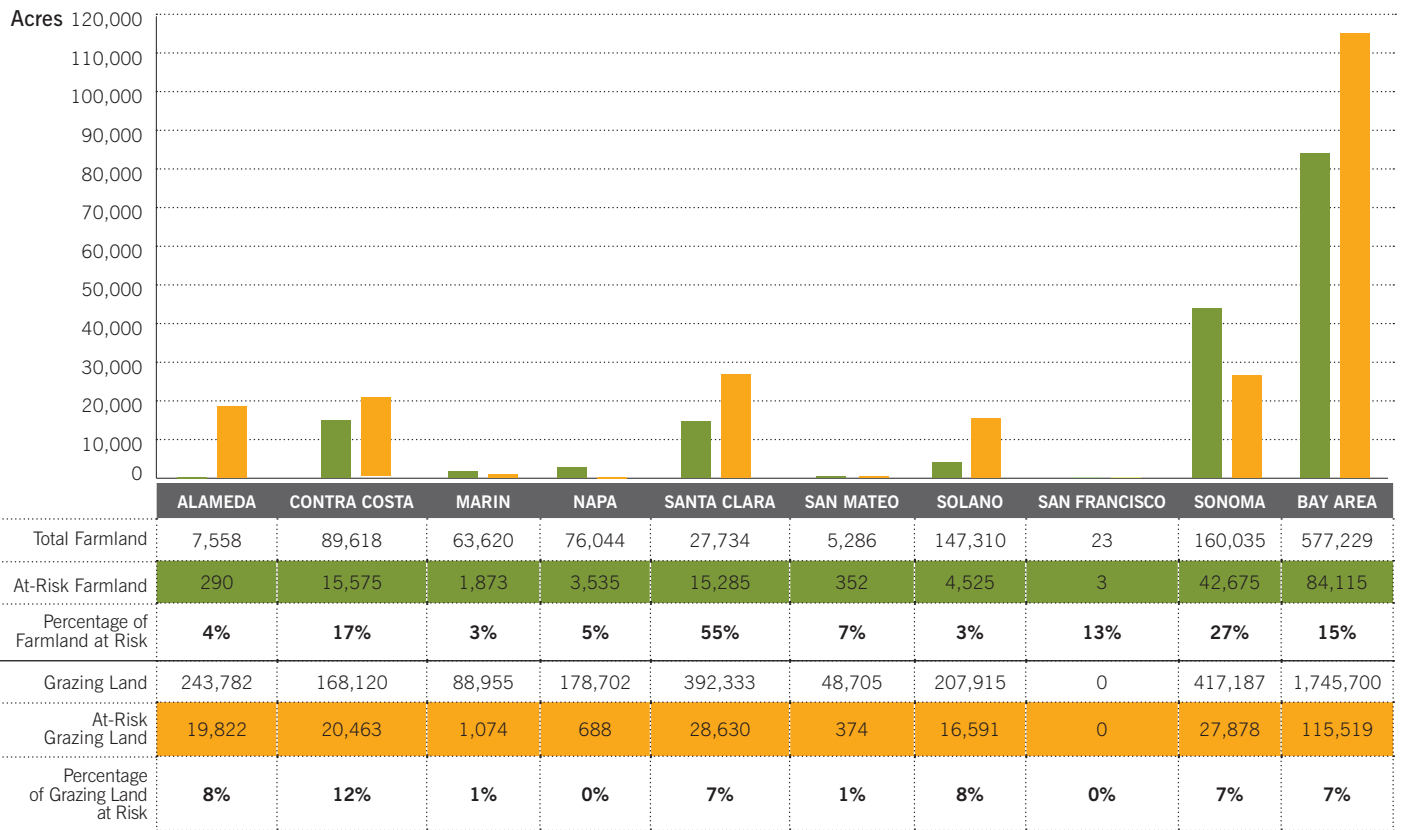
11 Al Sokolow and Kurt Richter, *What Farmers and Ranchers Say About the Future of Solano County Agriculture: Summary of Focus Group Discussions*, Solano Agricultural Futures Project, 2006.

12 Economic and Planning Systems Inc. and House Agricultural Consultants, *Morgan Hill Agricultural Policies and Implementation Program*, December 2011, p. 11.

Figure 4: Farmland and Grazing Land Is at Risk Across the Bay Area

According to the Greenbelt Alliance, 15 percent of the Bay Area's farmland and 7 percent of its grazing land is at either high or medium risk of development in the next 30 years. Agricultural land that's at risk is most often at the edge of urbanized areas. The areas with the highest concentrations of at-risk land are central Sonoma County, eastern Contra Costa County and southern Santa Clara County.





Source: Greenbelt Alliance analysis (2012) of California Farmland Mapping and Monitoring Program data (2010). San Francisco agricultural land analysis based on data collected for SPUR's report Public Harvest (2012).

The land use data used throughout this report comes from the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation.¹³ Updated every two years, the FMMP survey analyzes the state on a county-by-county level, excluding large public land holdings. FMMP categorizes land as follows:

Important Farmland generally includes land of high-quality soil and minimal slope that has been used for agricultural production within the previous four years or has been designated as agricultural land by a local board of supervisors.

Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.

Urban Land is land occupied by structures with a building density of at least one unit per 1.5 acres, or approximately six structures to a 10-acre parcel.

13 "FMMP — Important Farmland Map Categories," California Department of Conservation, available at www.conservation.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx (accessed December 2012). The broad category of "Important Farmland" includes the following FMMP sub-categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance.

Other Land comprises land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland and riparian areas not suitable for livestock grazing; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres in size is mapped as Other Land.

Defining "at Risk"

In this report, the "at risk" label includes parcels identified as having high or medium risk of development in the next 30 years based on the Greenbelt Alliance's analysis in its report *At Risk: The Bay Area Greenbelt 2012*. The determination of whether a parcel is at risk of development is based on a weighted GIS model that compares the threat of urban development against the policy measures intended to preserve and protect the landscape. A full description of the Greenbelt Alliance's methodology accompanies the group's report.¹⁴

14 Greenbelt Alliance, *At Risk: The Bay Area Greenbelt 2012*, May 2012, available at www.greenbelt.org/at-risk/methodology

These high land prices also threaten agricultural land because farmers may see greater gains by selling their land than by farming it. When agricultural landowners expect to sell their land, they often disinvest in their farming operations — either as a farmer, by forgoing capital improvements or investment in high-value crops, or as a landlord, by not renewing leases to tenant farmers. As a result, the profitability of the farm may decrease, selling the farm to a developer may become a more enticing option than before, and speculative land purchasing by developers seeking to convert farmland to other uses may increase.¹⁵

Preserving agricultural land in the face of this pressure requires a concerted effort by policy makers to support the economic viability of farms and ranches. A range of policy tools have been developed to support agriculture, and we discuss them in greater depth in Figure 5 (see page 18). These tools are related not only to preserving the land itself but also to preserving the economic viability of agriculture. The most effective agricultural preservation policy recognizes, in the words of the American Farmland Trust, that “it’s not farmland without farmers.” In other words, farmers won’t continue farming if they can’t make a living doing it.

SPUR’s Recommendations to Preserve Agricultural Land

Once agricultural land is built upon, it is essentially lost for good. For the reasons described above, SPUR believes it is critical to preserve nearly all of the Bay Area’s remaining “important” farmland (see page 15) and direct future growth into existing urban areas.

In balancing the trade-offs between agricultural land preservation and other land uses — whether residential, commercial or industrial — counties and cities should also evaluate the quality of the farmland and rangeland itself. The Farmland Mapping and Monitoring Program, which classifies land by its soil quality as well as its previous agricultural use, can serve as an important guide to the quality of agricultural land (see page 15). Some land currently under cultivation may be only marginally productive, or the type of agriculture practiced there may be poorly suited to the terrain. In many other cases, a farm with some of the richest remaining agricultural land may be very close to an urban area and at the highest risk of development. The agricultural quality of the land, in addition to its location, is an important criterion in considering where to prioritize agricultural preservation.

¹⁵ Dick Esseks et. al., *Sustaining Agriculture in Urbanizing Counties*, 2009, pp. 7, 27 and 62.

What Does Agriculture at the Urban Edge Need to Succeed?

Stability: Farms, like other businesses, need long-term stability to thrive. General plans, urban growth boundaries and zoning policy can only be effective at creating long-term stability if they are enforced and maintained. Agricultural zoning designations that change every few years and frequently amended general plans do not promote long-term investment in agriculture because they increase uncertainty rather than reducing it.

Support for agriculture use: A buffer zone between agricultural and urban uses, made up of either low-density development or open space, can reduce conflicts that stem from the noise, smells and dust generated by farming and ranching. Right-to-farm ordinances, which are statements of policy that emphasize the permitted agricultural uses of an area, have been a popular way to mitigate nuisance complaints.

Critical mass: When tracts of farmland are adjacent to each other, this can reduce the number of boundaries between agricultural and residential areas and thereby decrease the amount of friction that happens at those edges. Further, a large concentration of farmland can serve to maintain the support services (such as fencing companies, large animal vets, farm equipment distributors and irrigation installers) that are critical to farm operations.



Outside Morgan Hill, in southern Santa Clara County, 2003. The urban edge shown remains similar today.

While preserving large areas of agricultural land should be a priority, that emphasis does not preclude protecting agricultural land that falls within city limits and urban areas. Just as we provide open space and parkland within urban areas while we also preserve it in the greenbelt, so too can we protect agricultural land in both areas. As we stated in our 2012 report *Public Harvest*, urban agriculture — including multi-acre farms in cities — can provide a number of educational, ecological and social benefits.¹⁶ Policymakers should consider the value of maintaining farms and ranches within city limits on a case-by-case basis. In instances where a farm or ranch within an urban area is designated or sold for a non-agricultural use, cities and counties should consider requiring the developer to pay for mitigation measures, such as the purchase of conservation easements or the payment of fees for future agricultural land preservation, to reinforce the protection of agricultural land outside the urban area.

1. Adopt policies to preserve the region's agricultural land, especially large, contiguous agricultural areas and high-quality farmland and ranchland.

WHO: *County and city planning departments; city councils and boards of supervisors; and local agency formation commissions, especially those with jurisdiction in southern Santa Clara County, eastern Contra Costa County and Sonoma County*

As we stated earlier, successful agricultural land preservation often hinges on maintaining a critical mass of working land within an area. Zoning, urban growth boundaries and agricultural mitigation fees can be used to restrict the types of allowed development and also create long-term economic stability that affects land value and farm viability. The Greenbelt Alliance has identified three parts of the Bay Area that have significant amounts of important farmland at risk: southern Santa Clara County, eastern Contra Costa County and central Sonoma County. While land use policy and planning is key to decelerating the loss of farmland throughout the region, we especially need to focus on these locations.

Policymakers in those areas, and throughout the Bay Area, have a number of agricultural land preservation tools at their disposal. Recognizing that the economic and land use dynamics are different in each sub-region, SPUR does not recommend a one-size-fits-all approach. Instead, each jurisdiction must design a suite of policies that best fits the needs of its situation.

¹⁶ SPUR, *Public Harvest*, April 2012, available at www.spur.org/publicharvest

Agricultural land preservation serves not only to preserve farmland, but also to prevent sprawl — a long-standing goal for SPUR. We feel strongly that policies restricting development beyond the urban edge should be complemented by land use and transportation policies that support greater development and growth of already-urbanized areas, also known as infill development.¹⁷

In Figure 5, we analyze a range of policy options available, offer a brief discussion of the advantages and disadvantages of each, and highlight examples where each has proven successful. Many cities and counties have already put these policies into place in one form or another. Ultimately, as described on page 16 (“What Does Agriculture at the Urban Edge Need to Succeed?”), one of the most important aspects of agricultural land preservation is creating long-term certainty for landowners and developers about future land use regulations and the public commitment to protecting agricultural land. This is crucial to reducing development speculation at the urban edge and encouraging farms to invest in their operations. The challenge ahead involves filling in policy gaps where necessary, increasing the effectiveness of our policies and constantly keeping an eye toward maintaining the economic viability of farms and ranches.

2. Facilitate the sharing of best practices for preserving agricultural land among Bay Area cities and counties as part of land use efforts under the Plan Bay Area/Sustainable Communities Strategy.

WHO: *Association of Bay Area Governments (ABAG)*

ABAG should convene an annual meeting of planners, agricultural commissioners, land trust managers, farm bureau managers, food systems alliances and other interested parties to assess trends in land use changes and best practices in agricultural land preservation around the Bay Area.¹⁸

¹⁷ For examples of SPUR's support of infill policy see the SPUR reports *Beyond the Tracks*, October 2011, available at www.spur.org/publications/library/report/beyond-tracks, and *Zoning for More Housing*, February 1998, available at www.spur.org/publications/library/report/zoningformorehousing_040108

¹⁸ Originally proposed in a draft “Bay Area Greenprint: Working Lands Measurable Goals and Policy Measures” from Sustainable Agriculture Education and Greenbelt Alliance in January 2012.

Figure 5: Policy Tools for Agricultural Land Preservation

Because economic and land use dynamics vary throughout the Bay Area, there is no one-size-fits-all approach for preserving agricultural land. Instead, each jurisdiction must design a suite of policies that best fits its needs. The following tools are listed by the permanency of their effect, with the most permanent actions listed first. The “initial cost to implement” rating reflects the cost to the entity implementing the policy and does not include any financial effects of the policy action itself, such as foregone tax revenue. These tools serve not only to preserve farmland but also to prevent sprawl, a long-standing goal for SPUR.

TOOL	EXPLANATION	EXAMPLE ¹⁹	IMPLEMENTORS / DECISION-MAKERS	INITIAL COST TO IMPLEMENT
Land Acquisition	A public or private preservation organization purchases land.	The Peninsula Open Space Trust has purchased multiple parcels in San Mateo County totaling thousands of acres that it now leases to farmers and ranchers. ²⁰	Land preservation organization funded by private or public funds.	High
Conservation Easement	A land preservation organization pays a landowner for a permanent restriction on the property, preventing any non-agricultural development.	The Marin Agricultural Land Trust, founded in 1980, was one of the first to pioneer agricultural conservation easements. The Sonoma County Agricultural Preservation and Open Space District has protected more than 22,000 acres of agricultural land with a voter-approved sales tax. ²¹	Land preservation organization.	High
Affirmative Easement	This type of conservation easement not only restricts development but also requires that the land be actively farmed.	In San Mateo County, Pie Ranch and the Peninsula Open Space Trust have begun exploring affirmative easements. The Marin Agricultural Land Trust holds affirmative easements. ²²	Land preservation organization.	High
Transfer of Development Rights	After placing a conservation easement on his or her land, a landowner can then sell development rights to a developer, who can use them to build with greater density in an urban area. These programs are intended to simultaneously support rural conservation and infill development.	This tool exists in Marin, San Mateo and Contra Costa counties but has not been widely used. Recently, Washington state has allowed for three counties near Seattle to combine their transfer-of-development-rights efforts with tax-increment financing for infrastructure development. ²³	County and city planning departments, rural and urban landowners. Sometimes a public “bank” of development rights serves as broker.	Med

19 The examples in this column, unless otherwise noted, come from Sibella Kraus, Kathryn Lyddan, Jeremy Madsen, Edward Thompson and Serena Unger, *Sustaining Our Agricultural Bounty: An Assessment of the Current State of Farming and Ranching in the San Francisco Bay Area*, American Farmland Trust, Greenbelt Alliance, Sustainable Agriculture Education, January 2011. More general discussions of agricultural land preservation policies include the following: Institute for Local Self Government, *Farmland Protection Action Guide: 24 Strategies for California* (2002) and Dick Essecks et. al., *Sustaining Agriculture in Urbanizing Counties: Insights from 15 Coordinated Case Studies*, University of Nebraska–Lincoln, 2009, chapter 3.

20 Peninsula Open Space Trust, “Meet the Farmers and Ranchers: Discover the people that work the land and work with POST,” available at www.openspacetrust.org/whatwesave/farmers/index.html (accessed February 2013).

21 See note 4

22 Peninsula Open Space Trust, “POST Finds New Ways to Keep the Farmer in the Dell,” available at www.openspacetrust.org/news/ls-fa12-pg2.html (accessed December 2012); Pie Ranch, “Farmland for Farming: The Pie Ranch Access to Land Project,” www.pieranch.org/2012/12/farmland-for-farming-the-pie-ranch-access-to-land-project (accessed December 2012)

TOOL	EXPLANATION	EXAMPLE	IMPLEMENTORS / DECISION-MAKERS	INITIAL COST TO IMPLEMENT
Tax Incentive	The California Land Conservancy Act of 1965 (“Williamson Act”) allows farmers to receive lower property taxes in exchange for agreeing to farm their land for a 10- or 20-year period. Until 2009, county governments were partially reimbursed by the state for the foregone tax revenue. ²⁴	Every Bay Area county, except San Francisco, has land under Williamson Act contracts. However, the Williamson Act is not often used by farmers at the urban edge because it restricts their ability to sell their property for development. ²⁵	County or city governments.	Med
Urban Growth Boundary	A policy boundary line around a city or urban area can separate high and low density areas or limit the extension of infrastructure (such as water and sewer pipelines).	All Bay Area counties except San Francisco have established urban growth boundaries around some, if not all, of their cities. ²⁶	City or county planning commission or public vote.	Low
General Plan	General plans can be used as visioning documents for articulating the role of agriculture in an area’s development.	San Jose’s recent general plan update includes specific goals for preserving farmland that remains within the city’s sphere of influence. ²⁷ Contra Costa County created its 12,000-acre county agricultural core through its general plan in the 1970s, and it remains in place today.	City or county planning commission or by public vote.	Low
Zoning: General	This existing, relatively inexpensive tool allows a jurisdiction to create and enforce land use restrictions. Land zoned for agricultural use can still be subject to approved variances for residential or commercial use.	Every county in the Bay Area has some type of agricultural zoning. Napa County has perhaps the strongest agricultural zoning protection. Because of a voter-approved ordinance passed in 1990 (Measure J), a two-thirds vote of the entire county is required to change the zoning on any agricultural land.	City or county planning commission or public vote.	Low
Zoning: Minimum Lot Size	This type of zoning restricts the number of residential units per acre (e.g., one dwelling per 20 acres).	Marin County’s A-60 zoning permits only one residential unit per 60 acres of land. This reduces the pressure for exurban real estate development on agricultural land.	City or county planning commission or by public vote.	Low

23 American Farmland Trust, Farmland Information Center Fact Sheet: Transfer of Development Rights, April 2008, available at farmlandinfo.org/documents/37001/TDR_04-2008.pdf; Sustaining Our Agricultural Bounty, 38; Cascade Land Conservancy, Transfer of Development Rights (TDR) in Washington State: Overview, Benefits, and Challenges, March 2008, available at www.forterra.org/files/resources/TDR_in_WA_State_1.pdf; and Seattle City Council, “Cities to Protect Rural Land Under TDR Program”, April 2012, council.seattle.gov/2012/04/10/cities-to-protect-rural-land-under-tdr-program/ (accessed December 2012).

24 California Department of Conservation, “Williamson Act Program,” available at www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx (accessed December 2012).

25 Robert Wassmer, “Using California’s Farmland Preservation Programs to Reduce Greenhouse Gas Emissions,” *Cornell Real Estate Review*, vol. 7, May 2009, pp. 32–33.

26 Greenbelt Alliance’s Greenbelt Mapper shows all the region’s urban growth boundaries: www.greenbelt.org/greenbelt-mapper

27 City of San Jose, San Jose Envision 2040 General Plan, chapter 6, pp. 33–35: <http://www.sanjoseca.gov/DocumentCenter/Home/View/474>

Figure 5 continued: Policy Tools for Agricultural Land Preservation

TOOL	EXPLANATION	EXAMPLE	IMPLEMENTORS / DECISION-MAKERS	INITIAL COST TO IMPLEMENT
Zoning: Subdivision Ordinance	A subdivision ordinance can be embedded in a general plan or zoning code to outline restrictions on dividing larger parcels into smaller ones. Policies can either stipulate design standards to prevent conflict with neighboring farmland or restrict subdivision altogether.	San Mateo County prevents subdivisions in its Planned Agricultural District, and Contra Costa County prevents land from being subdivided into parcels smaller than 40 acres in the county’s agricultural core.	City or county planning commission or by public vote.	Low
Building Moratorium	A building moratorium can be used to halt the development pressure on agricultural land.	In Napa County, residential building permits in unincorporated areas have been restricted since passage of Measure A in 1980. ²⁸	Most land use tools are amended by a city planning commission or by public vote.	Low
Agricultural Mitigation Fee	Developers who convert agricultural land into other uses are required to pay fees to a public or private land preservation organization. This revenue is then used to conserve agricultural land elsewhere in the jurisdiction.	Alameda County, the City of Brentwood and the City of Gilroy all have agricultural mitigation policies.	County and city government.	Low
Local Agency Formation Commission (LAFCO)	A LAFCO governs changes to city, district and public service boundaries. These commissions can play a key role in encouraging agricultural land preservation when a city proposes to annex new land.	In 2007, the Santa Clara County LAFCO adopted a policy outlining its expectation that any city seeking to annex additional land should institute agricultural mitigation policies before seeking approval for the annexation. ²⁹	County level LAFCOs	Low

28 Hillary Gitelman, Napa County Conservation, Development and Planning Department, “Memorandum re: Napa Pipe – Response to Request for Growth Management System Information,” March 9, 2012.

29 Santa Clara County Local Agency Formation Commission, “Agricultural Mitigation Policies,” April 2007, available at www.santaclarala.fc.co.gov/policies/FinalAgMitigationPolicies.pdf



Photo by Joel Pullatti, courtesy of the San Francisco Wholesale Produce Market.

Sustaining a Thriving Food Economy in the Bay Area

The Regional Food System's Economic Growth Potential

A thriving regional food economy includes growth in food jobs and increased trade between local producers, processors, distributors and retailers. Though the industries within the food system are not, with the notable exception of winemaking, principal drivers of economic growth in the region, they support a diversified economy and have the potential to expand in a way that benefits both rural and urban areas.

The food economy comprises numerous industries beyond the farms and ranches described in the previous section. Processors and manufacturers turn raw vegetables into cut-and-packaged salad mix, fresh fruit into jam, milk into cheese and cattle into beef. Distributors broker raw and processed food between producers and retailers. Restaurateurs, caterers and grocers sell food to the public. And waste haulers turn food waste into compost that they sell to farmers, thereby closing the food system loop.

Jobs in the Food System Today

In 2010, the food system provided 405,000 — or 12 percent — of the region's 3.2 million private sector jobs, which is more than the information, finance, insurance and constructions sectors combined.³⁰ Nearly 60 percent of these jobs are in restaurants — from fast food to fine dining — or other food service businesses such as caterers, coffee shops and bars (see Figure 6). Another 20 percent of these jobs are in food retail, primarily grocery stores but also bakeries, convenience stores and similar shops.

30 Food system employment data based on SPUR analysis of California Department of Employment's California Regional Economies Employment series data combined with U.S. Census nonemployer data. See Appendix 1 for a complete description of employment data sources and analysis. Employment data for other industries from Bay Area Council Economic Institute, *The Bay Area: A Regional Economic Assessment*, p. 9: www.bayareaeconomy.org/media/files/pdf/BAEconAssessment.pdf

Production, processing, distribution, waste and support services constitute the remaining 20 percent of all food sector jobs and 3 percent of all private sector jobs in the region. Food processing is the largest subsector, providing 40,000 jobs. The wine industry stands out prominently within this segment of the economy, providing 15,000 jobs, more than one out of every three food processing jobs in the Bay Area.

Looking across California, the distribution of jobs among sectors within the food system in the Bay Area is very similar to the jobs distribution within the Sacramento and Los Angeles areas.³¹ Restaurant and food service jobs, as well as food retail jobs, constitute nearly identical shares of the food system employment total in each metropolitan region. The Bay Area, reflecting its world-class wine industry, has a significantly larger share of winemaking jobs, while the Sacramento area, which overlaps with the agriculturally rich Central Valley, has the highest percentage of production jobs among the three regions.³²

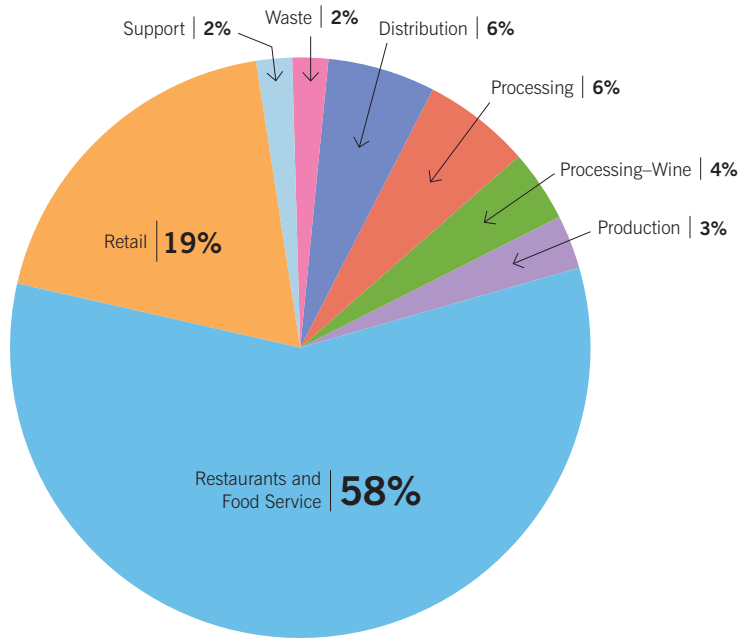
Looking at a more detailed county-by-county level within the Bay Area, food processing and distribution are most prevalent in Alameda County, while the production and winemaking sectors make up larger portions of Napa and Sonoma counties' food industry than elsewhere. The variations apparent at this level of analysis reveal a level of specialization that may point to unique job-growth opportunities within each county. For example, existing processing facilities and distribution warehouses in Alameda County may offer the potential for local business expansion or could serve as the foundation of an industry cluster in which numerous related businesses locate close to each other for mutual benefit.

31 For this analysis, the Sacramento region includes El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties. The Los Angeles region includes Los Angeles, Orange and Ventura counties. The complete data is available on page 41 in Appendix 1.

32 That the regions' food economies appear strikingly similar based on employment distribution could indicate that the Bay Area's regional food economy is unexceptional. But employment may not be the best single metric when judging the strength of a regional food system. Food industry revenue would be another valuable metric, but we were unable to obtain data with enough detail for our analysis. It may also be that any region in California, when analyzed at the scale of millions of people and hundreds of square miles, would show similar distributions. More research and data is needed to determine whether the Bay Area's regional food economy is as exceptional as its reputation.

Figure 6: Distribution of Food System Jobs by Sector

In total, the Bay Area food economy provided 405,000 jobs throughout the nine counties in 2010, or one of every eight private sector jobs. Within the food industry, the restaurant, food service and retail sectors provide nearly 80 percent of all Bay Area food system jobs. Within the processing sector, winemaking provides nearly half of all the employment.



Bay Area Food System Jobs by Sector 2010

Source: California Farmland Mapping and Monitoring Program.

Recent and Potential Growth in the Food Economy

Over time, food sector employment has been increasing at a faster rate than private employment generally. Between 1990 and 2010, food sector employment grew by 21 percent, from 320,000 jobs in 1990 to 390,000 in 2010, as illustrated in Figure 7. In contrast, during that same time, private sector employment as a whole only increased by 4 percent.³³ This employment growth, however, has not been evenly distributed among the food system sectors. In fact, while employment in the winemaking and waste sectors has increased by more than 80 percent, jobs in food production and processing have decreased since 1990, though these declines appear to have leveled off in the past five years. Restaurant and food service employment has seen robust growth of 38 percent in the past two decades.

While recent employment trends are one indication of job-growth potential, a number of other trends point to increasing demand for regionally produced food, which could spur further growth. For example, according to the U.S. Department of Agriculture, the number of farmers' markets nationally has been increasing since 1970 and has recently accelerated, rising from 1,750 markets in 1994 to 7,864 markets in 2012.³⁴ Direct-to-consumer sales of locally grown food has also been growing, from \$550 million in 1997 to \$1.2 billion in 2007. Additionally, the number of school districts operating local "farm-to-school" procurement programs across the country saw a 500 percent increase in recent years, going from 400 districts in 2004 to 2,100 districts in 2009.³⁵

33 This analysis of employment trends over time does not include data for "nonemployers" — such as farmers, many small business owners and other self-employed workers — resulting in a slightly different total than in the earlier section.

34 USDA Agricultural Marketing Service, "Farmers Market Growth: 1994–2012," available at www.ams.usda.gov (accessed April 2013).

35 Steve Martinez et. al. Local Food Systems: Concepts, Impacts, and Issues, Economic Research Report Number 97, U.S. Department of Agriculture, Economic Research Service, May 2010, pp. 5–6 and 14–15.

The National Restaurant Association's annual survey of chefs also reveals a strong consumer preference for local products on restaurant menus. The majority of chefs surveyed in casual and fine dining restaurants in a 2011 survey said they had seen customer interest in locally sourced menu items increase in the preceding two years; they also reported that locally sourced meats, seafood and produce were the top trends in their restaurants.³⁶ One large bank that lends to many farms in California concluded recently that demand for local food was likely to increase at least through 2018 and that this trend reflected a permanent shift in consumer preference.³⁷ Though exact projections of the Bay Area's growth potential are not available, this increasing demand for locally produced food is likely to lead to increased revenue and employment in the region's food economy.

It is important to note that economic development includes not only the quantity of jobs, but also their quality. Most food economy jobs — especially those in the production and food service sectors — offer low to modest wages.³⁸ Moreover, studies indicate that 12 percent of restaurant workers and between 25 and 50 percent of farm workers are undocumented immigrants. According to the Food Chain Workers Alliance, "undocumented workers surveyed reported a median actual hourly wage of \$7.60, compared to all other workers' reported median hourly wage of \$10," indicating a wage gap based on immigration status.³⁹ While an increase in the quantity of jobs — the focus of this report — would help the Bay Area economy, we acknowledge that the region's residents would also benefit through an improvement in the quality of jobs in the food sector.

36 National Restaurant Association, "2012 Restaurant Industry Forecast," 2012, available at <http://www.pma.com/system/files/2012%20Restaurant%20Industry%20Forecast%20FINAL.pdf>.

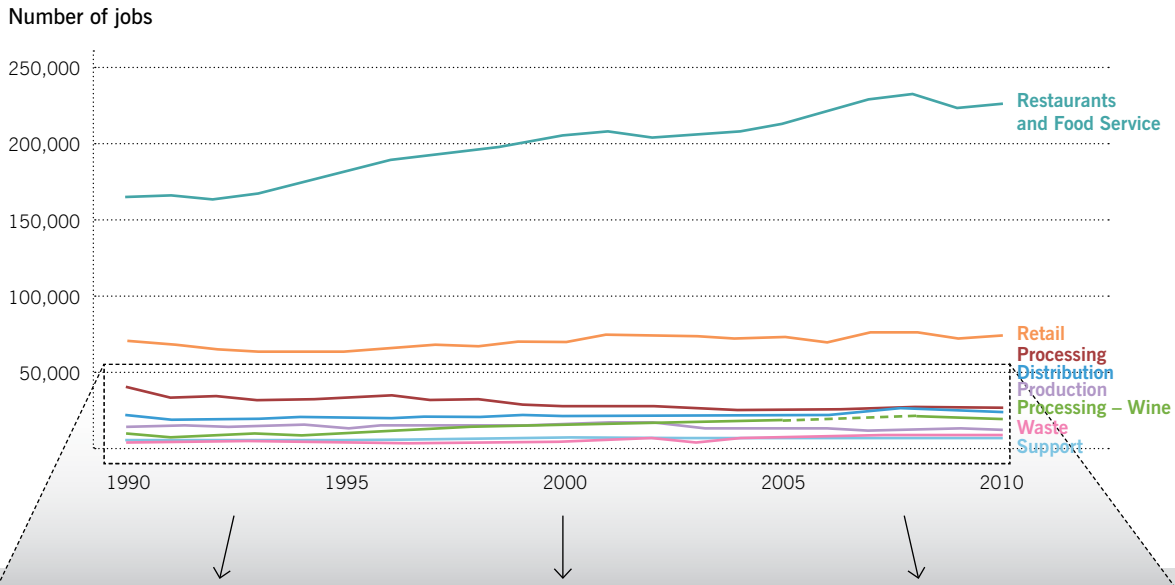
37 Rabobank, "Local Food Movement Gains Momentum, Increases Competition for Established Producers," Press Release, February 14, 2013, available at <http://finance.yahoo.com/news/local-food-movement-gains-momentum-170000859.html>

38 Collaborative Economics, *The Food Chain Cluster: Integrating the Food Chain in Solano and Yolo Counties to Create Economic Opportunity and Jobs*, May 2011, p. 13; Food Chain Workers Alliance, *The Hands that Feed Us: Challenges and Opportunities for Workers Along the Food Chain*, June 2012, pp. 16–20.

39 Food Chain Workers Alliance, *The Hands that Feed Us: Challenges and Opportunities for Workers Along the Food Chain*, June 2012, pp. 21, 34 and 43.

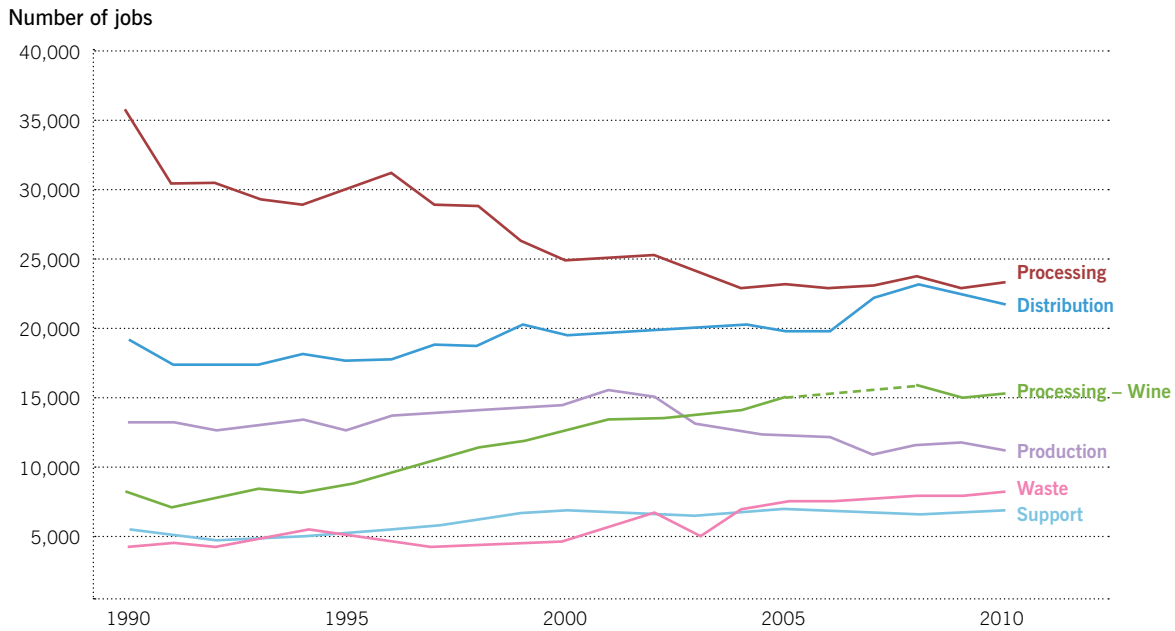
Figure 7: Food System Jobs Have Increased in Recent Years

Total food system employment in the Bay Area has grown 21 percent since 1990.



Source: California Regional Economies Employment Series, California Employment Development Department (1990-2010).

To provide a finer level of detail, the bottom chart excludes the restaurant, food service and retail sectors. General food processing and production employment declined through 2005, and have since leveled off, while winemaking, distribution, waste and support employment grew from their 1990 levels.



Bay Area Food Employment by Sector, 1990-2010

Source: California Regional Economies Employment Series, California Employment Development Department (1990-2010). The dotted line in the Processing - Wine sector represents SPUR's estimate of the employment level in that sector during two years for which data from certain counties is unavailable.

The Economic Benefits of Sourcing Locally

In addition to providing jobs, a stronger regional food system emphasizes local buying and selling, rather than solely relying on imports and exports. When companies and consumers direct more of their dollars toward locally produced goods and services and less toward counterparts from farther away — a practice known as import substitution — they reduce the amount of money that leaks out of the Bay Area economy. As a result, more of the region's wealth continues circulating locally, which produces the “local multiplier” effect. For example, assuming all other factors are equal, a Bay Area tomato sauce manufacturer will bring greater benefit to the region if it sources its tomatoes from Solano County rather than Mexico because the local tomato producer will spend a portion of what it receives locally (on wages, fertilizer and fuel, for example).

Numerous studies have documented the benefit of the local multiplier effect. An analysis of local retail in San Francisco — building upon earlier studies in Austin, Texas, and Chicago, Illinois — found that locally owned restaurants had a 27 to 30 percent greater positive economic impact on the local economy than a chain-owned restaurant, because more of the revenue and profit earned by the independent restaurants stayed local.⁴⁰ Similarly, a study conducted by the Union of Concerned Scientists concluded that farmers' markets have a proportionally greater positive impact on local revenue and jobs than traditional grocery stores, even when accounting for a decrease in grocery sales resulting from the growth of the farmers' markets.⁴¹ And when businesses throughout the food system — ranging from producers to processors to retailers — prioritize local sourcing, the impact is even more pronounced. A study of the local food economy in Seattle found that spending at businesses that focus on sourcing locally generated a greater multiplier effect than spending at those businesses that did not prioritize local sourcing. In the most pronounced example, grocery stores and restaurants with a commitment to local purchasing had local multipliers twice as high as their conventional counterparts.⁴² All of these studies indicate that strengthening our regional food economy by emphasizing local ownership and purchasing decisions provides economic benefits that are often lost when we import our food from farther away.

40 Civic Economics, *The San Francisco Retail Diversity Study*, 2007, pp. 2 and 20.

41 Jeffrey O'Hara, *Market Forces: Creating Jobs Through Public Investments in Local and Regional Food Systems*, Union of Concerned Scientists, 2011, p. 18.

42 Viki Sonntag, “Why Local Linkages Matter: Findings from the Local Food Economy Study,” *Sustainable Seattle*, 2008, pp. 18–19.

One possible way to expand the benefits of the local multiplier effect is by making it easier for consumers to use food assistance programs, especially food stamps, to purchase local products. In the nine-county Bay Area, 430,000 residents — or 6 percent of the region's residents — currently participate in the Supplemental Nutrition Assistance Program (SNAP), the federal food stamp program known in California as CalFresh, which is just one of the federal food assistance programs. Program participants receive an average of \$332 per month, which collectively totals more than \$72 million in collective buying power.⁴³ If more of these dollars could be used to purchase food from local producers — through farmers' markets or other retail avenues — it could help expand the customer base for regionally grown products.

There are important limits to keep in mind with regard to the local multiplier effect, however. Consider the example of a farm-to-school procurement program. If we take the idea to its extreme, the local multiplier effect suggests that a school district could best support the economic well-being of its families by sourcing all of its ingredients from the region. However, if the district has to pay twice as much for local ingredients as it would for the equivalent from farther away, the district either receives half as much food or the bill is twice as high. For a school district grappling with a tight budget, those same dollars could be used to improve the school meals program in other ways and the local procurement choice could be hard to defend. But if there is no price premium, or only a small premium, then the benefit to the local economy could very well justify a local preference. Determining what premium is justified is a policy choice for local governments. It is also a topic that deserves its own in-depth research.

In short, the Bay Area's food economy contributes to the diversity of the region's overall economy and provides 12 percent of all private sector jobs. In the past 20 years, employment has climbed steadily in restaurants and winemaking, stopped its decline in processing and increased recently in the distribution sector, indicating that there may be greater growth potential in those areas. Meanwhile, the rising popularity of regionally grown and processed food could lead to modest growth in the production sector as well. Rather than emphasizing food industry growth based on export, the region would also benefit from an emphasis on nurturing food industries that prioritize local sourcing and spending. The region's food economy has room to grow, especially if we are successful in preserving what remains of our agricultural land.

43 Tia Shimada, *Lost Dollars, Empty Plates*, California Food Policy Advocates, 2013, pp. 9–10, available at <http://cfpa.net/CalFresh/CFPAPublications/LDEP-FullReport-2013.pdf>. California Department of Social Services, “DFA 256 - Food Stamp Program Participation and Benefit Issuance Report”, January 2013: <http://www.dss.cahwnet.gov/research/PG352.htm>



Produce at the Alemany Farmers' Market in San Francisco. While all certified farmers' markets in San Francisco are required to accept food stamps, this is not true throughout the region, which limits some customers' access to fresh, local food.

Food Security and Access: Part of a Stronger Food System

While we seek to strengthen the food system across the Bay Area, we must also work to make sure its benefits are enjoyed equitably by people of all incomes. Currently, that's not the case. According to Feeding America's "Map the Meal Gap" project in 2010, more than 1 million residents — or one in every seven people — across Bay Area counties met the U.S. Department of Agriculture's definition of "food insecure," meaning that either the quality, variety and desirability of their meals were low or that they did not consistently have access to three meals a day.⁴⁴ Increasing levels of food insecurity in the Bay Area, and the United States as a whole, reflect a rise in poverty that cannot be solved by looking at the food system in isolation from the larger economy. Beyond meeting basic needs, food access also impacts quality of life — for example, when residents have to travel long distances to purchase healthy food. And, the growing public health concern over diet-related diseases also touches on food access — to both healthy and unhealthy food.

44 Feeding America, "Map the Meal Gap, Food Insecurity in Your County," available at <http://feedingamerica.org/hunger-in-america/hunger-studies/map-the-meal-gap.aspx> (accessed December 2012). USDA definition of food insecurity: USDA Economic Research Service, "Definitions of Food Security," available at www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx (accessed December 2012). See also M. Pia Chaparro et al., "Nearly Four Million Californians Are Food Insecure," UCLA Center for Health Policy Research, 2012, available at <http://cfpa.net/foodinsecurity2012>

Numerous policy initiatives in recent years have sought to address issues of food access and affordability, such as the California FreshWorks Fund, the Healthy Corner Store Network, the California Farmers' Market Consortium's Market Match program and numerous local campaigns to reform school meal programs. Some efforts focus on increasing the supply and availability of food, such as attracting food retailers to "food deserts" (i.e., neighborhoods without fresh food markets), improving the quality of food available at corner stores or expanding free and reduced-price breakfasts at schools. Others have focused on increasing demand, such as nutrition education programs or subsidies to consumers to help them purchase fresh food. While studies have shown that proximity to fresh food is strongly correlated with levels of fresh food consumption — and with lower incidences of obesity, diabetes and other diet-related diseases — others have indicated that increasing access alone may not lead to a reduction in food insecurity or to an improvement in public health.⁴⁵ Researchers, policymakers and food system advocates should continue to pilot and evaluate various policy initiatives, and combinations of those initiatives, to better target their efforts to improve food security and food access.

45 On the correlations between food access and diet-related disease, see Policy Link, *Grocery Gap: Who Has Access to Healthy Food and Why it Matters*, 2010, pp. 13–19, available at www.policylink.org/site/c.lkXlBmNjRE/b.5860321/k.A5BD/The_Grocery_Gap.htm. For articles examining the impact of increased food access, see Sarah Kliff, "Will Philadelphia's Experiment in Eradicating 'Food Deserts' Work?," *Washington Post*, June 8, 2012, available at www.washingtonpost.com/blogs/wonkblog/post/will-philadelphias-experiment-in-eradicating-food-deserts-work/2012/06/08/gJQAU9snNV_blog.html; Gina Kolata, "Studies Question the Pairing of Food Deserts and Obesity," *New York Times*, April 17, 2012, available at www.nytimes.com/2012/04/18/health/research/pairing-of-food-deserts-and-obesity-challenged-in-studies.html

SPUR's Recommendations to Sustain a Thriving Food Economy in the Bay Area

A stronger regional food system is one with thriving businesses in each sector, from production through waste. These businesses, especially those that emphasize local spending, support a diversified Bay Area economy. The region's cities can play an especially prominent role in this area by promoting policies that support job and business growth for processors, distributors and retailers — and that, by extension, also benefit rural producers.

3. Evaluate food system infrastructure and develop strategic plans that promote forming, retaining and expanding businesses that provide food processing, manufacturing and distribution.

WHO: *City and county economic development agencies in partnership with food industry trade groups* ⁴⁶

As described earlier, the number of food manufacturing and agriculture production jobs has steadily declined in the Bay Area over the past few decades. Yet, in recent years, studies looking at San Francisco, the North Bay and elsewhere indicate growth potential in this segment of the economy.⁴⁷ This sector relies on industrial infrastructure, including warehouses, manufacturing space and access to major highways. Many Bay Area cities have supported food-related industry at some point in their history, and many still have some of the infrastructure from that time. Economic development agencies in cities and counties, in partnership with food industry trade groups, should assess existing food industry infrastructure, the needs of food businesses and potential market opportunities, such as increased demand for certain types of products for which processing facilities already exist. The agencies should then set targets and timelines to take advantage of those opportunities. Subsequent strategies could include technical assistance, streamlined permitting, recognition

46 We recognize that economic development agencies can be at the city or county level and can be housed within a public agency or a within a public-private partnership. Our use of the term “economic development agency” in this recommendation encompasses organizations that work with government agencies and businesses to develop and implement economic at a local level.

47 SF Made, State of Local Manufacturing Report: 2012, available at www.sfmade.org/news/the-annual-state-of-local-manufacturing-12; Robert Eyster, Food Manufacturing in the North Bay: Economic Connections and Impacts, Economic Forensics and Analytics, November 2012, available at <http://econforensics.com/wp-content/uploads/2010/12/Report-for-Warren-Capital-Final.pdf>. Studies from outside the Bay Area looking at the potential of food industry sector potential include: New York City Economic Development Corporation, Hunts Point Peninsula, available at www.nycedc.com/project/hunts-point-peninsula (accessed December 2012); Jesse Ajayi et. al., 2010 Toronto Food Sector Update, City of Toronto, December 2010, available at www1.toronto.ca/static_files/economic_development_and_culture/docs/Sectors_Reports/2010_Toronto_Food_Sector.pdf

programs and tax incentives. To increase the benefits to the region's economy and greenbelt, these strategies should give added emphasis to processors, manufacturers and distributors who source their products from within the region and who source products grown organically or with other environmentally friendly production methods.

4. Establish a regional agribusiness economic development entity to support the region's food industry. In addition to assisting with financing food businesses, this entity could:

- Organize formal “trade missions” between urban food manufacturers and rural producers to encourage regional business exchange
- Expand existing agritourism and culinary tourism initiatives

WHO: *County boards of supervisors*

The idea for this type of organization was originally proposed and is currently being studied by the American Farmland Trust and the Greenbelt Alliance. This new entity would provide financing support and technical assistance to producers and processors in both rural and urban areas to increase the competitiveness and viability of regional food producers.⁴⁸

The idea of “trade missions” between rural producers and urban manufacturers was originally proposed in recommendations made by the San Francisco Urban-Rural Roundtable in 2009. Economic development and agricultural staff in both cities and rural areas, working under the guidance of a regional organization, can help facilitate introductions and convene gatherings that foster exchanges of information regarding demand for products, supply possibilities and current barriers to greater volumes of business exchange within the region.⁴⁹

Many segments of the food industry can benefit from tourism, in addition to sales of their food products. For example, a 2012 study estimated that wine-related tourism in Napa County generated more

48 American Farmland Trust, “Bay Area Agricultural Sustainability Initiative Enters New Phase,” available at www.farmland.org/programs/states/ca/New-Phase-for-Bay-Area-Agricultural-Study.asp (accessed December 2012).

49 Roots of Change, “The Final Recommendations of the San Francisco Urban-Rural Roundtable,” May 2009, pp. 17–18, available at <http://rootsofchange.org/content/activities-2/san-francisco-urban-rural-roundtable>. The Great Valley Center, Brentwood Agricultural Land Trust, Community Alliance with Family Farms, Marin Organic, and FarmsReach explored organizing trade missions between San Francisco buyers and producers in the greater Bay Area and Central Valley, but the initiative never launched.

50 Stonebridge Research Group, The Economic Impact of Napa County's Wine and Grapes, November 2012, available at www.napavintners.com/downloads/napa_economic_impact_2012.pdf

than \$1 billion in revenue for local businesses.⁵⁰ Marin and Sonoma counties' recently developed "cheese trail" and San Francisco and Oakland's promotion of culinary tours also illustrate how to promote food-related tourism.⁵¹ The regional agribusiness economic development entity described above, working with local economic development agencies, tourism promotion associations and local businesses, should work to expand existing agritourism and culinary tourism initiatives. In some cases, planning departments may need to reform existing zoning regulations to allow for increased commercial activity connected to agritourism.⁵²

If the pilot phase of the entity shows success in preserving land and growing the region's food industry, all nine counties in the Bay Area should consider long-term revenue measures to support this entity. Possible sources of revenue include a general sales tax, a sales tax specific to food retail transactions, an excise tax on sugar-sweetened beverages or an increase of the excise tax on pesticides.

5. Give preference to locally grown food in public procurement contracts.

WHO: *Public procurement offices within agencies such as school districts, health departments and correctional facilities*

Public agencies can support the economic strength of the regional food system by providing demand for local products. While some public funding restricts geographic preferences in the bidding process, in other cases government agencies can specify a preference.⁵³ Public schools, universities, hospitals, prisons and other institutions that serve food should implement a procurement preference for local food to the extent possible by law and budget.⁵⁴

A number of local procurement efforts have been launched in the Bay Area. Oakland Unified School District, for example, recently set a goal to procure 25 percent of its produce locally, with an additional 25 percent from elsewhere in California.⁵⁵

⁵³ For a legal guide to local preferences within procurement contracts see Changelab Solutions, *Local Food for Local Government: Considerations in Giving Preference to Locally Grown Food*, 2012, available at <http://changelabsolutions.org/publications/local-food-local-government>

⁵⁴ A study of the implications of increasing local procurement throughout California school districts, following a similar study in Oregon, found that impact on revenue to state food sector businesses, through the local multiplier effect, could benefit the state tremendously depending on the size of the shift in procurement. See Wendy Weiden, "Local Lunches, Local Livelihoods: Feeding Students, Farmers, and Economies through California's School Meals Program," Master's Thesis, Presidio Graduate School, May 2012.

⁵⁵ Center for Ecoliteracy, *Oakland Unified School District Feasibility Study*, December 2011, p. 4, available at www.ecoliteracy.org/downloads/rethinking-school-lunch-oakland-feasibility-study

6. Ensure that all farmers' markets and fresh food retailers can accept electronic benefits for food assistance programs.

WHO: *County social services agencies*

While many farmers' markets in the Bay Area accept electronic benefits, including all of those in San Francisco, not all are equipped to do so. County agencies that administer these programs — the Supplemental Nutrition Assistance Program (known as SNAP nationally and CalFresh in California), Special Supplemental Nutrition Program for Women, Infants and Children (WIC), and Senior Farmers' Market Nutrition programs — should work with farmers' market managers to make it possible for customers to use their benefits while shopping at the markets. Federal food assistance program dollars used at farmers' markets provide an economic boost to the farmers and offer low-income customers better access to fresh food. In most cases, the California Department of Social Services will provide the necessary point-of-sale technology to markets for free. The Ecology Center of Berkeley, supported by the California Department of Food and Agriculture, is currently working on an initiative to expand the use of food assistance benefits at farmers' markets across the state.⁵⁶

One promising innovation that could boost the acceptance of food assistance benefits at farmers' markets is a "matching dollar" incentive. In these types of programs, for every food assistance program dollar a customer spends, he or she receives additional money to spend at the market; in some projects, this is as much as a dollar-for-dollar match. Numerous groups, including some in California, have piloted these incentive programs, and initial research indicates that, as a result of the incentive, participants in food assistance programs are buying more fresh food at farmers' markets, to the benefit of both the customers and the farmers.⁵⁷ With a long-term commitment of public dollars, such programs could expand throughout the region.

Similarly, it's important to make sure that electronic benefits can be used at traditional food retailers that offer fresh food. County social services agencies should work with farmers' markets and retailers to ensure that federal food assistance program benefits are accepted as widely as possible.

⁵⁶ Ecology Center of Berkeley, "Farmers' Market EBT Project," available at www.ecologycenter.org/ebt (accessed December 2012).

⁵⁷ Community Science Evaluation Group, *Healthy Food Incentives Cluster Evaluation: 2011 Final Report*, available at www.healthyfoodincentives.org

Other Benefits of a Regional Food System



Stephen Joseph, courtesy of Santa Clara County Open Space Authority



Eliz Zigas



Flickr user wallgraham



Flickr user wallgraham



Eliz Zigas



Flickr user melaniehwang



Flickr user thebousie



Sergio Ruiz

Not all the benefits provided by a regional food system can be measured quantitatively. The educational value of farms, ranches, food processors and even compost facilities operating in close proximity to urban areas is intangible yet invaluable: They help us know and understand ecological cycles, the sources of our food, the taste of fresh food, and the scale of land and resources required to feed ourselves. Similarly, the food system is an integral part of not only the Bay Area's economy but also its heritage, cultural history and landscape. If the Bay Area loses this part of its economy, it loses part of its identity as a food-producing region. Though these values are impossible to quantify, they are important benefits of a stronger regional food system that should be included in the policy discussion.



Larry Strong, courtesy of fecology



Aya Brachett



Eli Zigas



Eli Zigas



Eli Zigas



Brentwood Agricultural Land Trust



Sergio Ruiz



Eli Zigas



Flickr user: trodmanjr



Noah Christman



Larry Strong, courtesy of Recology

Reducing the Regional Food System's Environmental Impacts

Food Waste and Greenhouse Gas Emissions

A stronger regional food system offers not only the benefits of preserved agricultural land and economic development, but also the potential for greater reduction of greenhouse gas emissions through food waste diversion. When food waste decomposes in a landfill, it releases methane, a greenhouse gas 21 times more potent than carbon dioxide. When food waste is composted, which is a different chemical process, it releases substantially fewer greenhouse gases.⁵⁸ This compost can then be used as a soil amendment that improves agricultural soils.

Numerous Bay Area cities currently have food waste diversion programs. San Francisco, for example, has led the nation with its municipal composting program and diverts 300 tons of food waste daily to composting facilities in Vacaville, Modesto and Gilroy.⁵⁹ Food waste discarded in Berkeley is composted at a facility in Vernalis, in San Joaquin County.⁶⁰ The East Bay Municipal Utilities District, meanwhile, has a food waste digestion operation that generates electricity while processing food waste from nearby businesses in Alameda County. San Jose and the Central Marin Sanitation Agency are scheduled to begin using this model of food waste processing, called anaerobic digestion, in 2013.

While Bay Area municipalities are pioneers in food waste diversion, there is still much more to be done. SPUR estimates that the Bay Area sends more than 970,000 tons of food waste to landfills each year. If all this food waste were sent to compost facilities instead, carbon-dioxide-equivalent emissions would fall by at least 863,000 metric tons — the same impact as taking 163,000 cars off the road for a year or reducing emissions at the region’s waste management facilities by 44 percent.⁶¹

A regional food system that utilizes composting and other food waste diversion methods, as the Bay Area has begun to do, helps reduce the region’s carbon footprint and closes the resource loop by turning food waste into compost that supports food production.

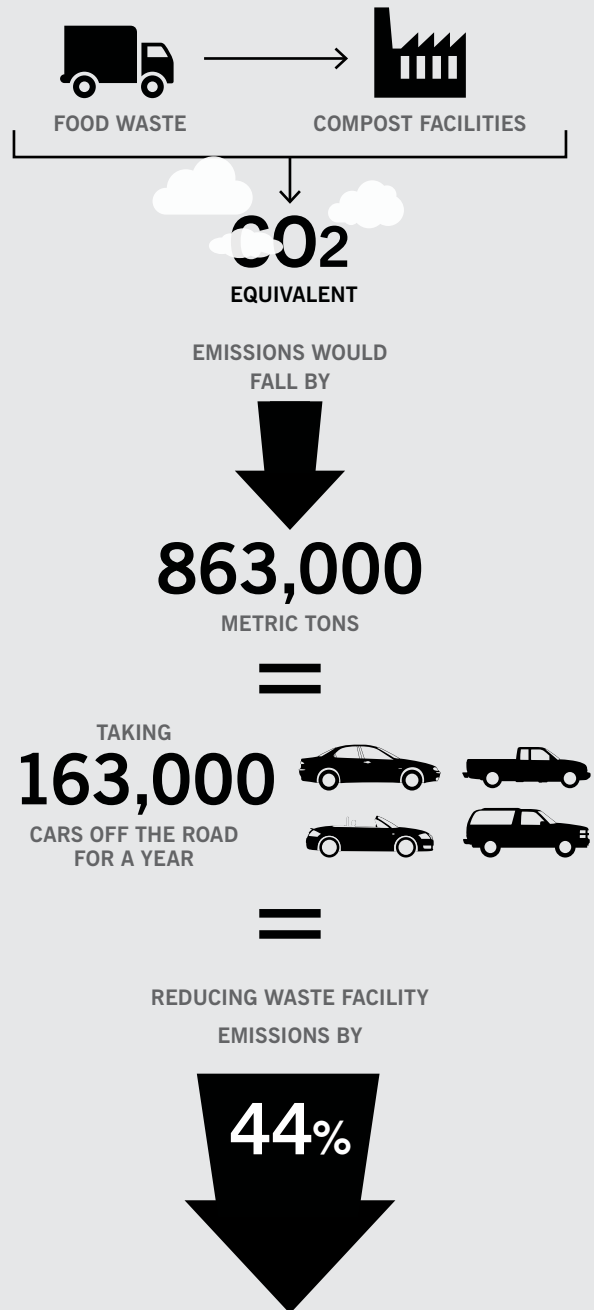
58 U.S. Environmental Protection Agency Region 10, *Reducing Greenhouse Gas Emissions Through Recycling and Composting*, May 2011, available at www.epa.gov/region10/pdf/climate/wccmmf/Reducing_GHGs_through_Recycling_and_Composting.pdf

59 Interview with Robert Reed, public relations manager, Recology, April 2013. See also Dan Sullivan, “Food Waste Critical to San Francisco’s High Diversion,” *BioCycle*, September 2011, available at www.biocycle.net/2011/09/web-extra-food-waste-critical-to-san-franciscos-high-diversion

60 Amy Kiser, “Compost Confidential,” *Terrain Magazine*, Spring 2010: <http://ecologycenter.org/terrain/issues/spring-2010/compost-confidential/>

61 For waste and emission equivalency calculations, see Appendix 3. Regional waste management facilities emissions from Bay Area Air Quality Management District, “Source Inventory of Bay Area Greenhouse Gas Emissions,” December 2008, p. 19.

SPUR estimates that the Bay Area sends more than 970,000 tons of food waste to landfills each year. If all this food waste were sent to compost facilities instead, carbon-dioxide-equivalent emissions would fall by at least 863,000 metric tons — the same impact as taking 163,000 cars off the road for a year or reducing emissions at the region’s waste management facilities by 44 percent.



The Benefits of Organic and Sustainable Practices

There is no data showing that local food is inherently better in terms of water use, water contamination, soil erosion, pesticide use or promotion of biodiversity and habitat. Nor does local food necessarily have a smaller carbon footprint (see “Does Locally Produced Food Really Have a Smaller Carbon Footprint?”). But data does support the environmental benefit of certified organic and sustainable farming methods. A survey of the literature on diversified farming systems — as opposed to industrial farms with single crops — showed that these agricultural practices consistently provide better soil management, carbon sequestration potential, weed control and biodiversity, as well as more efficient energy use.⁶² A National Academies of Science study similarly found that expanding sustainable agricultural practices would improve water quality and air quality, reduce habitat loss and contribute to maintaining genetic diversity in the food supply.⁶³

Does Locally Produced Food Really Have a Smaller Carbon Footprint?

Local food systems are often credited with reducing carbon emissions by reducing the distance — or “food miles” — that products travel from farm to fork. Intuitively, this makes sense. If all factors of production and distribution were the same, an apple from Sonoma County, for instance, would have a lower carbon footprint than an apple from Washington State or New Zealand because of its proximity to the Bay Area. Empirically, however, there is insufficient data to support a consistent correlation between the full carbon footprint of food and how many miles it travels to get to the consumer’s table. This is because the factors of production — such as fertilizer application and soil management — are not always equal. And, importantly, production accounts for more than 80 percent of the carbon footprint of the average food item, while the transportation involved in the final delivery of the food to retail consumers ranges from 1 to 11 percent depending on the type of food and mode of transportation.⁶⁴ In other words, how food is produced has a much greater influence on its carbon footprint than where it is produced. A U.S. Department of Agriculture study similarly concluded that food miles are not a valid proxy for food’s overall carbon footprint.⁶⁵

62 Claire Kremen and Albie Miles, “Ecosystem Services in Biologically Diversified Versus Conventional Farming Systems: Benefits, Externalities, and Trade-offs,” *Ecology and Society*, vol. 17, no. 4 (2012), p. 40, available at www.ecologyandsociety.org/vol17/iss4/art40/

SPUR’s Recommendations to Reduce the Environmental Impacts of the Regional Food System

As highlighted in SPUR’s 2009 report *Critical Cooling*, diverting food waste from landfills can significantly reduce greenhouse gas emissions and close the loop of the food system by generating compost that supports crop production.⁶⁶ Expanding food waste diversion efforts is a clear way that the region’s cities and counties can reduce the environmental impact of the food system.

Another way is by encouraging better environmental practices on farms and ranches. While many Bay Area farmers and ranchers are leaders in sustainable agriculture methods, there are many places in which agriculture could lessen its impact on the environment — by improving soil retention, making efficient use of water, protecting water quality, preserving wildlife habitat and other metrics.

7. Develop and expand the diversion of food waste from landfills through composting and similar efforts.

WHO: *County and city waste management authorities*

Even though many Bay Area municipalities offer food waste hauling, the rate of food waste composting could be much higher. For example, in Alameda County, where several jurisdictions have mandatory recycling ordinances that include food scraps, food still makes up 35 percent of residential garbage.⁶⁷

63 Committee on Twenty-First Century Systems Agriculture, National Research Council of the National Academies, *Toward Sustainable Agricultural Systems in the 21st Century*, 2010, pp. 519–533, available at www.nap.edu/catalog.php?record_id=12832

64 Christopher L. Weber and H. Scott Matthews, “Food Miles and the Relative Climate Impacts of Food Choices in the United States,” *Environmental Science and Technology*, vol. 42, no. 10 (2008), pp. 3508–3513. See also Sarah DeWeerd, “Is Local Food Better?,” *World Watch Magazine*, May/June 2009, available at www.worldwatch.org/node/6064; Tara Garnett, “Where Are the Best Opportunities for Reducing Greenhouse Gas Emissions in the Food System (Including the Food Chain)?,” *Food Policy*, vol. 36, 2011, pp. S23–S32.

65 Steve Martinez et. al. *Local Food Systems: Concepts, Impacts, and Issues*, Economic Research Report Number 97, U.S. Department of Agriculture, Economic Research Service, May 2010, pp. 48–49.

66 SPUR, *Critical Cooling*, May 2009, available at www.spur.org/publications/library/report/critical_cooling

67 Alameda County Waste Management Authority, “Food Scrap Recycling,” available at www.stopwaste.org/home/index.asp?page=528 (accessed December 2012).



Photo by Larry Strong, courtesy of Recology

Located near Vacaville in Solano County, Jepson Prairie Organics is a large-scale composting facility owned by Recology, which provides waste management for San Francisco. The facility converts food and yard waste into high-quality compost that is sold to nearby farms.

In areas that already have composting programs, the main challenge involves generating greater participation by residents. At the local level, cities can increase diversion through voluntary or mandatory programs. The most basic voluntary program is an education and marketing campaign. Beyond that, another way to increase food waste diversion is by creating incentives in the waste rate structure. In 2006, San Francisco imposed a new rate structure for commercial accounts to encourage diversion. Previous to July 2006, commercial customers paid for a garbage bin and received compost and recycling bins free of charge, but after that date commercial customers paid for all three bins but received a discount of up to 75 percent based on their diversion rate.⁶⁸ For large businesses paying thousands of dollars per year for trash service, the cost savings from diversion under this rate structure can be significant.

Mandatory policies, on the other hand, require individuals and businesses to separate their waste. San Francisco, for example, took its efforts further and passed an ordinance in 2009 requiring waste to be separated into containers for recycling, composting and landfill, while Vermont passed an outright ban on dumping recyclables and organics in its landfills by 2020.⁶⁹

68 Recology, "Commercial Rates," available at www.sunsetscavenger.com/commercialRates.htm (accessed April 2013).

8. Promote organic agriculture as well as other environmentally friendly agricultural practices.

WHO: *USDA Natural Resource Conservation Service, resource conservation districts, UC Cooperative Extension and county agricultural commissioners*

Farmers and ranchers can be conservation stewards. As mentioned earlier, there is clear evidence that organic and diversified agriculture generally has a better environmental footprint than conventional agriculture in terms of soil quality, water-use efficiency, biodiversity, carbon sequestration, energy use and resilience during droughts.⁷⁰ While attaining official organic certification can be expensive for farmers, it is one of the few clear standards of agricultural practice that's verified by an outside party. With or without undergoing

69 San Francisco Mandatory Recycling and Composting Ordinance, Ordinance No. 100-09 (2009), available at www.sfenvironment.org/sites/default/files/policy/sfe_zw_sf_mandatory_recycling_composting_ord_100-09.pdf. For a more in-depth history of SF's zero waste initiatives, see Laura Tam, "Toward Zero Waste," *The Urbanist*, February 2010, available at www.spur.org/publications/library/article/toward_zero_waste. For Vermont, see Jeremy Carroll, "Vermont Governor Signs Bill Banning Recyclables in Landfills," *Waste and Recycling News*, June 8, 2012, available at www.wasterecyclingnews.com/article/20120608/NEWS02/120609927/vermontgovernor-signs-bill-banning-recyclables-in-landfills (accessed December 2012).

70 See note 62.

organic certification, though, many farms could improve their environmental impact. Numerous groups in California — such as the Agricultural Sustainability Institute at UC Davis, the Ecological Farming Association and Wild Farm Alliance — are pioneering and promoting more ecologically friendly agriculture. At the regional level, recent efforts in Santa Clara County have explicitly connected the conservation of wildlife habitat with agricultural preservation efforts.⁷¹ The USDA Natural Resources Conservation Service, resource conservation districts, county agricultural commissioners and UC Extension should continue and expand their technical assistance efforts to encourage more farms to adopt sustainable agriculture methods, while also working on marketing efforts to increase consumer demand for sustainably grown food.

Eating Food, Not Wasting It

One proven strategy to reduce the volume of food waste is to divert wholesome, edible food out of the waste stream altogether so that it can be eaten. Village Harvest, a gleaning organization based in San Jose, collects thousands of pounds of fruit from local fruit trees and donates it to food pantries. At an institutional scale, the San Francisco and Marin food banks partner with the San Francisco Wholesale Produce Market to utilize unsold produce from local wholesalers.⁷² On the retail side, voluntary organizations such as San Francisco Food Runners rescue leftover food from restaurants, grocers, dining halls and cafeterias and deliver it to nearby food banks, food pantries or soup kitchens.

Despite these efforts, there is still enormous potential to reduce food waste further. The Natural Resources Defense Council reports that only 10 percent of potentially edible wasted food nationwide is salvaged along the food supply chain.⁷³



Courtesy of San Francisco and Marin Food Banks

San Francisco and Marin Food Banks driver KC Yick picks up a delivery of strawberries from the Wholesale Produce Market. The Food Bank provides food to 230 food pantries in San Francisco and Marin counties.

9. Provide guidance and technical assistance to farmers and ranchers on techniques for reducing their on-farm greenhouse gas emissions, sequestering carbon and adapting to climate change. Help farmers and ranchers learn how to tap into revenue from California's cap-and-trade system.

WHO: *USDA Natural Resources Conservation Service, resource conservation districts, UC Extension and county agricultural commissioners*

Recently passed state legislation outlines an investment plan for the public revenue generated from cap-and-trade auctions. Sustainable agriculture is one of the eligible investment categories, as advocated by the California Climate and Agriculture Network and others, and may allow farmers and ranchers to receive payments for agricultural practices that reduce greenhouse gas emissions or sequester carbon in the soil.⁷⁴ Once the legislature makes allocations, then UC Extension, the USDA Natural Resources Conservation Service and county agricultural commissioners should assist farmers and ranchers in scaling up practices that are eligible for these and similar types of “eco-system service” payments to maximize both their environmental and financial benefit. In addition, the cap-and-trade program creates a private market for trading carbon credits. Once the state approves protocols guiding eligibility, farmers and ranchers may choose to voluntarily reduce their greenhouse gas emissions using specified practices and sell carbon credits to regulated entities under the program. Producers will need guidance on participating.

71 Sustainable Agriculture Education, Coyote Valley — Sustaining Agriculture and Conservation: Feasibility Study and Recommendations, November 2012, available at <http://scc.ca.gov/overview-the-san-francisco-bay-area/coyote-valley>; County of Santa Clara et. al., Final Santa Clara Valley Habitat Plan, August 2012, pp. 5–37, available at http://scv-habitatplan.org/www/site/alias___default/346/final_habitat_plan.aspx

72 San Francisco Food Bank, “Market to Table,” February 23, 2012, available at <http://sffoodbank.wordpress.com/2012/02/23/market-to-table> (accessed December 2012).

73 Dana Gunders, Wasted: How America Is Losing up to 40 Percent of Its Food From Farm to Fork to Landfill, Natural Resources Defense Council, August 2012, p. 14.

74 AB 1532 and Senate Bill 535: California Climate and Agriculture Network, “Cap-and-Trade Revenue for Ag,” available at <http://calclimateag.org/cap-and-trade-revenue-for-ag> (accessed December 2012).

Plan of Action for Local and Regional Agencies

By strengthening the regional food system, the Bay Area has an opportunity to capture more of the land use, economic and environmental benefits it provides while also preserving the 15 percent of the region’s agricultural land that is currently at risk of being developed in the next 30 years. Cities and counties throughout the region have begun taking action on agricultural land preservation, food industry economic development and municipal food waste diversion. But, to truly meet the challenge and take advantage of the opportunity facing the Bay Area, policymakers at the city, county and regional level must build upon and accelerate their efforts.

The region’s diversity of land use patterns, existing food infrastructure and jurisdictions requires a diversity of approaches. Few of the recommendations below can be executed in a one-size-fits-all fashion. Instead, each jurisdiction or agency will need to tailor the implementation to their specific context and establish their own baselines and targets. (See Appendix 3 for suggested metrics for measuring success.)

IMPLEMENTING AGENCY	RECOMMENDATION
Boards of supervisors	<p>Adopt policy to preserve remaining agricultural land, especially large, contiguous agricultural areas and high-quality farmland and ranchland.</p> <p>Establish a regional agribusiness economic development entity to support the region’s food industry.</p>
County and city planning departments and city councils	Adopt policy to preserve remaining agricultural land, especially large, contiguous agricultural areas and high-quality farmland and ranchland.
Association of Bay Area Governments (ABAG)	Facilitate the sharing of best practices for preserving agricultural land among Bay Area cities and counties as part of the Plan Bay Area/Sustainable Communities Strategy land use efforts.
City and county economic development agencies, in partnership with food industry trade groups	Evaluate food system infrastructure and develop strategic plans to maximize assets through the retention and attraction of food businesses that provide food processing, manufacturing and distribution. These plans should especially target businesses that support regional sourcing and environmentally friendly farms and ranches.
Public procurement offices	Give preference to locally grown food in procurement contracts.
County social services agencies	Ensure that all farmers’ markets and fresh food retailers have the ability to accept electronic benefits for food assistance programs.
County and city waste management authorities	Develop and expand diversion of food waste from the landfill through composting and other similar efforts.
USDA Natural Resource Conservation Service, Resource Conservation Districts, UC Cooperative Extension and county agricultural commissioners	<p>Promote organic agriculture as well as other environmentally friendly agricultural practices.</p> <p>Provide guidance and technical assistance to farmers and ranchers on techniques for reducing their on-farm greenhouse gas emissions, sequestering carbon and adapting to climate change, as well as regarding how farmers and ranchers can tap into revenue from California’s cap-and-trade system.</p>

Appendix 1

Methodology for Economic Analysis

SPUR’s analysis of employment in the food sector is based on two data sources:

California Regional Economies Employment (CREE) Series

Published by the Labor Market Information Division of the California Employment Development Department, this data stretches from 1990 to 2010. The private sector employment numbers used in this report are based on the federal Bureau of Labor Statistics’ compilation of Quarterly Census of Employment and Wages (QCEW), which includes tax reports submitted by employers who are subject to unemployment insurance laws. As a result, these statistics exclude “self-employed workers, most agricultural workers on small farms, all members of the Armed Forces, elected officials in most states, most employees of railroads, some domestic workers, most student workers at schools

and employees of certain small nonprofit organizations.” Additionally, because the data tracks number of jobs rather than the individuals employed, “it is likely that a multi-job holder will be counted two or more times in QCEW data.”⁷⁵

U.S. Census Bureau, 2010 Nonemployer Statistics

To try to capture self-employed workers, our analysis of 2010 employment data includes figures from the U.S. Census Bureau’s compilation of nonemployer statistics by county, which is based on IRS tax returns. To come up with a conservative estimate, we assume that only one person is employed in each nonemployer establishment. In actuality, some nonemployer establishments may have more than one worker.⁷⁶

Analyzing the Food System by NAICS Codes

We define the food system sectors and analyze employment data using the following NAICS (North American Industry Classification System) codes⁷⁷:

ACTIVITY CATEGORY	2007 NAICS CODE	2007 NAICS US TITLE
Production	1111	Oilseed and Grain Farming
Production	1112	Vegetable and Melon Farming
Production	1113	Fruit and Tree Nut Farming
Production	11141	Food Crops Grown Under Cover
Production	111421	Nursery and Tree Production
Production	11193	Sugarcane Farming
Production	11194	Hay Farming
Production	11199	All Other Crop Farming
Production	112	Animal Production and Aquaculture
Production	114	Fishing, Hunting and Trapping

75 California Regional Economies Employment (CREE) Series, available at www.labormarketinfo.edd.ca.gov/Content.asp?pageid=173; U.S. Department of Labor, Bureau of Labor Statistics, “Quarterly Census of Employment and Wages: Frequently Asked Questions,” available at www.bls.gov/cew/cewfaq.htm#Q14 (accessed October 2012).

76 United States Census Bureau, “Nonemployer Statistics,” available at www.census.gov/econ/nonemployer (accessed December 2012).

77 Though our selection of NAICS codes is unique to this report, our methodology is based in large part on that of two earlier reports: Collaborative Economics, The Food Chain Cluster: Integrating the Food Chain in Solano and Yolo Counties to Create Economic Opportunity and Jobs, May 2011, and Collaborative Economics and the California Economic Strategy Panel, California’s Food Chain at Work: Agriculture Production, Processing, Distribution, and Support, November 2006.

ACTIVITY CATEGORY	2007 NAICS CODE	2007 NAICS US TITLE
Distribution	4244	Grocery and Related Product Merchant Wholesalers
Distribution	4245	Farm Product Raw Material Merchant Wholesalers
Distribution	42491	Farm Supplies Merchant Wholesalers
Distribution	49312	Refrigerated Warehousing and Storage
Distribution	49313	Farm Product Warehousing and Storage
Distribution	4248	Beer, Wine and Distilled Alcoholic Beverage Merchant Wholesalers

Processing	311	Food Manufacturing
Processing	31211	Soft Drink and Ice Manufacturing
Processing	322215	Nonfolding Sanitary Food Container Manufacturing (322219 in 2012 NAICS)
Processing	32616	Plastics Bottle Manufacturing
Processing	327213	Glass Container Manufacturing
Processing	332115	Crown and Closure Manufacturing (332119 in 2012 NAICS)
Processing	332431	Metal Can Manufacturing

Processing - Alcohol ⁷⁸	31212	Breweries
Processing - Alcohol	31213	Wineries
Processing - Alcohol	31214	Distilleries

Restaurants and Food Service	7221	Full-Service Restaurants
Restaurants and Food Service	7222	Limited-Service Eating Places
Restaurants and Food Service	7223	Special Food Services
Restaurants and Food Service	7224	Drinking Places (Alcoholic Beverages)
Restaurants and Food Service	7225	Restaurants and Other Eating Places

Retail	44422	Nursery, Garden Center and Farm Supply Stores
Retail	4451	Grocery Stores
Retail	4452	Specialty Food Stores
Retail	4453	Beer, Wine and Liquor Stores
Retail	45291	Warehouse Clubs and Supercenters

⁷⁸ The Processing – Alcohol category was labeled as Processing – Winemaking in the charts of this report because employment data for the breweries and distilleries sectors was unavailable at the county level.

ACTIVITY CATEGORY	2007 NAICS CODE	2007 NAICS US TITLE
Retail	4542	Vending Machine Operators
Retail	62421	Community Food Services
Support	1151	Support Activities for Crop Production
Support	1152	Support Activities for Animal Production
Support	22131	Water Supply and Irrigation Systems
Support	32192	Wood Container and Pallet Manufacturing
Support	3253	Pesticide, Fertilizer and Other Agricultural Chemical Manufacturing
Support	33311	Agricultural Implement Manufacturing
Support	333294	Food Product Machinery Manufacturing (333241 in 2012 NAICS)
Support	333993	Packaging Machinery Manufacturing
Support	42382	Farm and Garden Machinery and Equipment Merchant Wholesalers
Waste	5621	Waste Collection
Waste	5622	Waste Treatment and Disposal

Comparative Analysis Across Three California Regions of Food System Jobs Distribution by Sector, 2010

The distribution of jobs among sectors within the food system in the Bay Area is very similar to the jobs distribution within the Sacramento area and the Los Angeles area.⁷⁹ Restaurant and food service jobs, as well as food retail jobs, constitute nearly identical shares of the food system employment total in each metropolitan region. The Bay Area, reflecting its world-class wine industry, has a significantly larger share of winemaking jobs, while the Sacramento area, which overlaps with the agriculturally rich Central Valley, has the highest percentage of production jobs among the three regions. In other sectors, the regions are quite parallel.

	NUMBER OF JOBS, 2010			PERCENT OF FOOD SECTOR JOBS		
	Bay Area	Sacramento Area	Los Angeles Area	Bay Area Percent of Food Jobs	Sacramento Percent of Food Jobs	Los Angeles Percent of Food Jobs
Food System Jobs Subtotal	388,278	106,803	697,690	100%	100%	100%
Restaurants and Food Service	227,749	61,336	412,086	59%	57%	59%
Retail	74,540	20,830	137,945	19%	20%	20%
Processing	23,197	5,481	53,701	6%	5%	8%
Distribution	21,640	5,760	47,986	6%	5%	7%
Processing – Wine	15,096	139	351	4%	0%	0%
Production	11,234	7,222	20,392	3%	7%	3%
Waste	8,054	1,031	9,925	2%	1%	1%
Support	6,768	5,004	15,304	2%	5%	2%

⁷⁹ For this analysis, the Sacramento region includes El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties. The Los Angeles region includes Los Angeles, Orange and Ventura counties.

Appendix 2

Food Waste and Emissions Reductions Calculations

Food Waste Tonnage Calculation

Our estimate of the amount of food waste from the Bay Area that is sent to landfills is based on CalRecycle Waste Characterization Study data showing that 6,265,996 tons of waste was disposed into solid waste facilities in the Bay Area counties in 2007.⁸⁰ This may include some waste from other counties and does not account for any waste from the Bay Area that was sent to landfills outside the nine counties.

The same study estimates that 15.5 percent of disposed waste in California is food waste.⁸¹ The Environmental Protection Agency (EPA) has estimated that food waste constitutes 21 percent of all disposed waste nationwide.⁸²

Estimated food waste disposed in landfill per year:
 $6,265,996 \text{ tons} \times 15.5 \text{ percent} = 971,229 \text{ tons of food waste per year}$

80 CalRecycle, California 2008 Statewide Waste Characterization Study, 2009, Table 46, p. 97, available at: www.calrecycle.ca.gov/publications/Detail.aspx?PublicationID=1346

81 Ibid, Table 6, p. 23.

82 U.S. Environmental Protection Agency, Office of Resource Conservation and Recovery, "Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2010," Table 3, p. 4, available at www.epa.gov/osw/nonhaz/municipal/pubs/2010_MSW_Tables_and_Figures_508.pdf

83 U.S. Environmental Protection Agency, "EPA Waste Reduction Model," available at www.epa.gov/climatechange/waste/calculators/Warm_Form.html (accessed December 2012).

Carbon Dioxide Equivalency Calculation

In the EPA Waste Reduction Model, diverting 971,229 tons of food waste into a composting facility would result in an overall reduction in 863,283 metric tons of carbon-dioxide-equivalent emissions (MTCO₂E).⁸³

Based on the EPA's Greenhouse Gas Equivalencies Calculator, 863,283 MTCO₂E avoided is equivalent to removing 163,158 average passenger vehicles from the road for one year.⁸⁴

84 U.S. Environmental Protection Agency, "Greenhouse Gas Equivalencies Calculator," available at www.epa.gov/cleanenergy/energy-resources/calculator.html (accessed December 2012).

Appendix 3

Metrics for Measuring Progress on the Goals

For each of the goals listed in this report, SPUR's Food Systems and Urban Agriculture Policy Board has chosen a number of metrics that could be used to set a baseline and establish progress toward meeting that goal. Though we were not able to set the baseline for each of these metrics for this report, this type of measurement will be important for gauging the success of the implementation of many of the report's recommendations.

Preserve the Region's Agricultural Land

- Change in numbers of agricultural acres (as measured by the Farmland Mapping and Monitoring Program) in the Bay Area, categorized by land quality
- Change in number of agricultural acres at risk in Greenbelt Alliance analyses

Sustain a Thriving Food Economy in the Bay Area

- Increase in the number of food system businesses and jobs across all sectors of the food system (production, distribution, processing, retail and waste)
- Increase in gross revenue of food businesses
- Increase in the average wage/salary for food system jobs
- Decrease in the ratio between the lowest- and highest-paid workers within food companies
- Direct sales between farms and/or food processors and customers (as a proxy for increases in demand for locally produced food)
- Increase in percent of Bay Area residents that have access to fresh, nutritious and affordable food
- Decrease in the number of residents reporting food insecurity
- Increase in percentage of farmers' markets that accept food assistance program benefits

Reduce the Environmental Impacts of the Regional Food System

Food waste:

- Tonnage and percent of food waste diverted from the landfill
- Tonnage of edible food gleaned and donated
- Reduction in carbon emissions from composting and anaerobic digestion
- Tons of compost created and sold for regional use

Agriculture and the environment:

- Number of acres under organic certification
- Rate of soil erosion
- Water usage by agricultural operations
- Groundwater recharge on agricultural land
- Acres of wildlife habitat on farmland
- Amount of carbon sequestered by farms and ranches
- Pesticide usage by agricultural operations



Ideas + action for a better city

The mission of SPUR is to promote good planning and good government through research, education and advocacy.

SPUR is a member-supported nonprofit organization. Join us.

www.spur.org

SPUR

654 Mission Street
San Francisco, CA 94105
tel. 415.781.8726
info@spur.org