INVESTING IN A VITAL FOOD SYSTEM AS A FOUNDATION OF REGIONAL RESILIENCE

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Produced by Sustainable Agriculture Education
Bay Area Food Futures Roadmap: 
*Investing in a Vital Food System as a Foundation of Regional Resilience*

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EXECUTIVE SUMMARY

Overview
The Bay Area Food Futures Roadmap presents a vision and actions to advance a sustainable, equitable, healthy local food system as an integral foundation of the Bay Area's regional resilience and shared prosperity. Although the Bay Area's food system is facing serious challenges and is interconnected with key regional issues, including land use, housing, transportation, equity, jobs and workforce, public health, water and energy supply, and climate change impacts, it is not yet significantly taken into account in regional sustainability and resilience planning and implementation.

The result is an under-counting of the economic and environmental contributions of our regional food system, inattention to its vulnerabilities, and under-investment in the agricultural resources and food supply sectors that are critical to regional resilience. As regional leaders implement the Economic Action Plan of the Bay Area's newly designated Economic Development District, and plan for resilience in the face of disparate futures through processes such as Plan Bay Area 2050, it is essential that regional leadership and communities across the Bay Area carefully consider the future of our food, and take action to address the challenges and opportunities alike.

Purpose and Audience
The purpose of this Bay Area Food Futures Roadmap report is threefold: 1) identify opportunities to include the food and agricultural sectors in regional resilience frameworks and economic development strategies; 2) produce a Food Futures Roadmap Action Plan that describes current conditions and identifies regional-scale and other actions needed to ensure a preferred future for a robust agriculture and food sector; and 3) create a network of food and agriculture sector leaders to support the Food Futures Roadmap as a framework for collaborative action.

The audience for the Bay Area Food Futures Roadmap is foremost the Association of Regional Governments (ABAG), the Metropolitan Transportation Commission (MTC, co-staffed with ABAG as Bay Area Metro) and ABAG’s local government and business leadership partners. This audience can and must leverage its planning, policy and funding power to help address food and agriculture sector vulnerabilities and opportunities. The broader audience is food and agriculture business leaders and advocacy stakeholders who have a vested interest in increasing investments, partnerships and collaborative action toward creating a sustainable, equitable, and healthy local food system. In order to safeguard the food system that is the backbone of a healthy, resilient region, we must make the agriculture and food sector a high priority in regional planning processes and investment decisions.

Vision and Organization
The long-term goal of the Bay Area Food Futures project is the achievement of this vision:

A sustainable, equitable, healthy local food system is recognized and invested in as an integral foundation of the Bay Area's regional resilience and shared prosperity.

The Bay Area Food Futures Roadmap is organized in three sections, which reflect the three-fold purpose.
Section 1. Case for Integrating Agriculture and Food Sectors into Regional Frameworks

The San Francisco Bay Area has an extraordinarily rich and diverse food system that spans urban and rural areas and touches on the lives and serves millions of residents and visitors every day. On one hand, the Bay Area food economy is thriving, with an annual value of around $113 billion, almost half a million jobs, and almost 40,000 food establishments from small enterprises to global corporations.

On the other hand, there are alarming cracks in the region’s food value chain: over 11% of the population is food insecure, low wages (64% lower than the regional average) and long commutes for food sector workers, labor shortages, farmland loss, 85% of food waste sent to landfills, and shortages of affordable industrial spaces for food manufacturers and distributors. Some of the challenges facing the regional food system reflect issues endemic in the overall U.S. and global food system, especially policies supportive of cheap food, related lack of ‘true cost accounting’ for the externalities of cheap food, and increasing consolidation of food businesses. But many of the challenges facing the regional food system can and must be tackled regionally.

The first section of this report identifies key opportunities for the agriculture and food cluster to both help implement and be uplifted by strategies presented in dynamic regional frameworks. For example, ABAG’s Economic Action Plan, in effect the work plan for the soon-to-be-formed Economic Development District Board, outlines twenty strategies and over 70 actions for addressing regional business climate, workforce, workplace and housing, and infrastructure issues. The Horizon Initiative, which frames critical issues for Plan Bay Area 2050, outlines dozens of affordable, connected, diverse, healthy and vibrant strategies that can help the region prepare for a range of potential futures. As the food system is a critical backbone of society, it relates directly and indirectly to many of the strategies proposed in these and other frameworks.

Section 2. Roadmap Action Plan

The Food Futures Roadmap Action Plan, the report’s centerpiece section, provides a framework for describing existing food system conditions in the Bay Area and for identifying - and galvanizing support for - the actions needed to secure a vital regional food system. One axis of this framework is a set of five principles: economic viability, social equity, environmental sustainability, public health, and sense of place. The other axis for the framework is a set of seven food supply chain sectors: agricultural production, distribution, manufacturing, retail, and food service (all standard economic data classifications), as well as consumption and post-consumption.

The Roadmap’s seven chapters are each focused on one food supply chain sector or element, and are framed in terms of the five principles as well as sector specific goals and strategies. Each food sector chapter includes the following: 1) an introduction to major issues, referencing leading global analysis and California data; 2) intersections with regional planning; 3) presentation of existing regional conditions; 4) identification of dozens of actions needed to achieve a ‘preferred future’; and 5) a ‘what does success look like’ scorecard of indicators and metrics showing where we are and where we need to be, and which data is missing.

There are a number of limitations in the approach. Foremost, the Roadmap was developed primarily with secondary data and input from a representative but small number of agriculture and food system stakeholders. Each food sector chapter acknowledges just a small sample of the numerous actions already underway and of the myriad actors deeply involved in addressing urgent food systems issues in the region. Overall, the Roadmap is not intended to be a definitive document, but rather a framework and starting point for broader discussion, engagement and utilization.
Section 3. ‘Big Ideas’ for Priority Actions

This section proposes prioritized initial cross-cutting ‘big ideas’ that link various discrete strategies, are in alignment with the regional planning processes, and pose an immediate opportunity with ready and engaged partners. These four key cross-cutting actions are:

1. **Formalize a Food Futures Advisory Network**
   A Bay Area Food Futures Advisory Network, as an entity driving implementation of Roadmap actions, is already gaining momentum. As a first step, it is positioned to act proactively as an advisory committee to ABAG/MTC’s regional economic development initiatives and regional planning processes. Seeded by the Food Futures project working group, the Network will be comprised of leaders from food and agricultural industries and from the community, representing business and advocacy. These leaders are already engaged in triple bottom line issues and working across the supply chain, in both urban and rural areas, to create positive change. Sharing many common values, they recognize both the role that the food and agricultural sectors contribute to the overall resilience of the region and the role that regional planning contributes to the viability of these sectors.

2. **Align Food Access and Affordable Housing Policies**
   There is general consensus that the health and well-being of California residents is being stymied by a lack of access to decent affordable housing. Amid new legislative proposals emerging at the state and regional levels, lip service is being paid to the need for housing production and preservation strategies that enhance place-based opportunities, such as access to transportation, quality schools and green infrastructure. However, little concrete action is being taken to address food insecurity while ameliorating the housing crisis. These two issues are closely intertwined, but siloed housing, planning, and public health fields generally fail to connect them in the public policy arena. Given the renewed energy around housing and climate change policy, now is an opportune time to identify ways to insert food access and resilience into the housing conversation. This effort will provide a foundation to support greater collaboration between advocates working on food access and housing advocates to improve community health.

3. **Develop a Bay Area Agricultural Plan**
   Bay Area counties, often in partnership with special districts and land trusts, currently use a variety of mechanisms to protect agricultural lands and to identify and invest in critical agricultural resources. While many agricultural resource values do apply at the county or sub-county level, other values including eco-systems services and climate change mitigation, and other issues including agricultural economic viability and agricultural infrastructure and labor, would benefit from regional-scale assessment and action. A Bay Area Agricultural Plan, drawing from the example of the acclaimed [Santa Clara Valley Ag Plan](#), could provide a regional assessment and action framework. Assuming funding, this effort would lay the groundwork for regional-scale efforts including farmland protection, climate-smart agriculture incentives, a regional agriculture public education campaign, and investments/supportive policies for infrastructure needs such as farm labor housing and distribution and processing facilities. To be successful, this kind of initiative would need regional champions and leadership.

4. **Produce a Bay Area Food Resilience Plan**
   The Resilience Plan would provide a blueprint for actions needed to ensure that the food system is prepared to confront and recover from natural disasters, especially earthquakes, and also has the systems redundancy to address longer-term uncertainties of climate change and political and economic upheavals. It would outline both hazard mitigation strategies for proactively reducing vulnerability and risk, and also disaster response approaches for mitigating severity or duration of damage reactively, after a disaster occurs. It would identify public sector strategies and actions needed to address vulnerabilities and implement mitigation strategies. It would also identify value chain climate resilience strategies that the business sector could implement to reduce environmental impacts, adopt best practices, innovate, and manage business risks and opportunities associated with climate change.
While prioritizing the ‘big ideas’ above, the Food Futures team looked at several additional cross-cutting ideas, which could be incorporated into the prioritized ‘big idea’ or could become stand-alone initiatives in the future. These additional cross-cutting ideas are:

5. Optimize Bay Area food goods movement and food distribution and manufacturing clusters (this analysis could be incorporated into the Bay Area food resilience plan outlined above)
6. Develop a Bay Area agriculture and local food promotion and education campaign (could be an outcome of a Bay Area Ag Plan)
7. Create a Bay Area agricultural vitality, farm-land protection and resource stewardship fund (could be an outcome of a Bay Area Ag Plan)
8. Launch a campaign for training and development of a future-oriented food and agricultural workforce

Outcomes
The outcome of the Bay Area Food Futures Roadmap needs to be concerted and impactful action. In the next year or two, agriculture and food industry and advocacy leaders in collaboration with ABAG/MTC, other public agencies and allied organizations will work together to implement the ‘big ideas’ outlined above. These same stakeholders will also undertake and build on the myriad actions outlined in the Roadmap and will utilize and refine the ‘what does success look like’ scorecards and metrics. Within five years, a sustainable, equitable, healthy local food system will be recognized and invested in as an integral foundation of the Bay Area’s regional resilience and shared prosperity.

Funders and Project Team
The Bay Area Food Futures project was funded by the Kaiser Permanente Northern California Community Benefits Program with additional support from the Robertson Family Fund and the Wallace Center. The project builds on SAGE’s 2017 Bay Area Food Economy study, which was funded by the California Coastal Conservancy Bay Area Program. The project was led by a SAGE research team and was supported by a Working Group of food system stakeholders.
INTRODUCTION

Background and Purpose
The Bay Area’s food system is an integral, but under recognized, part of the region’s economic prosperity and long-term resilience. It spans rural and urban areas and is interconnected with key regional issues, including land use, housing, transportation, jobs and workforce, public health, equity, water and energy. However, the food system is not yet significantly taken into account in regional sustainability and resilience planning and implementation.

The result is missed opportunities: an undercounting of the economic and environmental contributions of our regional food system; inattention to its vulnerabilities; and underinvestment in the agricultural resources and food supply sectors that are critical to regional resilience, especially in the face of natural hazards and climate change. As regional leaders implement the Economic Action Plan of the Bay Area’s newly designated Economic Development District, and plan for resilience in the face of disparate futures through processes such as Plan Bay Area 2050, it is essential that regional leadership and communities across the Bay Area carefully consider the future of our food, and take action to address the challenges and opportunities alike.

The purpose of the Bay Area Food Futures Roadmap is threefold:
• Identify opportunities to include the food and agricultural sectors in regional resilience frameworks and economic development strategies.
• Produce a Food Futures Roadmap Action Plan that describes current conditions and identifies regional-scale and other actions needed to ensure the vital role that agriculture and food sectors play in resilience and shared prosperity.
• Create a network of food and agriculture sector leaders to support the Food Futures Roadmap as a framework for collaborative action.

Organization of the Food Futures Report
The Bay Area Food Futures report has three sections:
1. Case for integrating the agriculture and food industry cluster into regional frameworks.
2. Food Futures Roadmap Action Plan identifying principles, goals, strategies and actions needed to foster a vital regional food system.
3. Food Futures ‘Big Ideas’, initial regional-scale actions, in alignment with regional priorities and supported by engaged partners.

Case for Integrating Agriculture and Food Sectors into Regional Frameworks
The first section identifies key opportunities for the agriculture and food cluster to both help implement and be uplifted by strategies presented in dynamic regional frameworks. For example, ABAG’s Economic Action Plan, in effect the work plan for the soon-to-be-formed Economic Development District Board, outlines twenty strategies and over 70 actions for addressing regional business climate, workforce, workplace and housing, and infrastructure issues. The Horizon Initiative, which frames critical issues for Plan Bay Area 2050, outlines dozens of affordable, connected, diverse, healthy and vibrant strategies that can help the region prepare for a range of potential futures. As the food system is a critical backbone of society, it relates directly and indirectly to many of the strategies proposed in these and other frameworks.

Roadmap Action Plan
The Food Futures Roadmap Action Plan, the report’s centerpiece section, is organized around a framework of principles: economic viability, social equity, environmental sustainability, public health, and sense of place. The Roadmap outlines goals and strategies for the sectors of production, distribution, manufacturing, retail, and food service, as well as consumption and post-consumption.
Each food system sector chapter includes:
- An introduction to major issues
- The intersections with regional planning
- Presentation of existing conditions
- Identification of strategies, actions and actors needed to achieve a preferred future
- A scorecard of indicators and metrics showing what success looks like.
Chapters also reference leading analysis of global food systems problems and solutions as well as notable food systems issues and initiatives in California.

‘Big Ideas’ - Proposed Priority Actions
This section proposes prioritized initial ‘big ideas’. Four key cross-cutting actions, identified based on alignment with regional initiatives, opportunity, urgency and engaged partners, are:

1. Formalize a Food Futures Network as an entity driving implementation of Roadmap actions
2. Align Food Access and Affordable Housing Policies to support greater collaboration between advocates working on food access and housing advocates in a holistic effort to improve community health
3. Develop a Bay Area Agricultural Plan to increase investments in farmland protection, climate-smart agriculture, public education, and agricultural infrastructure across the region
4. Produce a Bay Area Food Resilience Plan to ensure that the region’s food system has the risk mitigation and redundancy in place to respond equitably and efficiently to natural disasters - especially earthquakes - and longer-term disruptions.

Audience
The audience for the Bay Area Food Futures Roadmap is foremost the Association of Regional Governments (ABAG), the Metropolitan Transportation Commission (MTC, co-staffed with ABAG as Bay Area Metro) and ABAG’s local government and business leadership partners. This audience can and must leverage its planning, policy and funding power to help address food and agriculture sector vulnerabilities and opportunities. The broader audience is food and agriculture business leaders and advocacy stakeholders who have a vested interest in increasing investments, partnerships and collaborative action toward creating a sustainable, equitable, and healthy local food system. In order to safeguard the food system that is the backbone of a healthy, resilient region, we must take the agriculture and food sector into account in regional planning processes and investment decisions.

Outcome
This report is the primary outcome of the initial, six-month phase of the Bay Area Food Futures project. An especially important element is the Food Futures Roadmap, an action plan supported by food and agriculture stakeholders that will catalyze public and private sector actions, partnerships and investments on specific next steps to advance a vital food system as a regional priority. The long-term outcome of the Bay Area Food Futures project is the achievement of this vision:

A sustainable, equitable, healthy local food system is recognized and invested in as an integral foundation of the Bay Area's regional resilience and shared prosperity.
Project Partners
The Bay Area Food Futures project was funded by a generous grant from the Kaiser Permanente Northern California Community Benefits Program with additional support from the Robertson Family Fund and the Wallace Center. The project builds on SAGE’s 2017 Bay Area Food Economy study, which was funded by the California Coastal Conservancy Bay Area Program.¹

The project was supported by a Working Group with the following members: Kathryn Boyle, Kaiser Permanente Northern California Community Benefits Program; Rebecca Chesny, IDEO; Al Courchesne, Frog Hollow Farm; Lucy Diekmann, UCCE Food System Advisor; Cynthia Kroll, Association of Bay Area Governments (ABAG); Bu Nygrens, Veritable Vegetable; Esperanza Pallana, Northern California Community Loan Fund; Albert Straus, Straus Family Creamery; Rob Trice, Mixing Bowl/Better Food Ventures; Sarah Wally, Food System Partners; and Heather Wooten (formerly with ChangeLab Solutions).

The project was led by Sibella Kraus, SAGE, in partnership with Serena Unger, consultant, and with significant project development and research assistance from Marie Mourad, consultant, and graduate student researchers, Maria Balcazar-Tellez, Caroline Grunewald and Esther Shears. Many additional advisors provided valuable input.
1. CASE FOR INTEGRATING AGRICULTURE AND FOOD SECTORS INTO REGIONAL FRAMEWORKS

Why a Roadmap for the Bay Area Regional Food System?

The Bay Area Food Futures Roadmap presents a vision for the region to more fully recognize the current and potential contributions of the food system as critical infrastructure to the economy as well as to overall regional sustainability and resilience. Our region has an extraordinarily rich and diverse food system that is an integral part of its economic prosperity, environmental sustainability, regional identity, and vibrant cultural life. The region’s food supply chain—comprised of producers, distributors, processors, retail stores, food service and restaurants, about 40,000 businesses in all—touches the lives of millions of residents and visitors every day, in places as diverse as wholesale distribution, corner stores, school cafeterias, and high-end restaurants. The region’s 1.9 million acres of farm and gazing land provides critical food production and environmental services.

The Bay Area has a thriving food economy, with considerable challenges and vulnerabilities. With an annual value of around $113 billion, the food economy employs close to half a million people, around 13 percent of the region’s workforce. However, the average wage is 64 percent lower than the average regional wage. The hallmark of the food economy is the very wide spectrum of business opportunities. The 38,500 food establishments include businesses from micro-food enterprises to headquarters for global food and beverage corporations, from small urban-edge farms to large farms growing for export, from local food coops to national grocery chains, and from neighborhood ethnic eateries to world class fine dining.

However, even with the region’s bustle of food enterprises, there are cracks in the value chain. These include food processing and distribution businesses that are being squeezed for affordable space in high-value real estate markets, a shortage of qualified workers in many of the food sectors, and a dearth of food business incubators, which are in high demand for the growing number of small businesses striving to enter the marketplace.

While some food system issues, such as insufficient access to healthy, affordable food, affect primarily low-income populations, many system challenges affect everyone in the region. These include low wages and long commutes for food sector workers, labor shortages, farmland loss, and shortages of affordable commercial and industrial spaces for food businesses. Potential future threats to the food system stem from increasing regional inequality, population growth, and development pressures on farmland, along with factors such as natural disasters, climate-related disturbances, and political and economic uncertainties.

Regional planning processes attempt to plan for future growth and shared prosperity while considering various future scenarios. However, even though food is a basic necessity, the food sector is significantly under-represented in these processes. This must change if we are to ensure a vital food system that can support a healthy, resilient region in the future.

The Bay Area Food Futures Roadmap presents a clear pathway to integrate a vision, strategies, and actions into regional planning processes, to ensure that the region overcomes the challenges and seizes the opportunities for fostering a healthy, equitable, sustainable food system for a resilient future.
What Can We Do Now?

Food Futures and Regional Planning

We need to integrate the Roadmap vision, strategies, and actions into the region’s three foundational planning and implementation frameworks, led by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). These include: 1) the San Francisco Bay Area Comprehensive Economic Development Strategy (CEDS) and its Economic Action Plan (EAP), adopted and now ready for implementation; 2) Plan Bay Area 2050, now in development; and 3) the ABAG Resilience Program.²

The CEDS and EAP processes, led by ABAG, build on the efforts of the many organizations already involved in economic and workforce development in the region and provide a framework to leverage local resources to advance solutions to our most pressing economic challenges. In its CEDS application, ABAG included an addendum paper, Bay Area Food Economy: Existing Conditions and Strategies for Resilience, which highlights the contributions of our food and agricultural sectors to the regional economy.³ This paper proposes several strategies and investments needed to protect and strengthen the region’s agricultural resources and food supply sectors. The Bay Area Food Futures Roadmap takes these proposed strategies a step further and identifies specific actions, actors, and steps to take now for moving the food and agricultural sectors towards regional resilience and shared prosperity.

As a part of the CEDS process, ABAG established a Bay Area Regional Economic Development District (EDD) and an EDD Board to guide implementation of the Economic Action Plan, which consists of twenty strategies and over 70 actions for addressing regional business climate, workforce, workplace and housing, and infrastructure issues. The Roadmap delivers an opportunity for the EDD Board (or a subset of the Board) to integrate related Food Futures strategies and actions into the established strategies of the EAP and move into action around some of the most pressing concerns for the food and agricultural sectors. Appendix A depicts the correlation of EAP strategies and proposed, priority Food Futures actions.

An additional important intersection is with ABAG’s two other major regional planning processes: Plan Bay Area 2050 and the Horizon Initiative. The Horizon Initiative, a scenario planning effort for the Bay Area, identifies strategies that will be most effective to address the challenges posed by various future scenarios. Through its community outreach process, it has established five guiding principles and over forty strategies to guide a long-range regional blueprint for the region’s future growth and investments. One of the strategies of particular relevance to the Bay Area Food Futures Network is Strategy V-3, “Preserve Agricultural Land and Jobs - Enhance funding to permanently preserve agricultural lands and to provide tax incentives to local agricultural business.”

As a blueprint for how the region will accommodate future growth while preserving the character of its diverse communities, Plan Bay Area is a critical regional planning process for considering the future of the region’s food system reliance. In the previous Plan Bay Area 2040 (and 2013), the region’s preferred scenario has been to focus growth in existing communities along the existing transportation network and established Priority Development Areas (PDAs) and to protect Priority Conservation Areas (PCAs) against development. These growth strategies have articulated a long-term commitment to preserving the region’s agricultural lands and have motivated jurisdictions towards smarter growth. As ABAG prepares Plan Bay Area 2050, the Food Futures Roadmap can help in understanding the needs of local agricultural and food production businesses that are located in designated development, conservation and pending production (industrial) areas. It can also assist in refining future grant guidelines so that land preservation and economic development are working together to encourage the economic potential of these lands.

The Food Futures Roadmap is also poised to inform ABAG’s Resilience Program. In the event of a major disaster, the region’s food system will likely face significant disruptions and yet will still need to function efficiently to feed millions of residents.
The region has not yet looked comprehensively at the necessary investments to improve the region’s food supply system with a focus on resiliency and modernization. Resiliency in the food system concerns both the distribution supply chain and the point-of-sale outlet network to withstand and/or recover quickly from system interruption. Modernization concerns upgrading facilities and infrastructure to meet the business, logistics, and food safety needs of a 21st century food distribution system.

As ABAG moves forward on the Regional Resilience Initiative Action Plan, the Food Futures Roadmap and its recommended actions can provide the necessary insight to these processes to look at deeper issues concerning the success of the food and agricultural sectors and encourage greater integration of the region’s food system into long-term investment priorities and resilience planning.

In summary, the Food Futures Roadmap identifies dozens of “Preferred Future” actions that can be synced with the many strategies and actions from the EAP, Horizon and Plan Bay Area programs, and outlines where there is significant intersection. The Roadmap also establishes what success will look like by providing a baseline of key indicators and metrics that show where we are now and where we need to be in the next ten to 30 years.

Food Futures Big Ideas

The Food Future Roadmap presents numerous Preferred Future actions for each sector of the food system. To maximize impact, the Food Futures team bundled sets of these actions into four cross-cutting, regional-scale ‘big ideas’ that are in alignment with the regional planning processes and pose an immediate opportunity with ready and engaged partners. These are summarized directly below. The Food Futures ‘Big Ideas’ section (page 58) provides details on the necessary steps and desired outcomes for each action.

1. **Formalize a Bay Area Food Futures Advisory Network**
   A Bay Area Food Futures Advisory Network is already gaining momentum and is poised to facilitate collaborative implementation of the Food Futures Roadmap priority actions. As a first step, it is positioned to act proactively as an advisory committee to regional economic development initiatives and regional planning processes. Seeded by the Food Futures project working group, the Network will be comprised of food and agricultural industry and community leaders (businesses and advocates) who are engaged in triple bottom line issues and working across the supply chain, in both urban and rural areas, to create positive change. With many common values, these leaders recognize both the role that the food and agricultural sectors contribute to the overall resilience of the region and the role that regional planning contributes to the viability of these sectors.

   As the region envisions and plans for disparate future scenarios, through efforts led by ABAG/MTC, and as local government agencies focus on the myriad issues of housing, jobs, transportation, and quality of life, it is essential that the food system is represented in these comprehensive planning efforts. This Network is prepared to offer important insights on the economic development and long-term planning strategies and to identify the investments needed to strengthen the contributions of the food and agricultural sectors to the region’s overall resilience. Assuming broad interest to become a fully realized collaborative impact entity, a Bay Area Food Futures Network, could have an agenda and action plan beyond its advisory capacity to ABAG/MTC.
2. **Align Food Access and Affordable Housing Policies**
   There is general consensus that the health and well-being of California residents is being stymied by a lack of access to decent affordable housing. Amid the flurry of new legislative proposals emerging at the state and regional levels, lip service is being paid to the need for housing production and preservation strategies that enhance place-based opportunities, such as access to transportation, quality schools and green infrastructure. However, little concrete action is being taken to address food insecurity while ameliorating the housing crisis. These two issues are closely intertwined, but siloed housing, planning, and public health fields generally fail to connect them in the public policy arena. Given the renewed energy around housing and climate change policy, now is an opportune time to identify ways to insert food access and resilience into the housing conversation. This effort will provide a foundation to support greater collaboration between advocates working on food access and housing advocates in a holistic effort to improve community health, with the aim of influencing the design and direction of state and regional plans and policies.

3. **Develop a Bay Area Agriculture Plan**
   Bay Area counties, often in partnership with special districts and land trusts, currently use a variety of mechanisms to protect agricultural lands and to identify and invest in critical agricultural resources. One of these mechanisms is Plan Bay Area’s Priority Conservation Area (PCA) program, through which local jurisdictions are awarded PCA designations for specific open space and agricultural areas, and are then eligible for One Bay Area Grant (OBAG) funding to invest in their PCA designated areas. While many agricultural resource values do apply at the county or sub-county level, other values including ecosystems services and climate change mitigation, and other issues including agricultural economic viability and agricultural infrastructure and labor, would benefit from regional-scale assessment and action. A Bay Area Agricultural Plan could provide this regional assessment and action framework. Such a plan could draw from the example of the acclaimed Santa Clara Valley Ag Plan, which was produced as a partnership between the County of Santa Clara and the Santa Clara Valley Open Space Authority and with funding from the California Sustainable Agriculture Lands Conservation program (SALC). It is likely that regional councils of governments (COGs) will be eligible applicants for this program starting in 2020. Following the Santa Clara County model and assuming funding, a Bay Area agricultural plan could lay the groundwork for regional-scale efforts including farmland protection, climate-smart agriculture incentives, a regional agriculture marketing campaign, and investments/supportive policies for infrastructure needs such as farm labor housing and distribution and processing facilities. To be successful, this kind of initiative would need regional champions and leadership.

4. **Produce a Bay Area Resilience Plan**
   The Bay Area Food Resilience Plan would provide a blueprint for actions needed to ensure that the food system has the systems redundancy to weather natural disasters, especially earthquakes, and also to address longer-term uncertainties of climate change and political and economic upheavals. The Bay Area Food Futures report provides an overview of the individual supply chain sectors as well as indicators setting a baseline and targets for multiple resilience factors. What is needed, now, is a dynamic map of the food system’s key internal points of connection and critical intersections with other regional-scale systems. Such a systems map would then provide the landscape context for understanding the vulnerabilities of the food system across the supply chain and especially in disadvantaged communities. The resulting Food Resilience Plan would outline both hazard mitigation strategies for proactively reducing vulnerability and risk, and also disaster response approaches for mitigating severity or duration of damage reactively, after a disaster occurs. The Plan would identify public sector strategies and actions needed to address vulnerabilities and implement mitigation strategies. It would also identify value chain climate resilience strategies that the business sector could implement to reduce environmental impacts, adopt best practices, innovate, and manage business risks and opportunities associated with climate change.
While prioritizing the ‘big ideas’ above, the Food Futures team looked at several additional cross-cutting ideas, which could be incorporated into the prioritized ideas or could become stand-alone initiatives in the future. These additional cross-cutting ideas are outlined below.

5. **Optimize Bay Area Food Goods Movement and Food Distribution and Manufacturing Clusters**
   (This analysis could be incorporated into the Bay Area Food Resilience Plan outlined above.) With the annual value of the Bay Area’s food economy exceeding $100 billion, the $18 billion annual value of California agricultural exports (much of which moves through the Bay Area), and the fact that over ten million Bay Area residents and visitors buy and eat food in myriad places every day, it is clear that there is a great deal of food goods movement into, out of, and within the Bay Area. However, considering the fundamental importance of food to our health, economy, environment, community life, identity and survival, there is insufficient understanding about food goods movement and in particular the food distribution and manufacturing sector. A pending Bay Area mega-region goods movement study and this report both include information relevant to food goods movement. The purpose of this new analysis is to fill in knowledge gaps about the vulnerabilities of the food goods movement and distribution and manufacturing sectors to natural disasters and other risks. The analysis will also cover opportunities for the sector, including alignment with the pending Priority Production Area (PPA) program.

6. **Develop a Bay Area Agriculture and Local Food Promotion and Education Campaign**
   The purpose of this promotion and education campaign is to build a broad public constituency committed to supporting the economic viability, environmental sustainability and equity of regional agriculture, including farmers and ranchers and their businesses, the agricultural workforce, and rural communities. Specific aims of the campaign would be to increase public, corporate, and institutional demand for local products, increase public awareness about key policy issues, and build public, policy maker, and business leader support for regional scale agricultural sustainability funding and policies.

7. **Create a Bay Area Agricultural Vitality, Farmland Protection and Resource Stewardship Fund**
   While ABAG has already established a progressive regional framework for land use decisions that incentivize growth away from agricultural and open space lands, the region’s farmers and ranchers continue to struggle with the high cost of doing business in the Bay Area. Without viable operations, these agricultural operations are at risk of going out of business. The Food Futures Network is ready to work with ABAG staff on implementation of the proposed Horizon Initiative Strategy, “Preserve Agricultural Land and Jobs - Enhance funding to permanently preserve agricultural lands and to provide tax incentives to local agricultural business.” This Horizon strategy, if formally adopted as part of Plan Bay Area 2050, could involve comprehensive and creative approaches to integrating land use planning, economic development, and climate smart agriculture with financial incentives that preserve land, add jobs, reduce greenhouse gas (GHG) emissions, and facilitate climate adaptation. The concept is for this Fund is to match potential public funding from Plan Bay Area with additional funds from private sources.

8. **Launch a Campaign for Training & Development of a Future-oriented Food & Agricultural Workforce**
   ABAG’s Economic Action Plan calls for resources to upskill the workforce and provide pathways to better jobs by improving the alignment between workforce skills and business needs and by evaluating ways to improve low wage occupations. This initiative would focus specifically on food and ag jobs, one of the lowest paid sectors in the region. Actions would include: 1) identifying organizations that provide training and education programs, where food value chain, eco-literacy, nutrition, and agricultural education could be expanded with additional funding resources; 2) engaging businesses to advise on development of curriculums for future-oriented jobs and to offer apprenticeships allowing students to ‘earn while they learn’; and 3) providing support for on-the-job training to help increase adoption of new workforce skills, with one focus on the workforce that has lost existing jobs due to automation. This initiative is already underway, with SAGE (as a proxy for the emerging Network) engaged as a collaborator on a food and ag workforce training proposal from the Peralta Community College District to a federal grant program.
What Does Success Look Like?

The Food Futures Network, as a collaborative impact entity taking action on the region's most pressing concerns and in collaboration with ABAG's regional planning processes, believes that by 2030, we can meet or exceed the following goals:

- **Indicator 1.** At least 50% of regional farmers and ranchers will employ climate-smart agriculture practices, with assistance available to support adoption of these practices.
- **Indicator 2.** Increased regional investments in transportation, infrastructure, and housing will support a more economically viable agriculture sector – including urban agriculture - and will facilitate access to healthy foods in all communities.
- **Indicator 3.** The number of people experiencing food insecurity will decrease from 11.5% of the population to less than 5% of the population.
- **Indicator 4.** The percentage of the region’s total food consumption that comes from food produced locally will increase significantly, driven by demand from an informed public and from local preference and good food purchasing policies.
- **Indicator 5.** The amount of food waste being sent to landfills will decrease from around 85% to less than 25%.
- **Indicator 6.** Re-localized businesses and living-wage jobs will make the food and agriculture sector a vibrant part of the region's economy, equity and investment in resilience.
- **Indicator 7.** At least a third of all Bay Area residents will have increased awareness about healthy local food as well as the desire and ability to support a local food economy.
2. ROADMAP ACTION PLAN FOR A VITAL REGIONAL FOOD SYSTEM

Vision: A sustainable, equitable, healthy local food system is recognized and invested in as an integral foundation of the Bay Area’s regional resilience and shared prosperity.

Background
The Food Futures Roadmap Action Plan, the report’s centerpiece section, provides a framework for describing existing food system conditions in the Bay Area and for identifying - and galvanizing support for - the actions needed to secure the food systems’ increasing importance for regional resilience.

The impetus for the Roadmap was the opportunity, presented by inflection points of two major regional planning initiatives - implementation of ABAG’s recently adopted Economic Action Plan and initiation of the development of Plan Bay Area 2050 - to bring food systems considerations and issues to the table in a systematic and impactful way. Just as the region is planning for resilience in the face of a range of divergent future scenarios, this Roadmap is similarly mapping a viable route to a resilient food system, shaped by core values and ready for uncertain futures.

Approach and Organization
The Food Futures Roadmap Action Plan is organized around a framework of principles:

- Economic Viability: financially self-sufficient
- Social Equity: just and fair processes and outcomes for all
- Environmental Sustainability: replenished, conserved resources for long-term ecological balance
- Public Health: wellbeing of populations
- Sense of Place: cultural identity, location-based sense of meaning or purpose

As illustrated by the overview chart on the next page, these principles have associated goals and strategies for each food system sector.

The Roadmap’s seven chapters are each focused on a food supply chain sector or element. The first five chapters - production, distribution, manufacturing, retail, and food service - reflect the NAICS Code (U.S. Bureau of Labor Statistics North American Industry Classification System) food sector categories used for analysis in the Food Economy white paper. The other two chapters - consumption and post-consumption - though not tracked as industry sectors in standardized economic data, are obviously definitive food system elements.

Each food system sector chapter is framed in terms of principles, goals and strategies and includes these sections: 1) an introduction to major issues, referencing leading global analysis and California data; 2) intersections with regional planning; 3) presentation of existing regional conditions; 4) identification of strategies, actions and actors needed to achieve a preferred future; and 5) a ‘what does success look like’ scorecard of indicators and metrics showing where we are and where we need to be, and which data is missing.

There are a number of limitations in the approach. The Roadmap was developed primarily with secondary data and input from a representative but small number of agriculture and food system stakeholders. It is intended to provide a framework and starting point for broader discussion, engagement and utilization, not be a definitive document. The research team had limited time and resources, and specific areas of expertise. Therefore, some sections are deeply researched (e.g. agricultural production, consumption, and), others less thoroughly analyzed (e.g. distribution, manufacturing, retail, food service), and other topics, namely fisheries and aquaculture, were not covered at all. Finally, the chapters acknowledge just a small sample of the numerous actions already underway and the myriad actors deeply involved in addressing urgent food systems issues in the region.
## Principles, Goals and Strategies by Food System Sector

<table>
<thead>
<tr>
<th>ECONOMIC VITALITY</th>
<th>SOCIAL EQUITY</th>
<th>ENVIRONMENTAL SUSTAINABILITY</th>
<th>PUBLIC HEALTH</th>
<th>SENSE OF PLACE</th>
</tr>
</thead>
</table>

### Agricultural Production

**Goal:** Protect/restore agricultural resources and support climate resilient, equitable, economically-viable agricultural production

| Strategies | Increase investments in sustainable agriculture and agricultural infrastructure on farms and in rural towns | Increase access to land and provision of technical and financial assistance for beginning farmers, especially minorities and women | Protect agricultural and aquatic resources and increase adoption of climate-smart and regenerative farming practices | Reduce use of pesticides, herbicides and fungicides | Promote the cultural history of farming and enhance rural-urban connections |

### Distribution

**Goal:** Increase resilience and sustainability of food distribution

| Strategies | Increase infrastructure investments in areas with competitive industrial real estate | Address labor shortages and support career mobility | Reduce distances and increase transportation efficiency to limit pollution and waste | Promote food safety innovations and supply chain transparency | Strengthen distribution opportunities for local products |

### Manufacturing

**Goal:** Promote innovation, entrepreneurship, workforce development and resource efficiency in food manufacturing

| Strategies | Increase investments in advanced manufacturing and in small business development | Support entrepreneurship, access to ownership, fair employment, and workforce development | Increase energy efficiency and reduce waste | Promote food safety innovations and healthy food options, and monitor novel foods | Support manufacturers developing and using local products |

### Retail

**Goal:** Support local businesses and workers in the retail sector, while improving access to healthy food

| Strategies | Foster best practices and new models for healthy food retail | Support living wages, stable employment, upward mobility, and community-owned business models | Incentivize sustainable food options, while assessing impacts of delivery and packaging | Promote healthy food retail at all scales, especially in underserved communities | Promote community-based businesses and farmer to consumer direct sales |

### Food Service

**Goal:** Support food service businesses that promote healthy food, provide good jobs and help relocate the food economy

| Strategies | Support business start-ups and transition of existing businesses to circular economy models | Support living wages, stable employment, upward mobility, and community-owned business models | Incentivize sustainable food options, while assessing impacts of delivery and packaging | Incentivize availability of and education about healthy food | Promote community-based models and diversity of food traditions |

### Consumption

**Goal:** Improve access to sustainable, healthy, locally-produced food for all

| Strategies | Support economic viability of affordable, healthy sustainably-produced food | Ensure equal access to sufficient healthy, culturally-appropriate food | Promote sustainable diets (seasonal, plant-centric) | Ensure access to sufficient and nutritious food, and promote healthy eating | Promote consumption of locally produced food, reflective of cultural diversity |

### Post Consumption

**Goal:** Promote a circular economy in the ag and food sector, with a focus on preventing waste of edible food

| Strategies | Develop new markets, jobs, and business opportunities in waste reduction, reuse, and recycling | Ensure dignified food redistribution, while avoiding negative impacts of waste on underprivileged groups | Reduce pollution and save resources while improving soil health | Promote sustainable, healthy, zero-waste diets | Build community through food sharing, community composting and recycling |
Agricultural Production Sector

Context

On the global scale, agricultural production is significantly straining natural resources. Agricultural intensification is depleting soil health, causing drastic loss of fertile soils (24 billion tons annually), polluting water bodies, and is the leading cause of biodiversity decline. Over the past 40 years, 52% of the world’s biodiversity has been lost primarily due to deforestation and land clearing in developing countries. Of the approximate 40% of total land area used for agriculture, around 75% of that used to support livestock and meat consumption, which at many large scales, but dependent on landscape context, is a highly resource inefficient means for producing food.

Agricultural production is also impacting climate change. Global food systems account for 19-29% of all greenhouse gas (GHG) emissions. In the United States, GHG emissions from agriculture have been increasing annually since 1990; the EPA estimates that agriculture emits 9% of the country’s greenhouse gases—mostly nitrous oxide from fertilizer and methane from livestock. The sector increasingly bears climate change impacts due to extreme weather events, unpredictable weather patterns, and long-term changes in temperatures and rainfall, which in turn disrupt production systems. Climate disruptions are projected to become more severe over this century. As just one example, in the western United States, in the past decade there has been a loss of nearly 1 million acres of irrigated land due to drought.

Agricultural production also has significant potential to provide climate change mitigation, through practices including soil carbon sequestration, improved nutrient management, emissions reductions from stored manure and emissions reduction from industrial fertilizer production. All possible changes in emissions reduction, sequestration of carbon, and consumer behavior (e.g., reducing meat consumption and reducing food waste) add up to between 5.4 to 6.3 Gt CO2e of mitigation potential, an estimate that would make the agricultural sector roughly GHG-neutral.

California has an extraordinary agricultural economy, with over 400 agricultural products contributing to an annual production value of $45.5 billion in 2017. However, in keeping with global trends, the impacts of climate change on agriculture and impacts of agriculture on climate, including potential mitigation of climate change by agricultural production, are key issues for California’s agricultural economy and environmental sustainability. One of the biggest challenges is water supply and management. Agriculture uses between 40% to 80% (data varies according to source) of all fresh-water supplies in the state, through an engineered system which has severely compromised the health of the Sacramento San Joaquin Delta and has led to serious over-pumping of groundwater.

The state’s landmark Groundwater Management Act aims to ensure that groundwater basins achieve recharge balance by 2040 for “critically over-drafted basins” and by 2042 for the remaining high and medium priority basins, which will mean less water available for agriculture and reduction in agricultural acreage in some parts of the state. Predicted significant decrease in snowpack levels over the coming century, due to the warming climate, increases uncertainty about sufficient water supplies for the state’s intensive and highly productive agriculture.

A few of the many additional challenges to agricultural production in California include: an aging farmer population (the average farmer is 60 years old, two years older than the national average); severe shortage of agricultural labor; and record high levels of pesticide use (in 2016, there were 208 million pounds of pesticides used in California agriculture, the 2nd highest amount since 2000).

In California, there are numerous efforts underway to promote agricultural production that helps mitigate climate change impacts, protect natural resources, and advance equity. As one example, SB 1368 established that the protection and management of land is a vital element of the state’s greenhouse gas emissions reduction goals. Under this bill, state agencies are required
to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands. As another example, the proposed *Regional Economies and Equity in Agricultural Lands Act* would protect agricultural lands and make them accessible to socially disadvantaged farmers and ranchers through ownership or long-term leases.19

Key climate smart agriculture programs funded by the *California’s California Climate Investments (CCI) Fund* and/or the California Department of Food and Agriculture (CDFA) include: the Sustainable Agricultural Lands Conservation Program (SALCP); Healthy Soils Incentives Program (HSP, HSIP), State Water Efficiency and Enhancement Program (SWEEP), and Alternative Manure Management Program (AMMP).20 Combined funding for these programs in 2018 was around $76.4 million.21 In 2018, 17 out of 64 (27%) of HSP awards were to certified organic farms.22 SWEEP has saved 33 billion gallons of water annually for all of CA since its inception, and through AMMP 711,382 metric tons of CO2 will be reduced over the next 5 years.23 Another positive trend is the increase in acreage of organic production, with the state now accounting for 20% of the nation’s organic farms.24

Cattle grazing, the most extensive land use in the state, also has stewardship benefits, which may be under-appreciated: it reduces fire fuel loads by consuming grass and can minimize greenhouse gas emissions from catastrophic wildfires, and also supports habitat for many of California’s threatened and endangered species.25

Land stewardship is also strengthened by engaging society at large with agriculture by promoting a cultural connection with the land. The Food and Agriculture Organization of the United Nations (FAO) and many actors around the world recognize the *importance of farming to culture* and sense of place.26 The concept of ‘terroir’ and designation systems such as AVA’s (American Viticultural Area) take further the culinary, cultural, geo-physical and related economic elements of food landscapes.

Urban agriculture on the rise globally, and also increasingly popular in California, is another important way of involving communities in food production.27 Community gardens, school gardens, and - in part thanks to the *Urban Agriculture Incentive Zones Act* - small commercial urban gardens, are flourishing across the state, reducing food insecurity, providing employment and training opportunities, and increasing awareness and appreciation for fresh, whole foods.28

### Intersections with Regional Planning

<table>
<thead>
<tr>
<th>Alignment with the Economic Action Plan Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Climate</td>
</tr>
<tr>
<td>#3. Prioritize programs to expand entrepreneurship and business ownership opportunities, particularly in distressed communities.</td>
</tr>
<tr>
<td>Workforce</td>
</tr>
<tr>
<td>#9. Expand economic opportunity and upward mobility in employment and wages at all life stages</td>
</tr>
<tr>
<td>#10. Enhance apprenticeship opportunities throughout the region.</td>
</tr>
<tr>
<td>Housing and Workplaces</td>
</tr>
<tr>
<td>#12. Identify and implement best practices to support housing production, preservation and affordability.</td>
</tr>
<tr>
<td>Infrastructure</td>
</tr>
<tr>
<td>#19. Reduce vulnerability to climate change and natural hazards.</td>
</tr>
<tr>
<td>#20. Recognize the region’s agricultural land, bay lands and open space as an economic asset.</td>
</tr>
</tbody>
</table>

*Alignment with Plan Bay Area 2040*

Goals: 1) Climate Protection, 3) Healthy & Safe Communities, 4) Open Space and Agricultural Preservation (Direct all non-agricultural development within the urban footprint).
Bay Area Status Quo – Agricultural Production

Agriculture production in the Bay Area reflects many characteristics of California agriculture overall. With almost 2 million acres of farmland and grazing lands encompassing a wide range of climate zones, the region’s agriculture is extraordinarily diverse and productive. From the fertile row crop fields of southern Santa Clara Valley to the wine-grape growing regions of Sonoma and Napa, and from Marin’s ocean view grazing lands to Brentwood’s productive orchards, Bay Area farmers produce a cornucopia of fruits, vegetables, meat, dairy, and wines for regional consumption and for worldwide markets. In addition to providing food, Bay Area agriculture provides numerous benefits: jobs, contributions to the local economy, ecosystems services, recreation and education opportunities, iconic view sheds and cultural identity. Below is a snapshot of agricultural production in the Bay Area today, in terms of five core principles: social equity, economic viability, environmental sustainability, public health, and sense of place.

**Economic Viability**

- Around 40% of the Bay Area is in agricultural land use; of the total 1.9 million acres, 12.5% is prime farmland and around 75% is grazing lands.  
- Bay Area agricultural production value is $2.4 billion, with an indirect economic value about two and a half times greater and an economic output value around five times greater than the production value.  
- The region has around 8,700 farm operations.  
- The average cropland value per acre in the Bay Area was $44,138 in 2017 (only $5,106/acre for rangeland, but $82,917/acre for vineyards). Lease values range from $1000-$6000/acre-month depending on the land use, and are increasing.  
- More than 200,000 acres of agricultural land have been converted to development use since 1984. From 1990 to 2008, there was a 12% decline in cropland acreage (591,167 acres in 2008).  
- The average age of a Bay Area farmer is 59 years old, and the average years of experience of a farmer is 21.2 years.

**Social Equity**

- Women make up about 37 percent of total food producers, and 27.4% of total producers are female principal operators. Only 14% of producers are non-white and only 10% of producers are minority principal operators.  
- Labor rates are too low for many farm laborers and employees to live in the high cost Bay Area, but low margins make it hard for farm owners to pay higher wages.  
- Farm employees, farm workers and their families need more housing options and more affordable housing in rural areas, especially those areas impacted by the increase in vacation rentals.

**Environmental Sustainability**

- The share of producers with farming as their primary occupation is 39.7%.  
- The share of producers under 35 years old is 6.6%, and producers with less than 11 years of experience account for 28.9% of Bay Area producers.  
- Indoor and ‘vertical’ farming - novel, energy and technology intensive agricultural production systems - are attracting funding and attention as potential climate change solutions. Indoor farming and vertical farming, using robotics and other energy-intensive technologies, make promises such as reduced resource use, less food miles, increased yields, and continuous production not dependent on seasons or labor supply. While the market for these products – mainly greens so far – is expanding, it is not yet clear to what extent these systems can supplement outdoor farming. That determination depends on ongoing assessments of costs, benefits and returns, as well as on market demand.

- A range of programs support the needs of beginning farmers (and to various extents all farmers) for training, technical and financial assistance, and land access. These include UC Cooperative Extension offices, county Resource Conservation Districts, and Community Development Financial Institutions (CDFI) with a focus on food and ag businesses, land trusts and other organizations, such as Kitchen Table Advisors and Sustainable Agriculture Education (SAGE). Anecdotally, there are considerable gaps between needs for, and provision of these kinds of services.
Social Equity (cont’d)

- Cities, including San Francisco and San Jose, report far more demand than supply for plots in community gardens, which primarily serve urban residents who do not have private gardening space (homes with yards are more common in higher income communities).

Environmental Sustainability

- There are 293,100 acres of farms, ranches, and natural lands at risk of development in the next 30 years, with 63,500 acres of that likely to be developed in the next 10 years. The percentage of “at risk” farmland declined 9.2% from 2012 to 2017. There are currently 1.2 million acres permanently protected from development in the Bay Area.
- As of 2016 in the Bay Area, there were 654 organic farms and 12 operations certified by Animal Welfare Approved (AWA), Certified Humane (CH), or Global Animal Partnership (GAP) Steps 2 and above.
- From 2003 to 2015, Bay Area farmers and ranchers have received roughly $37.1 million in financial assistance for implementing climate-smart agricultural practices from federal Natural Resource Conservation Service (NRCS) programs: Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP), and Conservation Stewardship Program (CSP).
- Investments from California climate smart agriculture programs in the Bay Area include: 25 Healthy Soils Program projects in 2018, representing 5771.4 metric tons of CO2 equivalent of emissions reduction; three AMMP projects in 2018, representing CO2 emissions reductions over the next five years of 13,590 MtCO2e; and one SWEEP project in 2018.
- Organizations like the Carbon Cycle Institute, Marin Carbon Project, and local Resource Conservation Districts (RCDs) are working with farms and ranchers to develop carbon farming plans and offer workshops to educate farmers in Marin County and beyond. At least nine farms and ranches in Marin County employ carbon farming practices.

Public Health

- The Pesticide Action Network keeps a database of pesticide usage by county, and a list of “Bad Actor” pesticides that are the most toxic. According to this database, in 2016 there were 1.8 million pounds of Bad Actor pesticides used on Bay Area farming operations.

Sense of Place

- As depicted in the Bay Area Food Landscapes map, Bay Area agriculture is comprised of numerous areas, each with their own distinct geography, climate, associated crop and livestock systems, farmer communities, and cultural history. Many are iconic, situated next to beautiful open spaces or affording spectacular view sheds; many encompass small rural towns, which also have historic character; and yet others are known for their unique agricultural products. Taken together, these features contribute a sense of place for residents and visitors alike, and in turn become the basis for agritourism.
- The expansion of urban agriculture in the Bay Area brings the cultural significance of growing food into urban parks, neighborhoods and backyards. San Mateo County offers a model example of county- and city-level policies that support urban agriculture.
Bay Area Preferred Future – Agricultural Production
Protect and restore agricultural resources and promote climate resilient, equitable and economically-viable agriculture.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase investments in sustainable agriculture and agricultural infrastructure on farms and in rural towns.</td>
<td>Increase access to land and provision of technical and financial assistance for beginning farmers, especially minorities and women.</td>
<td>Protect agricultural and aquatic resources and increase adoption of climate-smart and regenerative farming practices.</td>
<td>Reduce use of pesticides, herbicides and fungicides.</td>
<td>Promote the cultural history of farming and rural-urban connections.</td>
</tr>
</tbody>
</table>

Bay Area agriculture production has seen considerable positive trends in recent years, including a decreasing rate of agricultural land conversion and an increasing rate of adoption of climate smart agricultural practices. However, achieving the goal and strategies above, will require concerted action by multiple stakeholders.

**Economic Viability**
Increase investments in sustainable agriculture and agricultural infrastructure on farms and in rural towns.

**Public Sector Agencies**
- Protect agricultural activities through local and regional comprehensive planning and policies.
- Develop agricultural plans that balance the need for agricultural conservation, economic growth, and sustainable development.
- Invest in agricultural infrastructure, such as value-add processing facilities, distribution centers, and water supply (including recycled water).
- Develop agricultural enterprise zones.
- Increase resources for technical and financial assistance for farmers.
- Support legislation that supports economic viability of small-to moderate-scale diversified farms and ranches (e.g. AB 838, 2019, which would establish a Farmer Equity and Innovation Center through the University of California).\(^5^3\)

**Social Equity**
Increase access to land and provision of technical and financial assistance for beginning farmers, especially minorities and women.

**Public Sector Agencies**
- Support development of housing in rural areas for farm employees and farm workers.
- Support agricultural branding and public education campaigns; market and celebrate local agriculture.

**Philanthropy, Lenders, & Investors**
- Provide funding for programs that support beginning, ‘ag in the middle’, women, and minority farmers, help farmers build strong business acumen; and support the transition of farmland to the next generation
- Provide low cost capital for farmland acquisition.

**Retail, Food Service, & Restaurateurs**
- Buy foods from regional farms; educate the public.

**Public Sector Agencies (cont’d)**
- Support development of housing in rural areas for farm employees and farm workers.
- Support agricultural branding and public education campaigns; market and celebrate local agriculture.

**Civil Society**
- Advocate for more equitable access to farmland and technical and financial assistance.
- Advocate for public sector investment in community-based urban agriculture opportunities.
- Start community and/or school gardens; teach young people about where food comes from and why it’s important to have local farms.\(^5^5\)
Bay Area Food Futures Roadmap

Social Equity (cont’d)

Retail, Food Service, & Restaurateurs
- Purchase foods from farms that have fair labor practices and from women and/or minority-owned farms from within the region.

Farmers & Ranchers
- Offer apprenticeships and short-term work positions to women and minorities.
- Participate in training sessions for farmers and ranchers to share knowledge.

Environmental Sustainability

Protect agricultural and aquatic resources and increase adoption of climate-smart and regenerative farming practices.

Public Sector Agencies
- Investigate the feasibility of a public-private regional fund that supports permanent protection of farmland, strategic investments in farmland infrastructure, and incentives for climate-friendly agricultural practices.
- Support farmland protection policies.
- Dedicate funding for agricultural easements.
- Develop incentives for conservation easements (e.g. transfer of development rights).
- Dedicate funding for land acquisition for green infrastructure and ecosystem services values.
- Fund Priority Conservation Areas (ABAG).
- Scale up investment in climate-smart ag, and innovate ways to measure risk and rewards
- Invest in “greener” infrastructure.
- Support local food procurement policies for schools and hospitals.

Philanthropy, Lenders, & Investors
- Fund green infrastructure projects.
- Create a hybrid public/private fund to seed climate-friendly practices with initial low ROI.
- Create a Conservation Loan Fund.

Civil Society
- Advocate for farmland protection policies.
- Attend local planning meetings and show support for protecting farmland by prioritizing compact development over urban sprawl.
- Contact your legislators to voice support for funding and initiatives that protect farmland and help farmers manage the land sustainably.

Retail, Food Service, & Restaurateurs
- Purchase foods from certified organic farms.

Public Health

Reduce use of pesticides, herbicides and fungicides.

Public Sector Agencies
- Support legislation that reduces exposure of outdoor workers to unhealthy air (e.g. AB 1124, requiring the Occupational Safety and Health Standards Board to “adopt emergency regulations that require employers to make respirators available to outdoor workers on days the workers could reasonably be expected to be exposed to harmful levels of smoke or burning structures due to a wildfire.”)
- Support legislation that prohibits use of chemicals toxic to people and the environment (e.g. SB 458, “prohibiting the use of a pesticide that contains the active ingredient chlorpyrifos.”)

Civil Society
- Advocate for farmworker protection policies.

Retail, Food Service, & Restaurateurs
- Purchase foods from certified organic farms.

Sense of Place

Promote the cultural history of farming and rural communities and enhance rural-urban connections.

Public Sector Agencies
- Support investments in rural communities.
- Increase spending for K-12 school education programs about local agriculture.

Civil Society
- Advocate for Green New Deal policies that support family farms and rural repopulation.

Philanthropy, Lenders, & Investors
- Provide funding for projects that link farmland protection, resource stewardship, public engagement, and curation about ag history.

Retail, Food Service, & Restaurateurs
- Educate customers about farmer suppliers’ stories, their locations, practices, and workforce.
## What Does Success Look Like? Agricultural Production Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td># of farms</td>
<td>8,698</td>
<td>Remain steady or increase (a)</td>
<td></td>
</tr>
<tr>
<td># of fisheries</td>
<td>19</td>
<td>Remain steady or increase (a)</td>
<td></td>
</tr>
<tr>
<td>Acres in farming</td>
<td>1,978,730</td>
<td>Remain steady or increase (a)</td>
<td></td>
</tr>
<tr>
<td>Market value of agricultural production</td>
<td>$2,403,819,000</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Market value of aquaculture production</td>
<td>$6,846,000</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Average Value per Farm</td>
<td>$245,905</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Average farmer share of retail food price</td>
<td>Unknown</td>
<td>Measure and increase (a)</td>
<td></td>
</tr>
<tr>
<td>Average Age of a Bay Area farmer</td>
<td>59</td>
<td>Decrease (a)</td>
<td></td>
</tr>
<tr>
<td>Average years of Farm Experience</td>
<td>21.2</td>
<td>Remain steady or decrease (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers with Farming as their primary occupation</td>
<td>39.7%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers that are under 35 yrs old</td>
<td>6.6%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers with &lt;11 years experience</td>
<td>28.9%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Government payments (federal)</td>
<td>$7,822,000</td>
<td>Remain steady (a)</td>
<td></td>
</tr>
<tr>
<td>Operations receiving federal payments</td>
<td>430</td>
<td>Remain steady (a)</td>
<td></td>
</tr>
<tr>
<td>Operations receiving state &amp; local payments</td>
<td>39</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Average cropland value ($/acre)</td>
<td>$44,138</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td>Average cropland lease value ($/acre-month)</td>
<td>$1,367</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td>Average rangeland value ($/acre)</td>
<td>$5,106</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td>Average rangeland lease value ($/acre-month)</td>
<td>$28</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td>Average vineyard value ($/acre)</td>
<td>$82,917</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td>Average vineyard lease value ($/acre-month)</td>
<td>$6,581</td>
<td>-</td>
<td>(b)</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of producers that are women</td>
<td>37.4%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers that are women principal operators</td>
<td>27.4%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers that are minorities</td>
<td>13.9%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>% of producers that are minority principal operators</td>
<td>10.2%</td>
<td>Increase (a)</td>
<td></td>
</tr>
<tr>
<td>Programs that support beginning and/or underrepresented farmers, with aims to improve skills and business success</td>
<td>Unknown</td>
<td>Start collecting data</td>
<td>(a)</td>
</tr>
<tr>
<td>Access to fair financing</td>
<td>Unknown</td>
<td>Start collecting data</td>
<td>(a)</td>
</tr>
</tbody>
</table>

### Sources
- (a) 2017 Census of Agriculture, https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/2/table/1/state/CA
- (c) https://www.greenbelt.org/at-risk-2017/
- (d) https://www.conservation.ca.gov/dlfp/fmmp/Pages/county_info.aspx
- (f) https://www.bayareagreenprint.org/dashboard/#?tabid=Water&amp;font=Drinking%20Water%20Source%20Watersheds
- (g) https://www.bayareagreenprint.org/dashboard/#?tabid=BiodiversityandHabitat&amp;font=Wetlands%20and%20Ponds
- (h) https://www.bayareagreenprint.org/dashboard/#?tabid=BiodiversityandHabitat&amp;font=Bay%20Area%20Critical%20Linkages
- (i) https://www.aspca.org/shopwithyourheart/consumer-resources/certified-farms-state#ca
- (k) Carbon Cycle Institute, Marin Carbon Project
- (l) 2016, http://www.pesticideinfo.org/Search_Use.jsp#CountyUse

Agricultural Production Scorecard continued on the next page ---
# What Does Success Look Like? Agricultural Production Scorecard (cont’d)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Sustainability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic operations/farms</td>
<td>654</td>
<td>Increase</td>
</tr>
<tr>
<td>Market value of organic agricultural production</td>
<td>$428,590,000</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Federal payments for conservation/wetlands</td>
<td>$957,000</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Operations with alley cropping &amp; silvapasture</td>
<td>237</td>
<td>Increase</td>
</tr>
<tr>
<td>Operations that Harvest Biomass for Renewable Energy Production</td>
<td>28</td>
<td>Increase</td>
</tr>
<tr>
<td>Operations with Rotational or Management Intensive Grazing (relevant to pasture)</td>
<td>720</td>
<td>Increase</td>
</tr>
<tr>
<td>Operations with grazing managed for conservation values</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Farmland at Risk (acreage) (over next 30 yrs)</td>
<td>293,100</td>
<td>Decrease</td>
</tr>
<tr>
<td>High-risk Farmland (acreage) (over next 10 yrs)</td>
<td>63,500</td>
<td>Decrease</td>
</tr>
<tr>
<td>% change &quot;at risk&quot; farmland</td>
<td>-9.2% (2012-17)</td>
<td>Continue decline</td>
</tr>
<tr>
<td>Land permanently protected from development (acres)</td>
<td>1,200,000</td>
<td>Increase</td>
</tr>
<tr>
<td>Farmland (net acreage change 2014-2016)</td>
<td>9,660</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Grazing Lands (net acreage change 2014-2016)</td>
<td>-11,520</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Urban &amp; Built-Up Land (net acreage change 2014-2016)</td>
<td>1,277</td>
<td>Remain steady or decrease</td>
</tr>
<tr>
<td>Soil Organic Carbon Storage (metric tons CO2 equiv)</td>
<td>255,877,779</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Acres of Drinking Water Source Watersheds</td>
<td>1,590,602</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Acres of Wetlands/Vernal Pools</td>
<td>195,141</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Acres of &quot;Critical Linkages&quot;</td>
<td>892,726</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>Farms with &quot;Welfare Certifications&quot; (AWA, CH, GAP)</td>
<td>12</td>
<td>Increase</td>
</tr>
<tr>
<td>Healthy Soils Program (HSP) projects (#, 2018)</td>
<td>25</td>
<td>Increase</td>
</tr>
<tr>
<td>HSP GHG Emissions reductions yearly estimate (MT CO2 equiv)</td>
<td>3,005.90</td>
<td>Increase</td>
</tr>
<tr>
<td>AMMP projects (#, 2018)</td>
<td>3</td>
<td>Increase</td>
</tr>
<tr>
<td>AMMP GHG Emissions reductions over next 5 years est. (MT CO2e)</td>
<td>13,590</td>
<td>Increase</td>
</tr>
<tr>
<td>SWEEP projects (#, 2018)</td>
<td>1</td>
<td>Increase</td>
</tr>
<tr>
<td># of Farms w/ Carbon Farming Plans</td>
<td>9</td>
<td>Compile county-wide data</td>
</tr>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pounds of harmful pesticides, herbicides, &amp; fungicides used</td>
<td>1,841,406</td>
<td>Decrease</td>
</tr>
<tr>
<td># of programs that promote farmworker safety</td>
<td>Unknown</td>
<td>Compile county-wide data</td>
</tr>
<tr>
<td>Greater pesticide regulation and legislation that protects farmworkers' health</td>
<td>2 pending laws</td>
<td>Help AB1124 &amp; SB458 become law</td>
</tr>
<tr>
<td><strong>Sense of Place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Farm Size (acres)</td>
<td>264.55</td>
<td>Remain steady</td>
</tr>
<tr>
<td>Farms/operations with a barn built prior to 1960</td>
<td>1,683</td>
<td>Remain steady</td>
</tr>
<tr>
<td># of community and/or school gardens</td>
<td>Unknown</td>
<td>Compile county-wide data</td>
</tr>
<tr>
<td># of programs that support rural communities &amp; historic farms</td>
<td>Unknown</td>
<td>Compile county-wide data</td>
</tr>
<tr>
<td>Legislation that ensures protection and/or financial support for rural farming communities</td>
<td>2 pending laws</td>
<td>Help AB986 &amp; AB838 become law</td>
</tr>
</tbody>
</table>
Distribution Sector

Context

The food distribution sector includes packing, warehousing, wholesale, and transportation activities. This is a key sector, especially for countries with global food distribution systems, including the United States, where the average distance travelled by our food is estimated to be over 1,500 miles.\(^{61,62}\)

Distribution activities are influenced by evolving international food safety regulations, as well as by global trends such as automation, digitalization, and the increasing use of data analytics. In some industries, the unmet demand for commercial drivers may be partially compensated in the next 15-30 years by new technologies and assisted or autonomous vehicles (AV).\(^{63}\) However, to date, regional-scale wholesale food distribution in which commercial drivers also provide customer service, does not anticipate adoption of AV delivery.

A pending goods movement study commissioned by ABAG and covering a 19-county Northern California mega-region including the Bay Area, has a number of findings that are also germane to Bay Area food distribution. These findings are outlined in the Status Quo section below.

The amount of food consumed in the Bay Area that was produced in the region is approximately 5%, in terms of raw farm products. (See Appendix B for table of local production and local consumption.) It is also possible to estimate the amount of California grown products consumed in the Bay Area. To date, it is very difficult to track the exact provenance (from the U.S. and other countries) by volume of the vast majority of the food consumed in the Bay Area. However, this information is important for understanding regional food dependence and long-term food security, and also for understanding regional food goods movement infrastructure and logistics.

In the Bay Area, the food distribution sector represented 1,492 businesses in 2015 and more than 26,700 jobs, amounting to approximately 6% of food and ag businesses and 6% of jobs as well.\(^{64}\) While warehousing and storage activities are decreasing (with a 40% job loss since 1995), wholesale and trade activities are growing (by about 11% since 1995, with a 19% increase in wages). The ratio of distribution-related activities in the food and ag sector is even higher in Solano and Alameda Counties, primarily because these areas have good access to interstate highways and ports and a strong industrial land base.\(^{65}\)

Intersections with Regional Planning

<table>
<thead>
<tr>
<th>The distribution sector opportunities are aligned with strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative, as well as with ABAG’s Resilience and pending Priority Production Area programs.(^{66})</th>
</tr>
</thead>
</table>

**Alignment with the Economic Action Plan Strategies**

**Business Climate**

# 2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.

# 14. Support and strengthen the Production, Goods Movement and Repair Cluster.

**Infrastructure**

# 15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.

# 18. Enhance and strengthen communications, energy and water.

# 19. Reduce vulnerability to climate change and natural hazards.

**Alignment with Horizon Initiative Strategy**

V2. Establish Priority Production Areas to Protect Industrial Lands.
Bay Area Status Quo – Distribution

With the $113 billion annual value of the Bay Area’s food economy, the $18 billion annual value of California agricultural exports (much of which moves through the Bay Area), and the fact that over ten million Bay Area residents and visitors buy and eat food in myriad places every day, it is clear that there is a great deal of food goods movement into, out of and within the Bay Area. While some trends, challenges and opportunities facing the sector are understood, a comprehensive view of the food goods movement and the food distribution sector is lacking.

Below is a snapshot of food distribution in the Bay Area today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

**Economic Viability**

- Two-thirds of total agricultural goods are transported by truck, and mostly by small companies (more than 97% of companies have fewer than 20 trucks).
- Competition for industrial space in high value real estate markets results in high lease rates for food distribution and manufacturing businesses.
- Most warehouse and distribution infrastructure were built before 1950.
- Food distribution activities contribute to traffic and congestion.
- There is an increase in wholesale-trade businesses and jobs.
- Serious shortage of commercial truck drivers.

**Social Equity**

- Wide range of job opportunities in distribution: from machinists to logisticians.
- Bay Area jobs in agriculture support activities and food distribution and manufacturing pay higher wages than the same jobs in other regions in the state.
- Negative externalities (noise, congestion, pollution) may create conflicts for historically disadvantaged communities that have been exposed to industrial areas and pollution for many decades.

**Environmental Sustainability**

- Distribution makes up an estimated 6-8% of the total GHG emissions from the U.S. food system (roughly 0.23 t CO2e/capita-year).
- Inefficiencies: 50% trucks return empty after delivery.
- Fewer truck routes near dispersed small food businesses mean that these businesses are more vulnerable in case of a natural disaster.
- Most food packaging is plastic, and often not recyclable, and so end up in landfills.
- Introduction of state legislation SB44 aims to reduce GHG emissions from trucks. If passed it will set the following timeline: by 1/1/2021, the state board (ARB) will have developed a comprehensive strategy for the deployment of medium and heavy-duty vehicles in the state that will: 1) bring the state into compliance with federal ambient air quality standards; 2) reduce motor vehicle GHG emissions by 40% by 2030; 3) reduce motor vehicle GHG emissions by 80% by 2050.
- Development and increasing use of renewable diesel.

**Public Health**

- Food safety concerns: In 2011, the FDA inspected just 6% of domestic food producers and 0.4% of importers.
- Under the Food Safety Modernization Act, there are still no requirements for microbiological testing to confirm the efficacy of safety programs.

**Sense of Place**

- Numerous food distribution companies provide critical logistics services and communicate farmers’ stories and values, as they connect regional farmers with retail and food service companies demanding local products.
Bay Area Preferred Future – Distribution
Increase resilience and sustainability of food distribution.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase infrastructure investments in areas with competitive industrial real estate.</td>
<td>Address labor shortages and support career mobility.</td>
<td>Reduce distances and increase transportation efficiency to limit pollution and waste.</td>
<td>Promote food safety innovations and supply chain transparency.</td>
<td>Strengthen distribution opportunities for local products.</td>
</tr>
</tbody>
</table>

Digitalization, automation, and data analytics may soon impact the future of food distribution – at a global scale, and more specifically in the Bay Area. These evolutions offer opportunities to increase efficiency and resilience of the supply chain. Other innovations may also transform distribution activities in the longer term, but are currently at early, experimental stages. These include: macrobiota management and sensors for safer (and spoilage resistant) foods; food tracking through blockchain, crypto-coupons, smart contracts, or supply chain “disruptions” and innovations: delivery by drone, automated purchases, etc.82,83

**Economic Viability**
Increase infrastructure investments in areas with competitive industrial real estate.

**Public Sector Agencies**
- Conduct an analysis of the Bay Area food goods movement and food distribution cluster to fill in the knowledge gaps and address challenges and opportunities. Issues include: vulnerabilities to natural disasters and other risks; investment needs for modernization; advent of electric and autonomous vehicle technologies for truck fleets; and intersection with regional transportation and land use planning. (See Food Future Big Ideas section for more detail.)
- Support investments in future-oriented distribution centers/hubs and transportation infrastructures, such as the port of Oakland (data-driven terminal), San Jose, Tri-Valley, Solano, and I 880 corridor.84
- Support workforce training and upward mobility programs.
- Track labor shortages in this sector and address as part of regional labor shortage issues.

**Public Sector Agencies (cont’d)**
- Identify PDR spaces that are suitable and affordable for food distribution functions.85
- Develop policies, facilitate private-public partnerships, and encourage funding for supporting the development of dedicated space for co-located food manufacturers and wholesaler.86
- Study diversified and shared transportation options.
- Establish standards for new technologies and cybersecurity to avoid technological risks.

**Distribution & Food Businesses**
- Research best practices for food goods movement and facilitate information-sharing and adoption of best practices.87
- Develop interoperability, shared infrastructure, and data analytics to increase profitability.
- Assess opportunities for innovative forms of distribution: delivery robots, etc.

**Social Equity**
Address labor shortages and support career mobility.

**Public Sector Agencies**
- Prepare for potential automation and other new technologies that may shift workforce skills needed.

**Distribution & Food Businesses**
- Develop a strategic approach to PDA, PCA and PPD designations to bolster the viability of key cluster distribution businesses.
Environmental Sustainability

Reduce distances and increase transportation efficiency to limit pollution and waste.

Public Sector Agencies
- Implement California Sustainable Freight Action Plan to reduce congestion/pollution.\(^8\)
- Increase energy-efficiency and reduce GHG emissions in food goods movement, in the context of proposed regulation for fleets emissions reduction (SB44).\(^9\)
- Prepare distribution infrastructure in case of natural disaster: zone for (re)location to reduce the number of businesses in high-risk flooding and sea level rise zones, implement tax incentives in non-risk zones to influence business location decisions, prioritize transportation corridors and target the transportation routes most critical to the food sector for protection and repair. In the Bay Area, the most important routes are 101 and I-80.\(^8\)

Public Sector Agencies (cont’d)
- Provide technical assistance, streamlined permitting, recognition programs or tax incentives to distributors who source products grown organically or with other environmentally friendly production methods.\(^9\)

Distribution & Food Businesses
- Improve interoperability, shared infrastructure, and data analytics to reduce emissions.
- Transition to fuel-efficient and reduced emission vehicles.
- Find innovative models for reusable packaging, such as closing the loop.\(^9\)
- Implement zero waste programs.
- Develop innovative “green” packaging alternatives.

Public Health

Promote food safety innovations and supply chain transparency.

Public Sector Agencies
- Support research in food safety innovations (e.g. macrobiota management).

Distribution & Food Businesses
- Invest in food safety innovations and technologies.
- Promote transparency through data analytics distribution activities (to track food origin to destination).

Sense of Place

Strengthen distribution opportunities for local products.

Public Sector Agencies
- Provide technical assistance, streamlined permitting, recognition programs or tax incentives to distributors who source their products locally.\(^9\)
- Promote local products through outreach and education.

Distribution & Food Businesses
- Update technologies to help access local products (delivery, hubs, etc.), such as platforms/hubs for local products to aggregate demand.\(^9\)
- Seek public/philanthropic support to strengthen capacity to handle local products (e.g. San Francisco Wholesale Produce Market) per models such as Green Market, NYC; Common Market, Philadelphia, Loco Food in Colorado.\(^9\)
- Develop new B to B models to sell local products directly from farmers to businesses (notably supplying local manufacturers), like GrubMarket; or Foodshed.io that uses blockchains to provide local produce.\(^9\)
What Does Success Look Like? Distribution Sector Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Viability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ of public funding invested in food distribution centers</td>
<td>No consolidated data</td>
<td>Increase</td>
</tr>
<tr>
<td>Availability of industrial space for food distribution businesses</td>
<td>Insufficient</td>
<td>Increase</td>
</tr>
<tr>
<td>Affordability of industrial space for food distribution businesses</td>
<td>Insufficient</td>
<td>Decrease</td>
</tr>
<tr>
<td>Distribution infrastructure built more than 60 years ago</td>
<td>More than 50%</td>
<td>Decrease %</td>
</tr>
<tr>
<td>Labor shortage rate in the transportation sector</td>
<td>No consolidated data</td>
<td>Decrease</td>
</tr>
<tr>
<td>Accessible data on food goods movement</td>
<td>No consolidated data</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job training programs offered for distribution center workers</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Environmental Sustainability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average distance travelled by the food in the region</td>
<td>No available data</td>
<td>Conduct research</td>
</tr>
<tr>
<td>GHG emissions generated by food transportation in the region</td>
<td>No available data</td>
<td>Conduct research</td>
</tr>
<tr>
<td>% of trucks going back empty</td>
<td>50%</td>
<td>Decrease</td>
</tr>
<tr>
<td>% of low-emission or Electric Vehicles out of total trucks</td>
<td>No available data</td>
<td>Increase</td>
</tr>
<tr>
<td>% of trucks using biofuels made with recycled materials</td>
<td>No available data</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding for innovative food safety technologies</td>
<td>No available data</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Sense of Place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of distributors in rural areas aggregating supply from local small-medium scale farmers</td>
<td>No available data</td>
<td>Increase</td>
</tr>
<tr>
<td># of distributors communicating to their customers information about local suppliers</td>
<td>No consolidated data</td>
<td>Increase</td>
</tr>
</tbody>
</table>

**Sources**
(a) Megaregion Goods Movement Study (unpublished)
Manufacturing Sector

Context

The food and beverage manufacturing sector encompasses activities including processing of grains, edible oils, cereals, produce (e.g. frozen, canned, dehydrated, cut, etc.), seasonings, meat and seafood, bakery goods, snack foods, frozen and packaged meals, coffee and tea, as well as breweries, wineries, and other manufacturing of drinks. Over the decades, some types of food manufacturing have declined in California and the Bay Area, moving to other areas with cheaper labor costs. Yet, food and beverage processing is California’s third largest manufacturing sector, following computers and electronics and chemicals, and thus represents a key engine driving the California economy.

Several global innovations and consumption trends, some of which were born in the region, may change the food manufacturing sector in the following decades. These include “alternative proteins” such as synthetic and plant-based meat, the development of home-delivered meal-kits and customized full meals, as well as “microbial maps” informing agile and healthier food manufacturing processes.

In the Bay Area, the food and beverages manufacturing sector represented a total of 1,718 businesses in 2015 and more than 47,599 jobs, amounting to approximately 6.8% of food and ag businesses and more than 10% of jobs. Food manufacturing is the ninth largest traded cluster in terms of regional employment. While food manufacturing declined between 1995 and 2015 (the number of businesses has decreased by 11% and jobs by 10%), beverage manufacturing has increased significantly (the number of businesses has increased by 202% and employment by 95% over the same period).

Driven by the beverage industry, manufacturing establishments generate 12% of food system revenue in the Bay Area. Wages have increased by 18% in the sector between 1995 and 2015. While the Bay Area used to have a large canning industry, the region is now known as a leader in wine manufacturing (especially in Napa and Sonoma County), and also has a growing subsector of small to mid-size manufacturing businesses.

Intersections with Regional Planning

The food manufacturing sector has key needs and opportunities that are aligned with strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative, as well as ABAG’s Resilience and pending Priority Production Area programs.

Alignment with the Economic Action Plan Strategies

Business Climate

# 3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.

# 4. Support clusters and related industries that drive innovation and serve our communities.

# 5. Enhance the Bay Area’s innovation and entrepreneurship ecosystem.

Workforce

# 9. Expand economic opportunity and upward mobility in employment and wages at all life stages.

# 10. Enhance apprenticeship opportunities throughout the region.

Housing and Workplaces

# 14. Support and strengthen the Production, Goods Movement and Repair Cluster.

Infrastructure

# 15. Identify existing and develop new infrastructure funding.

Alignment with Horizon Initiative Strategy

V2. Establish Priority Production Areas to Protect Industrial Lands.
Bay Area Status Quo – Manufacturing

Food manufacturing businesses in the region are generally declining and losing jobs, with the exception of advanced food manufacturing, including production of novel foods, prepared meals, and meal kits. Small and mid-scale manufacturers struggle to start and sustain businesses with high costs of labor, industrial land and infrastructure, in addition to competition from large, consolidated manufacturing companies from outside the region. Below is a snapshot of food manufacturing in the Bay Area today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

**Economic Viability**

- Food and beverage manufacturing businesses have specific infrastructure requirements such as for extra drainage, ventilation, and loading access.\(^{104}\)
- As cost of industrial space increases (e.g. industrial rents in the East Bay rose by 14% in 2017, among the highest in the country), high tech and advanced manufacturing businesses can typically afford to pay higher rents than other industrial tenants, including smaller food industries, which are often outbid.\(^{105}\)
- The number of food manufacturing jobs decreased by 10% between 1995 and 2015.
- Innovative businesses (start-ups in alternative proteins, for example) receive high levels of investments but anecdotally, many are not yet viable economically.
- Some small businesses struggle to compete with companies funded by venture capital; while others aim to grow to the point that they can attract venture capital.

**Social Equity**

- Underrepresented populations face particularly high barriers to start and/or own a manufacturing business.\(^{106}\)
- Manufacturing jobs may be impacted by the growing trend of biotech labs using artificial intelligence and robotics to replace workers.
- Manufacturing workers who lose their jobs, especially minorities, lack retraining programs.
- Wages are unequal across the sector (e.g. in San Francisco-Oakland-Hayward in 2018, annual mean wage was more than $34,000 for butchers and bakers, and less than $30,000 for food cooking machine operators and tenders).\(^{107}\)

**Environmental Sustainability**

- Research is needed to assess the environmental impacts of processed food: for example, frozen and canned produce require more energy to process but may have less environmental impact than imported, out-of-season fresh produce.
- Manufacturing industries generate waste of packaged food products that are difficult to compost and recycle (mixed waste).
- Food packaging is often non-recyclable. In San Francisco, all molded plastic packaging (unless labeled “compostable” or “biodegradable”) is collected for recycling despite really low recycling rates; in Berkeley, the only non-redemption plastics purchased by Berkeley Recycling are \[#1\] and \[#2\].\(^{108}\)

**Public Health**

- The Food Safety Modernization Act established stricter controls on processing facilities, including “track and trace” processes.\(^{109}\)
- Novel foods, and in particular cellular animal proteins that are jointly regulated by the FDA and USDA, may need more oversight, in so far as regulatory agencies have not yet caught up with developments in this fast-growing industry.\(^{110}\)
- Large food companies perceive a demand and adapt their products to offer healthier options.\(^{111}\)
- Only a few cities so far (Berkeley in 2014, Oakland and San Francisco in 2016), have passed regulations to tax soda and sweetened beverages (1 cent-per-ounce of beverage).\(^{112}\) Some foods being marketed as ‘plant-based’ have proteins derived from genetically engineered products.

**Sense of Place**

- Local manufacturers cannot always access sufficient local products or ensure traceability of products.
- Products grown and/or manufactured locally are not necessarily transparently labeled as such.
Bay Area Preferred Future – Manufacturing
Promote innovation, entrepreneurship, workforce development and resource efficiency in food manufacturing.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase investments in advanced manufacturing and in small business development.</td>
<td>Support entrepreneurship, access to ownership, fair employment, and workforce development.</td>
<td>Increase energy efficiency and reduce waste.</td>
<td>Promote food safety innovations and healthy food options, and monitor novel foods.</td>
<td>Support manufacturers developing and using local products.</td>
</tr>
</tbody>
</table>

The food and beverage manufacturing sector is dynamic and innovative, and the region has become a hub for interested genetic engineering and lab-meat companies. For example, proteins are increasingly synthesized for food applications and the “alternative protein” category is expected to reach USD $5.2 billion value in 2020. The 2020 Food & Tech Summit will take place in San Francisco, allowing many entrepreneurs to discuss innovations in processing. At the same time, the region has an opportunity to look carefully at the full picture of the sustainability of synthetic foods through a social, economic, and environmental lens, and in terms of the full meaning of healthy food systems. This is a very controversial topic with a wide range of studies that are drawing different conclusions about this new industry.

**Economic Viability**

Increase investments in advanced manufacturing and in small business development.

**Public sector agencies**

- Make manufacturing infrastructure and processes more efficient, through existing programs: e.g. the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) awarded $100 million in sales tax exemptions to advanced manufacturers in 2015.
- Disseminate information about funding resources for food manufacturing businesses, including state funding for industry clusters, state-of-the-art processing facilities, and advanced manufacturing.
- Support development of food manufacturing and distribution clusters, including incubators and co-packers, possibly as part of new Priority Production Area.
- Provide technical assistance, streamlined permitting, recognition programs or tax incentives to small businesses that cannot afford industrial spaces, and to new, innovative businesses (drawing on recommendations from the New York City Council’s ’Food Works’ research).
- A Boston area report recommends having a city-wide property tax credit for small food business as a means for local governments to offer equipment rebates.

**Public sector agencies (cont’d)**

- Facilitate discussion about potential benefits and risks of processing innovations, including new genetically engineered products.

**Food Businesses & Nonprofits**

- Access information and resources through the California Manufacturers Technology Association. Access California Office of Business and Economic Development fund ($60 million) for existing and new food production centers and for lean production and advanced manufacturing (e.g. new broilers, vapor cooking).
- Access Employment Training Panel funding available to employers in the manufacturing sector to develop on-the-job and classroom training, e.g. on information technologies.
- Access support through Go-Biz (including California Competes tax credit), and other awards facilitating new business development.
- Develop incubators, such as La Cocina and Food Nest, to attract venture capital and foster new product development at larger scale.
- Develop new products and technologies in canning and packaging, such as retort pouches (sterile packaged) and High-Pressure Processing (cold pasteurization technique for juices, etc.)
Bay Area Food Futures Roadmap

Social Equity
Support entrepreneurship, access to ownership, fair employment, and workforce development.

Public Sector Agencies
- Support workforce training, internships, and upward mobility programs for underrepresented workers, including transition programs for workers who lose food manufacturing jobs.
- Facilitate access to Employment Training Panel funding (on-the-job training, technology training, etc.), with a focus on new jobs in advanced manufacturing.
- Improve transportation access to job sites.122

Food Businesses & Nonprofits
- Develop food business incubators with a focus on providing assistance to underrepresented food entrepreneurs.
- Offer career opportunities and ownership to underrepresented workers and food entrepreneurs.

Environmental Sustainability
Increase energy efficiency and reduce waste.

Public Sector Agencies
- Provide technical assistance, streamlined permitting, recognition programs or tax incentives to manufacturers that source products grown with organic or other eco-friendly methods and/or with locations close to production areas thus reducing transportation.123
- With the help of local universities, assess the full environmental life cycle and impacts of novel processed products, including the chemical inputs, energy use, and risks of contamination from production inputs and biotech waste.
- Incentivize reusable, recyclable, or biodegradable packaging alternatives124, increase composting and recycling of waste in the food industry.
- Zone for (re)location to reduce the number of industries in high-risk flooding and sea level rise zones: tax incentives in non-risk zones, hazard risk criterion in designation of PPAs.125
- Prioritize energy efficient equipment when offering equipment rebates.126

Food Businesses & Nonprofits
- Access funding through the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) for advanced manufacturing, lean or carbon-neutral production.127
- Participate in the California League of Food Producers’ environmental or energy resources committee.128
- Build facilities closer to production zones and access local raw materials to shorten supply chain.
- Increase energy efficiency and reduce GHG emissions from manufacturing (similar to recommendations from NYC Council).129
- Commit to explore reusable and recyclable packaging alternatives, as well as de-packaging technologies to allow for separate composting and recycling of discarded food products.130
- Join the Sustainable Packaging Coalition.131

Public Health
Promote food safety innovations and healthy food options and monitor novel foods.

Public Sector Agencies
- Clarify available information and implement health regulations established by FDA and USDA on novel foods (synthetic, lab-meat, genetically-engineered proteins, and plant-based ‘proteins’).
- Incentivize healthier processed food options (packaged meals, pre-cut produce, etc.), for example through labeling regulations (sodium, fat levels, etc.), and provide education on how to reduce health impacts of processed foods (e.g. rinse canned vegetables to reduce salt levels).132

Public Sector Agencies (cont’d)
- Limit the marketing of unhealthy food in environments frequented by children, especially at facilities that receive government funding.133
- Encourage “big 10” manufacturing businesses to develop innovative healthy options.
- Advocate for regulations and taxes on sugar-sweetened beverages at the State level.
Public Health (cont’d)

Food Businesses & Nonprofits
- Assess innovations such as “bio-designed products” that deliver health benefits and functional nourishment.  

- Develop healthy processed food options (packaged meals, etc.) not only for niche markets.  

Sense of Place
Support manufacturers developing and using local products.

Public Sector Agencies
- Provide technical assistance, streamlined permitting, recognition programs or tax incentives to manufacturers who source their products from within the region.  

- Provide incentives to businesses that supply local products to local manufacturers and to local manufacturers which sell their products locally.  

- Create a “Bay Area” brand and consider creating an online platform that links to local manufacturers’, similar to efforts in NYC.  

- Facilitate local urban-rural linkages.  

Food Businesses & Nonprofits
- Use and promote local ingredients.  

- Adopt best practices (e.g. the Central Valley AgPlus Food and Beverage Manufacturing Consortium “foster the growth and creation of food and beverage businesses and middle-skills manufacturing jobs in the Central Valley.”)
## What Does Success Look Like? Manufacturing Sector Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Viability</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of food manufacturing incubator programs</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of businesses participating in food manufacturing incubator programs</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Rate of businesses from incubators that survive 2+ years</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Availability of financing for qualified food manufacturing businesses</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Availability of industrial space for food manufacturing businesses</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Affordability of industrial space for food manufacturing businesses</td>
<td>Insufficient</td>
<td>Increase</td>
</tr>
<tr>
<td># of food manufacturing businesses</td>
<td>1,718 (2015)</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td># of jobs in the manufacturing sector</td>
<td>47,599 (2015)</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td>State funding going to advanced manufacturing in the region</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of ETP funding going to food manufacturing businesses</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of Go-Biz incentives going to food manufacturing businesses</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Social Equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average annual wage</td>
<td>$32,000</td>
<td>Increase</td>
</tr>
<tr>
<td># of training programs for manufacturing workers</td>
<td>No consolidated data</td>
<td>Increase</td>
</tr>
<tr>
<td>% of food manufacturing businesses owned by underrepresented populations</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Environmental Sustainability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of businesses with a program to be energy efficient</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Funding for energy-efficiency in manufacturing businesses</td>
<td>No consolidated data</td>
<td>Increase</td>
</tr>
<tr>
<td># of food manufacturing businesses in high risk areaa</td>
<td>Unknown</td>
<td>Build data and decrease</td>
</tr>
<tr>
<td>% of manufacturers having switched to reusable packaging options</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Public Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of municipalities with regulations against sweetened beverages</td>
<td>2</td>
<td>Increase</td>
</tr>
<tr>
<td># of food-safety related recalls in manufacturing (yearly)</td>
<td>Unknown</td>
<td>Decrease</td>
</tr>
<tr>
<td>Sense of Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% incentives going to businesses using local products</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
</tbody>
</table>

**Sources**

(a) Bay Area Food Economy, Baseline 2015
(b) California Legislature
Retail Sector

Context

The food retail sector includes food and beverage stores such as supermarkets, convenience stores, meat and seafood markets, fruit and vegetable markets, baked goods, confectionary and other specialty stores, as well as beverage stores. The scale of retail businesses ranges from large supermarkets (independent or part of a chain) to small corner-stores. The sector also includes grocery delivery services such as Good Eggs and AmazonFresh. However, farmers’ markets are not tracked as part of food industry economic data.

The region drives a number of global and national trends, such as the growth of food delivery and the proliferation of farmers’ markets, and direct-to-consumer sales. Nationally, non-store (online) retail represent around 12% of retail sales. As online sales increase market share competition, brick and mortar food and beverage stores are responding by offering new in-store experiences for customers, such as cooking demos and cafes.

In the Bay Area, food and beverage stores represented a total of 3,455 businesses in 2015 and more than 77,992 jobs, amounting to approximately 13.7% of food and ag businesses and more than 16.7% of jobs. The number of food and beverage stores has decreased by 12% between 1995 and 2015, while the number of jobs increased by 26% (showing a growth in the average number of workers per store). Retail establishments generate almost 42% of food system revenue in the Bay Area, but wages have decreased by 12% in the sector between 1995 and 2015. The food retail sector is a key component for improving food security and food access in the Bay Area, and also to broadening access to sustainable and healthy food options.

Intersections with Regional Planning

The needs and opportunities of the retail sector are aligned with multiple strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative, as well as with ABAG’s Resilience and Priority Development Area programs.

Alignment with the Economic Action Plan Strategies

Business Climate
# 2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.
# 3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.
# 5. Enhance the Bay Area’s innovation and entrepreneurship ecosystem.

Workforce
# 9. Expand economic opportunity and upward mobility in employment and wages at all life stages.
# 10. Enhance apprenticeship opportunities throughout the region.
# 11. Expand sector-specific paid internship programs for high school, and community college students.

Housing and Workplaces
# 13. Encourage employment growth around transit, transportation improvements near employment centers, and employment growth adjacent to workforce housing.

Infrastructure
# 19. Reduce vulnerability to climate change and natural hazards

Alignment with Horizon Initiative Strategy

V5. Create Incubator Program in Economically Challenged Communities.
Bay Area Status Quo – Retail

With a year-round growing climate and diverse demographics, Bay Area food markets offer a wide range of locally produced foods, organic products, and ethnic products, along with broad selection of commodity products and national brands. The rise in home deliveries, thin margins in the grocery business, and rapid growth in many cities, are just some of the factors presenting a dynamic and often challenging business climate for the retail food sector.

Below is a snapshot of Bay Area food retail today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

**Economic Viability**

- Food stores face increasing competition from companies delivering groceries and prepared meals or meal kits; such companies also provide opportunities for innovation.
- Space for retail stores is expensive, and the region has some of the lowest ground floor vacancy rates (especially in San Francisco).
- In 2015, 88.4% of food retail establishments employed between 1-14 people. At the same time, a small number of large stores (those with over 300 employees) concentrate a significant proportion of workers (e.g. Safeway with its headquarters in Alameda County).

**Social Equity**

- Retail wages are low as are unionization rates: average wage was $32,338 in 2015 with a 12% decrease since 1995.
- Food stores employ many temporary “gig” workers; such low-skilled workers then lack career-path opportunities.
- Consumers do not have equal access to all retail options, including food delivery. Paradoxically, a large proportion of food retail workers qualify for food assistance benefits (CalFresh program).

**Environmental Sustainability**

- A wide selection of fresh produce, organic food and sustainable seafood are available in many types of retail, including chain-stores, on-line grocers, independent stores and farmers’ markets.
- Smaller food stores are more at risk in case of natural disaster because they are unlikely to have back-up generators to keep perishable foods at temperature.
- Grocery delivery, through delivery companies like Amazon, generates GHG emissions from transportation as well as packaging waste. However, some recent life cycle analyses suggests that meal kits might in fact have lower impact than grocery shopping: more studies are needed on this topic.

**Public Health**

- Several few areas in the Bay Area qualify as food deserts (e.g. around Antioch, Concord, Petaluma, according to USDA mapping) with insufficient availability of fresh products.
- Additional research is needed to assess impact of in-store interventions that promote healthy products.

**Sense of Place**

- Grocery stores often anchor community shopping districts.
- Retail stores can educate consumers about where food comes from and how it is produced.
Bay Area Preferred Future – Retail
Support local businesses and workers in the retail sector, while improving access to healthy food.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place</th>
</tr>
</thead>
</table>

A preferred future for the Bay Area food retail would support stores and delivery services, operating at a range of scales, and offering sustainable and healthy food options in all neighborhoods. To work towards this preferred future, will require action through research, policy, education, and stakeholder collaboration. Local actors can achieve this goal through the following strategies, along core principles of resilience, which will benefit our local economy, communities, and the planet.

**Economic Viability**
Foster best practices and new models for healthy food retail.

**Public Sector Agencies**
- Assess incentives for including healthy food outlets in new and existing mixed-use housing projects. (See Big Ideas section for more detail.)
- Implement best practices from healthy food corner-store initiatives.
- Support business incubators to foster the emergence of new models and modes of retail, especially those that support local businesses and have a focus on healthy food.
- Provide technical assistance to businesses that struggle to adapt to technological changes.
- Support the use of reusable packaging and stimulate markets for bulk (non-branded) foods.

**Food Businesses & Nonprofits**
- Offer on-site experiences to consumers to compete with online shopping and delivery, such as demonstrations, and differentiation with niche products, personalized experience, in-store technologies, and/or additional value.\(^{155}\)
- Learn best practices from vertically integrated, community-owned food supply chain, e.g. Food Commons.\(^{156}\)

**Social Equity**
Foster best practices and new models for healthy food retail.

**Public Sector Agencies**
- Maintain or develop public policies that ensure livable wages and support workers’ unionization rights.\(^{157}\)
- Provide information and incentives to support workforce training, internships, and upward mobility programs.
- Ensure that all farmers’ markets and fresh food retailers can accept electronic benefits from food assistance programs.
- To increase food access options, make home delivery accessible food assistance benefits; an idea being piloted in the East Coast.

**Food Businesses & Nonprofits**
- Provide health coverage and benefits to workers, including the right to unionize.
- Develop cooperative models of grocery stores ensuring higher engagement and protection of workers-owners, such as Mandela Foods in West Oakland or Rainbow Grocery in San Francisco.\(^{158}\)
Environmental Sustainability
Incentivize sustainable food options, while assessing impacts of delivery and packaging.

Public Sector Agencies
- Promote reusable, recyclable, or compostable packaging in the retail sector, including at the back-of-the-store level.
- Assess environmental costs and benefits of grocery and meal kit delivery.
- Adopt standards for preferential public procurement of sustainable food (e.g. organic, local, seasonal) in stores.

Food Businesses & Nonprofits
- Adopt company standards for preferential procurement of sustainable food (e.g. organic, local, and seasonal) in stores.
- Adopt reusable, recyclable, or compostable packaging for procurement and for end consumers.

Public Health
Incentivize healthy food retail at all scales especially in underserved communities.

Public Sector Agencies
- Attract food retailers to food deserts through financial or fiscal incentives and streamlined permitting, in order to increase food access and the availability of fresh, healthy food.
- Promote best practices for healthy corner stores and healthy retail options such as kiosks at gas stations (like those in some EU countries).  
- Support healthier food options offered by large food retail businesses.
- Commission studies to assess effectiveness of in-store interventions promoting healthy products.  

Food Businesses & Nonprofits
- Develop new forms of retail offering healthy food options, such as healthy meal kit delivery, or food kiosks at gas stations.
- Access available resources to develop healthy food options, such as the healthy corner-stores network.
- Incentivize healthy products through price interventions.

Sense of Place
Promote community-based businesses and farmer to consumer direct sales.

Public Sector Agencies
- Support farmers’ markets, which have a positive impact on local economies and give farmers an outlet to sell local, fresh, and sustainable products directly to consumers.
- Support food and beverage stores (through tax incentives, technical assistance, etc.) that buy food from local suppliers.

Public sector agencies (cont’d)
- Support community-based, local, independently-owned businesses.
- Support development of retail food stores, as part of place-making and street activation.

Food Businesses & Nonprofits
- Develop new models to sell healthy local products directly to consumers.
## What Does Success Look Like? Retail Sector Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Viability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of food retail businesses</td>
<td>3,455 (2015)</td>
<td>Remain steady or increase</td>
</tr>
<tr>
<td># of jobs in the retail sector</td>
<td>77,992 (2015)</td>
<td>Increase</td>
</tr>
<tr>
<td>Market share of grocery delivery</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average annual wage</td>
<td>$32,338</td>
<td>Increase</td>
</tr>
<tr>
<td>% of unionized retail workers</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of retail workers without health insurance</td>
<td>Unknown</td>
<td>Decrease</td>
</tr>
<tr>
<td>% of stores and markets accepting CalFresh benefits</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Environmental Sustainability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHG impacts of grocery delivery and meal kits vs. on-site shopping</td>
<td>No available data</td>
<td>Conduct research</td>
</tr>
<tr>
<td>% of stores with options for bulk products/reusable packaging (in-store)</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of stores that use of reusable packaging (back-of-the-store)</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of stores with company standards for sustainable food</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total population living in food deserts</td>
<td>Unknown</td>
<td>Decrease</td>
</tr>
<tr>
<td>Funding for healthy cornerstores and other healthy retail options</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of stores implementing incentives for healthy options</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of municipalities with regulations against sweetened beverages</td>
<td>2</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Sense of Place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of cooperatively-owned grocery stores</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of stores that buy more than half of their food locally</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>% of stores owned locally (revenues stay in the region)</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
</tbody>
</table>

**Sources**

(a) Bay Area Food Economy, Baseline 2015
Food Service Sector

Context
The food service sector covers catering services, restaurants, cafeterias, bars, and community food services. As an increasing proportion of food is eaten outside of homes in developed countries, food service businesses play a major role in ensuring our food system's social, economic, and environmental sustainability. Global trends in food service, driven by technology and busier lifestyles, include clean and green living, individualized eating experiences, demand for ethically-sourced food options and development of food delivery platforms.\(^\text{163}\)

In the U.S., total global food service-related spending is expected to increase by 13% over the next five years.\(^\text{164}\) Food eaten away from home accounted for 43% of the average Americans’ spending on food in 2015, and this proportion is as high as 52% for Bay Area residents.\(^\text{165}\) Daily intakes of food (in volumes) are still larger at home, but certain food groups are consumed in larger volumes away from home, including for example, proteins and oils at fast-food restaurants.\(^\text{166}\)

Along with the trend of serving an increasing number of meals, corporate offices, institutions and schools and their food service providers, are becoming more focused on sustainability. This includes establishing healthy food standards. They often focus on more plant-forward meals and less processed food. They also set food sourcing sustainability standards, which cover a wide range of values around local production, climate-friendly farming practices and fair wages. Kaiser Permanente’s ‘Vision 2025 for 100% Sustainable Food (and Recycling)’ is an excellent example. The increase in the number of school districts adopting the Good Food Purchasing Program is another.\(^\text{167}\)

The food service sector is particularly dynamic in the Bay Area, which may have more restaurants and bars per capita than any other metropolitan region in the country, despite rapid growth in the options of prepared food at grocery stores and meal delivery kits.\(^\text{168}\) While the region’s multicultural population drives demand, the region’s high quality and diverse agricultural products provide the ingredients for this vibrant food service sector.

In economic terms, the sector represented 16,865 businesses and 293,358 jobs in 2015, amounting to approximately 8.6% of food and ag businesses total revenue. Around 80% of food services establishments in the Bay Area employ 1-14 people.\(^\text{169}\) The number of food and drinking businesses increased by 24% between 1995 and 2015, and employment grew by 61%, providing about two thirds of food system jobs.\(^\text{170}\)

Intersections with Regional Planning

The needs and opportunities of the Food Service sector are aligned with multiple strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative, as well as with ABAG’s Resilience program and with SPUR’s Locally Nourished and Economic Prosperity reports.\(^\text{171}\)

Alignment with the Economic Action Plan Strategies

- **Business Climate**
  # 3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.
  # 5. Enhance the Bay Area’s innovation and entrepreneurship ecosystem.

- **Workforce**
  # 9. Expand economic opportunity and upward mobility in employment and wages at all life stages.

- **Infrastructure**
  # 16. Improve and coordinate transportation systems and regional mobility.
  # 18. Enhance and strengthen communications, energy and water systems.
  # 19. Reduce vulnerability to climate change and natural hazards.
Bay Area Status Quo – Food Service Sector

The Bay Area food service sector is a study in contrasts. On one hand, this dynamic sector boasts a plethora of options including world-class fine dining, a thriving food truck scene, growing popularity of food halls, the phenomena of pop-up restaurants, an extraordinary diversity of ethnic food offerings, and all-you-can-eat corporate office cafeterias. On the other hand, wages are low and there is a huge shortage of labor. Below is a snapshot of Bay Area food service today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

**Economic Viability**

- The food service sector faces labor shortages, linked to low unemployment rate (e.g. less than a 3% in the City of San Francisco).\(^{172}\)
- High costs of living push up wages; corporate kitchens compete with restaurants for skilled labor.\(^{173}\)
- Aspiring chefs and restaurant owners struggle to afford sufficient capital and labor costs.
- Mid-tier full-service restaurants face competition from fine-dining, fast casual, and fast food businesses.
- The growth of delivery services transforms the sector. Market shares of Grubhub, UberEats and DoorDash are growing, and several companies (UberEats, Caviar, Postmates) are based in San Francisco.\(^{174}\)
- Shorter lunches at the office for white collar workers and workplace food options impact restaurants that rely heavily on lunch trade, such as those in SF’s Financial District.\(^{175}\)

**Social Equity**

- Average annual wage for food service and drinking places workers was $23,485 in 2015, which was the lowest of all food and ag sectors.\(^{176}\)
- Wages remain low, despite increases to try to account for higher cost of living, for workers with fewer skills.
- Many jobs rely on temporary contracts and “gig” work, and often without health insurance.\(^{177}\)
- Women are underrepresented among bartenders, especially in fine dining, and experience lower wages than men.\(^{178}\)
- Wages are lower for undocumented and minority workers who are more often food prep workers and dishwashers as opposed to wait staff who receive tips (less than 25% of the Bay Area restaurant workforce is white, but over half of all bartenders are white.\(^{179}\)
- According to Food Chain Workers Alliance, more than 10% of restaurant workers are undocumented, with lower median actual hourly wage.

**Environmental Sustainability**

- ‘Farm to Table’ restaurants and food service companies have high standards for purchasing sustainably produced ingredients; many note this fact directly on their menus.
- The growth of food delivery generates GHG emissions through transportation as well as more packaging waste.

**Public Health**

- Healthy food options in restaurants and institutional food service options tend to be more expensive, including at schools according to a national study led by USDA.\(^{180}\)
- Food portions in America’s restaurants have doubled or tripled over the last 20 years, contributing to higher rates of people being overweight.\(^{181}\)
- Growth rates of fast food restaurants (13.6%) are particularly high in the area.\(^{182}\)

**Sense of Place**

- Demand for locally produced food is growing, especially by higher end restaurants and food service businesses
- Growth rates of Mexican restaurants (14.1%) and Asian (13.5%) are the remarkably high in San Francisco area.\(^{183}\)
Bay Area Preferred Future - Food Service Sector
Support food service businesses that promote healthy food, provide good jobs and help relocalize the food economy.

**Economic Viability**
Support business start-ups and transition of existing businesses to circular economy models.

**Public Sector Agencies**
- Incentive inclusion of healthy food service businesses in new mixed-use developments.
- Support transition to new business models through trainings and technical assistance.
- Disseminate information about available funding and facilitate application for food service businesses, incubators, shared kitchens, and aspiring chefs and restaurant owners.

**Food Businesses & Nonprofits**
- Adapt to new technologies in ordering, serving, and outreach processes.
- Adapt to new trends in meal delivery.
- Develop shared kitchens such as food truck commissaries, ghost kitchens or delivery-only commissaries, culinary flex spaces, or commercial-size incubator kitchens like KitchenTown in San Mateo.

**Social Equity**
Support living wages, stable employment, and upward mobility, and community-owned business models.

**Public Sector Agencies**
- Support policies that ensure fair living wages for food service employees in the long term.
- Support and incentivize community-owned and cooperative models, e.g. through Community Development Financial Institution funds.
- Support incubators and shared kitchens working with underrepresented or underserved groups.

**Food Businesses & Nonprofits**
- Develop incubator kitchens focused on underrepresented and underserved populations, such as Kitchen Connect, Spice Kitchen Incubator, The Hatchery, and La Cocina (in San Francisco).

**Environmental Sustainability**
Incentivize sustainable food options, while assessing impacts of delivery and packaging.

**Public Sector Agencies**
- Include criteria based on sustainability in public procurement, including at schools.
- Support AB479 for plant-based beverage options and AB958 for organic options at school.
- Support research to assess the impacts of meal delivery (transportation, packaging).

**Food Businesses & Nonprofits**
- Adopt sustainable procurement policies in companies providing food to employees.
- Consider adoption of a 1% surcharge, through the Restore California program, which goes directly to support climate smart agriculture.
- Ensure traceability of ingredients and promote ethically-sourced foods.

The region’s dynamic and economically powerful food service sector can play a key role in improving the local food system’s sustainability. Local actors can achieve this goal through the following strategies, along core principles of resilience, which will benefit our local economy, communities, and the planet.
**Public Health**

Incentivize availability of healthy food and support nutrition education.

**Public Sector Agencies**
- Ensure food safety through hygiene inspections and enforcement of labor protection rules (notably allowing food service employees to take sick days in order to limit disease transmission).
- Support regulations favoring healthy food options at schools and disincentivizing sweet beverages.190

**Food Businesses & Nonprofits**
- Accommodate dietary restrictions and foster demand of healthy foods, including smaller food portions.
- Promote healthy options, including at schools (best practice: Revolution Foods).191

**Sense of Place**

Promote community-based models and diversity of food traditions.

**Public Sector Agencies**
- Incentivize locally-owned independent restaurants, which may have up to 30% greater positive impact on the local economy than chain-owned restaurants (because the revenue stays local).192
- Support procurement of local products at schools.

**Food Businesses & Nonprofits**
- Adapt to the growth of delivery services, while building a sense of community in eating places.
- Companies offering food to employees adopt sustainability standards for procurement, including local preference purchasing.
## What Does Success Look Like? Food Service Sector Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Viability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of food service business incubators and shared kitchens</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>Availability of financing for small business owners</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average annual wage</td>
<td>$23,485</td>
<td>Increase</td>
</tr>
<tr>
<td>% of workers without any form of health insurance</td>
<td>52%</td>
<td>Decrease</td>
</tr>
<tr>
<td>% of workers earning poverty wages</td>
<td>20%</td>
<td>Decrease</td>
</tr>
<tr>
<td>% of workers who do not receive training</td>
<td>54%</td>
<td>Decrease</td>
</tr>
<tr>
<td>Wage disparity between workers of color and white workers</td>
<td>$6.12</td>
<td>Decrease</td>
</tr>
<tr>
<td>Fine dining wage disparity between men and women</td>
<td>$3.34</td>
<td>Decrease</td>
</tr>
<tr>
<td># of food service incubators focused on minorities</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Environmental Sustainability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of school districts with Good Food Purchasing programs</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of students served by school districts with Good Food Purchasing programs</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of school districts accessing incentives for plant-based and/or organic meal options</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of large institutions (serving 1000+ meals/day) with sustainable sourcing standards</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td>GHG emissions resulting from meal delivery services</td>
<td>No available data</td>
<td>Conduct research</td>
</tr>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market share of fast-food restaurants</td>
<td>Unknown</td>
<td>Decrease</td>
</tr>
<tr>
<td>Average portion size in restaurants</td>
<td>Unknown</td>
<td>Conduct research on impacts</td>
</tr>
<tr>
<td><strong>Sense of Place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of independent, locally-owned restaurants</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
<tr>
<td># of local food procurement programs in public institutions</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
</tbody>
</table>

**Sources**
(a) Bay Area Food Economy, Baseline 2015
(b) https://rocunited.org/publications/bkd-report-bay-area/
Consumption: Food Security and Healthy Diets

Context
Global concerns around food consumption include population growth, income distribution, and insufficient access to healthy food leading to malnutrition (defined as levels of undernutrition, over-nutrition and micronutrient deficiencies), as well as the need for more sustainable diets, defined as a diet rich in plant-based foods and with fewer animal source foods.

In the U.S., “sufficient food” refers to the quantity of food necessary for an individual to not experience any level of food insecurity, and “healthy food” refers to food items that support the federal government’s Dietary Guidelines for Americans, which includes limiting the intake of sodium, solid fats, added sugars, and refined grains, and emphasizes nutrient-dense foods such as produce, whole grains, lean meats and poultry, eggs, beans and peas, and nuts and seeds.193

The relationship between food security, poverty, and homelessness can vary greatly depending on medical expenses, employment status, and cost of living. At 20.6%, California has the nation’s highest rate of poverty according to the U.S. Census Bureau’s Supplemental Poverty Measure.194 Some areas of California have among the highest rates of unemployment in the country, and research suggests that unexpected or extended periods of unemployment often lead to food insecurity.

Having one of the most expensive levels for cost of living, residents in the Bay Area also typically will spend a higher percentage of their income on housing and a lower percentage of their income on food when compared with national averages.195

Access to food, particularly healthy food, is acutely unequal across California. Obesity and overweight trends highlight the unequal access to food experienced across different communities. The prevalence of obesity among adults in California increased from 19% in 2001 to 27% in 2017. This rate is disproportionately higher among self-identified African-Americans, American Indians, and Latinos than among self-identified white individuals.196

It has been shown that a healthy diet is critical to improve health outcomes and environmental benefits.197 Research suggests that Americans with a lower carbon footprint diet also have a healthier diet, consuming more whole grains, plant-based proteins, and poultry, and eating less red meat and dairy, foods that are relatively high in saturated fat and in their production contribute to a larger share of greenhouse gas emissions.198 To have a healthy diet, U.S. consumers need to double consumption of fruits, vegetables, and legumes and reduce by half consumption of red meat and sugar.

Intersections with Regional Planning
The needs and opportunities for advancing food security and healthy diets are aligned with multiple strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative.199 There is not yet but should also be direct consideration of food security issues in ABAG’s Resilience program.

Alignment with the Economic Action Plan Strategies

Housing and Workplaces
# 12. Identify and implement best practices to support housing production, preservation and affordability. Note the correlation between food insecurity, healthy food access, housing insecurity, displacement and homelessness.

Infrastructure
# 15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.

Alignment with Horizon Initiative Strategy
The principles of Affordable and Healthy, and many of the proposed related strategies, have direct correlation with issues around food security and healthy diets.
Bay Area Status Quo - Consumption
Food is comparatively less affordable in the Bay Area than elsewhere in the U.S., and food access and quality of diet is vastly unequal across socio-economic groups in the region. Low-income communities are effectively consuming less food when compared to similar communities across the country, and struggle to access local, sustainable, and healthy food options. Consumption of less healthy and sustainable diets results in high levels of food insecurity with significant consequences on public health, in addition to the impact on the environment. Below is a snapshot of Bay Area consumption today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

**Economic Viability**
- Significant barriers to increasing procurement of local, healthy, and sustainable food include: higher costs, increased logistics for implementation, limited funding, long-lasting relationships with current procurement partners, and misalignment associated with what is available locally and what represents a healthier option.
- Procurement programs for both private organizations and public institutions typically prioritize affordability and convenience over healthier options.

**Social Equity**
- The California Self-Sufficiency Standard measures the income necessary for a family to meet its basic needs without assistance, depending on each county. According to the index, a family of four (including a preschool child and a school-age child) in San Francisco required an income of $123,442 in 2018 to be self-sufficient.
- Around 11.3% of all households experience food insecurity (about 970,000 people), with San Francisco, Solano, and Alameda Counties experiencing higher rates closer to 14-15%. Nationwide trends indicate that 11.8% of all U.S. households (15 million households) were food insecure in 2017. See Appendix C for additional information.

**Environmental Sustainability**
- There is a significant gap between the environmentally sustainable diet and the current diet consumed in North America. According to a recent Lancet Commission study, eating a sustainable diet would require reducing consumption of red meat by 638%, of eggs by 268%, of poultry by 234%, and of dairy by 145%.
- State-based studies have found that farmers’ market pricing is generally lower than grocery stores for comparable products, especially when a particular item is in season. However, there is great variability depending on product, location of farmer’s market, and seasonality.
- Organic products tend to be more expensive when compared to their conventional counterparts, though price difference varies greatly depending on type of product, seasonality, and purchasing site. Some research suggests that organic products are, on average, 47% more expensive, but with significant variability across products.

**Public Health**
- In 2016, food insecure individuals in the Bay Area had a collective annual food budget shortfall of $561,726,000.
- Average meal costs also vary throughout the Bay Area, with the average meal cost at around $3.83, but much higher (closer to $4.00-4.50) in the SF, Napa, and Marin counties. See Appendix C for additional information.
- Food assistance programs are not sufficient to compensate for food insecurity. While the Supplemental Nutrition Assistance Program (SNAP, known as CalFresh in CA) is available for some households experiencing food insecurity, around 35.7% of food insecure households do not qualify for SNAP/CalFresh benefits.

47
• Higher overweight & obesity rates in the Bay Area (31.4% and 16.4% respectively) when compared to the rest of the state of California.\textsuperscript{211}
• Between 60-75\% of adults in the Bay Area report consuming less than three fruits and vegetables per day.\textsuperscript{212}
• Research suggests that food insecurity and malnutrition interact with chronic conditions and results in significantly higher health care costs.\textsuperscript{213}
• Health care costs are significantly higher for food insecure people, even when socioeconomic and demographic variables are fixed.\textsuperscript{214}
• Additional per capita medical spending for obese individuals is $1,429 to $2,741. These costs are comparable to costs incurred by individuals with prolonged smoking habits.\textsuperscript{215}
• Hypoglycemia (a potentially life-threatening complication from diabetes) increased by 27\% among lower-income patients in the last week of the month compared to the beginning of the month. The article concluded that dwindling food supplies at the end of the month were a key factor driving these findings.\textsuperscript{216}
• According to a \textit{national study using NHANES}, “ultra-processed food” (soft drinks, cookies, salty snacks, etc.) have lower nutritional qualities that unprocessed or minimally processed foods (vegetables, beans, milk, pasta, etc.).\textsuperscript{217} More than one-half of survey participants’ calories came from ultra-processed foods, which may contribute to \textit{90\% of added sugar} in the American diet.\textsuperscript{218}

\textbf{Sense of Place}

• An analysis that juxtaposed current consumption and production of various food products in the Bay Area shows that there are a number of products for which our consumption far outstrips our production. These include animal protein sources, such as eggs, poultry, beef, pork, and turkey, as. Some other products, such as potatoes, wheat, and citrus fruits are also consumed in the Bay Area in larger quantities than those produced within the state. See Appendix B for additional information.
• Consumer preference for local products (in restaurants’ menus, etc.) is growing.\textsuperscript{219}
• Given the demographic and cultural diversity within the Bay Area, food banks and pantries must identify and shift towards prioritizing cultural-appropriate foods products preferred and familiar to community members to ensure limited food waste and effective engagement.\textsuperscript{220}
Consumption - Bay Area Preferred Food Future
 Improve access to sustainable, healthy, locally-produced, culturally-appropriate food for all.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support economic viability of affordable, healthy, sustainably-produced food.</td>
<td>Ensure equal access to sufficient healthy, culturally-appropriate food.</td>
<td>Promote sustainable diets (local, seasonal, plant-centric).</td>
<td>Ensure access to sufficient and nutritious food, and promote healthy eating.</td>
<td>Promote consumption of locally produced food, reflective of cultural diversity.</td>
</tr>
</tbody>
</table>

Changes at the global and national levels may help improve access to sustainable, healthy, locally-produced food for all. For example, introducing policies that incentivize local government agencies to provide and procure healthier and more sustainable food options or increasing access to culturally appropriate products to food insecure communities are steps in the right direction. The private sector can lead initiatives to develop technologies and provide services addressing access to sustainable and healthy food through innovation and entrepreneurship. To reduce food insecurity, increase access and consumption of healthy diets, and address the complex challenges described in the status quo section, Bay Area actors need to take action through research, policy engagement, consumer education, and stakeholder collaboration.

**Economic Viability**
 Support economic viability of affordable, healthy, sustainably-produced food.

**Public Sector Agencies & School Districts**
- Support procurement policies and programs for healthy, sustainable, local food. Good Food Purchasing Program facilitates values-based procurement. San Francisco is one of ten cities to have formally adopted the Good Food Purchasing Program; the Oakland Unified School District has also adopted the program.221
- Expand free breakfast and lunch programs in schools across the Bay Area.
- Adopt standards for preferential procurement of healthy, sustainable, local food.

**Social Equity**
 Ensure equal access to sufficient healthy, culturally-appropriate food.

**Public Sector Agencies & School Districts**
- Incentivize inclusion of healthy food retail in new mixed-use housing.
- Use zoning and incentives to shape food retail options.
- Develop corner-store conversion initiatives at the neighborhood level.
- Maximize enrollment in federally funded food assistance programs.
- Fund food banks to purchase CA fresh foods.
- Retail, Food Service, & Restaurateurs
- Increase participation in Double Up Food Bucks program.

**Food Banks**
- Encourage donations of healthy and organic produce.
- Develop a program evaluation scheme to determine regionally preferred product and other user trends.
- Identify demographics of food bank users and source and stock products that are culturally appropriate and preferred by those utilizing this resource.
Social Equity (cont’d)

Nonprofits & Advocacy Organizations
- Advocate for policy changes at the local, state and national levels. Some examples include:
  - SB285 CalFresh Connect: Implements a county-state performance improvement process to ensure CalFresh enrollment, especially among those receiving Medi-Cal.222
  - AB1022 California Anti-Hunger Response and Employment Training (CARET) Act of 2019: Sets up program to fight hunger and support work among individuals who have been determined ineligible for federal SNAP benefits.223
  - AB479 Healthy, Climate-friendly School Food Act: Provides an additional reimbursement to California’s public schools that serve a plant-based entrée or milk option.224
  - AB958 Organic-to-School Pilot Program: Offers grant program for public school districts to receive up to 15 cents extra per meal to support procurement of California-grown organic foods.225
  - AB614 Farm to Food Bank Tax Credit: Expands the types of foods eligible for the tax credit from just produce, to items like rice, beans, eggs, nuts, and dairy that is grown/produced in California.

Environmental Sustainability
Promote sustainable diets (seasonal, plant-centric).

Public Sector Agencies & School Districts
- Support long-term funding for sustainable food incentive programs.

Retail, Food Service, & Restaurateurs
- Feature healthy/sustainable options.

Nonprofits & Advocacy Organizations
- Advocate for policy changes. Develop healthy/sustainable food guidelines.

Public Health
Ensure access to sufficient and nutritious food, and promote healthy eating.

Public Sector Agencies & School Districts
- Maximize enrollment in federally funded food assistance programs.
- Support long-term funding for healthy food incentive programs.
- Support educational initiatives promoting healthy/sustainable food literacy in schools (e. g. OUSD Central Kitchen, Instructional Farm, and Ed. Center) and food access programs.
- Implement soda tax or advocate for regulations at the state level - supports healthier choices to children.
- Regulate advertising of unhealthy products to children.

Retail, Food Service, & Restaurateurs
- Feature healthy/sustainable options more prominently.

Nonprofits & Advocacy Organizations
- Provide education about company standards/policies.
- Promote healthy eating.
- Encourage donations of healthy and organic produce to food banks.
- Increase nutrition literacy.

Sense of Place
Promote consumption of locally produced food and the cultural diversity of local diets.

Public Sector Agencies & School Districts
- Support educational initiatives promoting healthy/sustainable food literacy in schools and food access programs.
- Promote local products and promote cultural diversity, including Native American food traditions.226

Retail, Food Service, & Restaurateurs
- Promote culture, gastronomy, time spent cooking and eating as a source of community and pleasure.227

Nonprofits & Advocacy Organizations
- Foster rising consumer demand for local products.
What Does Success Look Like? Scorecard for Consumption-Food Access and Healthy Diets

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Viability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lost dollars in federal nutrition benefits</td>
<td>$2.5 billion</td>
<td>Decrease</td>
</tr>
<tr>
<td>Additional federal meal reimbursements possible per school year</td>
<td>$41,491,000</td>
<td>Decrease</td>
</tr>
<tr>
<td># of grocery stores that accept DoubleUp food bucks</td>
<td>5</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of residents experiencing food insecurity</td>
<td>869,070 (2016)</td>
<td>Decrease</td>
</tr>
<tr>
<td>Food insecurity percent rate</td>
<td>11.3% (2016)</td>
<td>Decrease</td>
</tr>
<tr>
<td># of children experiencing food insecurity</td>
<td>240,750 (2016)</td>
<td>Decrease</td>
</tr>
<tr>
<td>% of children experiencing food insecurity</td>
<td>15.20%</td>
<td>Decrease</td>
</tr>
<tr>
<td># of eligible CalFresh individuals (CA-wide)</td>
<td>5,861,000</td>
<td></td>
</tr>
<tr>
<td>% of eligible CalFresh individuals receiving assistance (CA-wide)</td>
<td>66%</td>
<td>Increase</td>
</tr>
<tr>
<td>% of CalFresh eligibility among food insecure people (CA-wide)</td>
<td>64.30%</td>
<td>Increase</td>
</tr>
<tr>
<td># of individuals enrolled in the WIC program (CA-wide)</td>
<td>1,332,840</td>
<td></td>
</tr>
<tr>
<td># of individuals enrolled in the WIC program</td>
<td>139,935</td>
<td></td>
</tr>
<tr>
<td># of low-income students reached by school lunch</td>
<td>229,213 (2014-15)</td>
<td>Increase</td>
</tr>
<tr>
<td>% of low-income students reached by school lunch</td>
<td>61.3% (2014-15)</td>
<td>Increase</td>
</tr>
<tr>
<td># of low-income students reached by school breakfast</td>
<td>106,601 (2014-15)</td>
<td>Increase</td>
</tr>
<tr>
<td>% of low-income students reached by school breakfast</td>
<td>29% (2014-15)</td>
<td>Increase</td>
</tr>
<tr>
<td>Summer meal program participation among low-income children</td>
<td>46,248</td>
<td></td>
</tr>
<tr>
<td>% of school lunch participants reached during the summer</td>
<td>21.33%</td>
<td>Increase</td>
</tr>
<tr>
<td># of CalFresh participants</td>
<td>423,111 (2011)</td>
<td></td>
</tr>
<tr>
<td>Ratio of CalFresh participants to persons in poverty</td>
<td>1:1.57</td>
<td>Increase</td>
</tr>
<tr>
<td>% of food insecure people who fall below 200% poverty line</td>
<td>61% (2017)</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Sustainability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National average daily consumption of meat and poultry</td>
<td>~10 oz./day (2018)</td>
<td>Decrease</td>
</tr>
<tr>
<td><strong>Public Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity rates (2011-2012)</td>
<td>20.1% (2011-12)</td>
<td>Decrease</td>
</tr>
<tr>
<td>Average diabetes rates</td>
<td>7.8% (2013)</td>
<td>Decrease</td>
</tr>
<tr>
<td>Per capita consumption of healthy food, relative to unhealthy food</td>
<td>Unknown</td>
<td>Conduct research</td>
</tr>
<tr>
<td>Daily hours spent eating and drinking in the U.S.</td>
<td>1.1(M-F), 1.3(S,F)</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Sense of Place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National per capita consumption of local food (rate of change of sales)</td>
<td>20% ave yr increase (140%, 2008-14)</td>
<td>Increase</td>
</tr>
<tr>
<td>National per cap cons. of seasonal fruits/vegetables, re. other foods</td>
<td>Unknown</td>
<td>Increase</td>
</tr>
</tbody>
</table>

Sources
(k) https://www.businessinsider.com/the-demand-for-local-food-is-growing-2017-4
Post-Consumption

Context
A circular economy is an economic system aimed at minimizing waste and making the most of resources. This regenerative approach is particularly important in the agriculture and food sectors, where food waste is a global problem. The U.N Sustainable Development Target 12.3 set the goal to halve food waste by 2030 to fight climate change and sustainably feed 2 billion more people by 2050.228

In the U.S., the Department of Agriculture and Environmental Protection Agency made the commitment to halve food waste by 2030. EPA recommends following the food recovery hierarchy framework (source reduction, feed hungry people, feed animals, industrial uses, and composting, before incineration and landfill), and established an excess food opportunities map that indicates generators and recipients of excess food across the country.229 The Food Waste Reduction Alliance is a food industry collaboration that works with businesses across the county to reduce food waste.230

In California, in addition to regulations requiring large businesses to recycle organic waste, Senate Bill 1383 (2016) now requires local jurisdictions to reduce or recover 20% of edible food and to reduce disposal of total organic waste by 75% by 2025.231 Yet, federal and local regulations on food safety and traceability often limit food recovery and repurposing operations.

It is estimated that the Bay Area wastes more than 500,000 tons of edible food a year, in addition to leaving unharvested up to 20% of food crops. This may have an opportunity cost of more than $4 billion, generate more than 750,000 tons of GHG emissions and consume 68 billion gallons of water, without taking into account additional impacts and pollution related to food packaging waste.232 The region has insufficient economic and environmental resources to sustain such levels of waste, or the social grounds to keep throwing away edible food while a large fraction of the population does not have access to sufficient and adequate food.

Intersections with Regional Planning

The needs and opportunities for addressing food waste and promoting a circular economy are aligned with multiple strategies in the Economic Action Plan, Plan Bay Area 2040, and Horizon Initiative.233 There is not yet, but should be, direct consideration of food waste issues in ABAG’s Resilience program.

Alignment with the Economic Action Plan Strategies

Business Climate
# 4. Support clusters and related industries that drive innovation and serve our communities.

Workforce
# 5. Enhance the Bay Area’s innovation and entrepreneurship ecosystem.

Housing and Workplaces
# 11. Expand sector-specific paid internship programs for high school, and community college students.

Infrastructure
# 14. Support and strengthen the Production, Goods Movement and Repair Cluster.

# 15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.

# 18. Enhance and strengthen communications, energy and water systems.

Alignment with Horizon Initiative Strategy

V2. Establish Priority Production Areas to Protect Industrial Lands.
Bay Area Status Quo – Post-Consumption

Many crops, food, and organic materials are currently unused or underused in the Bay Area. CalRecycle is currently conducting a waste characterization study that will assess the amounts of food landfilled in California. However, it will not include agricultural waste or a methodology for assessing the quantity of food that was edible at the time of disposal. Thanks to innovative technologies and business models, many actions have already been implemented to recover food (donations for human consumption), repurpose it for animal feed, and compost or recycle organic materials to create energy (e.g. through anaerobic digestion). These initiatives all contribute to building a circular economy in the region. Yet, more remains to be done to achieve the state targets of recovering 20% of edible food and reducing disposal of total organic waste by 75% by 2025. Below is a snapshot of Bay Area post-consumption today, in terms of five core principles: economic viability, social equity, environmental sustainability, public health, and sense of place.

Economic Viability

- Approximately 20% of crops are left unharvested in the U.S., but no specific study has been done for the Bay Area.
- In the Bay Area, businesses (excluding agriculture) waste an estimate 206,400 tons of edible food annually.
- An estimated 85% of food waste is neither composted nor recycled.
- According to a study conducted in the City and County of San Francisco in 2016, there is not enough infrastructure and capacity to recycle or compost food and organic materials. Yet, to comply with the state regulations, 176,747 additional tons of organic waste are required to be diverted from landfill (i.e. recycled or composted) by 2031.

Social Equity

- Waste facilities, which may pollute the air, land, and water, are disproportionately located in disadvantaged communities.
- Many low-income households do not access food under dignified conditions; more than 11% of the population is food insecure.
- The Food Waste Reduction Alliance estimates that less than 4% of available excess edible food is donated nationally. Bay Area businesses may donate about 10%.
- Food wasted at home (~329,390 t, i.e. 92 lbs./person/year) could cost Bay Area households more than $140/year.

Environmental Sustainability

- Production, packaging, distribution, and transportation of food that gets wasted in the Bay Area, consumes an estimated 68 billion gallons of water and generates 760,830 GHG emissions annually, and also causes additional pollution.
- Waste facilities generate air and water pollution.
- There is insufficient oversight for disposal of some types of waste, such as potentially toxic biotech waste (e.g. algae that cannot be contained and may contaminate water).

Public Health

- Available calories in the U.S., more than 3,700/person/day, largely exceed the populations’ needs, resulting in over-eating and food waste.
- More wasteful food practices may be correlated with less healthy diets, including processed food, large portions, and less food cooked at home.

Sense of Place

- Most excess food is not shared locally but ends up as waste transported long distances and processed (if not landfilled) in large scale facilities. Organic waste from the City of San Francisco is sent to compost facilities between 25 and 90 miles away, or sent to landfills because of insufficient composting capacity.
- Limited data is available on distances travelled by organic waste.
Bay Area Preferred Future – Post-Consumption
Promote a circular economy in agriculture and food sectors, with a focus on preventing waste of edible food.

<table>
<thead>
<tr>
<th>Economic Viability</th>
<th>Social Equity</th>
<th>Environmental Sustainability</th>
<th>Public Health</th>
<th>Sense of Place &amp; Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop new markets, jobs, and business opportunities in waste reduction, reuse, and recycling.</td>
<td>Ensure dignified food redistribution, while avoiding negative impacts of waste on disadvantaged communities.</td>
<td>Reduce pollution and save resources while improving soil health.</td>
<td>Promote sustainable, healthy, zero-waste diets.</td>
<td>Build community through food sharing, community composting and recycling.</td>
</tr>
</tbody>
</table>

Preventing food waste and enhancing a circular economy is possible, and many international organizations have already provided model frameworks and toolkits, such as the World Resources Institute, UK’s WRAP, the Urban Sustainability Directors Network, and Ellen MacArthur Foundation. In the U.S., ReFED established a roadmap of the 27 most efficient solutions to address food waste. Environmental organizations such as NRDC provide studies and case studies of existing solutions, while research centers at Harvard Food Policy Clinic and John Hopkins University have developed guidelines for local public policies. The Food Waste Reduction Alliance developed sets of best practices for businesses. According to ReFED, reducing food waste could bring social benefits of $4 billion in the region. To avoid the challenges of the status quo and to meet the ambitious food and organic waste reduction targets mandated by recent California regulations, the Bay Area needs a multi-faceted response including conducting research, adopting policies, educating the community, and engaging in stakeholder collaboration.

**Economic Viability**

Develop new markets, infrastructure, and business opportunities in waste reduction, reuse, and recycling.

**Public Sector Agencies**

- Compile robust data on the quantities and value of edible food waste, including unharvested crops.
- Increase waste collection and treatment fees; use the revenue to support prevention and recycling.
- Increase organics recycling and composting capacity by building new infrastructure.
- Assess cost/benefit of composting/anaerobic digestion infrastructure at a range of scales.
- Provide support (grants or loans, incubators, streamlined procedures) for development of new businesses, local infrastructure, technologies, and jobs in waste prevention, reuse and recycling; including apps for food recovery (e.g. Replate, Copia), prevention tools (e.g. Leanpath), and recycling innovations (e.g. anaerobic digestion).
- Identify and implement strategies to reduce waste in public procurement, institutional food service and K12 schools (best practices include awareness among students/consumers and staff, shared tables to redistribute food).

**Public Sector Agencies (cont’d)**

- Encourage gleaning and sale of gleaned products in urban/rural areas; track gleaning opportunities.
- Provide information on food safety regulations and traceability requirements to facilitate repurposing of food that would otherwise go to waste.

**Food Businesses & Nonprofits**

- Measure and prevent food waste (relying on tools like Leanpath or Winnow); share data on waste.
- Develop markets for unharvested crops (e.g. Imperfect Produce, Full Harvest, Preserve Farm Kitchens).
- Sell products at discounted rates before their expiration dates, or through services, like BuffetGo.
- Seek local opportunities to use food by-products: animal feed, innovative foods (O2 Feeds, Renewal Mill, Regrained, etc.).
- Develop innovation incubators to support new businesses in waste prevention, recovery, and recycling.
Social Equity

Ensure dignified food redistribution, while avoiding negative impacts of waste on disadvantaged communities.

Public Sector Agencies
- Improve quality and dignity of food recovery through partnerships between food donors and food assistance organizations.
- Provide infrastructure funding (e.g. storage and transportation at food banks, food recovery hubs and shared facilities available to multiple food assistance organizations).
- Provide job training for volunteers or recipients (pathway for employment).
- Support donations through tax incentives (e.g. through proposed bill AB 614 (Eggman)—“Farm to Food Bank” tax credit; provide information and assistance in obtaining incentives).
- Engage local disadvantaged communities in identifying solutions (i.e. hackathon, brainstorming, etc.).

Public Sector Agencies (cont’d)
- Increase recycling and composting capacity, develop land use planning and location of facilities to avoid nuisances (odors, pollution), and foster environmental justice.
- Provide information on food donation liability protection (Good Samaritan Act) and food safety requirements in order to expand and facilitate food recovery operations.

Food Businesses & Nonprofits
- Develop innovative models and technologies of redistribution, such as Silicon Valley A La Carte program that created a food truck service to redistribute excess food from large companies.
- Donate locally and/or through recovery services.
- Educate households on how to save money by preventing food waste at home (educational campaigns, menu planning, etc.).

Environmental Sustainability

Reduce pollution and save resources while improving soil health.

Public Sector Agencies
- Build additional data on distances traveled by organic materials and impacts of transportation.
- Optimize waste collection, transportation, and treatment to reduce GHG emissions and other forms of pollution (including through support to AB 144 (Aguir-Curry)—Organic Waste Scoping Plan).
- Assess the impacts of packaging waste, including recyclable and compostable materials.
- Decrease single-use food packaging; expand local regulations on food packaging waste and single-use items; such as straws upon request ordinance and Berkeley ordinance on disposable food-ware.

Public Sector Agencies (cont’d)
- Support state regulations, e.g. AB 619 (Chiu)—“Bring-your-own reusable food and beverage containers.”
- Set robust standards for biotech waste (e.g. algae) disposal to compensate for the lack of federal standards and EPA assessments.

Food Businesses & Nonprofits
- Use compost instead of chemical fertilizers to improve carbon sequestration, and produce crops with more nutrients.
- Compost or recycle on-site when possible to limit transportation impacts (e.g. small-scale digesters, Common Compost).

Public Health

Promote sustainable, healthy, zero-waste diets.

Public Sector Agencies
- Build education and outreach programs (e.g. Save the Food) to promote sustainable, healthy, zero-waste diets (understanding of expiration dates, cooking and storing techniques, etc.).

Food Businesses & Nonprofits
- Promote healthy food options with less packaging and smaller portions.
Sense of Place
Build community through food sharing, community composting and recycling.

Public Sector Agencies
- Support grassroots food assistance groups (e.g. Food Runners) through financial and technical assistance, shared infrastructure (storage and transportation).265
- Facilitate permitting process, simplify regulations, and offer financial or technical support for community composting and small/medium-scale digesters.266

Food Businesses & Nonprofits
- Foster community-building through food sharing (e.g. OLIO).267
- Donate, compost, or recycle locally.
## What Does Success Look Like? Post-Consumption Scorecard

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Viability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of produce unharvested</td>
<td>20%</td>
<td>Build reliable data, decrease (a)</td>
</tr>
<tr>
<td>Estimated tons of edible food waste from businesses</td>
<td>206,400</td>
<td>Build reliable data, decrease (b)</td>
</tr>
<tr>
<td>Estimated tons of edible food waste from residents</td>
<td>329,386</td>
<td>Build reliable data, decrease (b)</td>
</tr>
<tr>
<td>% of food waste sent to landfill</td>
<td>85%</td>
<td>Less than 25% (b)</td>
</tr>
<tr>
<td># of composting facilities able to receive ag and food waste</td>
<td>26</td>
<td>Increase (c)</td>
</tr>
<tr>
<td>Estimated food waste composting/digestion capacity (tons/year)</td>
<td>1,052,377</td>
<td>Increase (c)</td>
</tr>
<tr>
<td># of municipalities with collection program for food waste</td>
<td>65</td>
<td>Increase (d)</td>
</tr>
<tr>
<td>Estimated % of businesses that have not implemented a mandatory recycling program</td>
<td>35%</td>
<td>Decrease (e)</td>
</tr>
<tr>
<td>Regional funding for innovative businesses in food waste prevention, recovery and recycling</td>
<td>No consolidated data</td>
<td>Consolidate data, increase funding</td>
</tr>
<tr>
<td># of commercial outlets or programs for unharvested produce</td>
<td>No available data</td>
<td>Build reliable data, increase</td>
</tr>
<tr>
<td>Social Equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of waste facilities located in disadvantaged communities</td>
<td>No available data</td>
<td>Establish facility siting programs (f)</td>
</tr>
<tr>
<td>% of available excess food donated</td>
<td>Less than 10%</td>
<td>More than 20% (g)</td>
</tr>
<tr>
<td>Estimated yearly cost of food waste per household</td>
<td>$140</td>
<td>Decrease (h)</td>
</tr>
<tr>
<td>Regional funding for food recovery programs and infrastructure</td>
<td>No consolidated data</td>
<td>Consolidate data, increase</td>
</tr>
<tr>
<td>Environmental Sustainability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average distance travelled by organic waste</td>
<td>No available data</td>
<td>Build reliable data, decrease</td>
</tr>
<tr>
<td>% of farmers using compost as fertilizer</td>
<td>No available data</td>
<td>Build reliable data, increase</td>
</tr>
<tr>
<td># of jurisdictions with regulations against single-use foodware</td>
<td>1</td>
<td>Increase</td>
</tr>
<tr>
<td>Public Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of education campaigns for reducing food overconsumption and waste</td>
<td>No consolidated data</td>
<td>Collect data to develop programs</td>
</tr>
<tr>
<td># of restaurants offering options for smaller portions</td>
<td>No available data</td>
<td>Build reliable data, increase</td>
</tr>
<tr>
<td>Sense of Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of community composting organizations</td>
<td>No available data</td>
<td>Increase</td>
</tr>
<tr>
<td>Regional funding allocated for community composting and small-scale digesters</td>
<td>No consolidated data</td>
<td>Consolidate data, increase</td>
</tr>
</tbody>
</table>

Sources
(a) National estimate. Research needs to be conducted in the Bay Area.
(b) Based on EPA 2014 Waste Characterization Study. See Appendix for calculation methods.
(c) https://www2.calrecycle.ca.gov/swfacilities/Directory/
(d) https://www.calrecycle.ca.gov/LGCentral/
(e) https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/OrganicsRecycling
(g) Based on national estimates from Food Waste Reduction Alliance and a study conducted in Alameda county. Research is needed in the Bay Area.
(h) Based on USDA estimates. See appendix for calculations.
3. FOOD FUTURES “BIG IDEAS”

The Food Future Roadmap presents Preferred Future actions for each sector of the food system. From these actions, the Roadmap identifies four initial ‘big idea’ cross-cutting, regional-scale actions that are in alignment with the EAP and pose an immediate opportunity with ready and engaged partners. These are described below.

**Big Idea 1 - Formalize a Food and Agricultural Advisory Network to Inform Regional Planning**

**Purpose**

A Bay Area Food Futures Network is already gaining momentum and is poised to facilitate collaborative implementation of the Food Futures Roadmap priority actions. As a first step, it is positioned to act proactively as an advisory committee to regional economic development initiatives and regional planning processes. Seeded by the Food Futures project working group, the Network will be comprised of food and agricultural industry and community leaders (businesses and advocates) who are engaged in triple bottom line issues and working across the supply chain, in both urban and rural areas, to create positive change. With many common values, these leaders recognize both the role that the food and agricultural sectors contribute to the overall resilience of the region and the role that regional planning contributes to the viability of these sectors.

As the region envisions and plans for disparate future scenarios, through efforts led by ABAG/MTC, and as local government agencies focus on the myriad issues of housing, jobs, transportation, and quality of life, it is essential that the food system is represented in these comprehensive planning efforts. This Network is prepared to offer important insights on the economic development and long-term planning strategies and to identify the investments needed to strengthen the contributions of the food and agricultural sectors to the region’s overall resilience.

**Background**

The completion of the Bay Area’s [Comprehensive Economic Development Strategy (CEDS)](https://example.com) and the establishment of a Regional Economic Development District (EDD) board to guide the CEDS implementation, provides a timely opportunity to build a network of diverse and engaged food and agriculture leaders who are ready actors to inform regional planning and take action toward shared goals. As ABAG’s website states,

> The EDD will be a platform for cooperative action, shared information, and developing creative policy responses to address economic, workforce and equity issues that no single jurisdiction, organization or enterprise can solve alone. Together, the CEDS and regional EDD will improve local jurisdiction access to federal, state and private foundation investments, foster greater public and private collaboration, and expand the effectiveness of local and regional resources.

In the spirit of collaborative action and information sharing, the Food and Agriculture Advisory Network will convene and coordinate regional actors to advise the EDD on specific issues facing the food and agricultural sectors as they relate to the 20 objectives and numerous actions of the Economic Action Plan. The aim is to drive well-informed and strategic policy development and investment in priority areas of concern, including: entrepreneurship and business ownership among underserved communities, food waste reduction, employee housing and transportation costs, training for new jobs such as in advanced manufacturing, food distribution and processing infrastructure investment needs, and investments in green infrastructure, especially climate-smart agricultural practices.
As a part of the Bay Area Futures project and previous work, SAGE has developed relationships with food and agricultural industry leaders who recognize that the viability of their businesses depends on a resilient regional economy overall. Now the Food and Agriculture Advisory Network, with SAGE as the initial convener, will work with ABAG staff to identify appropriate food and agriculture regional actors best suited to inform the EDD on implementation on actions. The Network will also be available to provide guidance on other regional planning process such as ABAG’s Plan Bay Area Update, including Priority Conservation Area Program and the development of Priority Production Areas, the Resiliency Program, and local planning efforts as well.

Methodology
The first step in formalizing the Food and Agriculture Advisory Network will be for the Food Futures Working Group, as the nucleus of the Network, to develop an inventory of key food and agricultural organizations and leaders, and if feasible, an issues landscape map and online engagement platform of key sector leaders. This action is directly aligned with the Strategy One of the EDD Board’s Economic Action Plan: “Identify the business, economic, workforce and community organizations within the region and establish a communication framework among them.”

Within the first six months of the EDD board formation, the Food and Agriculture Advisory Network will present to the EDD board, priority Roadmap actions and provide insight and recommendations on relevant and prioritized EAP strategies and actions. As appropriate, the Network will also advise in other areas of regional planning such as Plan Bay Area and ABAG’s Priority Development Area, Priority Distribution Area, and Priority Conservation Area programs.

Congruent with the developing the inventory and interacting with ABAG/MTC process, the Food Futures Working Group and SAGE will convene four to six small roundtables, each including representatives of around eight key regional food and agriculture organizations from different parts of the food system, to: give feedback on the Food Futures Roadmap, especially on the proposed ‘big ideas’; identify common interests and develop a common agenda; and help shape the structure and operations of the Network as a collaborative model that allows members to voice intentions, build trust, define objectives, set direction, pursue resources and take action.

Depending on interest and funding, subsequent steps in formalizing the Network could include: 1) organizing facilitated all-day workshops in four locations around the region, where around 15 diverse food system business and advocacy leaders could refine, augment and own the Roadmap; and 2) organizing a larger summit of regional food system businesses and organizations, as well as investors, technology innovators, researchers and educators, committed to creating a Bay Area Food and Agriculture Network as an impactful collaborative impact model.

Deliverables
- Formalization of the Network as a collaborative impact model.
- Inventory of key food and agricultural organizations and leaders, and if feasible, an issues landscape map and online engagement platform of key sector leaders.
- Key Food Futures Roadmap priority actions cross-pollinated with EAP actions, as appropriate.

Outcome
With the establishment of a Bay Area Food and Agriculture Advisory Network, key industry and community leaders gain a collective voice and have a platform to take collective action around key regional and local issues affecting the viability, sustainability, and resilience of the region’s food system.
Big Idea 2 – Align Food Access and Affordable Housing Policies

Overview
The Bay Area has a severe shortage of affordable housing. Amid the flurry of new legislative proposals emerging at the state and regional levels, lip service is being paid to the need for housing production and preservation strategies that enhance place-based opportunities, such as access to transportation, quality schools and green infrastructure. However, little concrete action is being taken to address food insecurity while ameliorating the housing crisis. These two issues are closely intertwined, but siloed housing, planning, and public health fields generally fail to connect them in the public policy arena. Given the renewed energy around housing and climate change policy, now is an opportune time to identify ways to insert food access and resilience into the housing conversation. This proposal will provide a foundation to support greater collaboration between advocates working on food access and housing advocates in a holistic effort to improve community health, with the aim of influencing the design and direction of state and regional plans, policies and investments.

Methodology
This project would consist of two major deliverables, 1) opportunity mapping and 2) the facilitation of a multi-sector roundtable. Major activities are outlined below.

Opportunity Mapping
Goals: Identify how and where food access may be harmed or improved by state and regional housing plans and proposals; and develop recommendations for how these two linked issues can be better aligned.

Activities:
1. Research:
   a. Assess regional housing development plans within the Bay Area and identify where food access will be exacerbated without interventions.
   b. Assess state and local policy funding opportunities for linking housing and food access policy. This scan could include looking at opportunity mapping, transit oriented development incentives, priority development areas, resilient by design and well as planning incentives such as the inclusion of health and equity elements in general plans.
   c. Assess what developers would need in order to feasibly include healthy food outlets in new affordable, mixed-use housing developments located in communities in need of improved access to healthy food.
   d. With healthy food and community development experts, assess demand for types of outlets needed, and desired locations.
   e. With a range of healthy food outlet models, assess conditions needed to feasibly locate within or near housing developments located in communities in need of improved access to healthy food.
   f. Assess examples of best practices for connecting all of the social determinants of health linked to food and housing.
2. Draft preliminary findings:
   a. Synthesize findings with preliminary recommendations for targeted interventions.
   b. Interview housing and food access advocates about findings and assess interest in specific interventions.
   c. Revise findings and share with round-table participants.
Round Table Convening

Goals: Engage the Food Futures Advisory Network, as well as stakeholders from regional government and private and nonprofit organizations; and create a platform for an interdisciplinary conversation about how to align housing and food system plans and policies.

Activities:
1. Compile a presentation for multi-sector roundtable that identifies opportunities for alignment and makes the case for why this alignment should occur.
2. Interview key stakeholders to determine who should be engaged in the roundtable.
3. Convene key stakeholders in a half-day conversation where presentation is shared and used as a platform for an interactive dialogue about specific strategies, opportunities and constraints.
4. Write up results of roundtable conversation and determine appropriate next steps.

Timeframe

Project would take four to six months. The primary activities could run on parallel tracks so that work to develop the convening could be happening while opportunity mapping and policy scan is being conducted.

- Policy Scan: The bulk of the research would be done in the first two months but because legislation is dynamic, the team would continue to engage in ongoing research to keep findings current.
- Roundtable convening: Stipends would be offered to participants, to make the participation of community advocacy groups more feasible and support equity values.

Outcome

New policies and incentives for aligning food access and housing policies are adopted and result in underserved communities having improved access to healthy food and becoming more complete communities.

Team

Project would be led by Saneta devuono-powell or Allison Allbee, co-founders and partners of SEED Collaborative, with support from Sibella Kraus, SAGE, and advisors, Heather Wooten and Rupal Sanghvi.
Big Idea 3 - Develop a Bay Area Agricultural Plan

Bay Area counties, often in partnership with special districts and land trusts, currently use a variety of mechanisms to protect agricultural lands and to identify and invest in critical agricultural resources. One of these mechanisms is Plan Bay Area’s Priority Conservation Area (PCA) program, through which local jurisdictions are awarded PCA designs for specific open space and agricultural areas, and are then eligible for One Bay Area Grant (OBAG) funding to invest in their PCA designated areas. While many agricultural resource values do apply at the county or sub-county level, other values including ecosystem services and climate change mitigation, and other issues including agricultural economic viability and agricultural infrastructure and labor, would benefit from regional-scale assessment and action.

A Bay Area Agricultural Plan could provide this regional assessment and action framework. Such a plan could draw from the example of the acclaimed Santa Clara Valley Ag Plan, which was produced as a partnership between the County of Santa Clara and the Santa Clara Valley Open Space Authority and with funding from the California Sustainable Agriculture and Land Conservation program (SALC). It is likely that regional councils of governments (COGs) will be eligible applicants for this program starting in 2020. Following the Santa Clara County model, a Bay Area agricultural plan could lay the groundwork for regional-scale efforts including farmland protection, climate-smart agriculture incentives, a regional agriculture marketing campaign, and investments/supportive policies for infrastructure needs such as farm labor housing and distribution and processing facilities. To be successful, this kind of initiative would need regional champions and leadership.
Big Idea 4 - Produce a Bay Area Food Resilience Plan

Background and purpose
Over ten million Bay Area residents and visitors rely on the region’s highly complex food system for their daily food needs and for food security over time. However, considering the fundamental importance of food to our health, economy, community life, identity and survival, there is insufficient understanding about the resilience of the food system to natural disasters, especially to earthquakes which could affect large parts of the regions, and to longer term climate change impacts.

There are a number of existing regional-scale studies, which touch on aspects of the food system, but which do not sufficiently explain its complex structure and interdependence with other regional-scale systems, such as power, water and transportation, or explicitly address its vulnerabilities to either natural disaster shocks or more slowly unfolding disruptions.

As one example, a pending Bay Area mega-region study includes some information about or relevant to food goods movement, such as: two-thirds of total agricultural goods are transported by truck, and mostly by small companies (more than 97% of companies have less than 20 trucks); most warehouse and distribution infrastructure was built before 1950; and the transportation sector faces shortages of drivers. Given the fact that millions of people buy and eat food in myriad places throughout the region every day, the $113 billion annual value of the Bay Area’s food economy (spanning the full supply chain) and the $18 billion annual value of California agricultural exports (much of which moves through the Bay Area), it is clear that there is a great deal of food goods movement into, out of and within the Bay Area. However, there is not yet dedicated study of regional food goods movement or of the major food production, distribution and manufacturing centers, the ‘nodes’ for the movement of the food supply on which the region relies.

As another example, ABAG’s resilience program has conducted extensive analysis about the region’s state of preparedness, hazard mitigation needs, and resilience in the face of climate change and earthquakes, and also floods, droughts, wildfires, and tsunamis. Although other regional-scale systems such as power, water, communication and transportation, are analyzed in depth, there is virtually no mention, yet alone analysis of the food system. This oversight can be partly explained by the fact that the region’s food sector is so diverse in terms of geographic distribution and scale, comprised of around 40,000 companies ranging from small family businesses to multi-nationals. This same diversity can give a misleading impression of more redundancy than really exists. In order to understand the resilience of the regional food system, it is critical to understand the points of connection within the food system as well as the many intersections of the food system with other regional-scale systems.

The purpose of the Bay Area Food Resilience Plan is to provide a blueprint for actions needed to ensure that the food system is prepared to confront and recover from natural disasters, especially earthquakes, and also has the systems redundancy to address longer-term uncertainties of climate change and political and economic upheavals. The Bay Area Food Futures report provides an overview of the individual supply chain sectors in terms of indicators that provide a baseline and targets for multiple resilience factors. A 2018 study, Risk and Resilience: Building Disaster Preparedness in the Bay Area Food System, used risk assessment methodology to look at disaster preparedness status of smaller grocery stores.
What is needed now, is a dynamic map of the food system's key internal points of connection and critical intersections with other regional-scale systems. Such a systems map would then provide the landscape context for understanding the vulnerabilities of the food system across the supply chain and especially in disadvantaged communities. The resulting Food Resilience Plan would outline both hazard mitigation strategies and disaster response approaches; the former reducing long-term vulnerability and risk proactively, and the later mitigating severity or duration of damage reactively, after a disaster occurs. The Plan would identify public sector strategies and actions needed to address vulnerabilities and implement mitigation strategies. It would also identify value chain climate resilience strategies that the business sector could implement to manage climate impacts, adopt best practices, innovate, and manage business risks and opportunities associated with climate change.

Methodology
We propose that ABAG commission a team with expertise in resilience analysis, supply chain analysis and the regional food sectors, to develop the Bay Area Food Resilience Plan. While resilience in the face of earthquakes versus longer-term disruptions, require different strategies, both rely on clear understanding of the food system components, connections, trends, challenges and opportunities.

Below are examples of the kinds of questions for the Food Resilience Plan might address:

- What are the necessary investments critical to improving region’s food supply system, with a focus on disaster resiliency and modernization? Resiliency in the food system concerns both the distribution supply chain and the point-of-sale outlet network to withstand and/or recover quickly from system interruption. Modernization concerns upgrading facilities and infrastructure to meet the business, logistics, and food safety needs of a 21st century food distribution system.
- What are potential impacts on the food goods movement and the food distribution and manufacturing sectors from natural disasters, and in turn on the populations that rely on getting food every day?
- Where are the major food distribution and manufacturing clusters located? What trends, challenges and opportunities are businesses within these clusters experiencing within their base of operations? What are the best ideas for addressing these issues? What are key infrastructure investment needs?
- What is the extent of food goods movement? What products are being moved into, out of and through the region? With what frequency? From what points to what points? What trends, challenges and opportunities are food distribution businesses experiencing in their delivery operations? What are the best ideas for addressing these issues?
- How do the food goods movement and the food distribution and manufacturing sectors, intersect with other food sectors in the region: agricultural production, retail, food service, food security and food waste?
- How do issues facing the food goods movement and the food distribution and manufacturing sectors, intersect with broader regional issues including transportation, industrial land use, jobs, energy and water efficiency, and public health? How might these issues help shape the pending Priority Production Area (PPA) program?
- How might broader trends in AI, autonomous vehicles, fleet electrification, home delivery, etc., impact the distribution and manufacturing sectors?

Deliverable
An actionable regional Food Resilience Plan.

Outcome
Implementation of key recommendations that establish the foundation for a resilient, equitable, and healthy regional food system.
## APPENDIX

### A. Correlation of Economic Action Plan Strategies with Bay Area Food Futures Big Ideas

<table>
<thead>
<tr>
<th>ECONOMIC ACTION PLAN STRATEGIES</th>
<th>CORRELATION WITH BAY AREA FOOD FUTURE BIG IDEAS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal One: Business Climate</strong></td>
<td></td>
</tr>
<tr>
<td>1. Identify the business, economic, workforce and community organizations within the region and establish a communication framework among them.</td>
<td>BAAF Network: compiles database of ag+food sector business and advocacy organizations, and key related agencies; formalizes a sector working group</td>
</tr>
<tr>
<td>2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.</td>
<td>* BAAF Network: identifies ag+food sector best practices</td>
</tr>
<tr>
<td>3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.</td>
<td>* BAAF Network: identifies existing and needed programs</td>
</tr>
<tr>
<td>4. Support clusters and related industries that drive innovation and serve our communities.</td>
<td>* BAAF Network: identifies clusters driving innovation within ag+food sector</td>
</tr>
<tr>
<td>5. Enhance the Bay Area’s innovation and entrepreneurship ecosystem.</td>
<td>BAAF Network: identifies gaps and opportunities</td>
</tr>
<tr>
<td>6. Document the changing structure of employment and its implications</td>
<td>* BAAF Network: tracks employment and gig workforce in ag+food sector</td>
</tr>
<tr>
<td><strong>Goal Two: Workforce</strong></td>
<td></td>
</tr>
<tr>
<td>7. Improve the primary, secondary, and higher education systems to create a globally competitive workforce</td>
<td>BAAF Network: identifies existing and needed curriculum and training related to ag+food workforce</td>
</tr>
<tr>
<td>8. Focus improvement efforts on middle, high school and community college education and training opportunities for disadvantaged students and districts to improve the home-grown workforce.</td>
<td>* BAAF Network: identifies and promotes economic opportunity and career pathways in the ag+food sector</td>
</tr>
<tr>
<td>9. Expand economic opportunity and upward mobility in employment and wages at all life stages.</td>
<td>* BAAF Network: identifies, helps develop, and promotes apprenticeship opportunities in the ag+food sector</td>
</tr>
<tr>
<td>10. Enhance apprenticeship opportunities throughout the region.</td>
<td>BAAF Network: identifies, helps develop, and promotes paid internship opportunities in the ag+food sector</td>
</tr>
<tr>
<td>11. Expand sector-specific paid internship programs for high school, and community college students.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Big idea</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAAF Network: identifies existing and needed programs</td>
<td>Manufacturing, Retail, Food Service, Post-consumption</td>
</tr>
<tr>
<td>BAAF Network: identifies clusters driving innovation within ag+food sector</td>
<td>Ag., Manuf., Retail, Food Service, Post-consumption</td>
</tr>
<tr>
<td>BAAF Network: identifies gaps and opportunities</td>
<td>all</td>
</tr>
<tr>
<td>BAAF Network: tracks employment and gig workforce in ag+food sector</td>
<td>all</td>
</tr>
<tr>
<td>BAAF Network: identifies and promotes economic opportunity and career pathways in the ag+food sector</td>
<td>Ag, Distribution, Manuf., Retail, Food Service</td>
</tr>
<tr>
<td>BAAF Network: identifies, helps develop, and promotes apprenticeship opportunities in the ag+food sector</td>
<td>Ag, Distribution, Manuf., Retail, Food Service</td>
</tr>
<tr>
<td>BAAF Network: identifies, helps develop, and promotes paid internship opportunities in the ag+food sector</td>
<td>Ag, Distribution, Manuf., Retail, Food Service</td>
</tr>
</tbody>
</table>
### Goal Three: Housing and Work Places

12. Identify and implement best practices to support housing production, preservation and affordability.  
   - **Big Idea**: BAAF Network: identifies needs and best strategies for creating, housing, especially in rural areas  
   - **Sector**: Agriculture

13. Encourage employment growth around transit, transportation improvements near employment centers, and employment growth adjacent to workforce housing.  
   - **Big Idea**: Healthy Food Outlets in Mixed Use Workforce Housing: explore feasibility of incentivizing this concept. Track gaps in transit to off-hour jobs.  
   - **Sector**: Retail, Food Service

   - **Big Idea**: Study of Food Goods Movement and Manufacturing/Distribution Cluster: connect study with development of PPA designation  
   - **Sector**: Agriculture, Distribution, Manufacturing, Retail, Food Service

### Goal Four: Infrastructure

15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.  
   - **Big Idea**: BAAF Network: identifies ag+food sector infrastructure needs and track relevant state and federal programs  
   - **Sector**: Agriculture, Distribution, Manufacturing, Retail, Food Service, Post-consumption

16. Improve and coordinate transportation systems and regional mobility.  
   - **Big Idea**: BAAF Network: tracks impact of congestion pricing on food goods distribution efficiency and costs  
   - **Sector**: Distribution

17. Improve travel access to economic opportunity for low income workers.  
   - **Big Idea**: BAAF Network: tracks travel of low-income ag+food sector workers and identifies specific needs  
   - **Sector**: Agriculture, Distribution, Manufacture, Retail, Food Service

18. Enhance and strengthen communications, energy and water systems.  
   - **Big Idea**: BAAF Network: identifies needs and opportunities for increasing energy and water efficiencies  
   - **Sector**: Agriculture, Distribution, Manufacturing, Retail, Food Service, Post-consumption

19. Reduce vulnerability to climate change and natural hazards.  
   - **Big Idea**: BAAF Network: identifies needs and opportunities for improving disaster resilience; identifies resources for measuring and compensating provision of ecosystems services by farmers  
   - **Sector**: Agriculture, Distribution, Manufacturing, Retail, Food Service, Post-consumption

20. Recognize the region's agricultural land, bay lands and open space as an economic asset.  
   - **Big Idea**: BAAF Network: identifies current and potential direct and indirect contributions of agriculture to the regional economy; tracks vulnerabilities and needs of agriculture; helps implement (if feasible) the Ag Resilience Fund  
   - **Sector**: Agriculture
B. Bay Area Production compared to Consumption Estimate, 2016

Commodity Production & Consumption Estimates for Bay Area (9-county foodshed), 2016

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Commodity Production (tons)</th>
<th>Maximum Consumption Estimate (tons)</th>
<th>Bay Area Max Consumption as % of Foodshed Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eggs</td>
<td>84.75</td>
<td>324,375.12</td>
<td>144065.11%</td>
</tr>
<tr>
<td>Dairy milk</td>
<td>311,600.00</td>
<td>463,502</td>
<td>148.75%</td>
</tr>
<tr>
<td>Chicken</td>
<td>15,814.44</td>
<td>231,943</td>
<td>1466.65%</td>
</tr>
<tr>
<td>Turkey</td>
<td>n/a</td>
<td>48,608</td>
<td>n/a</td>
</tr>
<tr>
<td>Beef (Cattle, Calves)</td>
<td>7,054.03</td>
<td>193,668</td>
<td>2745.50%</td>
</tr>
<tr>
<td>Pork (Hogs, Pigs)</td>
<td>35.85</td>
<td>170,704</td>
<td>476207.16%</td>
</tr>
<tr>
<td>Apples (fresh)</td>
<td>14,900.00</td>
<td>55,498</td>
<td>372.47%</td>
</tr>
<tr>
<td>Citrus (fresh)</td>
<td>n/a</td>
<td>76,549</td>
<td>n/a</td>
</tr>
<tr>
<td>Head lettuce (fresh)</td>
<td>n/a</td>
<td>46,350</td>
<td>n/a</td>
</tr>
<tr>
<td>Onions (fresh)</td>
<td>185.00</td>
<td>63,918</td>
<td>34550.36%</td>
</tr>
<tr>
<td>Tomatoes (fresh)</td>
<td>192,900.00</td>
<td>56,646</td>
<td>29.37%</td>
</tr>
<tr>
<td>Potatoes (fresh)</td>
<td>n/a</td>
<td>113,292</td>
<td>n/a</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>56,910.00</td>
<td>443,600</td>
<td>779.48%</td>
</tr>
<tr>
<td>Corn products</td>
<td>49,800.00</td>
<td>115,206</td>
<td>231.34%</td>
</tr>
<tr>
<td>Rice (C-2010)</td>
<td>n/a</td>
<td>68,894</td>
<td>n/a</td>
</tr>
<tr>
<td>Total caloric sweeteners (sugars)</td>
<td>n/a</td>
<td>445,130.69</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Source: https://data.bls.gov/oes/#geoOcc/Multiple%20occupations%20for%20one%20geographical%20area

C. Food Insecurity & Average Meal Costs

Food Insecurity in the Bay Area by county, 2016

<table>
<thead>
<tr>
<th>County</th>
<th>Number of Food Insecure People</th>
<th>Food Insecurity Rate</th>
<th>Average Meal Cost</th>
<th>Annual Food Budget Shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda</td>
<td>214,370</td>
<td>13.40%</td>
<td>$3.72</td>
<td>$136,279,000</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>123,170</td>
<td>11.10%</td>
<td>$3.53</td>
<td>$74,353,000</td>
</tr>
<tr>
<td>Marin</td>
<td>27,240</td>
<td>10.50%</td>
<td>$4.32</td>
<td>$20,112,000</td>
</tr>
<tr>
<td>Napa</td>
<td>12,170</td>
<td>8.60%</td>
<td>$4.18</td>
<td>$8,691,000</td>
</tr>
<tr>
<td>San Mateo</td>
<td>68,490</td>
<td>9.10%</td>
<td>$3.69</td>
<td>$43,239,000</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>186,130</td>
<td>9.90%</td>
<td>$3.67</td>
<td>$116,617,000</td>
</tr>
<tr>
<td>Solano</td>
<td>59,020</td>
<td>13.70%</td>
<td>$3.12</td>
<td>$31,508,000</td>
</tr>
<tr>
<td>Sonoma</td>
<td>53,360</td>
<td>10.70%</td>
<td>$3.73</td>
<td>$34,011,000</td>
</tr>
<tr>
<td>San Francisco</td>
<td>125,120</td>
<td>15%</td>
<td>$4.53</td>
<td>$96,916,000</td>
</tr>
<tr>
<td>Total</td>
<td>869,070</td>
<td>11.30% (ave)</td>
<td>$3.83 (ave)</td>
<td>$561,726,000</td>
</tr>
</tbody>
</table>

Source: Feeding America, https://www.feedingamerica.org
D. Mean Wages in Food Industry

May 2018 Mean Wages in San Francisco-Oakland-Hayward

| Occupation                                                      | Hourly mean wage | Annual mean wage |
|                                                                |                  |                  |
| Bakers                                                          | $16.51           | $34,340          |
| Butchers and meat cutters                                      | $17.93           | $37,290          |
| Meat, poultry, and fish cutters and trimmers                   | $15.74           | $32,750          |
| Food and tobacco roasting, baking, and drying machine operators and tenders | $19.23           | $40,000          |
| Food batchmakers                                               | $15.58           | $32,410          |
| Food cooking machine operators and tenders                     | $14.02           | $29,160          |
| Food processing workers. all other                             | $14.20           | $29,540          |

Source: https://data.bls.gov/oes/#/geoOcc/Multiple%20occupations%20for%20one%20geographical%20area

E. Food Consumption by Location

Average daily intake of food by food source (location). 2007-10 (U.S.)

| Food Group          | At Home | Total away from home | Away from home |
|                     |         |                      |               |
|                     |         | Restaurant           | Fast Food     | School | Other |
| Fruit               | 89.52%  | 11.43%               | 1.90%         | 1.90%  | 2.86% | 4.76% |
| Vegetables          | 67.61%  | 33.10%               | 12.68%        | 11.97% | 1.41% | 7.04% |
| Dairy               | 74.58%  | 25.42%               | 5.65%         | 10.73% | 4.52% | 4.52% |
| Grains              | 69.04%  | 30.96%               | 8.20%         | 13.93% | 2.17% | 6.66% |
| Protein Foods       | 67.43%  | 32.57%               | 11.44%        | 12.68% | 1.58% | 6.87% |
| Added Sugars        | 74.28%  | 25.72%               | 5.53%         | 8.97%  | 1.58% | 9.70% |
| Oils                | 65.01%  | 34.99%               | 11.25%        | 14.94% | 1.84% | 6.95% |
| Solid Fats          | 65.28%  | 34.72%               | 9.43%         | 14.72% | 2.35% | 8.23% |


Food Service Employment by Occupation. Gender and Race (U.S.)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Women</th>
<th>White</th>
<th>Black or African American</th>
<th>Asian</th>
<th>Hispanic or Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chefs and Head Cooks</td>
<td>22</td>
<td>61</td>
<td>17.2</td>
<td>16.6</td>
<td>26.6</td>
</tr>
<tr>
<td>Food Prep Workers</td>
<td>61</td>
<td>71.1</td>
<td>15.9</td>
<td>6.2</td>
<td>26.2</td>
</tr>
<tr>
<td>Waiters and Waitresses</td>
<td>69.9</td>
<td>76</td>
<td>10.7</td>
<td>7.6</td>
<td>22.6</td>
</tr>
<tr>
<td>Dishwashers</td>
<td>24.3</td>
<td>74.3</td>
<td>13.2</td>
<td>5.7</td>
<td>27.9</td>
</tr>
<tr>
<td>Host and Hostesses</td>
<td>81.6</td>
<td>75.1</td>
<td>12.9</td>
<td>4.5</td>
<td>27</td>
</tr>
</tbody>
</table>

Source: https://www.bls.gov/cps/cpsaat11.htm
F. Quantities of Food Waste by Sector

Quantities of Food Waste by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Tons Total Generated</th>
<th>Tons Curbside Organics</th>
<th>Tons Curbside Recycle</th>
<th>Tons Other Diversion</th>
<th>Tons Disposed</th>
<th>% Disposed/Generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Service</td>
<td>355,796</td>
<td>26,063</td>
<td>3,479</td>
<td>4,388</td>
<td>321,866</td>
<td>90%</td>
</tr>
<tr>
<td>Manufacturing and wholesale</td>
<td>80,966</td>
<td>881</td>
<td>81</td>
<td>28,727</td>
<td>51,277</td>
<td>63%</td>
</tr>
<tr>
<td>Retail</td>
<td>190,174</td>
<td>4,601</td>
<td>681</td>
<td>83,824</td>
<td>101,068</td>
<td>53%</td>
</tr>
<tr>
<td>Other</td>
<td>257,656</td>
<td>13,685</td>
<td>1,308</td>
<td>29,658</td>
<td>213,005</td>
<td>83%</td>
</tr>
<tr>
<td><strong>Total Commercial</strong></td>
<td>884,592</td>
<td>45,230</td>
<td>5,549</td>
<td>146,597</td>
<td>1,201,885</td>
<td>78%</td>
</tr>
<tr>
<td>Residential</td>
<td>548,985</td>
<td>2,316</td>
<td>6,889</td>
<td>0</td>
<td>514,670</td>
<td>94%</td>
</tr>
<tr>
<td><strong>TOTAL (Commercial + Residential)</strong></td>
<td>1,433,578</td>
<td>47,545</td>
<td>12,439</td>
<td>146,597</td>
<td>1,201,885</td>
<td>84%</td>
</tr>
</tbody>
</table>

Source:
https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupStreams?cy=1&lg=1001&mt=40

G. Estimate of Bay Area Edible Food Waste

Estimated Quantities of Edible Food Waste

<table>
<thead>
<tr>
<th></th>
<th>Commercial Waste</th>
<th>Residential Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Tons of Food Waste</strong></td>
<td>884,592</td>
<td>548,985</td>
</tr>
<tr>
<td><strong>Total lbs of Food Waste (×2.000)</strong></td>
<td>1,769,184,738</td>
<td>1,097,970</td>
</tr>
<tr>
<td><strong>Total Edible Tons of Food Waste</strong></td>
<td>294,864</td>
<td>274,493</td>
</tr>
<tr>
<td><strong>Total Edible lbs of Food Waste</strong></td>
<td>589,728,246</td>
<td>2,195,940,531</td>
</tr>
<tr>
<td><strong>Estimated Total Edible Tons (adjusted)</strong></td>
<td>206,405</td>
<td>329,391</td>
</tr>
<tr>
<td>#of individuals**</td>
<td></td>
<td>7,150,739</td>
</tr>
<tr>
<td>Estimated Edible Food Waste in lb/person/year</td>
<td></td>
<td>92</td>
</tr>
</tbody>
</table>

* Based on available research, the quantities of edible food are about ⅓ of total food waste (including food scraps that are not edible) for businesses, and about ½ for households. These are rough estimates based on a few studies (conducted in other areas or countries, for example 2015 Metro Vancouver Waste Composition Monitoring (Tetra Tech)).
** Based on Census Bay Area 2010.
*** Several studies conducted at the city or county-level in the Bay Area (Palo Alto Waste Characterization Study 2017. Alameda County commercial food waste reduction study, for example, suggests that CalRecycle numbers tend to overestimate the amount of food waste from businesses (by 30%), and to underestimate the amount of food waste from residents (by 20%) in the region. We adjusted the numbers using these coefficients in order to have more accurate estimates. The variations between studies and methods suggests that more research needs to be done in order to have an accurate baseline of food waste levels in the Bay Area.
H. Cost of Food Waste per Person

Estimated Cost of Edible Food Waste

| USDA Estimated Cost of Edible Food Waste at consumer level ($/lb) | $1.53 |
| Estimated Quantities of Edible Food Waste (lbs/person/year) | 92 |
| **Estimated Cost of Food Waste ($/Year/person)** | **$140.82** |

Source: https://www.usda.gov/foodwaste/activities

I. Estimate of GHG Emissions & Water Consumption due to Food Waste

Estimated Impacts of Avoided Edible Food Waste

<table>
<thead>
<tr>
<th>Estimated Impacts of Avoided Edible Food Waste (Refed calculation)</th>
<th>Impact per Lb</th>
<th>Edible Food Waste Quantities (Adjusted)</th>
<th>Total Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG Reductions</td>
<td>0.00071 tons</td>
<td>1,071,591,931 lbs</td>
<td>760,830 tons (GHG)</td>
</tr>
<tr>
<td>Water Conservation</td>
<td>63.4921 gallon</td>
<td>1,071,591,931 lbs</td>
<td>68,037,622,073 gallons</td>
</tr>
<tr>
<td>Potential financial benefit per food waste avoided</td>
<td>$3.97/lb</td>
<td>1,071,591,931 lbs</td>
<td>$4,252,398,262</td>
</tr>
<tr>
<td>Cost across the supply chain</td>
<td>$0.71/lb</td>
<td>1,071,591,931 lbs</td>
<td>$765,438,117</td>
</tr>
</tbody>
</table>

Sources:
REFERENCES

ORGANIZATIONS & RESOURCES

100 Resilient Cities - http://www.100resilientcities.org
California Climate & Agriculture Network (CalCAN) - http://calcimateag.org
California Department of Food & Agriculture (CDFA) - https://www.cdfa.ca.gov
CDFA Healthy Soils Program - https://www.cdfa.ca.gov/oefi/healthysoils/
EatForum.org - https://eatforum.org
Food First. Can We Feed the World Without Destroying It? - https://foodfirst.org/can-we-feed-the-world-without-destroying-it/
Food Solutions New England - https://www.foodsolutionsne.org
Food Tech Connect - https://foodtechconnect.com/2019/01/07/biodiverse-food-intersection-taste-sustainability/?mc_cid=1e470efe1b&mc_eid=aea8183475
Future Food Tech - https://futurefoodtechsf.com
Future Market Insights - https://www.futuremarketinsights.com
Global Alliance for the Future of Food - https://futureoffood.org
Global Food Security. The UK Cross-government programme on food security research - https://www.foodsecurity.ac.uk
Golden Gate Restaurant Association - http://ggra.org
Good Food Institute - https://www.gfi.org
International Food Policy Research Institute (IFPRI) - http://www.ifpri.org
Marin Food Policy Council - https://ucanr.edu/sites/MarinFoodPolicyCouncil/
One Step Closer 2 Organic Sustainable Community (OSC2) - https://www.osc2.org
San Francisco Bay Area Planning and Urban Research Association (SPUR) - https://www.spur.org
Specialty Food Association - https://www.specialtyfood.com
The Food Corridor - https://www.thefoodcorridor.com

The Food Trust - http://thefoodtrust.org


University of California. Agriculture and Natural Resources (UC ANR) - https://ucanr.edu


Vermont Fam to Plate - https://www.vtfarmtoplate.com

**PEER-REVIEWED LITERATURE**


**REPORTS**


**NEWS & OTHER**


Endnotes

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The Economic Impact of Food and Beverage Processing in California and Its Cities and Counties, California League of Food Processors, January 2015:

The food and beverage manufacturing sector economic activities are defined by the North American Classification System codes (NAICS). In this report, we consider that “manufacturing” and “processing” are synonymous.

According to this study, the sector generates $82-billion of direct and additional (induced) value-added.

See Appendix D.


The food and beverage manufacturing sector economic activities are defined by the North American Classification System codes (NAICS). In this report, we consider that “manufacturing” and “processing” are synonymous.

The Economic Impact of Food and Beverage Processing in California and Its Cities and Counties, California League of Food Processors, January 2015: http://clfp.com/wp-content/uploads/CLFP_FINAL_Report_1_29_15.pdf. According to this study, the sector generates $82-billion of direct and additional (induced) value-added.

See Appendix D.

https://berkeleyrecycling.org/page.php?id=22
https://www.mindbodygreen.com/0-21141/15-big-food-companies-that-are-making-healthy-changes.html
https://www.iftf.org/fileadmin/user_upload/images/ourwork/Food_Futures_Lab/IFTF_Good_Food_is_Good_Business.pdf

See Appendix D.

https://www.treasurer.ca.gov/caeatfa/
https://cccfoodpolicy.org/sites/default/files/resources/planning_to_eat_sunybuffalo.pdf
https://www.cmta.net
http://www.business.ca.gov
http://www.business.ca.gov; http://business.ca.gov/Programs/CaliforniaCompetesTaxCredit
http://www.thefoodnest.com


In this chapter, we do not include Food (health) supplement stores, Vending Machine operators, and Nursery, Garden Center, and Farm Supply Stores.

These businesses are classified as Local Messengers & Local Delivery industry (NAICS code 492210), and not included in food and beverage stores. We take them in consideration for the analysis conducted in the chapter.


Direct-to-consumer sales of locally grown food has also been growing, from $550 million in 1997 to $1.2 billion in 2007. (SPUR)


Food (health) supplement stores have increased over the same period, but we only consider food and beverage stores in this chapter.

Based on Bay Area Food Economy numbers, if 88.4% of stores have 7 employees on average, while 2.4% of stores have 200 employees on average, and 0.2% of stores have 300 (taking a conservative estimate), large stores employing more than 100 workers would represent more than 40% of the retail workforce.

According to USDA, to qualify as a "low-access community," at least 500 people and/or at least 33 percent of the census tract's population must reside more than one mile from a supermarket or large grocery store (for rural census tracts, the distance is more than 10 miles), https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/; http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

According to SPUR, 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 farmers’ markets. https://www.spur.org/sites/default/files/publications_pdfs/SPUR_Locally_Nourished.pdf


This may produce USD $359 billion in incremental value. https://go.euromonitor.com/white-paper-cfs-2018-cfs-new-concepts.html#download-link

According to the Quarterly Census of Employment and Wages (QCEW), in Bay Area Food Economy, SAGE. These numbers analyze the role of intermediary, application-based delivery services such as Grubhub or DoorDash, while they do not directly belong in the food sector service category (based on NAICS codes).


See Appendix D for detailed wages in San Francisco, San Mateo, and Redwood City.


Women made up 67 percent of full-service restaurant servers but only 41 percent of full-service bartending staff. Women made up 84% of fine dining servers but only 30 percent of fine dining bartending staff.

https://rocunited.org/publications/bkd-report-bay-area/


https://www.SPUR_Healthy_Food_Within_Reach.pdf

https://oewd.org/sites/default/files/Invest%20In%20Neighborhoods/State%20of%20the%20Retail%20Sector%20Final%20Report.pdf

See Appendix E for detailed Appendix E.


Cafe Ohlone by mak-‘amham. https://www.makamham.com/cafeohlone


See Appendix F-I for calculations.

These estimates are based on ReFED calculations. See Appendix F-I for details.

See Consumption chapter on Food Security and Food Access.


See Appendix F-I for calculations.


The EPA Excess food opportunity map gives locations of excess food generators and recipients, which may give an indication of distances travelled, but additional data are necessary. https://www.epa.gov/sustainable-management-food/excess-food-opportunities-map#whatis

See Appendix F-I for calculations.

https://www.epa.gov/agstar/agstar-webinar-innovative-business-models-anaerobic-digestion-projects
https://www.epa.gov/sites/default/files/kids2012-6.pdf


The EPA Excess food opportunity map gives locations of excess food generators and recipients, which may give an indication of distances travelled, but additional data are necessary. https://www.epa.gov/sustainable-management-food/excess-food-opportunities-map#whatis
See more regenerative agriculture practices in the Chapter on Agricultural Production.
http://climatechampions.ucop.edu/2017/04/06/whendee-silver-compost-to-restore-carbon-to-soil/

http://www.commoncompost.org
https://savethefood.com
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https://abag.ca.gov/planning/pdfs/Complete_CEDS_with_all_appendices.pdf