

Food System Resilience

A Planning Guide for State Governments



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Report Summary

This planning guide aims to provide state governments with resources to build food system resilience and to do so in a way that promotes an equitable and just food system. The primary audience for this planning guide is state government staff (e.g., planners, sustainability directors, food systems managers, emergency management staff, resilience managers, etc.) and policymakers who can develop and implement policies at the sub-national level. While one entity may lead the food system resilience planning efforts outlined in this guide, many community partners will need to be involved. Effective food system resilience work requires meaningful collaboration with community partners, community members, and across state agencies.

This document is an abridged adaption of the local resiliency guide developed by the Johns Hopkins Center for a Livable Future and Bloomberg Center for Government Excellence, together with a community of practice of local government partners.

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Executive Summary

Environmental and human-made disasters and even seasonal changes directly and indirectly affect people and the functioning of food systems. These shocks and stressors to food systems can be acute events such as extreme weather phenomena (hurricanes, earthquakes, etc.) or long-term political, economic, and/or environmental disruptions, during which food is not accessible, available, or acceptable. While these factors can impact everyone, those with the most vulnerabilities and who are the most marginalized are at the greatest risk. State governments around the United States are taking action to prepare for and prevent the consequences of these disruptions on their food systems, but there is limited guidance available to support states in this work.

This planning guide consists of six modules that provide background information on state food system resilience, as well as tools for developing food system resilience strategies. The strategies can be used to create a stand-alone food system resilience plan or components to embed into other plans, policies, or programs. We recommend that you complete the modules in order as they build on one another. If your state has completed elements of the work already, you may skip to the next section.

This guide is an abridged adaption of the [Food System Resilience: A Planning Guide for Local Governments](#) developed by the Johns Hopkins Center for a Livable Future and Bloomberg Center for Government Excellence with a local government community of practice. ASTHO has tailored this version to state governments. For more information on a specific topic, please refer to the local guide for additional context. This guide includes recommendations and specific program examples obtained from interviews with Colorado, Hawai'i, Maryland, Massachusetts, New England, New Hampshire, and Rhode Island.



Module 1: Get Started

Food systems face acute and chronic threats caused by social, environmental, and political crises. Shocks like environmental disasters and stressors like ongoing persistent changes in temperature and precipitation have already disrupted food systems across supply chains from farms to dinner tables. These disruptions threaten food security for all and often magnify existing racial, geographic, and socioeconomic inequities.

The COVID-19 pandemic, for example, brought to light many vulnerabilities in food supply chains and social systems in the United States. The pandemic and consequent policies to contain its spread led to food shortages, unemployment, and food insecurity, hitting many communities already experiencing issues with accessing food the hardest. The crisis stretched limited resources of nonprofit food assistance programs, with governments from the federal to state level stepping in to help fill the gaps and coordinate responses while also preparing for potential future disruptions.

State governments can play a key role in preparing for, responding to, and recovering from food system impacts. States with food system resilience plans have demonstrated that there are many actions that state governments can take to build food system resilience.

Food system resilience planning can help a state government to:

- Prepare for disruptive events by learning more about potential threats (e.g., flood, civil unrest, pandemic, drought, etc.) that might disrupt food systems.
- Respond to food system disruptions more efficiently and effectively by having plans in place and existing relationships with key actors in the state and beyond.
- Create more equitable and just food systems by implementing food system resilience actions that uproot the systems and structures that create inequities in the food systems.

This guide is designed to be adapted according to your state government's capacity and your region's unique context and needs. It provides resources to help state government staff understand where food systems issues fit within resilience and disaster planning and vice versa. Throughout, we provide case studies and hypothetical examples to demonstrate how this work is (or could be) done and suggest resources for learning more about specific topics and enhancing your capacity to do this work.

Understanding Food System Resilience

A food system is all the activities and resources that go into producing, distributing, and consuming food, the drivers and outcomes of those processes, and the relationships and feedback loops between system components. A food system can be very complicated; within a state, multiple government departments may oversee it, and it both depends on and impacts the functioning of other systems — such as transportation, energy, and health.



Food system resilience applies resilience thinking to a food system. Resilience is the capacity over time of a food system and its units at multiple levels to provide sufficient, appropriate, and accessible food to all, in the face of various and even unforeseen disturbances. One way to think about food system resilience is to ask four key questions:

1. **Resilience of What?** What are the things or systems that you are trying to make more resilient? What are the boundaries of the food system and what other systems are intersecting with that food system?
 - Example: State X is interested in making the state food system more resilient. State X will have to consider regional, national, and international supply chains as it imports a considerable amount of food.

2. **Resilience to What?** What shocks and stressors may impact the food system? Are you concerned with stressors or shocks or both types of disruptions?
 - Example: State X is interested in taking an all-hazards approach. Due to its geographic location and changing climate, State X is particularly concerned about extreme coastal weather events and sea level rise.

3. **Resilience for What Purpose?** What are the goals for building food system resilience? How can the goals help promote emergency response efforts and long-term systems transformations?
 - Example: State X wants to make sure that the food system is prepared for the next disruption, but it also wants to make the current and future food systems more equitable and just.

4. **Resilience for Whom?** How does resilience work promote equity?
 - Example: State X wants to work collaboratively with the communities that are most at risk of food system disruptions. It wants to collaborate in all stages of the process, share in the leadership, and build community capacity to respond to future disruptions.

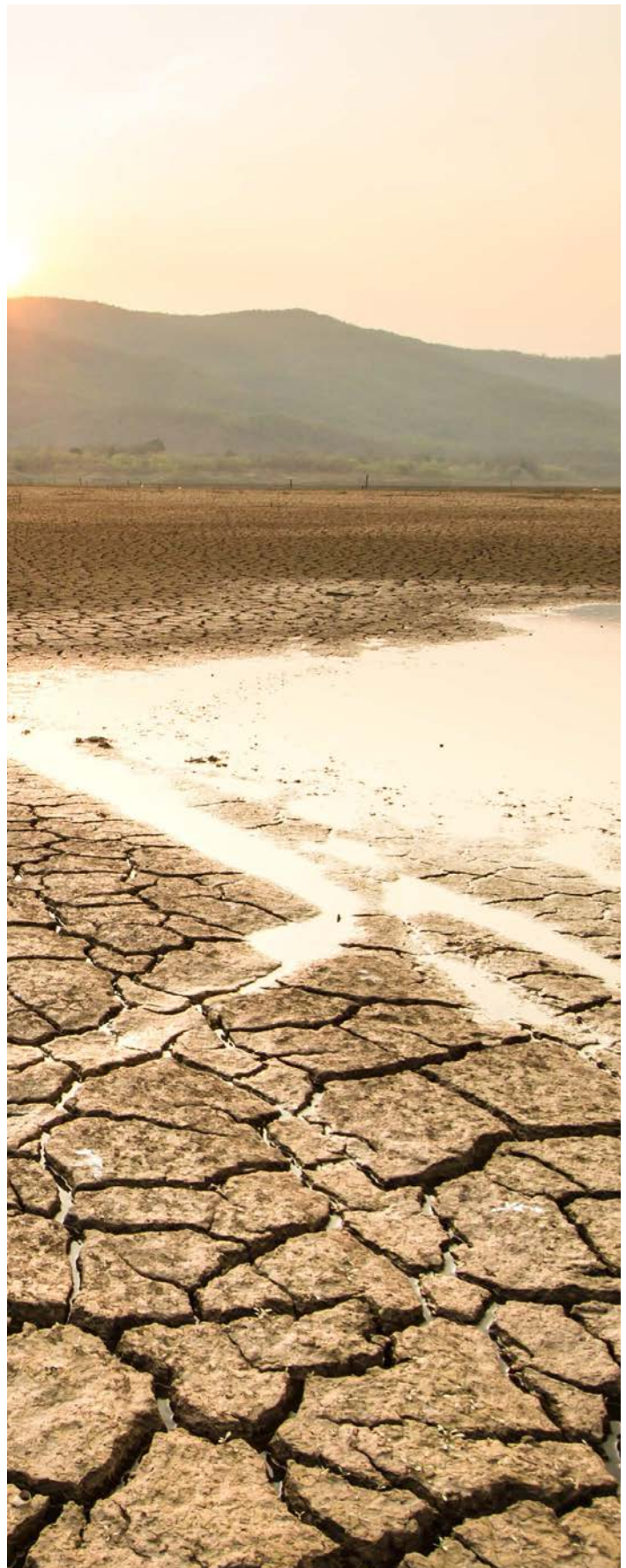


Table 1. Food System Resilience Attributes, Descriptions, and Examples

Attribute	Description (in food system context)	Food System Example
Diversity	A variety of food system elements that can serve a similar purpose.	A variety of food retail options, such as farmers’ markets, independent grocers, and supermarkets.
Redundancy	Multiple or duplicative food system elements that can serve the same purpose.	Neighborhoods with more than one grocery store in walking distance.
Connectivity	Multiple food system elements that connect and communicate with one another.	Regular communication between food banks and emergency response actors during a crisis.
Capital Reserves (social, financial, natural, political)	Available “backup” resources that can be used during a disruptive event.	Strong community networks (social), reserve funds (financial), arable soil (natural), state government support (political).
Flexibility	The ability to make modifications to food system elements during disruptive events when needed.	Government providing waivers to operate school meal programs outside of normal hours.
Preparedness	A plan in place for how to ensure food access, availability, and acceptability during a disruptive event.	Food included in emergency management protocol; Formation of an Emergency Food Working Group.
Inclusive Decision-Making	Establish “transparent, fair, and inclusive” food system resilience planning, implementation, and evaluation process.	State government do food system resilience planning work in partnership and co-owned by community partners, and compensate community members for their engagement in the process.
Balanced Resource Allocation	Ensure the benefits and burdens of your food system resilience planning are equitably distributed.	Food system resilience actions prioritize resources to communities that experience the greatest inequities, disproportionate impacts, and have the greatest unmet needs.
Reducing Structural Barriers to Access	Uproot long-term, embedded structures that perpetuate inequitable food system and resilience outcomes.	State government offers microgrants to organizations increasing fresh food access in the state.
Sustainable Planning	Actions taken today conserve resources for future generations.	Youth are included in the development, implementation, and evaluation of food system resilience actions.

Module 2: Building Resilience for All Communities

An effective approach to strengthening food system resilience focuses on ensuring that actions taken before, during, and after shocks and stressors support food systems that consistently provide safe, healthy, and affordable food for all communities. From the state level, food system resilience includes not only food production and distribution, commerce, and trade, but also food system workforce and agricultural entities. Food system resilience at the state level can have broad impacts. This approach recognizes that there are levels within states and geographical regions that may have different needs and therefore may require tailored strategies and levels of support. It also considers the underlying conditions that contribute to these differences. Importantly, this work is most successful when state governments develop these strategies in partnership with local communities, incorporating state knowledge and shared ownership throughout the process. This module covers the four core principles of equitable food system resilience planning.

1. Inclusive Decision-Making

Establish "transparent, fair, and inclusive" food system resilience planning, implementation, and evaluation processes. Building food systems that can outlast whatever challenges the future brings requires building authentic and long-lasting relationships between government actors and community partners. All elements of community engagement should be bi-directional and built on trust and open communication between government and community partners.

INCLUSIVE DECISION MAKING EXAMPLE: MARYLAND FOOD SYSTEM RESILIENCY COUNCIL

Maryland formed the [Food System Resiliency Council](#) in response to food insecurity and economic crises stemming from the COVID-19 pandemic. The group is comprised of state agencies, nonprofits, private sector organizations, community partners, academic institutions, and food business owners. This group meets regularly to address the state's food insecurity crisis, develop equity and sustainability policy recommendations to increase long term food system resilience, and expand the impact of existing local food council organizations.

2. Balanced Resource Allocation

Equitably distribute the benefits and burdens of your food system resilience planning. The causes and impacts of food system disruptions and the resources available to recover from them are not equally distributed across all communities. Regions or counties where low-income and marginalized communities live have greater exposure to environmental hazards, have fewer economic resources to prepare for and overcome disruptions, and are disproportionately excluded from the decisions that could reduce these harms. Additionally, be sure to consider other types of inequities that are particularly relevant for food system resilience, such as primary language spoken, disability status, immigrant or undocumented status, and low socioeconomic status.

Analyzing and visualizing population data — for example, with maps — to identify inequalities, draw connections, and understand trends across systems such as health care, housing, transportation, and food can better inform policies and create more effective programs. Consider using state agency surveillance data and publicly available datasets such as the U.S. Centers for Disease Control and Prevention (CDC) [Social Vulnerability Index](#) to help illustrate the unequal distribution of social vulnerabilities across the state and country.

Not only do balanced resource allocation approaches consider the disparities across communities, but they also recognize community assets, including networks of people and organizations, state programs and initiatives, and physical resources. Understanding the layering of individual and community needs, along with the scope of resources available, or lack thereof, can help to appropriately distribute necessary resources during any given disruption.

**BALANCED RESOURCE ALLOCATION EXAMPLE:
HAWAII MASTER GARDENERS ADOPT A COMMUNITY
FOOD GARDEN**

Hawaii established a public housing community garden project to promote food security, health, and resilience among residents by creating and sustaining public housing community-managed garden spaces. This program expands access to fresh, local produce for low-income residents and offers a sustainable community framework by partnering with certified master gardeners across Hawaii.

3. Reducing Structural Barriers to Access

Uproot long-term, embedded structures that perpetuate inequitable food system and resilience outcomes. Addressing vulnerabilities through food system resilience planning requires moving beyond identifying the lack of resources to understand the reasons these conditions and environments exist. To do this, we must take a critical look at past and current policies and practices.

When responding to shocks and stressors, the goal of food system resilience is not to return to the status quo after a disruption but to create a food system that is more equitable and just. Within food system resilience planning, this means going beyond the outcomes to the reasons for those outcomes and developing strategies that address the root causes.

**REDUCING STRUCTURAL BARRIERS TO ACCESS EXAMPLE:
NEW HAMPSHIRE STRATEGIC PLANNING**

The New Hampshire Food and Agriculture Strategic Planning process involved 90+ organizations to propose over 140 recommendations that address 27 structural agriculture and food-related topics through Product, Market, and Issue briefs. Each recommendation lays out a specific suggested action, from policy changes and funding opportunities to program expansion and technical assistance. New Hampshire also categorized these recommendations by the stakeholders best suited to address them. Each brief touches on a product, market, or issue that is foundational to the food system; briefs are mapped across the Strategic Plan's Vision, Goals, and Persistent Themes to ensure all of the state's work is aligned toward stakeholders' collective goals.

4. Sustainable Planning

Actions taken today conserve resources for future generations. When responding to an event, the focus is often on emergency response efforts. This is justified but competing priorities often arise before there is time to work on long-term resilience planning. It is critical to work on these long-term changes that uproot the inequitable systems now to make improvements for future generations. By planning now and addressing potential future shocks and/or stressors, we can protect resources for future generations. Consider involving partners outside of the food system space who address natural resources, including environmental protection agencies, farmland, soil or water conservation organizations, and air quality advocates. Ensure to include a variety of ages, from youth to elderly, in the process.

**SUSTAINABLE PLANNING EXAMPLE:
COLORADO NEXTGEN LEADERS**

Colorado State University partnered with the Colorado Department of Agriculture to increase engagement with young Coloradans pursuing careers and studies in food systems. Colorado NextGen Leaders in Food and Agriculture (NGLFA) initiative is designed to equip the next generation of food and agriculture leaders with the knowledge, skills, and networks needed to shape the future of Colorado's food and agricultural policy. By engaging young voices, they are preparing a new generation to carry forward the work of building a more resilient, equitable, and community-driven food system.

We recommend using a set of tools to support your planning activities and link to them throughout this report.

TOOL #1: EQUITY CONSIDERATIONS TO GUIDE FOOD SYSTEM RESILIENCE PLANNING (page 10)

This tool helps assure you perform your planning in an equitable way. It includes criteria related to inclusive decision making, balanced resource allocation, reducing structural barriers, and sustainable planning considerations to think about and discuss with your community partners and members when developing or implementing food system resilience strategies. You should use this tool as a preliminary step to start conversation and reflect on potential actions and strategies. It is not a comprehensive list of all considerations.

Module 3: Define and Scope

Identifying Partners and Their Roles

Food systems depend on and affect many different actors. More resilient systems often have strong connections and networks. A couple of important steps to food system resilience planning are 1) to identify the partners who will guide and carry out food system resilience planning and work in your community and 2) clearly identify the roles that they will play.

For this guide, we suggest that you identify partners by generating an initial list of food system resilience actors. One way to do this is to think about what governmental agencies, associations, NGOs, businesses, and local jurisdictions in your state and/or region would be interested and/or critical to food system functioning. Further: what partners would be critical for protecting and promoting food security in the case of those potential shocks and stressors such as a pandemic, flood, snowstorm, or civil unrest?

Alternatively, think about how your agency responded to support food security during a recent disruptive event. Which community, business, and government partners were involved? Who wasn't involved but should have been?

IDENTIFYING PARTNERS AND ROLES: MASSACHUSETTS

The [Massachusetts Food System Collaborative](#) was created following the completion of the [Massachusetts Local Food Action Plan](#) in December 2015. The Collaborative seeks to promote, monitor, and facilitate implementation of the Plan. They utilize a network of local food system stakeholders that collaborate with each other in ways that connect them to other sectors of the food system and support each other's mutual progress.

Through these networks, they lead advocacy campaigns around items in the Plan that emphasize cross-sectoral collaboration; support equity, sustainability, and resilience in the food system; and have the potential for significant impact through coordinated grassroots efforts. The clear distinction between the state agency council and collaborative allows distinct lanes for food system implementation, engagement, and advocacy.

TOOL #2: PARTNERS ASSESSMENT (page 5)

This tool helps you identify possible partners to include in your food system resilience planning effort, and to collect key information about the partners. This exercise will ask you to think about which partners you need for an effective food system resilience planning process, but the matrix may also be useful in identifying emergency response or implementation actors. Sharing the partner list via an online platform, such as Google Drive, can allow multiple people to simultaneously add to the list. This list can also serve as a foundation for a community partner database.

Getting Your Agency on Board

Some of the key people you might need to communicate with are those in your agency leadership, peers, and other staff. Your agency culture can play a crucial role in the success of your food system resilience planning and work; therefore, an essential early step is to develop a strong link between your agency mandate and food system resilience. Some suggestions to getting your agency on board include:

- Ground the work in what has already been established in your state, agency, or in the community.
- Link food system functions and goals with needs and vulnerabilities of other interdependent sectors, such as water, energy, education, and transportation.
- Build on work that is already happening by aligning resilience goals and outcomes with other food access, climate action, or emergency planning goals.
- Use current events to showcase why food system resilience is vital.
- Remind that prevention and planning work save money in the long term.
- Start small to build buy-in.
- Build in evaluation so the agency knows what's working, can modify when something isn't working, and can justify the work.

Forming a Planning Team

You may consider creating a smaller team that will lead the planning process and work associated with the plan in addition to an advisory team that can provide input and validate the work as being representative of the community. Once you have a list of food system resilience partners, use the list to determine who should be engaged in the planning process. It is important to have a diverse and interdisciplinary planning team that brings together people from different sectors, levels of employment, geographic areas, and demographics. A variety of personal and professional experiences and knowledge will yield a team that thinks critically, raises issues beyond the food supply chain that will impact resiliency, and asks important questions.

PLANNING TEAM EXAMPLE: COLORADO FOOD SYSTEMS ADVISORY COUNCIL

The Colorado Food Systems Advisory Council (COFSAC) was originally established in 2010 through [Senate Bill 10-106](#) as an advisory committee to make recommendations to the General Assembly and to the appropriate regulatory agencies, not to make policy. COFSAC is the state conduit for hearing, reviewing, and advancing critical food systems issue in which state government does or could play a role. COFSAC is comprised of 12 General Assembly Leadership appointed seats and five Governor appointed seats that correspond to specific food system stakeholder groups and regions, in addition to six members appointed by each of the associated state agencies designated in the founding legislation.

Communicating About Food System Resilience

Whether you are trying to convince people to join your food system resilience planning team, or to garner funding to create a food system resilience plan, or you've been working on the topic for years, chances are good that you'll need to be able to gain support from other parts of state government, funders, political leaders, local organizations, and your colleagues. When resources are tight, how do you convince someone to invest in lessening the effects of a crisis that may not happen? How do you ask representatives from relevant organizations to engage in a long-term planning process when they are stretched thin addressing current issues? How do you explain these sometimes-complex ideas without a lot of jargon?

Many people are unfamiliar with the term, "food system resilience." It is important to be able to explain it in a way that resonates with others. This might look like helping a colleague who approaches this work from a food lens to understand terms like "vulnerability assessment" and "hazard exposure." Or helping your emergency operations colleagues understand why food systems are a critical part of emergency response.

COMMUNICATIONS EXAMPLE: RHODE ISLAND FOOD POLICY COUNCIL MUNICIPAL FACTSHEETS

The Rhode Island Food Policy Council creates [local municipal food system fact sheets](#) as a resource for every city and town in the state. The factsheets provide municipal leaders with recent and relevant metrics. These sheets offer a snapshot of the most pressing food systems issues in the jurisdiction and can provide a high-level overview of recent metrics to show stakeholders the importance of engaging in food resiliency work.

Define Project Scope

After identifying and recruiting key partners, the next step is to determine the scope and purpose of your state's food system resilience work. While neither disasters nor food systems have clear boundaries, for the purposes of planning, it is useful to clearly identify the scope of your food system resilience work.

Determining Food System Resilience Project Scope

Food systems are complex, and the threats to food security are numerous, so it is important to set parameters around the geographic area of interest and a realistic time frame for action to clearly define why this work needs to happen. It will also be helpful to understand what work has already been done to support food system functioning, emergency planning, and resilience planning.

Two Types of Scope to Consider in Food System Resilience Planning

1. **Geographic Scope:** Food systems exist at multiple scales including local, regional, national, and global. Although political entities may regulate these systems, they do not easily fit within political boundaries. The food that we eat is sourced from many different places and may travel hundreds or thousands of miles to reach the dinner table. It is helpful when thinking of resilience to define the food system in terms of what the state government and community can specifically influence.
2. **Temporal Scope:** Resilience can be demonstrated in response to a wide range of events, from short-term shocks to long-term stressors. Likewise, planning for more resilient food systems can include strategies for both. Based on your motivation for planning for food system resilience, the planning team needs to decide the length of time the process will cover.

Conduct a Landscape Assessment

It is useful to complete a landscape assessment of the work already happening in your state that may be related to food system resilience. Scanning existing work early on in your food system resilience planning process can help ensure that your work builds on, rather than duplicates, existing efforts in the state. We provide two tools to help you understand the existing work in your state.

[TOOL #3: JURISDICTIONAL INVENTORY \(page 15\)](#)

The tool is designed to help you evaluate your jurisdiction's current level of food system resilience planning. This tool is adapted from "Get it Toolgether: Assessing Your Food Council's Ability to Do Policy Work," which was created by the Food Policy Networks projects at the Johns Hopkins Center for a Livable Future.

[TOOL #4: POLICY AND PLAN SCAN \(page 20\)](#)

The Policy and Plan Scan will help you to identify plans and protocols that may already exist in your state government or community that are relevant to the food system or resilience. It will also help you identify gaps or opportunities that could be addressed through your food system resilience planning work.

Define the Vision and Purpose

Now that you have identified your partners, narrowed your scope, considered your organization's strengths in working on food system resilience, and identified plans that exist within state government and outside organizations related to food system resilience, you are ready to define the vision and purpose for your work. The vision and purpose provide aspirational goals as well as realistic boundaries around your planning process.

Vision Statement

A vision statement is an aspirational statement about what the future will look like and what will be achieved. The statement should provide context for why this work is important in your state. Setting a vision statement will help to clarify expectations for the food system resilience planning process, bring partners together around a collective goal and help to guide your work. Individually and as a team, members of the planning team should consider the following questions:

- Why are you working to make your food system more resilient?
- What does a more resilient food system look like in your community?
- What do you hope to achieve by engaging in food system resilience planning?
- How will you achieve it?
- Who will benefit?

Define the Purpose

A purpose statement will help to narrow the scope of work for the planning team and what you are working to accomplish with this process. Individually and as a team, members of the planning team should consider the following questions.

1. What do you hope to produce as a result of this planning process?
2. With broad needs and possibilities, will you take on the whole system or focus on pieces?
3. What is the time frame of focus — one year, three years, etc.?
4. Who is the target audience for the products?
5. Who is leading the process?
6. How will the process and product(s) incorporate equity?
7. What resources are available to support the planning work?



Module 4: Assess

Utilize these [Five Steps to Assess Food System Resilience](#) to investigate how effective your state's current food system may be in responding to and recovering from shocks and stressors.

- 1. Evaluate baseline food system functioning:** How well a food system responds to a shock or stressor depends in part on how well the system was working before a disruption occurred. Start by conducting a current (or "baseline") assessment of the level of food system functioning in your state. For this step, you will use the Baseline Food System Functioning Indicators tool.
- 2. Identify critical food system assets:** Take an inventory of assets that are critical to a well-functioning food system. These assets may be physical, social, or natural. Mapping critical assets helps plan for physical hazards such as storms or floods. For this step, you will use the Asset Inventory tool.
- 3. Assess potential hazards to the food system:** Identify the specific hazards that are likely to pose the most risk (i.e., the estimated likelihood and impact) to your food system. Hazards can manifest in the food system as short-term shocks such as a hurricane or long-term stressors such as political instability or chronic food insecurity. For this step, you will use the Risk Assessment tool.
- 4. Consider food system vulnerabilities:** Different communities or individuals within the state might experience the impacts of shocks and stressors on their food system in different ways. Therefore, the next step is to understand areas of greater physical and social vulnerability. For this step, you will use the Vulnerability Assessment.
- 5. Examine food system resilience attributes:** It is useful to identify food system characteristics that demonstrate resilience attributes that could counteract or reduce vulnerability. The resilience attributes proposed in this section are specific to food system resilience. For this step, you will use the Resilience Attributes Investigation tool.

Evaluate Baseline Food System Functioning

The first step in assessing food system resilience should be to gain an understanding of the baseline level of food system functioning in your state so you can document change over time. To do this, start by determining what a well-functioning food system looks like in your community, and then identify what indicators you can use to measure your baseline level of food system functioning. The guidance and tools in this section are based on the idea that, at a minimum, a well-functioning food system provides safe, nutritious, accessible, and culturally acceptable food for all residents of a community before, during, and after disruptive events. Included in this definition is the idea that food is accessible, available, and acceptable.

Once you determine your definition of a well-functioning food system, continue to identify what indicators might be appropriate [to measure the functioning of your food system](#).

Collecting baseline data on food system functioning will help to:

- Understand the food system, hazards, and the interconnections between systems.
- Track progress on food system resilience goals and indicators.
- Prioritize resources and decisions.
- Create effective policies and programs.
- Prioritize equity in your food system resilience work.
- Facilitate collaborations around data collection and sharing.



BASELINE EVALUATION EXAMPLE: NEW ENGLAND FOOD SYSTEM PLANNERS PARTNERSHIP STATE REPORTS

The [New England Food System Planners Partnership](#) (NEFSPP) is a collaboration amongst seven state-level food system organizations and representatives from the six-state agricultural, economic and environmental departments in New England. [New England Feeding New England](#) is NEFSPP’s primary initiative and aims to have 30% of the food produced in New England consumed in the region by 2030. NEFSPP conducts an annual food count to capture the percentage of local and regional food and beverage products bought or purchased in each state in New England to compare progress to achieving the 30% goal. At the beginning of the partnership, the organizers developed [individual state reports](#) to highlight each state’s unique landscape assessment of their food system characteristics.

Using Data Equitably

When deciding on indicators of food functioning, keep in mind how well the data and indicators capture the experiences of the communities that experience the greatest inequities and how using data may or may not contribute to equitable food system outcomes. While data can be beneficial in helping to visualize inequities and prioritize resources, data only tells part of the story. Decisions are often only as good as the data they are based on.

The below resources can help you integrate equity considerations into your baseline data collection.

- [Principles for Advancing Equitable Data Practice: Urban Institute](#)
- [Toolkit for Centering Racial Equity Through Data Integration: University of Pennsylvania Actionable intelligence for Social Policy](#)
- [Powering Health Equity Action with Online Data Tools: 10 Design Principles: Ecotrust](#)
- [Measuring Racial Equity in the Food System: MSU Center for Regional Food Systems](#)

Table 2. Example Baseline Food System Functioning Indicators

Food System Function	Example Indicator	Data Source
Food Accessibility (Economic)	% change in Supplemental Nutrition Assistance Program enrollment	USDA Food and Nutrition Services
Food Accessibility (Physical)	% of homes without internet access including computer, mobile, etc.	U.S. Census Bureau: American Community Survey
Food Availability	Pounds of milk production	USDA National Agriculture Statistics Service
Food Acceptability	% of households reporting not being able to acquire the type of food they want out of the total state population	U.S. Census Bureau: Household Pulse Survey

The first draft of the indicators table may be idealistic, representing what your state would want to measure to understand the food system if you had unlimited time and resources. Likely, the final choice of indicators will also be guided by feasibility. When considering an indicator, determine if there is state level data for this indicator and how often this data is updated.

The next step is to collect the baseline data for the indicators to compare over time. For each indicator, you will want to specify the current level/measure of the indicator (i.e., current household food insecurity for your state is 12%) and suggest a target level/value of the indicator that would reflect that the system functioned well (i.e., household food insecurity will be below 5%). For government data, including data units within relevant state agencies can be helpful for this task, such as the epidemiology team at the state health department or the evaluation team at the state agricultural department.

TOOL #5: BASELINE FOOD SYSTEM FUNCTIONING INDICATORS (page 6)

In this tool, you will apply the information presented in the previous section to fill in the template of baseline food system functioning indicators. You will first determine the indicators and then fill in the table with data. You might want to put the table into a shareable format to collaborate with colleagues.



Data Considerations

Data collection is necessary, but it can be time and resource intensive. When measuring food system resilience, you will need to consider data across time, geography, and the type of data available or needed to accurately measure impact and progress. Keep in mind the following considerations as you decide what approach is most beneficial for your food system resilience planning and work:

- **Scale:** Consider what geographic scale is most beneficial to your assessment and evaluation. Some data are available at multiple scales—census tract, zip code, county, state, or regional.
- **Frequency:** Depending on the shock or stressor you are attempting to measure, the frequency with which data are updated may be important. If you are evaluating long-term resilience, annual data may be sufficient. However, if a disaster strikes and you need to evaluate the government’s response immediately, you may need data that is updated more frequently.
- **Type:** Both secondary (collected by another entity) and primary (collected by you and your team) data can be important in assessing and evaluating food system resilience. If you have the time and resources, collecting primary data can add to your evaluation of food system resilience given every community has different food system assets and vulnerabilities, as well as underlying contextual factors that influence food system outcomes. However, there are many publicly available and internal agency datasets that exist and can be used to measure attributes of resilience or by proxy. You may also consider qualitative (e.g., interviews, focus groups, observations) and quantitative (e.g., surveys or administrative data) data collection methods to build a robust understanding of your state food system.

We recommend the [Bloomberg Center for Government Excellence resources](#) on open data, data management, and performance analytics to learn more about how data can strengthen your state’s work. As your agency is evaluating data collection, consider what is already available at the federal (i.e., USDA farm census), state (i.e., state program reports), and local level (i.e., local extension office).

Identify Critical Food Systems Assets

Now it is useful to inventory the different assets that are critical for providing these functions. "Critical" for this planning guide means those assets that are vital to ensuring a well-functioning food system before, during, and after a shock or stressor (based on your definition of a well-functioning food system). We recommend grouping the assets into four categories: natural, physical/built, political, and social.

In thinking about assets in your state that are considered critical for food system functioning, consider:

- What are the most important food system assets critical for community well-being?
- Which assets are necessary for ensuring food availability, accessibility, and for acceptability or other forms of food system functioning?
- For whom are the assets critical? Who benefits from these assets? How might others in the state define assets as critical? What would happen if those assets did not exist?
- What effect would there be on other parts of the food system if one type of food system asset failed or did not exist?

Food system infrastructure is also dependent on and interdependent with other infrastructure systems such as waste and wastewater, transportation, energy, and chemical systems. Considering how food system components depend upon and interact with those other sectors is an important part of understanding and protecting food system functioning.

Mapping Food Systems Assets

Mapping food system assets and infrastructure has emerged as one way for government and community partners to better understand food systems and how they function. Using maps to locate food system assets and vulnerabilities can be useful, especially if you are concerned about physical hazards such as storms or floods that are likely to disrupt your food system and physical infrastructure. If your state already has some food system data mapped, consider using it to enhance your understanding of food system assets, hazards, vulnerabilities, and resilience attributes. If you're at the beginning of your food system planning and have not mapped your food system, you can use the resources in this guidebook to identify and collect current data.

[TOOL #6: ASSET INVENTORY \(page 10\)](#)

This resource can help you to identify assets in your state that are critical for food system functioning or may be leveraged to support your vision of a resilient food system. Identifying the most critical assets can also help you communicate how and why the food system is a key part of your state's resilience planning and emergency response. It is important that you include diverse voices when considering assets and engage community partners in this work.

Assessing Potential Hazards to the Food System

Once you have a sense of the critical assets that are required for a well-functioning food system, you will want to identify the specific hazards that are likely to pose the most risk to these assets and the overall functioning of your food system. While hazard and vulnerability are of course intertwined, this guide purposely separates the hazard and vulnerability assessment. This allows you to get a clearer picture of each before focusing on how they intersect.

Hazards can be environmental, political, or economic and manifest in the food system as short-term shocks or long-term stressors. Not every area of your state is at risk of experiencing the same hazards. For example, farms located in coastal areas may be more likely to experience sea-level rise or flooding, whereas inland or urban areas may be more exposed to heat-related disruptions.

Identifying food system hazards requires thinking beyond natural disasters and considering other social, economic, or political events or structural inequities that could negatively impact functions, such as ensuring food access, affordability, and acceptability within specified food system boundaries.

The Risk Assessment will walk you through a process to estimate the expected risk of hazards to your state's food system. This assessment will ask you to:

1. Identify hazards: What are the disruptions that might impact the food system?
2. Estimate likelihood: Based on data and projections, how likely is it that the different hazards will impact your state's food system?
3. Estimate impact: If the hazard were to happen, how severe would the impact be to the food system?
4. Assign a risk score: Risk is calculated by multiplying the likelihood with the impact of a hazard. Hazards with a higher risk score may be a good target for interventions.

[TOOL #7: RISK ASSESSMENT \(page 13\)](#)

Use this tool to assess the expected risk of natural and human-made hazards to your state's food system.

Analyze Food System Disruptions

Another way to think about how different hazards may impact and disrupt food systems is to use what's known in engineering as a [fault tree](#). This approach illustrates the pathways through which a hazardous event can impact food system functioning and lead to a significant food system disruption. Considering these pathways in a structured way can not only point your attention to risks of concern but also suggest areas for intervention in order to interrupt these pathways.

Describe Vulnerabilities

Vulnerability can be a measure of social, physical, or natural elements. For example, different groups of people in your state might have more or less vulnerability to food system disruptions, or different infrastructural items (e.g., roads, bridges, food providers, etc.) in your state might be more or less vulnerable to a hazard. Something that is more vulnerable to a particular event is at a greater risk of experiencing negative consequences of a disruption because it is either more exposed to the shock or stressor, more sensitive or unable to adapt or transform in the face of the shock or stressor.

Assessing food system vulnerability requires looking at both the physical environment and infrastructure required to support a functioning food system, as well as the underlying social determinants of food system outcomes, such as poverty, land access, or institutional racism.



The following tool is broken into two parts. The first guides you through a process for assessing physical vulnerability in food system infrastructure based on the assets you identified previously in this module. The second asks you to identify the people or communities whose health and livelihood may be particularly vulnerable to a disruption in the food system, and underlying stressors that may contribute to those vulnerable states. For each part, you will be asked to also identify potential food system characteristics that could counteract or reduce vulnerability.

People-First Language and “Vulnerability”

Take care in communicating about vulnerability, to avoid reducing a person or community to their risk factors. We recommend using person-first language indicating that a person or group "has" or "faces" vulnerabilities, rather than language such as "vulnerable people," which can be disempowering or hurtful. See the CDC’s Key Communication Principles for more information about this.

[TOOL #8: VULNERABILITY ASSESSMENT \(page 23\)](#)

This tool will take you through the steps of identifying physical and social vulnerabilities in your food system and prioritizing the areas that are most critical to address in the short term. Through this process you will consider the physical and social vulnerabilities in your food system and community that may make your food system especially at risk to hazards. This activity draws from the Risk Assessment tool to assess the vulnerability of each of the hazards with the top risk scores identified using the tool.

Examine Food System Resilience Attributes

In the previous section, you considered how different assets and groups experience vulnerability to food system hazards, including what characteristics contribute to vulnerability. This section focuses on the reverse: a set of characteristics-resilience attributes that have been linked with more resilient systems.

[TOOL #9: RESILIENCE ATTRIBUTES INVESTIGATION \(page 29\)](#)

This activity will help you to gain a better understanding of food system resilience attributes and how they may or may not be present for crucial food system assets in your state.



Module 5: Strategize

Two Approaches to Developing Strategies for Improving Resilience

This module will take you through the process of identifying and prioritizing potential solutions and strategies to improve resilience. The activities in this module assume that you have a good understanding of the current health of your food system (Steps 1 and 2 of the Assess module), the hazards most likely to pose a risk to it (Step 3 of the Assess module), and the vulnerabilities and attributes in the system that you expect will make it more or less resilient to a threat (Steps 4 and 5 of the Assess module).

This module presents two complementary approaches to help you develop strategies. The Food System Functioning approach is based on the premise that well-functioning systems are better able to withstand a range of threats while the Resilience Attributes approach focuses on deliberately strengthening specific attributes that have been associated with resilience. You only need to use one of these approaches, though it is possible to combine elements of both.

We present these two approaches because depending on where the food system resilience work is positioned in your state, one approach may align better with other work, existing or developing plans, or terminology used. A detailed description and suggestions for who might want to use each approach is provided below. In the tools, we provide templates that can be used as a starting point.

Food System Functioning

Strategies developed using this approach seek to improve food access, availability, and acceptability before, during, and after a disruptive event. This method relies on the [Risk Assessment](#), to assess how a hazard can lead to a food system disruption. A disruption occurs when food is not accessible, available, or acceptable.

This approach may be useful and appropriate for your work if:

- Your agency has a program or individuals specifically focused on food systems or food policy work, and the food system resilience work is being led by these individuals or program.
- You plan to integrate food system resilience into an existing or future food, comprehensive or emergency plan to communicate the co-benefits of food system resilience for other planning goals.

[TOOL #10: DEVELOPING STRATEGIES: FOOD SYSTEMS FUNCTIONING APPROACH \(page 4\)](#)

This activity identifies strategies that improve the functioning of the food system from food production to food security.

STATE EXAMPLE: RHODE ISLAND FOOD DISRUPTION RESPONSE PLAN

The Rhode Island Food Policy Council created the [Food Disruption Response Plan](#). The Council developed the plan through a collaborative process including nearly 250 stakeholders and bridges short-term emergency responses with the long-term goals of [Rhode Island's Food Strategy 2030](#).

Resilience Attributes Approach

Strategies developed using this approach seek to reduce vulnerability and increase resilience attributes specific to previously identified "critical" food system assets. Assets may be social, political, natural, or physical. It is important to note that different disciplines may use "asset-based planning" to mean different things. This method aligns with the framing and methods used in hazard mitigation plans, where the focus is on protecting critical assets, infrastructure, and populations in the face of specific hazards.

Compared to the Food System Functioning Approach, Resilience Attributes may be more appropriate if:

- The food system resilience work is nested within a resilience or climate and health plan for your state or is led by individuals familiar with changes in climate and resilience.
- There is a specific hazard that poses especially high risk, or the group has decided they would like to focus on one or a few hazards.

[TOOL #11: DEVELOPING STRATEGIES: RESILIENCE ATTRIBUTES APPROACH \(page 7\)](#)

This method requires familiarity with the elements that contribute to food system vulnerability-exposure, sensitivity, and adaptive capacity-and the food system resilience attributes.

Prioritize Strategies

Once you develop your strategies, it is important to prioritize so that you know where and when to invest time and resources. The first step is to define the criteria that will be used to evaluate potential strategies. These criteria will help you to focus the list of strategies on those that are most appropriate for your community.

Define Criteria for Evaluating Potential Strategies

To define the criteria by which to evaluate all possible strategies, consider the following questions:

1. What makes a strategy "high-impact"? What do you think are the actions likely to have the highest impact from your list of strategies? Why?
2. What do you think are the most feasible actions from your table? Why are they the most feasible?
3. Which resilience attributes or elements of vulnerability are most important to your state? What actions from your list do you think would have more buy-in from state government leadership? From partners? From implementation actors? Potential opponents?
4. What actions have the greatest potential to promote equity and justice? Were any of the actions co-developed with other partners? Which ones reflect the values and needs of your state, region, or government entity?
5. What factors will affect which strategies you choose?
6. Are there targeted populations to consider in your decisions about strategies?
7. What actions are "win-win" (if the hazard never occurs, this action will still be beneficial)?

[TOOL #12: STRATEGIES DECISION MATRIX \(page 12\)](#)

This tool can help you decide what strategies should be top priority for your organization. This tool offers a quantitative approach to help you prioritize strategies. You can also use it to gather input from different partners regarding which strategies to prioritize. The tool provides a list of criteria to evaluate and score each strategy and allows you to assign weight to each criterion based on importance.

Module 6: Implement and Measure

Potential Barriers and Mitigation Strategies

Ensuring that the strategies you identify in this process are maintained, sustained, and effective in the long run despite hurdles you may encounter along the way requires building internal resilience, too. In order to understand whether your strategies and actions are working to build resilience in our food system, it is necessary to plan for on-going measurement and monitoring. As you monitor your strategies and actions, this will allow for an understanding of progress and where adjustments may need to occur.

FOOD SYSTEM RESILIENCE EVALUATION EXAMPLE: HAWAI'I FOOD SYSTEM SUMMIT

Hawai'i hosts an annual Food System Summit to convene stakeholders across the islands to share food system updates. The 2025 Summit focused on disaster preparedness and resilience in Hawai'i food and agriculture. The two-day event overviews Hawai'i food system and state-level planning efforts including lessons from the Lāhainā wildfires and the O'ahu Feeding Task Force. Discussions focused on the practical challenges of emergency food distribution, gaps in access, and opportunities to strengthen local production and resilience.

Food system resilience depends not only on physical assets like storage and supply chains, but also on strong social infrastructure — relationships, networks, institutions, trust, and coordination and the summit helps build this essential social infrastructure.

Methods To Evaluate Food System Resilience

Method 1: Food System Functioning Over Time as a Proxy Measure for Food System Resilience

In the Evaluate Baseline Food System Functioning section of this planning guide, we presented the concept of food system functioning as one way to identify indicators and data sources that could measure how well your state or region's system is working and meeting its goals before a disruption occurs. If you measure food system functioning indicators consistently over time, they can also provide post-disruption information on how the food system and communities are withstanding and recovering from disruption.

Method 2: Resilience Attributes Observed in Food Systems

While Method 1, the food system functioning approach, depicts the system's functioning and level of recovery, Method 2, the resilience attributes approach, focuses on the system's capacity for resilience. This can be done in the absence of a disruption. The [Resilience Attributes Approach](#) provides a starting framework to help you think through ways you might measure the resilience attributes. Although you do not have to measure the attributes after an event occurs in order to tell you something about the systems' resilience, we suggest making a plan for reassessing the attributes periodically as part of the evaluation of your resilience plan implementation.



Conclusion

A disruption to your state's food system can happen at any time, without warning, and directly and indirectly impact food security and the functioning of a food system. Food system resilience planning can help mitigate harm from shocks and stressors often while improving food systems overall. While food system resilience work is still in its infancy, we hope that this guide is a useful starting point and place to build upon as more states develop and implement their plans. This work takes time, dedication to equity for all, forward-thinking, and collaboration, but the result of a more prepared and equitable food system is more than worth it.

As you work through this guide and new ideas, strategies, and considerations arise, please consider sharing with your networks so we can all continue to learn together and build the field of food system resilience.

