



U.S. DEPARTMENT OF AGRICULTURE



How School Food Authorities Use Scratch Cooking to Meet Their Program Goals

Insights from the U.S. Department of Agriculture's School Food Preparation Study

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What's in this document

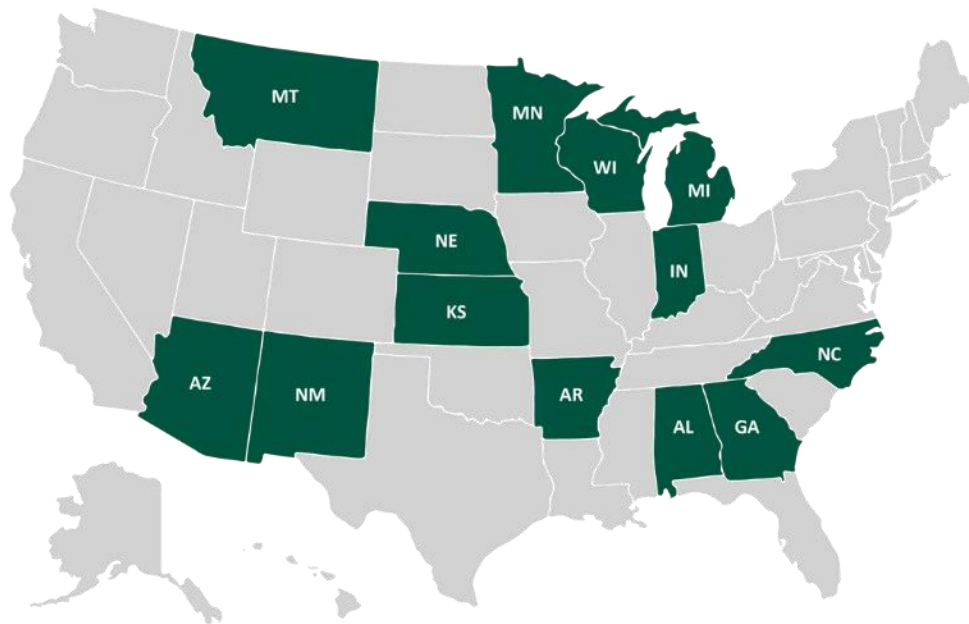
- Examples of how SFAs across the U.S. use scratch cooking to meet their program goals
- Specific strategies that SFAs use to overcome the barriers to scratch cooking: menu planning, production planning, key equipment, focused training, leveraging entitlement funds and local foods, encouraging staff buy in, and promotion and partnerships

Many school food authorities (SFAs)¹ across the U.S. prepare foods from scratch, due to factors like parent and student preferences, food industry trends, increased access to fresh produce and raw meat from farm to school programs, and investment of COVID-19 relief money into school food infrastructure. Studies have shown that scratch cooking (or using less processed foods in meals) can improve the healthfulness of school meals,² but there are obstacles for SFAs to use more scratch cooking.

To learn more about the challenges of scratch and how SFAs are overcoming them, the U.S. Department of Agriculture (USDA) commissioned the School Food Preparation Study to collect feedback from 36 SFAs, ranging from small³ rural districts with two kitchens to large urban⁴ districts with over 200 kitchens. Data collection included interviews with each SFA's food service director (FSD) and 43 other staff (e.g., cafeteria managers, supervisors) as well as site visits to 45 school kitchens in 10 SFAs.

This document, designed for SFAs, shares the techniques their peers are using to successfully do more scratch cooking in their kitchens.

Image 1: States participating in the School Food Preparation Study



¹The school food authority (SFA) is the entity legally responsible for the operations and administration of the local school nutrition programs (e.g., the school district food and nutrition department that operates the National School Lunch Program).

²Behrens T. K., Liebert M. L., Peterson H. J., Smith J. F., Sutcliffe J. T., Day A., Mack J. (2018). *Changes in school food preparation methods result in healthier cafeteria lunches in elementary schools*. American Journal of Preventive Medicine, 54(5 Suppl. 2), S139–S144.

³This document uses four categories of SFA size based on the number of enrolled students: small (1-999), medium (1,000-4,999), large (5,000-24,999), very large (25,000+)

⁴This document uses a collapsed version of the National Center for Education Statistics (NCES) Locale Codes to identify urban, suburban, and rural school districts - <https://nces.ed.gov/programs/edge/Geographic/LocaleBoundaries>

Why do SFAs implement scratch cooking?

There is no single overarching reason for SFAs to use scratch cooking – and usually, scratch is not the goal itself. Instead, SFAs in this study say they use scratch cooking to support their broader program goals.

Offer the best quality food

SFAs use scratch when it produces a superior product.

"Scratch items just taste so much better than something that's been preheated again and then cooked off."

- FSD, large urban SFA

Increase student participation

Some SFAs believe scratch improves how parents and students perceive the program, which increases participation and program revenue.

"I applied [scratch] knowledge, and it has increased everything. Our lunch participation has increased."

- FSD, small rural SFA

Improve healthy eating behaviors

Scratch can help expose students to new flavors and build their connection to food.

"I think it's important that kids see [scratch]. It's important for a kid to know where [their] food comes from, how it's made, that chicken is a bird, not a little piece of nugget." – FSD, large suburban SFA

Control ingredients

Some SFAs used scratch cooking to remove specific unwanted ingredients, like dyes, additives, and allergens.

"Processed foods have a lot of additives. A lot of stuff your body doesn't need. If you make it from scratch, you can control how much you put in it." – FSD, large suburban SFA

Meet nutritional guidelines

Scratch helps some SFAs meet nutrient and meal pattern requirements, like reducing sodium and added sugars.

"The most pressing reason [for scratch] relates to compliance. Being able to control our ingredients - the added sugar, added sodium, calories. The things that outline the menus we write." – FSD, large suburban SFA

How are SFAs using scratch cooking

For many, the image of "scratch cooking" is cooking with all raw or minimally processed ingredients, such as baking bread from flour, water, and yeast, or making chili from raw meat and dried beans. But many SFAs take a more practical view of scratch cooking. For them, scratch may include cooking with whole fresh produce or precut frozen produce, using precooked but unseasoned meat, or adding sauce, cheese and toppings to ready-to-bake pizza dough.

Overall, SFAs use a range of food preparation techniques to provide students with freshly prepared options – "scratch" looks different depending on the capacity of the SFA. SFAs throughout the U.S. are using scratch techniques to prepare many types and styles of food (see the following page).

Student Classics

Basil and Mozzarella Pizza at a very large urban SFA

- Thaw frozen dough balls overnight
- Press in dough presser on day of service
- Top with a combination of fresh and premade ingredients



Grab and Go Options

Bacon Chicken Entree Salad at a medium rural SFA

- Cut cucumbers by hand
- Slice radishes with a mandoline
- Wash lettuce and grape tomatoes
- Assemble and package salads



Fast Casual

Beef Barbacoa or Cilantro Lime Turkey Tacos with Corn Salsa at a medium rural SFA

- Dice green peppers, onions, and tomatoes with the continuous feeder
- Assemble corn salsa from a combination of raw ingredients
- Cook raw beef from a local vendor, shred precooked turkey (from USDA Foods)



Global Flavors

Thai Curry Chicken/Chickpeas with Rice at a very large urban SFA

- Dice zucchini with a continuous feeder
- Roast zucchini, carrots, and chickpeas in the oven
- Heat precooked fajita chicken (from USDA Foods)
- Add spices to queso



Sauces and Condiments

Local Chimichurri Sauce at a medium rural SFA

- Grow cilantro with high school students in the 'Food Production and Processing' class
- Blend cilantro with lime juice, oil, and garlic in a food processor



FSDs and menu planners consider staff effort and food cost across menu options for each day, week, and cycle, balancing scratch alongside items that require less preparation.

“Sometimes people want us to do everything 100 percent from scratch. That’s really just not feasible. People have to remember that we’re not all cooking 100 percent from scratch at home either, so for us to do that for thousands of kids every day would be crazy.” – FSD, medium suburban SFA

Food preparation techniques across a sample of middle school trays



Turkey Rice Soup: Cooked in a tilt skillet from raw turkey (baked by staff), canned carrots, pre-diced celery, pre-diced onions, chicken stock, spices. **Cheese Sandwich:** Assembled and baked in oven from bread (pre-sliced) and cheese (pre-sliced). **Salad Bar:** Assembled from bagged greens, whole baby carrots, cucumbers (sliced by staff). **Green Beans:** Warmed in combi oven from canned green beans and spices added by staff. **Sliced Apples:** Sliced from whole using sectionizer, bagged with specialty equipment.

Medium rural SFA



Peruvian Chicken: Baked from frozen chicken drumstick (USDA Foods) and Peruvian chicken marinade (made from raw ingredients). **Pineapple:** Cut from whole. **Sweet Potatoes:** Warmed in combi oven from canned sweet potatoes (USDA Foods) with spices added by staff. **Salad Bar:** Assembled from bagged greens, pre-shredded carrots, cucumbers (sliced by hand), red onions (sliced by hand). **Garlic Lime Rice:** Cooked in combi oven from dry brown rice, lime juice, and garlic powder.

Large urban SFA

Strategies to Support Scratch Cooking

Incorporating scratch cooking into the already-challenging school meals environment is difficult for many SFAs. Below are specific strategies SFAs in the study have used to increase their scratch cooking.

1) Menu Planning

SFAs carefully consider many variables when deciding when and where to implement scratch cooking within a meal, day, and week. SFAs shared that scratch food preparation requires more steps and planning, and they are balancing time, efficiency, food quality, and cost. When applying scratch in their recipes and menus, SFAs might consider the following:

- Identify which preparation method produces the best quality product, by weighing whether a scratch-cooked or pre-made item is more appealing to students.
- Consider the financial and opportunity cost of labor to decide whether cooking an item from scratch is the most efficient use of staff time and worth any extra costs.
- Balance high and low effort days and items, by alternating days with more or less scratch cooking on the menu; avoid labor-intensive menu items on Mondays (little prep time) and Fridays (more staff call-outs); pair a labor-intensive scratch meal at lunch with easier options at breakfast or vice versa.
- Adjust other staff responsibilities on days with labor-intensive menu items (for example, use disposable trays).

“If we have a high scratch day, for example, having a lower scratch day before and after it ... For a long time, [we] had a hot breakfast every day. Well, we can't do deep cleaning and make a regular breakfast and a regular lunch. So, we're calling it simple Fridays.” – FSD, large urban SFA

2) Production Planning

Production planning helps improve kitchen efficiency, staff time management, and ultimately the quality of menu items. The table below presents practices used by the SFAs in this study, which are applied to a sample menu on the following page.

Production planning to support scratch cooking – observations from successful SFAs

- 1-2 weeks in advance: Staff review the recipes they will prepare; review their ingredients; the cafeteria manager orders product or coordinates with the SFA buyers.
- 1-2 days in advance: Staff measure/portion ingredients and place in cold or dry storage; move frozen product to cool storage to thaw; place products on trays in cold storage to prep for cooking.
- School sites meet daily or weekly to review their production planning schedules and figure out staff assignments and which tasks require more people.
- Posted visuals remind staff about key areas of production planning.
- Cafeteria managers or team leads share best practices in production planning from site to site (e.g., tasks often not included in recipes).
- Kitchen staff have independence to figure out their own production planning and take ownership over their meals and programs.

Incorporating Scratch Cooking in Menus and Production

School food authorities (SFAs) can include more scratch items through careful planning. The sample menu below is based on real examples shared in the USDA School Food Preparation Study by SFAs that regularly use scratch preparation.

Mountain River School District and Mountain River Middle School

District Information

Student enrollment: 3500 in 7 schools
4 elementary schools
2 middle schools
1 high school
School kitchens in each building

Middle School Information

School enrollment: 560
Free/reduced price lunch: 68%
Lunch ADP: 71% (400 students)
Breakfast ADP: 42% (235 students)
Full school kitchen

Middle School Staffing

One, 8-hour manager, 6:00am-2:00pm
Two, 7-hour nutrition specialists,
7:00am-2:00pm
One, 5-hour nutrition specialist,
9:00am-2:00pm

Two Day Menu

The sample two-day menu below references the following four food preparation techniques that staff used to prepare each menu item:

- **Scratch:** staff must process (cut, shred, etc.) multiple ingredients and/or cook with raw ingredients.
- **Assemble:** includes multiple ingredients and steps, but no more than one ingredient needs processing (cutting, shredding, etc.).
- **Heat:** requires portioning and heating items.
- **Stock:** items that are placed directly on service line.

Wednesday (Day 1)

Breakfast 1	French Toast Sticks (Heat)
Breakfast 2	Pork Sausage Links (Heat)
Fruit	Strawberry Cup (Stock), Persimmons (Stock)
Other	Assorted cereals, cheese stick, yogurt, pre-cooked hard boiled eggs (Stock)
Entree 1	Meatball Subs (Assemble)
Entree 2	Cheese and Pepperoni Pizza (Assemble)
Fruit	Apples (Stock), Sliced Oranges (Assemble - this item does not perfectly fit the definition, but requires significant staff time)
Vegetables	Roasted Broccoli (Scratch), Tater Tots (Heat), Salad Bar (Scratch), Marinated Cucumber Salad (Scratch)
Grab & Go	Smoothie (Scratch), Parfaits (Scratch), Sandwiches (Assemble)

Thursday (Day 2)

Breakfast 1	Cheesy Bacon and Potato Egg Bake (Scratch)
Breakfast 2	Biscuit (Heat)
Fruit	Fresh Grapes (Stock), Sliced Apples (Stock)
Other	Assorted cereals, cheese stick, yogurt, pre-cooked hard boiled eggs (Stock)
Entree 1	Turkey Rice Soup with Bread (Scratch)
Entree 2	Spicy Chicken Patty (Heat)
Fruit	Apples (Stock), Bananas (Stock)
Vegetables	Green Beans (Heat), Salad Bar (Scratch), French Fries (Heat)
Grab & Go	Entree Salad (Assemble), Parfaits (Scratch), Sandwiches (Assemble)

Production Planning

Tuesday PM

- Thaw french toast sticks, sausage links, meatballs, and precooked pizza crusts
- Pull ingredients for the egg bake, parfaits, and smoothies
- Cut cucumbers for marinated cucumber salad
- Slice oranges with sectionizer

Wednesday Early AM

- Slice sausage links
- Measure and prepare smoothies and parfaits
- Pull ingredients for grab & go sandwiches
- Cut fresh broccoli
- Assemble marinated cucumber salad

Wednesday Late AM

- Roast broccoli
- Assemble and cook pizzas
- Assemble grab & go sandwiches
- Mix, bake, and chill egg bake

Wednesday PM

- Pull ingredients for grab & go entree salad
- Thaw turkey and measure other ingredients for soup
- Thaw chicken patties, rolls, french fries, and biscuits

Thursday Early AM

- Pull ingredients for grab & go sandwiches
- Cut vegetables (cucumber and radishes) for grab & go entree salads
- Thaw green beans
- Cook turkey, mix soup ingredients, and cook soup

Thursday Late AM

- Assemble entree salads and sandwiches
- Assemble spicy chicken sandwiches



Menu Planning

SFAs plan how to incorporate scratch within a week, day, and meal. They balance a number of factors (e.g., staffing, student preferences, product quality, cost) when deciding how and when to use scratch or other food preparation methods.

Strategies

Balance high & low effort items across days

Pair labor intensive scratch meals with easier options

Consider the financial and opportunity cost of labor

Consider what produces the best quality

How does Mountain River Middle School do this?

Day 1 limits scratch to sides (cucumber salad, roasted broccoli, and parfaits) at breakfast and lunch. Day 2 has scratch entrees for breakfast and lunch, but the egg bake was assembled and baked on Day 1.

Each day involves a convenience prep entree item paired with a menu item that involves more assembly and scratch cooking. Day 2 at lunch uses whole fruits to save staff time.

The egg bake is worth the labor cost because it is a student favorite, meaning higher participation and more revenue. The vegetables for the turkey soup are pre-cut which saves time without compromising taste or nutritional value. Teachers and principals like when students have a hot breakfast, fostering broader school support for school meals.

The SFA moved from a heat-and-serve pizza to a more scratch made item. They thought about using pizza dough, but the quality of the product didn't justify the time and effort compared to using a pre-baked crust. Everyone loves this pizza!

Production Planning

Production planning is the organization and scheduling of food preparation processes by staff to achieve timely and efficient delivery of school meals to students. Production planning and time management are crucial when using any preparation method.

Strategies

Do recipe steps in advance

Discuss recipes

Communicate and provide support within the team

Job aids/visuals

Specialty equipment

How does Mountain River Middle School do this?

Cucumbers for cucumber salad are cut the day before assembly and service. At the end of Day 1, staff pre-portion all ingredients for the turkey rice soup recipe and place on carts in the walk-in refrigerator.

On Friday before the week, staff are given their recipes so they can review what they will prepare. Managers ask staff if they have questions about recipes and discuss potential challenges.

The kitchen manager conducts a "team huddle" each morning to discuss responsibilities and where help is needed.

Images show staff how salads should be prepared and how fruit should be cut/bagged.

Staff use a sectionizer to efficiently slice oranges and improve appearance with uniform cuts.

3) Leveraging USDA Foods, USDA DoD Fresh, and Local Foods

USDA Foods in Schools (USDA Foods, both the direct delivery products and items diverted for processing) and the USDA Department of Defense Fresh Fruit and Vegetable Program (USDA DoD Fresh) have helped SFAs increase the number of scratch-cooked items they prepare. These programs help SFAs reduce the cost per plate, allowing them to spend more on labor or other food.

Strategies to leverage USDA Foods and DoD Fresh	
Purchase products that can be used across multiple recipes	• Simplifies storage by reducing the number of different items. • Increases staff familiarity with handling and cooking products, improving preparation times and overall staff confidence. • SFAs highlighted precooked chicken (fajita, diced), cheeses, canned beans, and produce as being particularly versatile for multiple recipes.
Access affordable, quality precut fruits and vegetables	• Purchasing precut, minimally processed fruits and vegetables saves staff time that can be used in other areas of preparation without sacrificing nutritional value.

“I don't like to order anything from [USDA Foods] that only serves one purpose. But it's been amazing because it's so much free product. I have that little bit of wiggle room to buy the local meats and stuff that costs more, and I can reduce the dish price by using the commodity beans and tomato sauces.” – FSD, small rural SFA



Local raw beef used in sloppy joes.

Many SFAs shared how working with **local vendors** is viewed favorably by SFA staff, parents, and the community, and these vendors often provide fresh produce and raw meat that can be used in scratch cooking. These items can be more expensive, but SFAs discussed they had benefitted from Local Food for Schools funding to offset costs and meet their customers' preferences for local foods.

Strategies to leverage local foods in scratch cooking	
Market local foods in scratch recipes to students and parents	Showcasing local foods on menus and in the service line encourages increased student selection of these menu items.
Join purchasing consortiums and local coops	SFAs procure food products as a group, including local produce. Often, these SFAs are sharing recipes using scratch techniques as well in these groups.
Participate in State initiatives	SFAs learn how to use more local products in scratch cooking through specific farm to school initiatives led by State agencies, universities, and other groups.

I would definitely say that the local produce we get ... is consistently good quality. Some of the bigger vendors that we get our orders through, their fresh produce lacks quality.” – FSD, medium rural SFA

4) Leveraging Key Equipment

Equipment is an important driver of how much scratch SFAs include in their menus. As observed in the School Food Preparation Study, there was not necessarily one piece of equipment that led to more scratch cooking. Many SFAs use smaller equipment to improve the efficiency of their preparation process. This looks different in each SFA depending on its recipes and processes but can include using specialty equipment to cut produce in different sizes, portion dough for baking, bag sliced fruit, and press fresh dough for pizza.

Large equipment, in particular the tilt skillet, is also extremely helpful for producing scratch recipes in large batches. Without these, SFAs are still able to scratch cook with equipment like ovens and steamers, but it may require more staff time or may limit certain scratch recipes. Some staff may be hesitant to use the large equipment and require additional training.

The right equipment can provide efficiencies and improve product quality



A **countertop dicer** dices produce in uniform size.



A **continuous feeder** cuts produce in uniform size.



A **sectionizer** cuts produce into uniform wedges or slices, adding visual appeal.



Tilt skillets can tilt to safely transfer products and cook large batches of scratch items like soup, raw meat, or chili.

5) Focused Training

Many FSDs and kitchen staff shared that the trainings that best facilitate scratch cooking are those directly related to specific food preparation needs in their kitchens. When staff are trained on skills that are relevant to their roles and responsibilities, they can begin applying them immediately. Helpful training topics include making specific scratch recipes, using kitchen equipment, and production planning.

SFAs' training preferences and strategies

Hands on, in person	Kitchen staff prefer experiential training, in the environment in which they work. Some SFAs are working with local chefs and experienced staff who provide training, either formally or informally, during meal prep and service.
Networking with other SFAs	SFAs like to learn recipes and processes that other SFAs are using, either through conferences or informal meetups.
Short videos	Some states and large SFAs have created training videos for recipes and specific equipment.

6) Encouraging Staff Buy-In

At first [staff] were very apprehensive. They were thinking, 'it's going to be too time consuming, too difficult.' But seeing the kids liking our products and taking it, [staff] changed their mind about scratch cooking. For us it's always about the kids and our customers. As long as they like it, we're making it." – FSD, large urban SFA

It's essential to build positive momentum among kitchen staff to increase scratch cooking. Many kitchen staff associate scratch cooking with more work, but they are willing to take the extra steps when students enjoy the food.

SFA strategies to build scratch momentum	
Listen to staff	Listen and respond to staff concerns while still pushing them. <i>"If I have an idea, I talk with my entree cook first and say, 'Hey, I'm thinking about this.' I get their input and buy in before saying, 'I'm changing all the menus.' Which is really important because if they feel heard, they're going to feel valued and want to do a better job." – FSD, medium rural SFA</i>
Start slow	Efforts to increase scratch were more effective when they were gradual and gave staff time to learn new processes. <i>"We are being intentional about perfecting one [scratch] recipe, building the confidence of our staff so that they understand food safety, understand how to do it, and the importance of it." – FSD, large urban SFA</i>
Focus on the why	Staff need to understand the value of doing scratch before making changes to their process. <i>"The crux of [doing scratch] is educating my team on why nutrition is important. To see how much pride they have knowing we don't serve these 12 ingredients, knowing they just made 800 [meals] from scratch. We've created such passionate people. That is the key to our success and being able to continue." – FSD, medium rural SFA</i>
Focus on recipes students will enjoy	Recipes that were poorly received by students were detrimental to scratch progress, so understanding what students will enjoy is critical. <i>"If they have spent a lot of time making this homemade thing and then the kids are throwing it in the trash, that is demoralizing, and I'm going to hear about it." – FSD, medium rural SFA</i>

Many SFAs believe that school staff (e.g., teachers, administrators, and board members) have a negative view of their programs or at the least don't understand them. SFAs feel that more scratch cooking can help change these perceptions, which in turn can lead school staff to help promote the meal programs to students and boost participation rates.

SFA strategies to get buy-in from school staff	
Provide free meals	Some SFAs offer staff free meals one day a week, and one SFA secured a grant to offer all School Resource Officers free meals every day.
Promote scratch items to the school board	Some SFAs provide free catering to school board meetings and highlight scratch menu items to raise awareness.
Invite school staff to tour the kitchen	A few SFAs offer opportunities for teachers and board members to visit school kitchens and observe food preparation, in particular on days when there is more scratch cooking.

7) Promotion and Partnerships

Many SFAs lack the time, knowledge, and dedicated resources to promote their menus, programs, and scratch cooking efforts. But SFAs believe that marketing scratch cooking to their communities can help build a more positive image of their programs and increase community support and student participation. Some SFAs in this study are using creative strategies to market scratch cooking:

- Providing catering or concessions at community events, like sports, plays, or board meetings, gives the community exposure to scratch made items and kitchen staff.
- Hosting community dinners where families and community leaders can learn more about school meals and taste a menu item made from scratch using local products.
- Posting sample meals using scratch on social media to change the perception of school meals for parents.
- Creating a sample tray or plate along the service line to showcase a scratch menu option available to students.



Example tray promoting a build your own taco bowl bar that used scratch techniques.

Some SFAs have established key partnerships with school departments and professional networks to support operations and marketing and expand funding for scratch cooking in school meals.

Examples of partnerships that can promote more scratch cooking	
Work with school departments and students	• High school culinary arts students process fresh produce deliveries used in scratch recipes, saving staff time they can use on other food preparation tasks. • Students and A/V staff make videos to promote scratch recipes. • High school agriculture students grow herbs and lettuce used in scratch recipes and salad bars.
Network with community partners	• FSD attends local Chamber of Commerce meetings to develop partnerships and catering clients while also raising the visibility and status of the program. • FSD participates in a leadership training offered by the Chamber of Commerce that has been helpful in managing staff as the SFA increases scratch recipes. • Active networking in the community leads to funding or donations of specific equipment (e.g., a hydroponic grow tower, food truck).

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