

Scaling Up Healthy, Climate-Friendly School Food

STRATEGIES FOR SUCCESS



Acknowledgments:

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Executive Summary

As public schools across the nation grapple with how to feed kids healthy, delicious and environmentally-friendly food on tight budgets, this report spotlights a growing movement of school districts using their massive purchasing power to provide food that is healthier for students and the planet. Climate-friendly school food emphasizes low-carbon, plant-based and plant-forward options — and builds on a decade of progress implementing healthy food policies, farm-to-school and garden education programs. Incorporating more climate-friendly food into the seven billion meals served annually by U.S. school districts is a triple win that delivers compelling health, environmental and financial benefits.

Friends of the Earth’s groundbreaking 2017 case study from Oakland Unified School District demonstrated the impressive environmental and financial gains from shifting to plant-forward foods in one district.¹ In response, school food professionals and advocates wanted to know more: *What are other schools across the country doing? How are they ensuring student satisfaction and successfully serving plant-based meals when government subsidies and dominant culture drive foodservice to offer heavily processed, meat-centric meals? What policy changes and resources are needed to scale up healthy, climate-friendly school food?*

We set out to answer these questions by distilling the lessons learned from detailed case studies in four districts and from interviews with 33 school food professionals across the country.

Section I establishes the health, environmental and financial case for climate-friendly foodservice. **Section II** details replicable strategies implemented by four pioneering school districts, including specific climate benefits from simple recipe swaps. **Section III** examines three key factors that drive successful climate-friendly food programs: 1) Ensuring high participation rates; 2) effective operational strategies (staffing, kitchen facilities, context-appropriate recipes and cost-effective procurement) and 3) dedicated leadership by foodservice directors and key stakeholders (students, parents, school boards, industry leaders and advocacy organizations). **Section IV** outlines policy reforms at the district, state and federal levels that are needed to promote wider adoption of climate-friendly food.

Our report shows that climate-friendly foodservice is not only feasible, but can also boost student participation and community appreciation of school food. We document many districts that are showing

the way through tenacious leadership, community buy-in and assistance from supportive organizations. We also emphasize that scaling up climate-friendly school food will require significant cultural, institutional and policy shifts as well as engagement from diverse school food stakeholders and policymakers. Fortunately, many strategies and policy solutions for climate-friendly food also support parallel efforts for fresh, scratch-cooked meals and farm to school purchasing — all interrelated components of the broader healthy, sustainable school food movement. We encourage readers who want to make change in their communities to reach out to the school foodservice leaders we interviewed and experts from supporting organizations, all of whom have agreed to provide suggestions and guidance (see Appendix B and C for contact information).

What is climate-friendly foodservice?

Healthy, climate-friendly foodservice is a multi-benefit strategy that can be achieved in incremental steps. Principally, it achieves a lower carbon and water footprintⁱ than traditional foodservice by offering a wider array of healthy, plant-forwardⁱⁱ and plant-based foodsⁱⁱⁱ and reducing food waste. It also cuts emission by sourcing food from regenerative farms that use carbon-enhancing, healthy soil practices and implementing energy and water-saving measures within cafeterias. The shift to climate-friendly food is inclusive of farm to school initiatives that prioritize fresh, organic and responsibly sourced ingredients from local farms and educate students about the power of food to cultivate healthy people and healthy minds.

Within this broader vision of climate-friendly foodservice, this report focuses primarily on strategies for increasing offerings of healthy, cost-effective plant-forward foods. While we encourage schools to source food from organic, regenerative farming operations, and for distributors to make organic food more widely available, we recognize that budget limitations can often make sustainable sourcing cost-prohibitive for many schools. Over time, we must shift agricultural policies and increase state and federal funding for school lunch in order to expand access to more healthful and sustainable foods.

i “Carbon footprint” refers to climate impact associated with carbon dioxide emissions and other greenhouse gases, including methane and nitrous oxide. These emissions may occur anywhere during the life cycle of a product including production, transportation, use and disposal.

ii “Plant-forward” refers to a diet or a food dish that emphasizes plants instead of meat and dairy but that does not consist solely of foods that are plant-based.

iii “Plant-based” refers to food that is wholly derived from plants, including vegetables, legumes, grains, nuts, seeds and fruits.

Section I. The Case for Healthy, Climate-friendly School Food

The need to dramatically reduce meat consumption is clear. Public health experts overwhelmingly agree on the need to reduce consumption of processed and red meat in favor of more plant-based foods. Americans eat significantly more meat than is recommended by U.S. Dietary Guidelines for Americans,² and adults consume an average of 66 percent more protein per day than they need.³ Only 20 percent of adults eat the suggested amounts of fruits and vegetables.^{4,5,6} High consumption of red meat, especially processed meat, is associated with increased rates of cancer, heart disease, obesity, diabetes and a shortened life span. Meanwhile, diets high in vegetables, fruits, whole grains and beans help prevent these diseases, saving our nation billions of dollars in costs from diet-related chronic diseases.⁷

Industrial meat and dairy production take a huge toll on our planet. They are major drivers of our gravest environmental problems, including climate change, deforestation, species extinction and depletion and pollution of our soil, water and fisheries. Animal products are the most carbon- and resource-intensive foods in our diet, requiring massive water and energy inputs. Studies show that we cannot avert the worst impacts of climate change or protect future water supplies unless we reduce meat and dairy consumption in favor of plant-forward meals.⁸ The U.S., which consumes 2.6 times more meat than the global per capita average, must help lead the way toward a plant-forward food culture.⁹



Source: San Francisco Unified School District

We also address cost — a top concern among foodservice directors. The good news is that several reports, as well as our case studies and interviews, show that meat reduction can actually save money, or at least be cost neutral, depending on kitchen facilities and staff resources. Using more plant-based proteins will become more even cost-effective over time, as volatile weather and shifting subsidies will increase the cost of animal products in coming years.^{10,11}

Healthy, climate-friendly food is a positive trend boosted by growing demand

Schools districts across the country are providing more plant-based options, creating meatless days and participating in culinary trainings to energize staff about plant-forward recipes. Public institutions are expanding their commitments to serve healthy, climate-friendly food through efforts like the [Good Food Purchasing Program](#), [Meatless Monday](#) and “Lean and Green” days. Student activism and growing demand were central to shifts toward plant-based menus in Boulder, CO; Charlotte-Mecklenburg, NC; Dallas, TX; Lee County, FL; St. Louis, MO; Los Angeles, San Diego, San Luis Coastal and Ukiah, CA school districts.

Section II. Climate Benefits from Plant-based Menu Shifts in Four Pioneering School Districts

- [Novato, California](#): A single recipe swap (serving a Morning Star veggie burger instead of a beef burger) reduced the district’s footprint by 1.3 million pounds of CO₂ emissions over 10 years — equivalent to not burning 70,000 gallons of gas or 650,000 pounds of coal.
- [Lee County, Florida](#): By replacing beef tomato pasta eight times a year with Beyond Meat Crumble tomato sauce, this district reduced its footprint by 2.3 million pounds of CO₂ emissions over a two-year period — equivalent to not burning 120,000 gallons of gas or 1.2 million pounds of coal.
- [Santa Barbara, California](#): The district reduced its carbon footprint by 300,000 pounds of CO₂ emissions over two years, simply by replacing beef chow mein with Hungry Planet’s non-GMO soy-based chow mein. This is equivalent to not burning 15,000 gallons of gas or 150,000 pounds of coal.
- [Boulder Valley, Colorado](#): Offering a veggie nachos option alongside beef nachos, the district reduced its carbon footprint by 800,00 pounds of CO₂ emissions — equivalent to not burning 41,000 gallons of gasoline — over a seven year period. (Roughly 13 percent of students choose the veggie option, suggesting even greater gains are possible.)

Section III. Strategies for Scaling up Healthy, Climate-friendly Foodservice

A. Boosting participation and image of school food

Since participation rates are the main driver behind school foodservice profitability, strategies are needed to help kids enjoy and want more of these healthy and climate-friendly foods.

Strategy 1. As Bertrand Weber from Minneapolis Public Schools says, **changing the mindset from fast-food to “true-food” boosts appreciation of healthier food.**

Key approaches include:

- **Using fresh and local ingredients:** Districts report that highlighting more farm-fresh, local and seasonal ingredients is important to building more student and community trust in the foodservice. (Austin, TX; Vancouver, WA; Novato, CA; Boulder, CO, and others).
- **Serving plant-forward meals in a friendly dining environment via** food trucks (Santa Barbara, Austin and Boulder), food courts (Riverside and Lee County), build-a-bowl stations (Dallas and Minneapolis), salad bars, grab-n-go carts (Dallas and Ukiah) and plant-based “pop-up restaurants” (Riverside).
- **Increasing scratch and speed-scratch cooking:** If feasible with kitchen and staff capacity, scratch cooking is the best way to make fresh, delicious meals that students and the community value. Boulder, Minneapolis, Santa Barbara and Oakland all do this successfully. When scratch cooking isn’t possible, many districts have succeeded with heat and serve and cold plant-based options.

Strategy 2. Shift cultural preference toward plant-forward food by building appreciation for plant-based food and confronting the misguided belief that plant-based meals do not provide enough protein.^{12,13}

- **Taste tests** emerged as the number one way to improve participation rates, including try-it days (Vancouver), recipe competitions (Charlotte-Mecklenburg, San Diego, Boulder), build-a-meal concepts (Dallas), student focus groups (San Francisco and San Diego), piloting a plant-based food court line (Lee County) and food festivals (Dallas and Santa Barbara). (See Appendix A, p. 35 for an extensive list and links to popular climate-friendly recipes).
- **Positive messaging** that highlights the flavors and deliciousness of plant-forward items, while avoiding the words “vegan” and “vegetarian,” is essential. “Positive framing is really important,” said Tara McNamara, marketing coordinator for San Diego Unified. “By calling it vegetarian, it makes it sound like it is just for the vegetarians, but it’s really just for everyone.”

- **Staff ambassadors, including the principal,** are effective and motivational spokespeople who can help instill healthy eating habits (Novato, San Francisco and Austin).
- **Prioritize class-based and parent-focused nutrition education** (New York’s [Coalition for Healthy School Food](#) and [Wellness in the Schools](#) as well as San Diego and Novato school districts).

B. Investing in kitchen facilities, staff, recipes and cost-effective procurement strategies

For students to embrace climate-friendly food, it needs to be delicious. And delicious food requires good ingredients, good cooks, good equipment and good recipes.

Strategy 1. Investments in staff training and hiring pay off: Several districts report that investments in professional development, supported by culinary training grants and NGO resources, have reaped substantial dividends in the form of tastier meals and greater student satisfaction (Oakland, San Diego, Minneapolis and St. Louis). For districts with frequent labor shortages that are unable to hire sufficient staff for scratch cooking (common in rural districts, such as Ukiah Unified), climate-friendly foodservice is still possible using [pre-made plant-based products](#) in conjunction with cost-saving strategies.

Strategy 2. Better cooking facilities are ideal, but plant-forward food is possible in any school kitchen: Several districts say that scratch and speed-scratch (combining scratch cooking with a pre-made product) are typically the most cost-effective way to create plant-based, fresh-tasting meals that students love. Scratch cooking lends itself to using local and fresh ingredients, which make meals more delicious and appealing. Despite the added challenges, districts with limited capacity for scratch cooking (such as Ukiah and Lee County) have successfully served plant-forward meals using pre-made products.

Strategy 3. Ensure access to culturally- and context-appropriate foods and recipes: To succeed, climate-friendly recipes must be accepted by students and adapted to each district’s cultural contexts, sensitivities, religious traditions and cooking capacities. (See Appendix A for an extensive list and links to popular plant-based and plant-forward recipes, including less carbon-intensive blended meat recipes.)

Strategy 4. Cost-effective plant-based procurement:

- **Menu-level budgeting** entails balancing a product or recipe that is slightly above the budget allocation per meal with a lower cost product or recipe. This allows food service operations to keep weekly menu-level expenditures within the budget. (Santa Barbara, Lee County, and Boulder).

- **Creative revenue generation** allows districts to expand their food budgets and purchase more expensive plant products and local ingredients while also paying employees a living wage. Districts increase their federal reimbursable meals by serving breakfast in the classroom as well as after school snacks, summer meals and catering at school and in the community (Boulder, Minneapolis and Santa Barbara).
- **Joint bids** on plant-based products are an important way for districts to make plant-forward products available and affordable on a larger scale. The [Urban School Food Alliance and Forum for the Future](#) are working on competitive bid processes for plant-based foods.

C. Strong leadership is essential

In the 18 school districts we studied, strong leadership from all stakeholders is essential for overcoming the dominant corporate food status quo. Bold and committed leadership helps these districts create healthy, climate-friendly foodservice despite a challenging regulatory environment and federal policies that incentivize highly processed, meat-centric foods.

Section IV. Policy Actions for Scaling Up Healthy, Climate-friendly K-12 Foodservice

District level:

- Require a plant-based food option at every meal.
- Adopt the [Good Food Purchasing Program](#) to promote a systemic shift toward healthy, local, humane, equitable and climate-friendly foods.
- Adopt [Meatless Monday](#) or Lean and Green days that feature plant-based food as the primary entrée.
- Elect to make your district an [Offer Versus Serve](#) site, in order to make milk optional.
- Reduce and eventually remove processed meats (e.g. chicken nuggets, hot dogs, bacon, lunch meat) from school menus and disallow purchasing contracts with fast food companies for these unhealthy foods.
- Pass local bond measures that increase funding for new kitchen facilities (Oakland, California [Measure J](#)).
- Adopt a [climate action resolution](#) that commits a school district to pursue climate-friendly foodservice.

State level:

- Enact healthy, climate-friendly food resolutions or legislation encouraging or requiring schools to serve daily vegetarian and/or vegan options to students (California, [New York](#) and [Hawaii](#)).
- Enact farm to school purchasing legislation that provides financial incentives for purchasing more

locally sourced plant-based products (a win-win for student health and local farms.)

- Provide web-based educational resources (including recipes, on-line trainings and sample policies), modeled after the [California Department of Education's Vegetarian Meal Options in Child Nutrition Programs website](#).
- Increase plant-based options on state procurement bids and support joint purchasing initiatives.
- Increase funding for school food cooking facilities and invest in nutrition education programs and wellness policies that emphasize the benefits of plant-forward eating.

National level (U.S. Department of Agriculture):

- Rename the Meat/Meat Alternate Category as the "Protein Category."
- Add more plant-based proteins that credit under current M/MA (include tempeh, seitan, all lentils, quinoa and other high-protein, plant-based foods) and allow for crediting/reimbursement regardless of how the food item is presented.
- Require all schools to be Offer Versus Serve for milk as a default.
- Spend a larger portion of USDA Foods budget on plant-based bulk foods and meat alternatives (e.g. veggie burgers; bean burritos) and add diverse products like tofu, seitan and soy yogurt to its food offerings.
- Update USDA's technical resources for wellness policies and nutrition education, including the [Core Nutrition Message](#), to better reflect the 2015-2020 Dietary Guidelines for Americans recommendations that boys should consume less meat and that plant-based proteins are part of a healthy diet.¹⁴
- Provide education and resources, including plant-based recipes and pre-made [product lists](#), to all relevant websites — similar to the resources provided on the web page "[Vegetarian Meal Options in Child Nutrition Programs](#)" hosted by the California Department of Education.

National level (Congress):

- Amend the National School Lunch Act to:
 - a) Allow for higher reimbursements for all meals; and especially for meals with fresh fruits and vegetables;
 - b) increase grant funding for farm to school programs and kitchen improvements (both equipment and built infrastructure); and
 - c) make dairy an optional, rather than mandatory meal component.

Introduction

As public schools across the nation grapple with how to feed kids healthy, delicious and environmentally-friendly food on tight budgets, this report spotlights a growing movement of school districts that are using their massive purchasing power to provide food that is healthier for students and more sustainable for the planet. The growth of healthy, climate-friendly school food — emphasizing low carbon, plant-based and plant-forward options — builds off of more than a decade of progress toward healthier and more sustainable school food. The transformative Healthy, Hunger-Free Kids Act,¹⁵ as well as farm to school, school gardens and clean label initiatives, have laid important groundwork for this new wave of climate-friendly foodservice. As a sector that serves over seven billion meals annually, public schools in the U.S. have a profound impact and opportunity to improve the health of our students and the environment for generations to come.

In 2017, Friends of the Earth’s groundbreaking case study from Oakland Unified School District showed the impressive environmental and financial benefits of shifts to plant-forward food, all while increasing student meal satisfaction and serving more local, organic, sustainable meat.¹⁶ In response, school food professionals and advocates wanted to know more: *What are other schools across the country doing? How are they successfully serving plant-based meals when government subsidies and dominant culture drive foodservice to offer heavily processed, meat-centric meals? How can we make plant-based meals a more widely available option that more kids choose? How can we ensure that school food aligns with the U.S. Dietary Guidelines that recommend less meat and more vegetables and other healthy foods? What policy changes and resources are needed to scale up healthy, climate-friendly school food?*

We set out to answer these questions by distilling the lessons learned and key strategies for success based on four case studies and interviews with 33 school food professionals.¹⁷ We also reviewed menus from the 25 largest school districts in the United States.¹⁸ Our findings (which include calculations of carbon savings from high-impact recipe shifts) illuminate barriers and provide vital inspiration and guidance around effective strategies and key policy solutions for expanding climate-friendly food in schools across America. By swapping just one or two common meat-centric recipes with plant-based or plant-forwardⁱ dishes, our research shows that districts are generating significant

and recurring climate benefits, all while providing healthier options for students.

If there is one big takeaway from our research, it’s this: With bold leadership, strategic partnerships and support from outside resources, foodservice leaders are showing that changing school food to improve kids’ health and protect the environment is not only feasible, but can actually help boost student participation and community appreciation of school food. This progress is especially encouraging given the severe budget constraints, pervasive fast food culture and the heavily subsidized meat and dairy food industry that are all working against quality improvements in school food.

In order to scale up climate-friendly food and create sector-wide transformation, our report identifies the vital need for systemic policy, cultural and institutional changes. These changes must be supported by active engagement and advocacy from key stakeholders — school nutrition staff, students, administrators, parents, advocacy, school boards, organizations and policy makers. Fortunately, many of the strategies and policy solutions for climate-friendly food also support parallel efforts for fresh, scratch cooked meals and farm-to-school purchasing — all interrelated components of the broader healthy, sustainable school food movement. In the spirit of fostering collaboration and mutual support, we encourage readers to reach out to those interviewed for this report who have agreed to provide suggestions and guidance (see Appendix B, p. 36 for contact information).

This report is presented in four sections. First, we outline the compelling health and environmental benefits and growing demand for climate-friendly menu planning. Second, we present four case studies from districts that are transitioning to more plant-based menus, documenting the significant climate benefits of simple menu shifts and extracting key lessons learned along the way. Third, we reflect on these case studies and the inspiring stories from 18 pioneering districts to present a comprehensive roadmap of strategies for overcoming obstacles and serving climate-friendly food in K-12 schools.ⁱⁱ

We hope that the many pathways offered in this report inspire and equip stakeholders to support climate-friendly school food in their communities. As a growing number of school districts are discovering, climate-friendly food provides a rare opportunity for a powerful triple-win that benefits kids’ health, our planet’s future and schools’ food budgets.

i “Plant-forward” refers to a diet or a food dish that emphasizes plants instead of animal foods but that does not consist solely of foods that are plant-based (e.g., fruits and vegetables; whole grains; beans, legumes (pulses) and soy foods; nuts and seeds.)

ii Admittedly, the districts we interviewed—primarily large urban districts—are not representative of the full spectrum of U.S. public schools. However, many strategies employed in these districts can be replicated in all districts — large and small, urban and rural.

Section I. The Case for Healthy, Climate-Friendly School Food

What is climate-friendly foodservice?

Healthy, climate-friendly foodservice is a multi-benefit strategy that can be achieved in incremental steps. Principally, it achieves a lower carbon and water footprintⁱ than traditional foodservice by offering a wider array of healthy, plant-forward and plant-basedⁱⁱ foods and reducing food waste. It also cuts emissions by sourcing from regenerative farms that use carbon-enhancing, healthy soil practices and implementing other energy- and water-saving measures. The shift to climate-friendly food is inclusive of farm to school initiatives that prioritize fresh, organic and responsibly sourced ingredients from local farms and educate students about the power of food to cultivate healthy people and healthy minds.

Within this broader vision of climate-friendly foodservice, this report focuses primarily on strategies for increasing offerings of cost-effective, plant-forward foods. While we encourage schools to source food from organic, regenerative farming operations and for distributors to make organic food more widely available, we recognize that budget limitations can often make sustainable sourcing cost-prohibitive for many schools. Over time, we must shift agricultural policies and increase state and federal funding for school food in order to expand access to these healthful and more sustainable foods.

A. The Health Benefits of More Plants and Less Meat

There is an overwhelming public health consensus on the need to reduce processed and red meatⁱⁱⁱ consumption in favor of more plant-based foods. Americans eat significantly more meat than is recommended by U.S. Dietary Guidelines for Americans¹⁹ and only 20 percent consume the suggested amounts of fruits and vegetables.^{20,21,22} Since American adults consume an average of 66 percent more protein per day than they need, they can easily meet recommended levels of protein intake by reducing or eliminating meat and replacing with plant-based proteins.²³ Many studies show that high consumption of red meat — especially processed meats — is associated with increased rates of cancer, heart disease, obesity, Type 2 diabetes and a shortened lifespan.²⁴ In contrast, diets high in vegetables, fruits,

whole grains and beans can help prevent these diseases, saving our nation billions of dollars in costs from diet-related chronic diseases.²⁵ A vegetarian diet is healthy for all stages of life and lifestyles, including childhood, pregnancy and for athletes.²⁶

Reduced Meat Consumption Reduces Dioxin Intake

According to the World Health Organization, more than 90 percent of human exposure to cancer-causing dioxin-like compounds (DLC) comes from meat, dairy, fish and shellfish.³¹ These dioxins are created through industrial production processes (like incineration and chlorine bleaching) and are deposited on plants, soil and water where they bioaccumulate in the fatty tissues of animals. An Institute of Medicine report published by the National Academy of Sciences suggests that an important way to lower personal dioxin levels is to reduce dietary exposure to dioxins by lowering animal fat intake and increasing consumption of fruits, vegetables and whole grains.³²



Source: Boulder Valley School District

- i “Carbon footprint” refers to climate impact associated with carbon dioxide emissions and other greenhouse gases, including methane and nitrous oxide. These emissions may occur anywhere during the life cycle of a product including production, transportation, use and disposal. “Water footprint” refers to the consumptive use of water associated with a given product.
- ii “Plant-based” refers to food that is wholly derived from plants, including vegetables, legumes, grains, nuts, seeds and fruits. Friends of the Earth opposes the use of ingredients derived from genetic engineering in plant-based foods due to lack of adequate assessments and regulatory frameworks.
- iii Red meat refers to “all mammalian muscle meat, including, beef, veal, pork, lamb, mutton, horse, and goat.” <http://www.who.int/features/qa/cancer-red-meat/en/>

Public Health Consensus on Reduced Meat Consumption

An impressive list of health and nutrition organizations, as well as the U.S. government, recommend reduced meat consumption and/or plant-based eating as part of a healthy diet:

- The [U.S. Department of Agriculture's 2015-2020 Dietary Guidelines for Americans](#) recommends that teenage boys and men reduce their meat consumption. It also found that vegetarian and low meat Mediterranean diets are “associated with reduced risk of obesity, type 2 diabetes and some types of cancer.”²⁷
- The [American Medical Association](#) passed a resolution in 2017 recommending that hospitals offer patients plant-based meals and eliminate processed meats entirely.
- [Kaiser Permanente](#), the nation's largest health care network, encourages its physicians to recommend a plant-based diet to patients struggling with chronic illnesses such as heart disease, diabetes, high cholesterol and high blood pressure.
- The [American Cancer Society](#) has long recommended “a diet that limits processed meat and red meat, and that is high in vegetables, fruits, and whole grains.”^{28,29}
- The [American Institute for Cancer Research](#) recommends eating a plant-based diet to reduce the risk of cancer, avoiding processed meat altogether and limiting all other meats to 18 ounces a week.
- The [Academy of Nutrition and Dietetics](#) found that a well-planned vegetarian diet is suitable throughout the human life cycle and can also reduce risk of certain health conditions.
- The World Health Organization's International Agency for Research on Cancer classified processed meat as a known human carcinogen and red meat, including beef and pork, as a probable human carcinogen in 2015.³⁰

B. Environmental Benefits of More Plants, Less Meat

Industrial meat and dairy production take a huge toll on our planet. It is a major driver of many of our gravest environmental problems, including climate change, deforestation, species extinction and depletion and pollution of our soil, water and fisheries resources. The [2016 Menu of Change annual report](#) by the Culinary Institute of America and the Harvard T.H. Chan School of Public Health concludes that **“greater emphasis on healthy-plant-based foods - including plant-based proteins - is the single most important contribution the foodservice industry can make toward environmental sustainability.”**

Extensive scientific research shows we must rapidly reduce consumption of meat and dairy in order to avert the worst impacts of climate change and ensure food security for future generations.³³ Of all worldwide greenhouse gas emissions (GHGs), 14.5 percent come from the livestock sector, more than the emissions generated by the entire transportation sector.³⁴ A recent [report](#) found that if other sectors reduce emissions in line with the Paris agreement, but current consumption trends continue, by 2050 the livestock sector could account for 80 percent of the global GHG budget, “making it virtually impossible to keep temperatures below dangerous levels past 1.5° Celsius.”³⁵ While varying across regions and production systems, meat and dairy products generally emit significantly higher emissions and use more water than plant-based alternatives. Beef, lamb, cheese and pork

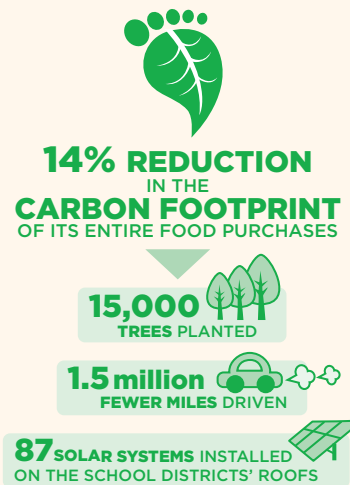
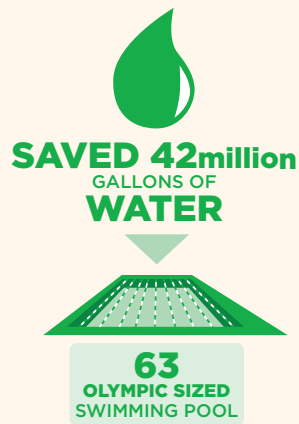
have the highest emissions per gram of protein; beef alone accounts for 36 percent of all U.S. diet-related emissions and pound for pound, is 25 to 34 times more carbon-intensive than beans and lentils (see Appendix E, p. 42 for chart comparing the GHG emissions of common foods).³⁶ Per 4 ounce serving, beef requires an average of 460 gallons of water, while beans and legumes average only 121 gallons of water used.^{37,38} Nations like the U.S., which consumes 2.6 times more meat than the global per capita average, must lead the way to a more equitable and sustainable system of food production and consumption.³⁹

C. Financial Feasibility

Cost is a common concern among foodservice directors. The good news is that several reports have found that meat reduction can actually save institutional foodservice money — or at least be cost neutral, depending on the kitchen facility and staff resources. For instance, Friends of the Earth's [case study](#) found that Oakland Unified School District saved \$42,000 by reducing meat in school lunches, and an analysis of Health Care Without Harm's “Balanced Menu: Less Meat Better Meat” program found that four San Francisco Bay Area hospitals generated an estimated foodservice savings of \$400,000 per year.⁴⁰ According to the Center for Good Food Purchasing, since the Los Angeles Unified School District adopted its Meatless Mondays policy in 2012, the district has recorded a “32% decrease in meat spending.” As our interviews and case studies show, many schools

FOOD SHIFTS MATTER

Over 2 years, Oakland Unified School District reshaped its menu with fewer animal foods and more protein-rich legumes and vegetables. This shift generated considerable **water** and **climate benefits**, and **cost savings**:



Source: Friends of the Earth (2017). *Shrinking the Carbon and Water Footprint of School Food: A Recipe for Combatting Climate Change*

were able to add plant-based meals with little or no additional cost. Furthermore, putting more plant-based proteins on school menus will become more cost-effective over time — given predictions that costs of animal foods will increase due to more volatile weather and shifting subsidies.^{41,42} For more information on cost-saving strategies, see Section III (B) p. 24.

D. Growing Demand for Plant-Based Meals in K-12 Schools

Climate-friendly foods and healthy foods go hand-in-hand. Building on decades of farm to school, nutrition education and other healthy school food policies and programs, the trend toward more plant-based school food is promising. Schools across the country are providing more plant-based options, creating meatless days, and participating in culinary trainings to energize staff about plant-forward recipes.

For example, more than 1,600 school foodservice professionals from 65 school districts have participated in the Humane Society of the United States' plant-based culinary training. Among school food directors who completed a 2014 [national survey](#) by the School Nutrition Association, 56.2 percent said they consistently offer vegetarian meals (includes egg and dairy) in at least one school in their district.⁴³

Our review of the nation's 25 largest school district menus found that: most (23) serve vegetarian meals once or more a week, 40 percent (10) offer vegetarian options once a day for elementary, 56 percent (14) offer daily vegetarian choices at middle school and 68 percent (17) offer daily vegetarian options at high school.⁴⁴ Among the 18 school districts that we interviewed (a biased sample), most serve a daily option that is vegetarian (13 districts) or vegan

(4 districts), but only a third offer vegetarian hot entrees. Looking at a sampling of menus from the largest school districts, the most common vegetarian and plant-based offerings are still basic — primarily consisting of cheese pizza,^{iv} mac and cheese, peanut butter (or sunflower seed butter) and jelly sandwiches, chopped salads, yogurt parfaits or a hummus and pita entree. Improving the diversity of plant-centered offerings must be a top priority for schools. Overall there continues to be a plethora of unhealthy food in schools, particularly processed meat products (e.g. chicken nuggets, hot dogs, bacon, pepperoni, lunch meat). A recent [report](#) from Balanced found that 24 out of 25 of the largest school districts serve red and processed meats more than twice per week.

The expansion of plant-forward menus is partly in response to growing demand from students and parents. Young people are more aware of the impacts of their food choices and want greater transparency and more socially and environmentally responsible food. Student activism and growing demand has created shifts toward plant-based menus in Boulder, CO; Charlotte-Mecklenburg, NC; Dallas, TX; Lee County, FL; St. Louis, MO and Los Angeles, San Diego, San Luis Coastal and Ukiah, CA School Districts. While various surveys show that the number of strict vegetarians or vegans remains below 10 percent, more and more people are choosing flexitarian diets that include more plants and less meat.

In 2018, a marketing research firm, funded by Aramark, surveyed 5,200 consumers to capture attitudes toward increased availability of plant-based options. According to this survey, 60% of respondents wanted to reduce their meat consumptions (primarily for health reasons); 80% would try new plant-based

iv Although it is an improvement from pepperoni pizza, cheese pizza is still a carbon-intensive menu item because cheese has a high GHG footprint. Schools can reduce emissions and improve health by trimming dairy from their vegetarian options.

foods that are completely new to them; and 69% of millennials and 65% of generation z (born between mid-90s and mid-2000s) find plant-based and plant-forward eating appealing. According to the survey, these positive trends seem to be consistent across all regions in the United States. (See compelling [video](#) on plant-based trends in foodservice).⁴⁵

A 2014 Vegetarian Resource Group Harris Poll of more than 1,200 young people estimated that four percent of 8- to 18-year-olds (about 1.5 million kids) identified as vegetarian and/or vegan,⁴⁶ while 32 percent of youth polled said they eat one or more vegetarian meals a week. Demand for plant-based milk alternatives is also high, especially among minority students. Approximately 95 percent of Asians, 60 to 80 percent of African Americans, 80 to 100 percent of American Indians and 50 to 80 percent of Hispanics are lactose intolerant.⁴⁷ Offering more plant-based milk options is critical given that these groups represent a significant portion of public school students.⁴⁸

E. Institutional Support and Commitments for Plant-Based Foods

Institutional commitments to serve healthy, climate-friendly food through efforts like the [Good Food Purchasing Program](#), [Meatless Monday](#), [California Thursdays](#) or “Lean and Green” days helps ensure long-lasting structural changes that are not dependent on the leadership of one or two people. Much of the progress around institutional shifts over the past decade can be attributed to the valuable tools and support provided by organizations and initiatives such as the [GFPP](#), [Meatless Monday](#), [Lean and Green Kids](#), [Chef Ann Foundation’s More Plants Please](#), [Forward Food](#), [California Thursdays](#), [Farm to School Network](#), [Physicians Committee for Responsible Medicine](#), [Wellness in the Schools](#), [FoodCorps](#) and [Coalition for Healthy School Food](#). Find more information on

the resources and support these organizations can offer districts in Appendix B, p. 36.

The GFPP, first adopted by the City of Los Angeles and Los Angeles Unified School District in 2012, is notable for its comprehensive standards-based framework that uses public procurement to promote local, healthy, sustainable, fair and humanely produced foods, including climate-friendly foods. The Program’s animal welfare and environmental sustainability standards encourage reduced purchases of conventional animal products. For example, **reducing the carbon and water footprint of animal products** by 20 percent over five years is one option for meeting the minimum environmental standard. Other institutions that have formally adopted the Program are the San Francisco, Oakland, and Chicago school districts, the City of Chicago and Cook County (Chicago area). In total, 28 public institutions in 14 cities participate in the Program, including seven school districts that are moving toward adoption. The GFPP recently announced an important partnership with the [Urban School Food Alliance](#) that will bring even more school districts into GFPP’s comprehensive climate-friendly five-value framework.

Meatless Mondays: Making A Difference

Nationwide, 261 districts have participated in Meatless Mondays, with 148 schools committed to offering meatless menus every week. A recent study⁴⁹ found the program has had an extraordinary impact on the environment and animal welfare over a five-year period:

- 399 million meals converted to meatless
- 595,547 tons of carbon dioxide equivalent saved (equal to 1.4 billion less auto miles driven)
- 10.3 million animals saved

Section II. Case Studies: Four Districts Pioneering Climate-Friendly Food

This section details the foodservice programs of four pioneering school districts in Novato, California; Lee County, Florida; Santa Barbara, California and Boulder Valley, Colorado. In each of these districts, we interviewed the foodservice director or purchasing manager to capture the story behind the impressive transformation toward healthy, fresh and climate-friendly food. While recognizing that foodservice must be context-specific, these case studies offer replicable and adaptable strategies for increasing plant-based menu offerings including:

creative recipes, community collaboration and engagement, nutrition education and budget balancing approaches. They reveal that climate-friendly food relies on many of the same strategies that support fresh, farm to school purchasing and scratch-cooked meals. These districts are simultaneously pioneers of climate-friendly food and powerful leaders in the larger movement for healthy school food. We hope these stories inspire and empower more districts to take the path toward healthy, climate-friendly foodservice.

NOVATO UNIFIED SCHOOL DISTRICT

Miguel Villarreal arrived at Novato Unified School District in 2002 from Plano Independent School District in Texas, a much larger district where he managed around 300 employees. He noticed that “beautiful Marin County” was a highly productive agricultural region with abundant organic farms and ranches. Yet he quickly realized that no regional produce was served in the schools, and in his words, “that just didn’t make sense.” He entered Novato USD, a relatively small district, with a large school district mindset. This mindset, according to Miguel, enabled him to improve the quality of the food and increase the amount of plant-forward and plant-based meals. Smaller districts have fewer human resources, so he contacted organizations that could help advance his vision of healthy, climate-friendly food. Miguel was empowered, resourceful and dedicated to educating Novato’s community along the way, which proved essential to making positive and lasting change.



Miguel Villarreal,
Foodservice Director

“Today there is no reason why any foodservice Director shouldn’t be providing plant-based options.”

At A Glance

7,500 total students
\$2.15 million total budget
\$700,000 food budget (1.25/lunch)
4,000 meals served /day
720,000 meals served /year 4,000 meals /day
38% free & reduced meals
60% speed scratch
40% heat & serve

Self operated foodservice, with a central distribution center, onsite kitchens & no central kitchen
Plant-based or vegetarian options at every meal & 100% meatless every Monday

Plant-forward menu transitions start locally

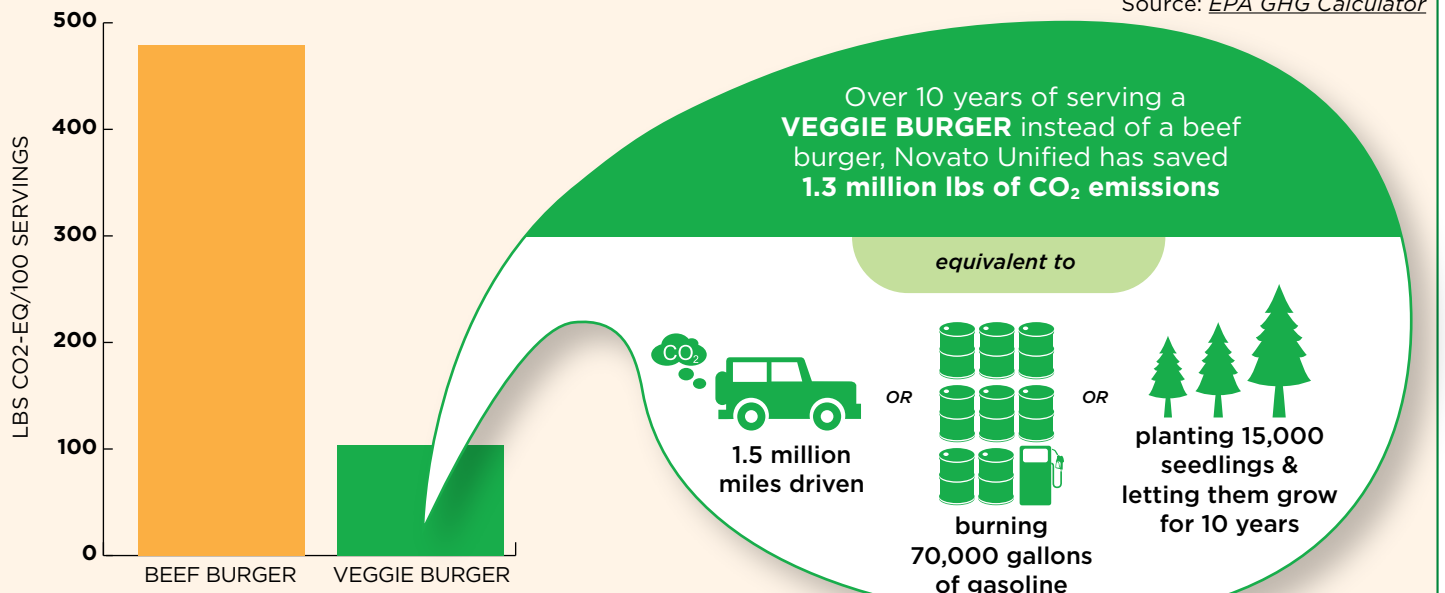
Miguel’s “first phase” was to introduce more local and organic vegetables into the cafeteria. In the early 2000s, he worked with Marin Organic’s School Lunch and Gleaning Program (harvesting produce that would otherwise be left in the field) in order to obtain high-quality local, organic produce from farmers at

an affordable price. Miguel then connected with local farmers to increase the amount of fresh ingredients served. These shifts slowly changed the perception of school food in the community and helped build trust for future shifts.

In 2008, six years after arriving in Novato, Miguel eliminated beef. This bold move was grounded in a larger goal to eliminate highly processed food from the menu. After the eighth national recall of beef

The Power of One Recipe Swap: Veggie Burger

Source: EPA GHG Calculator



NOVATO UNIFIED SCHOOL DISTRICT



Source: Novato Unified School District

during his tenure as a foodservice director, Miguel decided that instead of serving cheap, unhealthy and environmentally-damaging beef, he would not serve any at all. “Initially my superintendent asked if I was nuts,” Miguel recalls.

Miguel succeeded by educating the community through school food events and writing board reports that explained every food shift he made. He also created a precedent a few years earlier by eliminating chocolate milk from the menu. “The education took time, but now there’s so much data out there, so it won’t take as long to get people on board,” he explains.

The district serves plant-based options at every meal and features creative recipes such as the plant-forward chicken taco (one of the most popular entrees, Miguel says). Novato USD also frequently serves a veggie burger and mixes up the daily menu with plant-based burritos, chili bean bowls, and sunflower seed butter sandwiches. Plus, students can always make 100 percent plant-based meals from the salad bar.

Collaboration with outside partners is key to success

From the beginning, Miguel has collaborated with numerous organizational partners, who have assisted with menu planning, nutrition education and leadership. These include Meatless Mondays, Chef Ann Foundation and the Culinary Institute of America’s Healthy Kids Collaborative. Novato Unified has also partnered with the Golden Gate Dietetic Internship Program, which provides interns to help with menu planning and nutrition education.

Miguel also works with [Wellness in the Schools](#) to bring a chef into the district to lead student culinary labs. Elementary school students aged 5 to 11 receive at least one 50-minute kitchen lab experience, where students learn to prepare foods like hummus, kale salad, tomato sauce, balsamic vinaigrette and more.

So far, they reach 3,000 students each spring and fall semester. Since launching the program, Miguel has observed increased consumption of these foods in the cafeteria and he credits nutrition education and taste testing as critical factors in successful menu changes. While teachers and administrators have embraced these programs and asked for more culinary labs in the classroom, their expansion is currently prevented by limited resources.

Strong participation rates help offset costs

Miguel’s resourcefulness allowed Novato to incorporate local fresh ingredients and plant-forward options within tight budget constraints while maintaining steady participation. Miguel admits that when Novato “picked out a day, like Meatless Monday, to get the message out, we saw a decline in participation early on,” but “slowly they inched back up, when it became the norm.” If he could do it over again, Miguel says he might not focus on just one day to feature plant-based recipes. He believes that the district’s taste testing and nutrition education programs have played a key role in educating students about the benefits and deliciousness of plant-forward foods. Miguel refers to current students as the “healthier generation,” with increasing consciousness and receptivity to these menu shifts.

When it comes to incorporating plant-based proteins, cost is still a challenge. When Novato phased out beef in 2008 and switched from hamburgers to veggie burgers, the shift did not save Novato money. The heavily subsidized beef cost 25 cents per portion, half the price of the Morning Star veggie burger that replaced it. This is one major challenge for K-12 foodservice. To overcome the higher cost of the veggie burger, Miguel offsets costs by purchasing heavily subsidized USDA Foods products (such as chicken and cheese) and Department of Defense produce, which are much cheaper than market prices. This saves enough money for Novato to afford more fresh, local ingredients and more expensive items like the veggie burger.



Source: Novato Unified School District

SCHOOL DISTRICT OF LEE COUNTY, FLORIDA

Students are receptive to “healthy & fresh” messaging

Amy Carroll started working as Lee County School District’s food procurement supervisor in 2017. She became familiar with the growing interest in plant-based meals among the younger generation initially from her pre-teen daughter, who decided to become a vegetarian when she was eleven.

In 2015, with encouragement from the Humane Society of the United States’ Forward Food Program, Lee County, the 32nd largest school district in the country, instituted a Lean and Green Friday — an entirely plant-based day focused on health and nutrition. The district highlights the positive health and nutritional qualities of the meals (especially the fresh ingredients), rather than the vegetarian or meatless aspect. Using social media and educational cafeteria signage, the district demonstrates the health and environmental benefits of Lean and Green days. Sometimes they promote individual ingredients and highlight the specific nutritional benefits and local sourcing.

Lee County also hosts events like “Farm to Table” days and will implement “Taste It Tuesday” (where students can try different fruits and vegetables and new recipes), which builds enthusiasm for plant-based meals. Amy is convinced that this positive messaging is key to the overwhelming support among



Amy Carroll, RD
Supervisor, Food Procurement

“For us it was just a healthy food transition.”

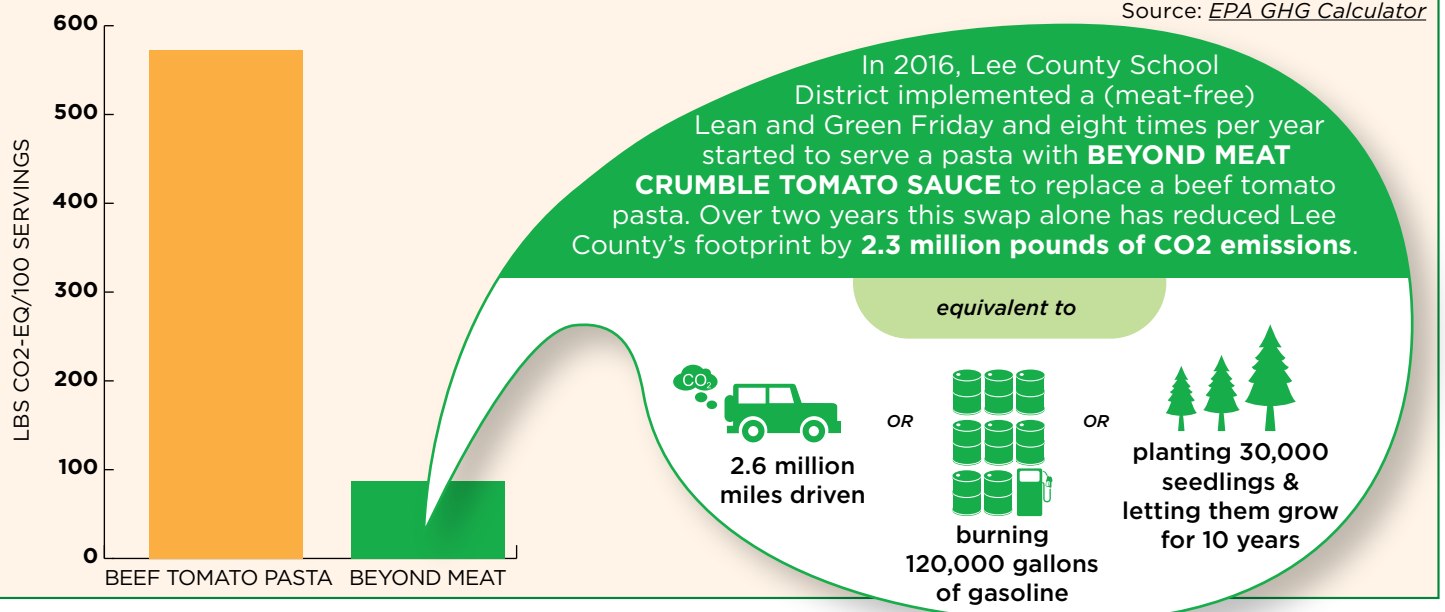
At A Glance

93,221 students (32nd largest in the U.S.)
\$59.5 million total budget
\$17 million food budget (\$1.40/lunch)
32,627 breakfasts /day 55,937 lunches /day
14 million meals served /year
95% free & reduced meals
Limited speed-scratch cooking
Self-operated foodservice Onsite kitchens & no central kitchen Plant-based option at every meal and 100% meatless day every Friday.

students and the community. In fact, Amy says she has only heard feedback asking for more plant-forward menus. Currently, at all of Lee County’s high schools and middle schools, food courts offer a vegetarian option (e.g., veggie entree salad) every day, as do the elementary schools. In response to student enthusiasm, Lee County is planning to pilot a separate vegetarian line in the high school food courts, which would be one of 10 distinct food lines at the high schools.

The Power of One Recipe Swap: Beyond Meat Tomato Pasta

Source: EPA GHG Calculator



SCHOOL DISTRICT OF LEE COUNTY, FLORIDA

Popularity of plant-based recipes varies across cultural groups.

As Amy explains, “Lee County is so big, something might be popular in one segment of the county but be totally different across town,” highlighting the need to serve culturally appropriate plant-based foods and conduct taste tests at different schools to gain broad acceptance. While several vegetarian recipes were popular throughout the district (e.g., mac and cheese, pasta spirals and tomato sauce made with Beyond Meat plant-based crumbles), other recipes only worked with select populations. For instance, many Latino students didn’t like the flavor of the Fiesta Bowl (bean and cheese) and found it inauthentic, whereas non-Latino kids across town loved it. Amy found that the schools with a curriculum focused on the arts were particularly positive about plant-forward menus. Other food interests are harder to track: “Hummus wraps can be very popular in some schools and less popular in others.” Amy notes, “it’s just hit or miss.” Next year the schools will feature new hummus flavors and add hummus wraps to the grab-n-go section, Amy says. Lee County schools are exploring new creative recipes vetted by students, including a black bean gyro with tzatziki (yogurt sauce), which has been a “total hit” with students so far. In order to support culturally appropriate menu planning, Amy encourages districts in the same region with similar demographics to communicate and share recipes and marketing strategies.



Student enjoys Beyond Meat pasta spirals. Source: Lee County School District

Leadership from the top and outside resources help support plant-based menus.

Like many districts, Lee County successfully capitalized on support from non-profits and community-based organizations to make its plant-based improvements. The Humane Society’s Forward Food Program provided Lee County with culinary training and supported its launch of the Lean and Green Friday program. Amy emphasizes that leadership and support from the superintendent helped smooth the transition to plant-forward food. As a farmer, the superintendent had a strong interest in getting more local fresh fruits and veggies into the cafeterias, and the district is now hoping to invest in a salad and fruit bar in every school.

Making plant-forward meals affordable.

Amy has found that most of the vegan and vegetarian options (e.g., veggie entree salad and bean and cheese burrito) do not cost the district extra money. One exception is the plant-based Beyond Meat Pasta, which costs 71 cents per serving compared to the heavily subsidized ground beef spaghetti at 44 cents per serving. However, the beef spaghetti has much larger hidden health and environmental costs, with a carbon footprint seven times that of Beyond Meat Pasta. The Beyond Meat Pasta is served once a month, so the slightly higher cost is worth the benefits it provides to the students and the environment.

After the devastation of Hurricane Irma in the fall of 2017, a need for greater community assistance meant that the district now qualifies for a 100 percent free breakfast and lunch program. As a result, Lee County will receive the highest level of federal reimbursements, providing more budget flexibility to invest in greater food quality. Lee County is also considering sampling new, pre-made, plant-based products like breaded tofu nuggets ([Asian Food Solutions](#)).



Black bean burger gyros with tzatziki sauce Source: Lee County School District

SANTA BARBARA UNIFIED SCHOOL DISTRICT, CALIFORNIA

A strong culinary vision can shift foodservice culture.

Before becoming foodservice director in 2008, Nancy Weiss was a restaurateur focused on scratch cooking with high-quality local and organic ingredients. When she started in school food, Nancy saw a need to introduce the restaurant model and ethic to the cafeteria. This meant taking more care in cooking and food purchasing in order to increase food quality. The “frozen to oven, fast-food model needed to be cleaned up,” she says. The school board hired Nancy to pursue this vision.

Prior to taking on the role, she worked as a cook in the SBUSD cafeteria, observing how things could be improved. Her first step as director was to connect the school district to the local farming community. “By introducing the farmers to the school food program, energetically I was already making the swing in a positive direction, which was infectious,” she says. “People started to listen; and the more they listened, the more participation; and the more participation, the more money from the federal government; the more money, the better the staff and the better the food.”

Strategic partnerships and community engagement support food shifts.

Nancy has partnered with the [School Food Initiative](#),



Nancy Weiss,
Foodservice Director

“Eat to live, live to learn and learn to eat!”

At A Glance

14,546 total students

\$9.1 million total budget

\$2 million food budget (\$1.28/meal)

\$390,000, USDA Foods allocation

8,050 lunches served /day

1,449,000 lunches served /year

50% free & reduced meals

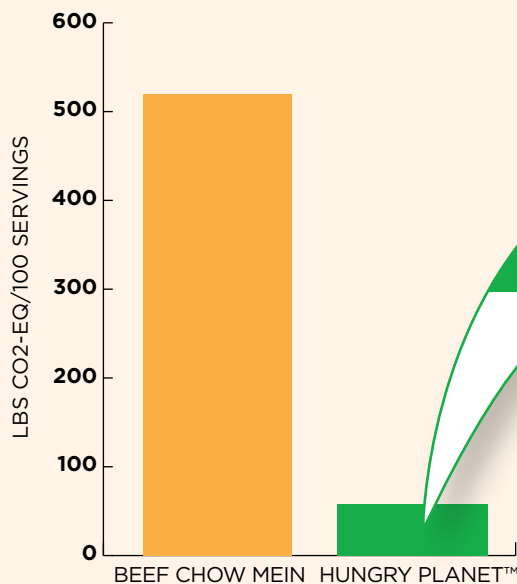
Nearly 100% scratch cooking

Self-operated foodservice with 11 production kitchens including 5 satellite kitchens (with no food prep) and 28 locations district-wide
Hot, plant-based option at every meal, one or two meat-free days per week.

the [Chef Ann Foundation](#) and the Humane Society of the United States’ [Forward Food](#) Culinary Training Program, receiving valuable assistance with procurement, menu planning and education. The School Food Initiative (which has since closed) was particularly instrumental in providing infrastructure grants, local food sourcing assistance and culinary training to promote scratch cooking. The initiative also helped fund seven food trucks (called the Mobile

The Power of One Recipe Swap: Hungry Planet™ Chow Mein

Source: [EPA GHG Calculator](#)



In 2016, Santa Barbara Unified started featuring HUNGRY PLANET™ plant-based proteins on the menu, allowing one-for-one replacement of meat-centric recipes. One such replacement was the beef chow mein for the Hungry Planet™ chow mein, which alone has reduced the district’s carbon footprint by **300,000 pounds of CO2 equivalent emissions over two years.**

equivalent to



300,000 miles driven

OR



burning 15,000 gallons of gasoline

OR



planting 3,500 seedlings & letting them grow for 10 years

SANTA BARBARA UNIFIED SCHOOL DISTRICT, CALIFORNIA

Cafe) that serve delicious food to both students and community members. “The food trucks are hip and build a positive association with school food,” Nancy says. “Food got more attention, a positive buzz developed about the improved quality of the food, and students and parents began to trust the food more.” The food trucks operate in the summer, giving students more exposure to new foods, engaging the community and increasing revenue, all of which enabled Nancy to make menu changes without sacrificing participation.

The Santa Barbara Unified School District participates in an annual Earth Day festival, which draws 30,000 people over a weekend in April (2018). The Mobile Cafe food truck is present, educating the community about the type of whole foods meal program SBUSD operates. Nancy noted, “We sold out both days this past April, as we highlighted Hungry Planet™’s 100% plant-based products, in a chicken chili verde burrito, hamburger, and meatball sub.” In 2017, Nancy received the U.S. Congressional Woman of the Year Award and the Physicians Committee of Responsible Medicine’s Golden Carrot Award. These accolades affirmed her work and amplified the positive perception of the school food program.

Make plant-forward meals delicious by serving what appeals to the customer.

When Nancy started, SBUSD’s foodservice was losing money; in her first year, it was still not profitable. She explains that she was overzealous, offering complex and unfamiliar dishes like a tandoori veggie wrap and eggplant scaloppini. In her second year, she increased student interest by adapting the food to the cultural context of the community — starting with more familiar foods like tacos, lasagna and burgers, and enhancing them through scratch cooking, including plant-based options like veggie lasagna with tofu and a BBQ tofu sandwich. Offering these familiar foods that kids seemed to like increased participation and put the program on firmer financial ground, enabling employees to be paid a living wage.

In 2016, Nancy brought in [Hungry Planet™](#) a plant-based meat company, which now constitutes most of the district’s plant-based options. The company’s fleet of plant-based meats (using non-GMO soy protein to create beef crumble, beef burgers and chicken strips) make it possible to serve a hot, nutritious option at every meal and eliminate meat on some days. Students have been very receptive to these climate-friendly plant-based or vegetarian spins on classic school meals, such as the beef taco and beef chow mein. In fact, most students chose the plant-based sausage and veggie pizza, even when served alongside the meat option, “BBQ bone-in chicken.”

Nancy’s most popular plant-based entrees include: tacos, nachos, chow mein, plant-based cheeseburger with coconut-based vegan cheese, spaghetti and plant-based meat sauce, plant-based crispy chicken burger and plant-based meatball subs with marinara. She explained that all Hungry Planet™ products are void of fat, so you do need to add fat and some flavor. Although these products are processed, they give Nancy the ability to supply scratch-cooked meals with plant-based protein that kids love. Reflecting on her success in expanding meat-free foods, Nancy explains: “If we want to make an impact, we need to do it at volume and do it with foods kids will come back to. If my kids won’t eat it, it’s a waste of labor and food.”

Meat replacement products can be made more affordable.

It has taken some finesse to make the transition to Hungry Planet™ economically viable within a tight budget. Even at a discounted rate, Hungry Planet™ products cost \$3.45 per pound. So, Nancy saves by using her USDA Foods entitlement dollars on meat and cheese products that are the most expensive items, then uses the remaining entitlement money on canned fruit (for smoothies), canned pinto beans and flour. This provides more flexibility to buy fresh local ingredients and pre-made plant-based proteins from Hungry Planet™. Nancy has boosted participation in other creative ways to capture more reimbursement dollars:

- The district now has a more robust supper program with strong participation and reimbursement rates.
- The department operates seven “Mobile Cafe” food trucks, providing greater reach in the community for supper and summer meal service.
- The Summer Foodservice Program feeds over 2,000 kids daily.
- The Child and Adult Care Food Program serves free supper daily to over 1,000 children.
- The district has a full-service catering division.

All of these operations are amplified with effective marketing strategies. For example Santa Barbara never uses the word “vegan.” Instead, a diamond at the top of the item reads a variation of: prepared from scratch, local, organic, proudly sponsors Hungry Planet™, 100 percent pure protein or soy delicious. This type of positive framing can make a huge impact in boosting participation and student acceptance of plant-based meals.

BOULDER VALLEY SCHOOL DISTRICT, COLORADO

Lead with vision and take chances.

Ann Cooper is a K-12 foodservice visionary. Years before entering the school food world, Ann was a fine dining chef. Her school foodservice career began as director at Ross School in East Hampton, New York, where she transformed the menu to seasonal and sustainable. She was then recruited by Alice Waters to transform school food in Berkeley, California before taking the helm in Boulder.

Ann has led Boulder's district to become one of the most successful school food operations in the country. Since Ann began nine years ago, BVSD has prioritized scratch cooking and local and organic sourcing whenever possible. The kitchen avoids using highly processed foods, high fructose corn syrup, chemicals, dyes or food additives.

Plant-forward or vegetarian options are offered daily at every meal, along with salad bars stocked with fresh, delicious and often local farm produce. BVSD is the first REAL certified school district in the country, recognizing the district's excellence in implementing healthy and sustainable food goals. Boulder has received 39 USDA Healthier U.S. School Challenge awards and is the only school district on the Good Food 100 Restaurants List. Ann also helps other school districts through her non-profit, the Chef Ann Foundation, which aims to "provide school communities with the tools, training,



Ann Cooper,
Foodservice Director

"We know our mission is to serve kids healthy food and educate them about healthy food, and that's what we do."

At A Glance

31,000 total students

\$8.8 million total budget

\$2.6 million food budget
(\$1.25/lunch)

13,000 meals served /day

2,219,000 meals served /year

19.4% free & reduced meals

95% scratch cooking

Self operated foodservice, 3 regional production kitchens (planning central kitchen for 2019-20).

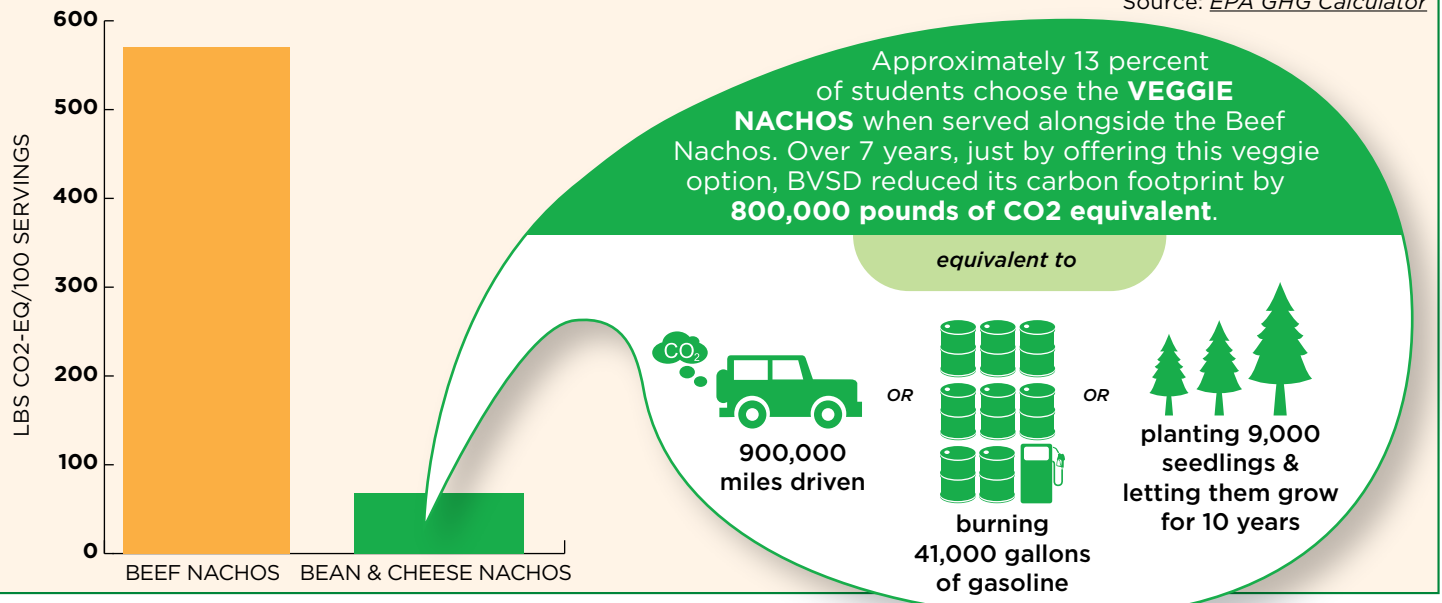
Plant-based every day (plus 25% regional)

resources, and funding to create healthier food and redefine lunchroom environments."

Ann says her experience working in high-end restaurants makes her "willing to take more chances." "I have two big white boards with my next six-week menu cycles on it. I ask myself, 'how do I sell it?' I'm not worried about pushing the envelope. For example, the day veggie Bibimbap is on the menu, there are red

The Power of One Veggie Option: Bean and Cheese Nachos

Source: EPA GHG Calculator



BOULDER VALLEY SCHOOL DISTRICT, COLORADO

pork tamales and a chicken dish. We can take chances, and even if the vegetarian dish doesn't sell well, something else will. But for a lot of other people, they can't take a chance to lose Average Daily Participation (ADP). It's like a menu mix, if the total overall works out, it's okay," she says.

Creative funding strategies help pay for better food.

BVSD features a robust catering program that helps fund their local and regional purchases and their quality plant-based menu items. This "School Food Project" program includes food truck catering and event catering marketed to the public for events, parties and meetings, as well as classroom celebrations. Rather than a parent bringing in a cake or pizza, kids can have a pizza party prepared by the school foodservice staff, with items such as vegetable crudité, hummus or quesadillas. The catering business helps raise money for the program and boosts exposure for their work.

Community events and nutrition education can increase participation.

Ann and her staff participate in more than 200 events a year teaching kids "what we eat matters." These

events range from menu tastings to "A Taste of BVSD Food Festival." The tastings, Ann says, "provide an opportunity for students to try samples of our menu items and Harvest of the Month featured produce." "It's challenging to get anyone to change eating habits," said Ann. "But we do Rainbow Days, menus tastings, and chef demos, which supports the students trying new flavors and helps make changing their pallets easier."

To deepen kids' engagement, Ann hosts Iron Chef competitions where students can cook what they want to eat for school lunch. "We had 12 teams apply for the Iron Chef this year and we chose six. Every team had to get up and speak about why they chose their dish. We have six teams of kids in middle school talking about plant-forward and really understanding it. It's great."

In this year's plant-forward theme, "kids came up with the menu and the winner was served in schools," Ann says. This year's winner was a traditional tomato soup with pureed chickpeas. "Soups are challenging because of the protein requirement in school foodservice. The kids pureed the chickpeas into the soup and served it with veggie flatbread."



Source: Boulder Valley School District

Boulder Valley School District's innovative approaches to educate and engage students:

- "Rainbow Days" introduce elementary students to the salad bar while teaching them healthy fruit and veggie choices (tasting the rainbow) and portion control;
- Chef demonstrations engage secondary students with a sensory approach and encourage them to try new foods;
- Calendar and poster art contests show what local food means to kids;
- Farmer visits enable students to meet BVSD's farmer partners, who grow the beautiful produce for schools' salad bars and lunch menu;
- Farm field trips provide hands-on experiences for students to learn about farm operations, where food comes from and how it is grown;
- "A Taste of BVSD Food Festival" offers parents, students and the community an opportunity to sample high-quality entrees and side dishes while celebrating local food — and connects students and their families with BVSD garden and farmer partners.

BOULDER VALLEY SCHOOL DISTRICT, COLORADO



Source: Boulder Valley School District

Ramp up plant-based options with whole ingredients.

To expand the variety of vegetarian and vegan options, Ann insists on using whole foods for her plant-based dishes. “I don’t like meat analogues because I want to cook with real ingredients,” she says. “I get that it’s climate friendly, but it’s highly processed and I don’t feel like it’s teaching children anything. To make a chicken nugget that’s plant-based isn’t teaching kids how to eat vegetables.” Ann is also concerned about the manufacturing processes used to produce these meat substitutes, such as protein isolates.

Boulder’s participation numbers have increased (up 29 percent in the nine years since she’s been with the district) as Ann has added more vegetarian options. About 10 to 15 percent of BVSD students choose vegetarian options daily. Next year, she’s ramping up her plant-based game with a veggie ramen with (Meat/ Meat Alternate) protein from tofu and edamame. “We’ve had good luck with Ramen bowls,” she says. “Ethnic food works well. A bean burrito (50% beans, 50% cheese) sells well too and another new item next year is an open-face falafel with tzatziki, which will be vegan, and almost all of our dressings will be vegan with aquafaba.”⁵⁰

Ann is also **blending animal and plant protein to offer more plant-forward entrees.** The Plant-Forward Continuum is a useful framework developed by Ann and promoted by the Chef Ann Foundation. The continuum shows how foodservice directors can incrementally include more plant-based protein that credits as meat or meat alternative or M/MA into dishes — adding first 25 percent plant protein, then 50 percent, then 100 percent. For instance, Boulder Valley has been adding 25 percent (M/MA) beans into the beef nachos, reducing the cost and enabling the district to buy higher quality local beef. Blending is not only more climate-friendly, it also supports more purchasing of local and fresh products.

Policy limitations

Ann acknowledges that plant-based proteins for K-12 students are a challenge due to USDA guidelines and restrictions. “The idea that quinoa is not considered a protein is a problem. We need to figure out a whole foods answer to this. It’s not about highly processed. It’s about how to use whole foods as a plant-based answer.”

Section III: Strategies for Scaling up Healthy, Climate-Friendly Foodservice

In this section, we reflect on the above case studies and the wisdom from the 18 districts we interviewed to present key strategies and examples for successfully scaling up climate-friendly school food. First, we show how school districts have **boosted participation** while serving more plant-based meals; second, we offer key **operational strategies** pertaining to staff training and engagement, upgrading kitchen facilities, creating context-appropriate, climate-friendly recipes and implementing plant-forward procurement; and third, we outline the vital role of **leadership** from multiple school food stakeholders, including foodservice directors, students, parents, school boards, industry leaders and advocacy organizations.

“The key changemaker is the student. As a service provider, your number one measurement is how many students you’re feeding.”

—Stephen O’Brien of New York City’s Office of School Food

A. Boosting participation rates and the image of school food

Since participation rates drive school foodservice profitability, the key to expanding plant-based meals in districts across the country is to ensure that kids love and want more of these healthy and climate-friendly foods. While our research uncovered several challenges to participation, two strategies were key in establishing trust and appreciation for plant-based meals: 1) the need to transform the fast food model that dominates school food culture by implementing a hospitality model and mindset (e.g., a friendly dining



Source: San Diego Unified School District

environment like food courts, food trucks and serving more local, fresh ingredients) and 2) the importance of shifting cultural preference for meat-based foods and eliminating stigma of vegan/vegetarian items through marketing and nutrition education. Key impactful engagement activities include taste tests, compelling messaging that emphasizes flavor over health and other fun, educational activities that bring kids into the culinary experience. Serving delicious meals based on good recipes is also a critical factor for boosting participation covered in Section III, (B) p. 24. The need for cultural shift underpins all of these strategies.

Strategy 1. Transform fast food culture by implementing a hospitality model and mindset

Most school foodservices operate within a food culture that is dominated by a corporate, fast-food model. “Big Food has dictated that ‘kid’s food’ is bite-sized and pre-packaged,” explains Bertrand Weber, Minneapolis Public Schools foodservice director in Minnesota. “Which is why many just assume that kids only like fried chicken nuggets, pepperoni and hot-dogs—all highly processed meat products that are known to be bad for our health and even worse for the climate.”^{51,52} Jim Stuart, foodservice director of Ukiah Unified School District in California, adds that foodservice “was set up in the 1980’s to make it cheap and fast. McDonald’s style. That was what kids wanted. It is really difficult for families to shop, cook and clean, so kids are accustomed to fast food and other convenience foods.” Across the country, fast food restaurants like Domino’s and Chick-fil-A have squarely established themselves and their products in school food culture, securing multimillion dollar contracts with school districts.⁵³ This predominant fast food influence, coupled with tight budgets and subsidized animal products in USDA-sponsored commodity foods, has led to an overabundance of highly processed meats and heat and serve foodservice in schools.

A systemic transformation toward healthy, climate-friendly choices requires a mindset switch — and a policy shift — away from the factory model of fast food culture. It also requires implementation of friendly dining environments and a focus on culinary traditions, fresh ingredients and better cooking facilities. Many interviewees developed student and community trust in plant-based menus by first shifting their foodservice away from the dominant fast food culture. We heard overwhelmingly that these shifts and implementation strategies evolve and take time.

“When the food respects the kid, the kids respects the food.”

—Bertrand Weber, Minneapolis Public Schools

a. Create a friendly dining environment: By shifting to a hospitality model characterized by fresh, local and seasonal ingredients — plus more scratch and speed-scratch cooking and an inviting, fun dining environment — many districts were able to maintain high participation rates crucial for success. Several districts mentioned that good meals made with fresh ingredients can demonstrate to students (their customers) that they are important and valued. Several districts re-arranged their cafeterias to mimic the fast-casual dining environments that students experience outside of school, to provide more diversity of food options and create a space that supports the social atmosphere of mealtime. Here are examples of how districts are transforming the school food experience:

- Chef Ann in Boulder was hired for her culinary vision that embraces seasonal foods and plant-based recipes.
- In Minneapolis, success is driven by the mindset that “we’re a restaurant in a school food environment,” incorporating protein bowls and food courts.
- Riverside Unified highlights global themes and transformed its high school cafeterias into food court-style environments by displaying banners over each line and installing additional checkout screens.
- In Lee County, each high school has 10 lines in a food court environment, which give students a diversity of food choices (Lee county is piloting a plant-based line this coming school year).
- At San Luis Coastal, California Erin Primer “serves food as it’s meant to be seen in the ‘real world.’”

“Vegan is becoming more and more popular. Next year we will roll out ready-to-eat packs with different fruits and vegetables, sun butters, and other plant-proteins like hummus. Just like at Starbucks.”

—Althea Albert-Santiago, St. Louis Public Schools



Hip school food truck. Source: Austin Independent School District

Many schools serve plant-forward menus in a friendly dining environment

- **Food trucks:** Boulder, CO; Ukiah and Santa Barbara, CA
- **Food courts:** Lee County, FL; Minneapolis, MN; Riverside and San Diego, CA
- **Build-a-bowl stations or plant-based bowl entrees:** Minneapolis, MN; Dallas, TX; Lee County, FL; and San Luis Coastal and Riverside, CA
- **Grab and go carts:** St. Louis, MO and Ukiah, CA
- **Vegan pop-up “restaurants”:** Riverside, CA
- **Ready-to-eat, power packs:** St. Louis, MO

b. Incorporate fresh and new ingredients: For most interviewees, serving more climate-friendly, plant-forward food is a natural evolution from farm to school meals. Most of the case study districts began by sourcing from local producers, using grant funding and enthusiasm for fresher ingredients to set up the infrastructure and staff to process veggies with speed-scratch and scratch cooking. Plant-based meals, featuring farm-fresh ingredients can be more affordable, illustrating the synergy between farm to school and climate-friendly foods.

- In Novato, California, Miguel’s first step was to incorporate more local produce. The same is true for Chef Ann in Boulder and Nancy in Santa Barbara.
- Riverside began its journey into plant-based with a salad bar in all schools, each serving as much local produce as possible.
- In Minneapolis, Bertrand combines farm fresh produce and commodity beans to make plant-forward entrees.
- Vancouver Public Schools in Washington recently incorporated three new vegetarian options based on three different legumes the staff learned about during culinary trainings and local farm visits.
- Austin Independent School District in Texas is shifting to make fresh vegetables the center of the plate. During the 2016-17 school year, they served over 5.8 million plant-based entrees.

Strategy 2. Shift cultural preference toward plant-forward meals

Despite the growing popularity of plant-based eating,⁵⁴ school food professionals must confront misinformation and misunderstandings about good nutrition — in particular the misguided belief that plant-based meals do not provide sufficient protein.^{55,56} This is a particular concern among parents in districts where students rely on the school meal for a large

portion of their daily nutrition. “We need to make sure they don’t think they are starving because they didn’t get any meat protein,” says Jordan Gordon, director of child nutrition for Kansas City Public Schools in Missouri. In some school districts like St. Louis (also in Missouri) that provide 100 percent free meals, many students are afraid to try the plant-based protein. Althea Albert-Santiago, director of food and nutrition services there, says, “A lot of times students don’t take the vegan or vegetarian option because there’s a risk they won’t like it in case it’s their only meal. They don’t want to go home hungry.” This speaks to the need for prioritizing plant-based nutrition education in order to dispel common myths.

Many school food experts we interviewed noted that sometimes students aren’t familiar with or used to eating plant-based proteins at home. Lauren Heumann, of San Francisco Unified in California says, “Mission High School kids said they don’t trust the food because it doesn’t look like what they’re used to. So, they go to 7-11 and get nachos, which they do trust.” Due to this lack of familiarity, participation dropped during Meatless Mondays at Novato Unified in California, but later improved once it became normalized and other strategies like taste tests were put in place. As Miguel explains, “When we picked out a day, like Meatless Monday, to get the message out, we saw a decline. Slowly participation inched back up when it became the norm. Now, we don’t see a decline in any given day in terms of meals.” Erin Primer, foodservice director at San Luis Coastal in California observes, “We saw this stigma with an Asian Noodle Bowl. When we called it vegan, we saw a decline in participation. When we didn’t call it vegan, there was an increase in participation.” This statement aligns with recent consumer data that shows that “vegan” is the least appealing food label, and “fresh” the most appealing.⁵⁷

Hollie Greene, program director for California Wellness in Schools Programs, says, “Children are open to the plant-based replacement. But adults put the hate of plant-based into their minds. We make up so many excuses for why kids won’t like something. But we don’t teach kids how to like them.” Creating opportunities to teach kids to like healthy, plant-based options must be a priority to ensure this eating pattern multiplies in schools and beyond. Schools reported taste tests as the top strategy for improving participation with plant-based menus. Messaging highlighting the flavors and deliciousness of plant-forward items while never using the words “vegan” or “vegetarian” came in a close second. Deploying staff as ambassadors and implementing classroom nutrition education and cafeteria marketing are other successful strategies.

a. Taste tests are crucial: Nearly all the schools we interviewed found that testing plant-based recipes with students is the most effective way to increase

participation and trust. These schools conduct tastings in a variety of creative ways:

- **Try it days:** St. Louis, Missouri features a “Try it Tuesday” program that introduces students to a new menu item that is vegetarian or plant-based 30 percent of the time. Promo flyers in advance help get the students and parents excited. Vancouver Public Schools also implements “Try It” days. “It treats the kids like a customer,” says Melissa Martin, chronic disease prevention program manager with the Clark County Health Department, who works directly with VPS in Washington state.
- **Competitions:** School districts in Boulder, Charlotte-Mecklenburg and San Diego Unified engage students in celebrity chef show-style contests. By giving students the opportunity to learn about ingredients and cook what they want to eat for lunch, this approach engages students in nutrition education and helps increase participation. Chef Ann conducts Iron Chef competitions. “Kids come up with the menu and the winner will be served in schools.” (Austin Independent School District does something like this too.) In 2018, the theme was “plant-forward.” The winning item was a traditional tomato soup with pureed chickpeas. In Charlotte-Mecklenburg, the first competition resulted in a vegetarian recipe, a salad made with local greens and chickpeas. This event helped get more plant-based recipes on the menu. San Diego’ student recipe, Ava’s Avocado Salad, made with beans and corn, has become a favorite.
- **Compare products:** At Ukiah Unified School District, Jim says the students sampled different types of burritos with the help of dietetic interns to help decide the menu.
- **Build-a-meal concepts:** In Dallas, Texas: “At one event this year, we had a ‘Build your Own Bento’ event,” says Julie Ferris, director of Food and Child Nutrition Services. “We gave out a multi-compartment container and asked them to put in their own favorite fruits, vegetables and proteins.”
- **Pilot a new concept:** Next year, Lee County, Florida will pilot a solely vegetarian line in their high school food court. At Riverside, California, they tested vegan entrees with a “pop-up restaurant,” which was so popular they are expanding it to more schools next year.
- **Volunteer committees and focus groups:** In a “Food Fellowship” at San Francisco Unified, high school students meet regularly to help develop the menu and learn about school food. “Our first cohort was last spring. It was a big impetus for shifting to one meat, one plant-based entrée,”

Lauren says. In San Diego, a pilot program of student groups in six schools “do focus groups, they sample food, tell us which options would be best, then participate in the marketing,” says Tara McNamara, the districts’ marketing coordinator.

- **Walk around:** In San Diego, the staff, recognizing that kids want to socialize at lunch, walk around giving out samples.
- **Food festivals:** In Dallas, schools hosted a food festival that attracted 100 to 150 students to taste test about 60 items on their menu.

It is important to taste test where the meals will be served. Miguel in Novato, California says, “We do not sample at every site, which makes it difficult when we launch a product that has been student approved. We have experienced many problems with students not taking the ‘student approved’ meal in schools where we did not sample the meal.”

“Everyone gets excited about our taste-tasting. It’s new, exciting, and they get a say in it so they get to participate in the decision-making.”

—Jordan Gordon, Kansas City Public Schools, Missouri

b. Compelling and informative messaging: emphasize flavor over health:

All districts interviewed agreed that to gain acceptance, messaging is of paramount importance — from the way food is presented to how it’s described. For plant-based entrees, it’s even more critical to appeal to students’ need for flavor over labeling a dish “vegetarian” or “vegan.”

- In Santa Barbara, for two years in a row, Nancy sampled her plant-based recipes with her food truck at a very popular Earth Day festival. She used her food truck and this community event to introduce her Hungry Planet™ creations, brand her school food vision as approachable and engage students, parents and the community in her efforts.
- In Minneapolis, Bertrand says, “We never talk about nutrition. We talk about good food. We have a ‘true food’ campaign which is all about how we don’t serve school food. We serve lunch, we serve food. We don’t showcase food as vegetarian. There is a vegetable lasagna, a bean burrito; no bad food, just good, whole food.”
- Tammy Yarmon, foodservice director for Omaha Public Schools, Nebraska, says, “We make sure not to frame these dishes as vegan or vegetarian, but instead talk about adding plant-based protein to the menu.”



Plants are Powerful Food for better grades and mood!

Source: *Lean and Green Kids*

- Jennifer LeBarre, formerly of Oakland Unified, California, says shifting perception through presentation is critical. “Something served on a tray or in a bowl doesn’t have the same perception as something served pre-packaged. Pre-packaged is seen as throw-away.”
- “Positive framing is really important,” notes Tara, in San Diego. “By calling it vegetarian, it makes it sound like it’s just for vegetarians, but it’s really just for everyone.”

c. Teachers and principals as ambassadors: We heard from a few districts that teachers and principals who eat with students in the cafeteria can make a big difference with participation, especially in elementary school. For example, in both Novato and Austin, they have outreach efforts in place to ask teachers and principals to eat plant-based school lunch to encourage the kids. “It’s important to create a positive attitude around the food,” says Ryan Cengel with Austin Independent Schools. Lauren in San Francisco adds, “Teachers are the front-line and can have a huge impact on students’ decision to eat at school or what they eat, period. They have relationships with the students. Principals can lead by example and encourage kids to eat plant-based.” Tara in San Diego concurs, “If the message is coming from the principal, it is more effective since they are an authority figure.”

d. Class-based and parent-focused nutrition education: All interviewees highlighted the need to make plant-based nutrition education accessible to all students and parents. The importance and efficacy of nutrition education for increasing student lunch participation rates and student acceptance of healthy foods is echoed by academic research.⁵⁸ Many

mentioned that the cafeteria should not be the only place to do that education, and believe it must happen in the classroom and via parent outreach as well.

- In Novato, teachers work with student services to change the culture of the school, using the menu as part of the education process. Teachers speak about the menu every day and collaborate with Wellness in Schools to teach kids how to make hummus and cook with kale, for example.
- Riverside and other districts communicate with parents as part of the food shift education process.
- San Diego schools conduct outreach to parents about plant-forward additions. In one school, foodservice staff coordinate with teachers to speak to three classes about their “Grow, Go, Glow Foods” featured in the salad bar. In another three district schools, Lean and Green Kids, a nutrition education nonprofit, coordinates with teachers, principals and foodservice staff to teach k-5 students about the cultural and nutritional value of beans in the salad bar. The founder dresses as Queen Bean and her assistant is Princess Pea Pod.
- In New York, the Coalition for Healthy School Food works with schools to introduce plant-based foods and nutrition education for the whole school community.
- While not mentioned in the interviews, schools with on-site gardens have an excellent opportunity to use the garden to reinforce plant-based eating,

connecting students to what they grow with what they eat at lunch.

“Education is key. That’s why Lean and Green Kids focus is very much on changing the nutrition education message to emphasize beans, ‘the lean and green protein,’ and to include consideration for animals and the planet. I believe that is the formula for change.”

– Barbara Cole Gates, founder of Lean and Green Kids



Plant-based marketing poster.
Source: Lean & Green Kids

No Chard Left Behind: Nutrition Education is Key to Making Healthier Choices

By The Laurie M. Tisch Center for Food, Education & Policy Program in Nutrition, Teachers College, Columbia University

Growing lettuce, making a salad, visiting a farm, comparing the nutritional value of processed meat to lean and plant-based protein, exploring cultural foods, advocating for universal free school meals — these are all forms of nutrition education that make a difference. They can all increase student acceptance of delicious, nutritious, plant-forward meals in the cafeteria. What does good nutrition education look like in practice? The following are evidence-based nutrition education strategies:⁵⁹

Get students inspired!

- Include opportunities to eat fruits and vegetables through tastings and cooking
- Create positive social norms that make fruits and vegetables cool, while decreasing fears of trying new foods
- Focus on health benefits of eating fruits and vegetables
- Include activities that build cultural appreciation
- Have students work with plants in the garden; harvest, cook and eat what is grown
- Introduce the concept of composting and provide opportunities to compost

Give students tools to eat well.

- Compare the nutritional value of healthful and less healthful snacks
- Use [MyPlate visuals](#) to encourage students to make half their plate fruits and vegetables
- Help students set goals and monitor progress toward eating more fruits, vegetables and plant-based proteins
- Share recipes for students to take home to prepare with their family

Empower students to advocate for good food.

- Teach students how our “farm to plate” food system works
- Focus on inequity in access to healthy foods and resources and strategies that build toward equity

B. Investing in kitchen facilities, staff, recipes and procurement strategies for plant-forward meals

To win students' support, climate-friendly food needs to be delicious. And delicious food requires good ingredients, good cooks, good equipment and good recipes. Our research uncovered several challenges and four overarching strategies that make it easier to offer fresh, delicious, climate-friendly school food. 1) Schools must invest in staff training and continue to empower staff to take ownership around creating good food. 2) Cooking facilities need to be upgraded so that trained staff can prepare healthy, climate-friendly food from scratch. 3) Foodservice professionals need access to culturally- and context-appropriate recipes and products. 4) Foodservice professionals need to work toward cost-effective procurement of plant-based products. These are many of the same strategies that have been successful at districts that have worked for years to shift toward fresh, nutritious, and less processed animal and plant-based foods. Underlying all of these efforts, however, is the difficult reality of a policy environment that restricts school food budgets, orients regulations and subsidies toward meat-heavy meals and limits the number of plant-based foods that USDA recognizes as having a protein equivalency (known as meat or meat alternative or M/MA) in the National School Lunch Program (see Policy section, p. 32).

Strategy 1. Investing in staff training and appreciation pays off.

Insufficient investment in qualified staff and training may translate into less inspired cooks, less inspired eaters, less participation and less money for the district. Without training, cooking options are limited, often necessitating the use of highly processed, pre-made products. It also reduces the likelihood of kitchen staff engagement with the students. Some school districts face labor shortages because they cannot compete with other foodservice jobs that pay higher wages. A related challenge is that foodservice staff typically get paid the same amount for speed-scratch and scratch cooking, even though scratch cooking takes more work and skill. Investment of both time and money to properly train and value staff reaps huge benefits. (See Appendix A, p. 35 for resources for staff engagement and training).

Many interviewees said that hiring quality staff and training foodservice workers substantially enhanced food quality and student participation. Training staff to cook better food and help them understand why they are serving plant-forward meals translates into more enthusiastic and engaged employees. This results in more student appreciation and food knowledge. Here are just a few examples of that success:

- “We want to empower staff to take ownership over the food,” says Lauren Heumann, project manager for the San Francisco Unified School District’s [Future Dining Experience program](#). “You need to approach them as chefs, not just cooks. Historically, it’s been following directions and going through the motions. We’re trying to get them to taste what they’re serving and add spices if needed, or make sure the beans aren’t hard. Treating your staff with respect is key. Make them feel appreciated and provide perks.”
- Oakland Unified School District’s former executive director of Nutrition Services, Jennifer LeBarre, attributes much of OUSD’s success to an increase in staff engagement and training focused on building culinary skills, introducing small wares, food safety, new recipes, tastings, seasonality and team dynamics. OUSD increased staff professional development hours by 90 percent since 2013, thanks to grants from the [USDA](#) and [California Department of Food and Agriculture](#).
- In Minneapolis, Food and Nutrition Services Director Bertrand Weber says, “I had to convince the staff that what they were doing for 20 years was wrong.” He used various resources to help educate staff, including [materials from the Center for Ecoliteracy](#). “I lost some management level workers, who were entrenched. We now have professional cooks and prep cooks.” To afford this, he invested in better food, which increased participation.
- In St. Louis, Southwest Foodservice Excellence brought in chefs to educate the foodservice team and teach them to cook. “Now they understand basic culinary principles. The difference is day and night,” says Althea Albert-Santiago, Nutrition Services Director for St. Louis Public Schools.
- Investing in staff includes showing appreciation and gratitude for foodservice workers, who work tirelessly to feed students nutritious meals. “The fine men and women that show up every day and do this hard work and care deeply about students and their well-being, they deserve our respect and our support,” says Hollie Greene, program director for California Wellness in the Schools programs.

Strategy 2. Making plant-based possible in any school kitchen.

For schools that already have adequate staffing and facilities, scratch cooking is the most affordable way to serve plant-based protein, because pre-made products or meat alternatives are more expensive than raw plant-based ingredients such as beans and pulses. Scratch cooking also lends itself to using local and fresh ingredients, which can make meals

more delicious and appealing to students and thus can help boost participation rates. In the long-term, increasing investments in better cooking facilities and staff training would make it far easier and affordable to serve delicious, fresh, healthy, climate-friendly food every day, on a larger scale.

Most districts, however (including the majority of those interviewed), lack the required infrastructure for scratch cooking and instead rely on heat and serve recipes and/or pre-made items with some speed-scratch capability.

We interviewed districts with a range of cooking facilities: from well-equipped kitchen producing 100 percent scratch-cooked meals to those with some scratch and speed-scratch cooking capabilities (combining scratch cooking with a pre-made product), to those limited to heat and serve using pre-made products, which is the most common. While more challenging, schools without cooking facilities have also been successful in implementing plant-forward meals. For a list of scratch, speed-scratch and heat and serve plant-based recipes, Appendix A, p. 35.

- Despite having no capacity for scratch cooking, Lee County serves plant-based options every day and features a “Lean and Green Friday” (meat-free) every week.
- “There are lots of cool opportunities for plant-based with speed scratch,” says Jenn Gerard, former foodservice director in Monterey, California, now working with nonprofit The Center for Ecoliteracy — which offers programs to promote California farm products, such as California Thursdays. Jenn describes several innovative products, including lentil and black bean pasta or legume pesto,⁶¹ which can be counted toward meat alternatives. “The pasta itself is the meat alternative! Kids that are reluctant to eat beans can eat a high-protein bean pesto pizza and not know.” These products can be combined with scratch-cooked sauces or pizzas to create a plant-based meal that tastes fresh with limited cooking facilities.

- San Diego Unified uses speed-scratch cooking to serve a plant-forward option at every meal across the district. In the elementary schools, they have an entirely meat-free day every week. The middle and high schools feature up to four veggie options on a given day, including Ava’s Avocado Salad, a Cali veggie burger (Morning Star) and the Tater Eggurito, an egg and potato burrito (created by a third grader for a district-wide recipe contest).
- When Bertrand entered his large urban district in Minneapolis, all the food was pre-packed and processed at a central kitchen. Now Bertrand is able to serve over 80 percent scratch-cooked meals. Thirty-two of the district’s schools have kitchens and the district has committed to building kitchens in all the schools.

See Appendix A, p. 35 for equipment and infrastructure improvement grants.

Salad bars are an excellent and customizable way for districts to offer plant-based options every day. Salad bars can contain legumes and/or tofu, so students can receive a creditable meal with all the necessary food components. For support making a salad bar, check out the [Salad Bars 2 Schools Program](#).



Source: Boulder Valley School District

Labor shortage? Speed-scratch can be climate-friendly!

Ukiah Unified, a small rural district (just under 7,000 students) in northern California, struggles to keep and hire new staff. Ukiah recently lost its best cook to a higher-paying job. As a result, Jim Stuart, the foodservice director, was forced to decrease the amount of scratch cooking from 45 percent to 20 percent. However, he was still able to serve plant-based or vegetarian items every day, “in response to an increase in kids asking for those options,” Jim says. Like many districts, Ukiah offers basic, cold plant-forward options such as bean dip with chips, peanut butter and jelly sandwiches and salad bars that feature plant-based proteins. Jim also serves some hot veggie options using pre-made [tamales](#) and [pupusas](#) from Del Real, “popular items amongst the large Latino community.” For districts that don’t have the staff time for scratch cooking, there are a growing number of companies producing [pre-made plant-based products](#).

Got Milk: Unnecessary and Unjust Milk Requirements Must Change

Current regulations—which make milk a mandatory component of a reimbursable school meal— encourage waste and unnecessary consumption of milk products. This requirement is also unjust, given the high rates of lactose intolerance among students of color, who make up the majority of students who receive free and reduced-price school meals.

Unless elementary and middle schools voluntarily elect to be an Offer Versus Serve (OVS) site, USDA regulations assert that milk is not an optional, but a required component of a reimbursable school meal. In other words, serve means students are expected to take the milk (that has already been purchased) as part of a fully composed meal. High schools, on the other hand, are required to participate in Offer Versus Serve which means that students are allowed to decline the milk and at least one other meal component without causing food service to lose the reimbursement for the meal. According to the OVS manual⁶² schools can easily become an OVS site by simply filling out a form to indicate this preference. The OVS approach is better because students don't have to take the milk. However, some school sites interpret this confusing policy to mean that students are required to take milk all the time, disregarding lactose intolerance and cultural sensitivities. The current requirements also contribute to higher food waste and unnecessary food costs.

In order to address food waste specifically, some districts in Oregon and Washington have installed milk dispensers to replace milk cartons. Two schools in Clackamas County, Oregon have reduced milk consumption by 130 gallons per month, per school, mostly because students drink more of what they take and waste less. Districts with dispensers fulfill nutrition requirements without the milk, making clear that milk is an option, not a requirement. The dispensers also eliminate the massive waste stream of single-use milk cartons. If dispensers become widely adopted and milk bags become cheaper, it could provide significant yearly cost-savings for districts. The Oregon Department of Environmental Quality and the Washington Department of Ecology are hoping to offer consistent grants to support the installation of these dispensers.

New policies and simple solutions are needed. First, USDA should automatically make every school OVS as a default. Second, all districts should provide daily alternatives to cow's milk, such as non-GMO soy or another nutritionally-equivalent non-dairy beverage, without a required note. Third, Congress should make dairy an optional, rather than mandatory meal component. And fourth, USDA should provide grants to replace single carton use with milk dispensers.

Strategy 3. Ensure access to culturally- and context-appropriate foods.

Foodservice directors consistently cite a lack of good recipes and delicious, pre-made plant-based products as major challenges. Many highlight the need for recipes that consider the cultural context of the student body and region.

To generate positive results, recipes must be accepted by students and viable for production within the district's kitchen facilities. Following are examples of plant-based and plant-forward recipes that work for districts with a range of cultural contexts and cooking capacities. For certain districts, offering plant-based recipes is imperative to respect cultural sensitivities and religious traditions. (See Appendix A, p. 35 for an extensive list and links to popular plant-based and plant-forward recipes for school foodservice and additional resources for recipes).



*Hungry Planet™ pure plant protein “chicken” chile verde burrito.
Source: Santa Barbara Unified*

a. Scratch-cooked climate-friendly entrees: Although still a minority, an increasing number of school districts are incorporating more scratch-cooked meals with fresh ingredients that are also climate-friendly and help reduce food-based emissions. Scratch-cooked meals, local purchasing and plant-forward menu planning are a mutually supportive trifecta. Scratch cooking enables fresh and delicious farm to school meals, and buying mostly veggies and plant-proteins such as legumes makes those local ingredients more affordable.



*The chickpea masala is a 100 percent plant-based recipe that has been successful at Boulder Valley and Minneapolis school districts.
Source: Boulder Valley School District*



*Lentil Chili Frito Pie has been highly successful at Austin Independent School District.
Source: Austin Independent School*

b. Speed-scratch climate-friendly entrees: Utilizing speed-scratch (combining scratch cooking with a pre-made product) for plant-forward menus is a cost-effective way to provide more fresh, healthy, climate-friendly meals.



*Hungry Planet™ plant-based Italian meatball sub.
Source: Santa Barbara Unified School District*



*Ava's Avocado Salad is a popular item at San Diego Unified School District, California.
Source: San Diego Unified School District*

c. Pre-made products and heat and serve climate-friendly entrees: While more expensive than scratch-cooked options, pre-made plant-based protein products are becoming more available to K-12 foodservice and come recommended by staff we interviewed.

» **Hot pre-made plant-based options:**



*Beyond Meat Pasta Spirals.
Source: Lee County*

» **Cold plant-based options: If a district does not offer any plant-based options, cold options are a great and affordable way to start:**

- Peanut butter and jelly sandwich (a very popular 100 percent plant-based option)
- Sunbutter and jelly sandwich
- Sunbutter and honey sandwich
- Salad Bar with beans and/or tofu
- Southwestern bean dip
- Hummus wraps
- Hummus and cracker

The debate: processed plant-based vs. fresh plant-based

There is a robust debate among foodservice professionals about using pre-made, mostly processed plant-based products versus fresh, whole, plant-based recipes. For some, plant-forward, climate-friendly menus are part of a movement away from resource-intensive animal products and highly processed foods — including highly processed plant-based foods. For others, pre-made products are the key to plant-forward menus that kids love. “They allow you to create classic, recognizable dishes by just swapping the plant-protein for the meat-protein,” says Nancy Weiss, who is transforming Santa Barbara Unified menus with Hungry Planet™ non-GMO plant-based meats. Although Nancy is cooking mostly from scratch, she credits these plant-protein substitutes as essential to creating plant-based meals that students love. These foods also allow her to dramatically reduce the carbon footprint of her operation.

Chef Ann Cooper in Boulder, Colorado believes that using processed plant-based products means losing an important educational opportunity. She explains “to make a chicken nugget that’s plant-based isn’t teaching kids how to eat vegetables. It’s not about highly processed. It’s about how to use whole foods as a plant-based answer.” Chef Ann admitted that this is more difficult in K-12 foodservice, “because the USDA’s guidelines for a meat/meat alternate are limiting, and don’t credit quinoa as protein, for example.” Lack of cooking facilities is another big hurdle, she acknowledges.

Many other foodservice directors see a place for both. Some see pre-made products as the gateway to plant-forward eating habits — a helpful step for students learning that they don’t need to eat meat to have a satisfying, nutritious and delicious meal. Dallas plans to blend both approaches: “We want students to know what the whole food looks like and some will want the meat alternative,” says Julie Ferris. “There’s a place for all the options in a school nutrition program so kids can choose.”

It’s clear that schools face many limitations within the foodservice environment. Some schools have more barriers than others when it comes to using fresh ingredients with scratch cooking. Certainly, increasing fresh plant-based meals is ideal; but it is still a win if schools use processed plant-based products instead of resource intensive meat.

d. Blended and reduced meat recipes: it’s not all or nothing.

Climate-friendly menus are not just about vegetarian and vegan — they also include reduced-meat recipes. By blending products, districts can steadily shift menu cycles to reduce overall meat and add more plant-based proteins that credit as M/MA. Blended burgers, now featured in San Diego and San Luis Coastal school districts in California, have become increasingly popular. San Diego sources a pre-made blended burger from Don Lee, while San Luis Coastal makes its own patties with 50 percent mushrooms and 50 percent local, grass-fed beef. For districts located in large ranching communities, this can be an excellent way to engage ranchers in less and better meat recipe strategies.

The plant-forward continuum is a framework to incrementally incorporate more plant-based protein that credits as M/MA, replacing some meat within a recipe by blending, or within the menu cycle by swapping. The Chef Ann Foundation developed a continuum approach as part of its [More Plants Please Initiative](#), which can be found on their Lunch Box website.⁶³

Strategy 4. Cost-effective plant-based procurement

Many foodservice directors are stymied by the high cost of most pre-made plant-based products and others are limited to buying products within their food bid, which is typically decided by foodservice management companies or state-run organizations that may not offer plant-based meat alternatives. In North Carolina, for example, Charlotte-Mecklenburg’s

Manager of Culinary Development, Jody Francisco, reported that the NC Procurement Alliance state bid severely limits their ability to purchase healthy, plant-forward products because they were not available on the bid. Our research uncovered a series of actions for making plant-forward meals cost-effective, including: a) menu-level budgeting; b) creative revenue generation (including serving more reimbursable meals); and c) leveraging joint purchasing. Professionals involved in the procurement process must apply careful thought and action to include more plant-based items. Also important is the need to change policies that favor industrial meat and dairy over plants, and perpetuate the under-resourced, highly processed, corporate school food environment. We explore the urgent need for policy shifts in Section IV.

a. Menu-level budgeting allows school districts to incorporate higher quality and higher cost products into the menu cycle. By balancing a product or recipe that is slightly above the budget allocation per meal with a lower cost product or recipe, it is possible to keep weekly menu-level expenditures within the budget. “We must be strategic to make ends meet,” says Nancy in Santa Barbara Unified School District.

Oakland Unified’s creative budget balancing strategies have allowed the district to buy higher quality local products, such as organic ground beef from Mindful Meats.⁶⁴ Recipes such as the bean and beef chili (where half of the M/MA comes from beans and half from beef) or bean and cheese veggie taco with avocado are made possible by balancing cheaper ingredients like USDA Foods beans with more expensive ones like avocados.

- SBUSD buys the higher-end and relatively expensive Hungry Planet™ meat substitute, which is made possible “by using every penny of entitlement money” to buy expensive USDA Foods like cheese and pork to offset those costs.
- Bertrand in Minneapolis has proven that it can be cost-effective to purchase farm fresh ingredients and mix them with USDA Foods to create plant-based entrees.

Cost-savings lessons from OUSD

Friends of the Earth’s two-year analysis of Oakland Unified School District’s food programs found that healthy, climate-friendly menus can work fiscally within the school environment by:

- Reshaping the menu with fewer animal foods and more protein-rich legumes and vegetables.
- Adding reduced meat recipes, such as beef and bean chili and a chicken and bean taco.
- These savings can be reinvested in higher quality fresh ingredients, employee training or facility improvements (see [full case study](#) in Friends of the Earth report).

b. Creative revenue generation

- Nancy at Santa Barbara Unified has developed supplemental programs (summer programs, mobile food trucks, after-school snacks, catering) that bring in revenue and help them afford healthy fresh ingredients while supporting local farmers. “In order to make money you have to promote yourself, promote the program and feed as many kids as possible,” she says.
- Bertrand at MPS has also used creative ways to tap into alternate revenue streams, with the ultimate goal of expanding the total food budget to afford higher quality produce. These include catering events, breakfast in the classroom and after-school snack programs.
- Chef Ann in Boulder runs a catering program for both classroom events and the community at large that expands her food budget.

c. Leveraging joint purchasing power to afford more plant-based food products

One of the significant deterrents to the widespread adoption of plant-based menus is the lack of affordable plant-based protein products that credit for USDA reimbursement in the National School Lunch Program. However, due to increasing student demand and assistance from advocacy organizations, there are now an increasing number of plant-based food companies working to create products targeting the K-12 foodservice sector (see Appendix A, p. 35 for a list of companies, products and contact information developed by Forward Food).

Many large districts working with the Urban School Food Alliance (the Alliance),ⁱ and School Food Focus,ⁱⁱ have pooled their purchasing power to secure better pricing or higher quality products (e.g., chicken raised without routine antibiotics). Recently the Alliance worked to create a joint bid for an affordable and reimbursable plant-based protein product. Although this effort has not yet resulted in a joint bid, the strategy has shown success with other products. More plant-based products are likely to come on the market soon with exciting initiatives like [Forum for the Future’s Protein Challenge 2040](#). The Forum for the Future has recently issued a [request for proposal](#) for plant-based proteins designed for the National School Lunch Program.

Role of plant-based food companies: Many foodservice directors agree that plant-based food companies play an important role in providing more affordable options for school foodservice. However, school districts must publicize their demand so that manufacturers are encouraged to make more delicious and affordable pre-made products. Danny O’Malley, president of Before the Butcher, says, “It’s just a matter of time before the scale of plant-based protein production expands to make products more affordable ... then it can become a staple on K-12 school menus, instead of a specialty item.”

ⁱ The [Urban School Food Alliance](#) is a group of some of the largest school districts in the country, uniting to “share best practices and use its collective purchasing power to drive quality up and costs down while incorporating sound environmental practices.”

ⁱⁱ FoodCorps has brought the work of School Food Focus into its existing operations connecting kids to healthy food in schools. This move boosts FoodCorps’ ability to support schools across the country in procuring more local, nutritious foods for their cafeterias, providing kids with access to healthier school meals.

C. Strong leadership is a key ingredient

In all 18 school districts we examined, interviewees said strong leadership and vision are critical ingredients for achieving healthy, climate-friendly foodservice. Change is never immediate within large systems, especially given the many structural and policy challenges. While the leadership and vision of foodservice directors and staff is most important, our interviews revealed changemaker roles for stakeholders throughout the system — including students, parents, school board members, NGOs and industry leaders. All have the power to transform school food. We found that many stakeholders are inspired by the profound nutritional and environmental benefits of climate-friendly foods and are working to galvanize support from the school community, build trust and transform foodservice.

“We’ve found that change happens when there’s strong leadership and commitment. It’s an element you can’t overlook”

—Jenn Gerard, Center for Ecoliteracy

1. Foodservice directors guiding the way

Leadership from foodservice directors and a clear vision and plan is paramount. Given the day-to-day operational challenges, those who lack strong vision will generally not make the time to create a clear plan for increasing plant-based menu options. And without time and vision, the road to transformation is much more difficult given the overpowering, cheap, fast-food mindset — and the difficult policy environment.

All of our case study participants are innovators, hired for their vision to transform their district’s food program. They expressed a commitment to a strategic plan, they educated the school community and made bold management and procurement decisions to usher in more plant-forward products and recipes. When faced with resistant staff, they found a way to train them or hire people who would execute the plan. At Charlotte-Mecklenburg in North Carolina, manager of culinary development Jody Francisco combined leadership and vision to sway a reluctant staff accustomed to saying “no.” He says “much of the administrative staff was against plant-based [in the form of salad bars] ”because of their concern for the several obstacles like food cost, labor, and local health department regulations.” With the superintendent’s support, he convinced them to give it a try. They will pilot salad bars in the 2018-2019 school year. Some school food directors lead by encouraging state procurement agencies to emphasize plant-based



Kids make a difference by recycling. Source: San Francisco Unified

products. Others are working with peer groups, like the Menu of Change School Food Collaborative, to create better recipes and to advocate within industry to get better plant-based protein products into the school food market.

2. Students as changemakers

Students are key drivers of plant-forward shifts on menus. Interviewees say that students are asking for more vegetarian and vegan options, including by sending emails and asking for in-person meetings. When they ask, school food directors listen. At San Luis Coastal School District in California, Dane, a fifth-grader, helped shift toward plant-forward food by writing a letter, leading Erin Primer to offer blended burgers with mushrooms. In Los Angeles Unified, the 2018 vegan pilot program was inspired by student activism. Student demand prompted Lee County School District, in Florida, to implement a meatless day. Foodservice can foster student leadership by creating focus groups that help with taste tests, generate ideas for recipes and other activities. San Francisco and Riverside districts in California and Minneapolis, Minnesota, among others, have employed this method. Districts have also sent out student surveys, though they found in-person polling and focus groups to be more effective.

“Texas is traditionally a beef state. We’re getting more requests for plant-based foods from our students. We’re looking to provide menu options to please every pallet”

—Julie Farris, Dallas Public Schools, Texas



Schools for Climate Action holds a training summit in Sebastopol, CA with teachers, students and community members. Source: Kari Hamerschlag

3. Parents as advocates

As primary influencers of diet-related choices among kids, many parents are requesting more plant-based options in schools. Often these parents sit on schools' wellness, food or environmental committees or participate actively as school volunteers. In Boulder, Colorado and St. Louis Public Schools in Missouri, parent groups were strong advocates for plant-based foods. In schools without visionary leadership, the role of parents is even more important.

4. School boards and superintendents set standards

School boards and school district administrations play a key role in creating staff leadership and policies that help transform school food. They can hire innovative and visionary foodservice directors. They can also create and support strong institutional policies, such as wellness policies emphasizing plant-based foods or adopting the [Good Food Purchasing Program](#) that requires healthier foods and more plant-based options. Most foodservice directors we interviewed suggested that these healthy "real" food priorities be made an "essential" part of their job descriptions. Nancy Weiss and Ann Cooper were hired specifically to implement their real food visions. In St. Louis, Missouri, the school board encouraged more scratch cooking and fresh food in the cafeteria and replaced their old foodservice company with one that would execute their vision.

5. Industry leadership

Foodservice companies operating cafeterias and plant-based food manufacturers are also instrumental in ensuring that kids have full access to plant-based foods. Southwest Foodservice Excellence, which operates the St. Louis Public School district food

program in Missouri, is a strong advocate for adding more plant-based items to the menu. It also offers plant-based nutrition education to students and conducts staff trainings to convert heat and serve staff to scratch cooking methods. Hungry Planet™, a manufacturer of non-GMO soy-based protein foods, also leads by offering deeply discounted products to schools that meet certain criteria. Hungry Planet™ has committed 30 percent of its business operations to supplying K-12 requests.

6. NGOs as advocates and helpers

Our case studies and interviews have consistently revealed the importance of encouragement and support from outside organizations. In addition to Friends of the Earth, the following organizations provide leadership and technical support to help school districts transition toward more plant-based menus: [Forward Food](#), [The Chef Ann Foundation](#), [Center for Ecoliteracy](#), [Good Food Purchasing Program](#), [The Physicians Committee for Responsible Medicine](#), [Meatless Mondays](#), [One Meal a Day \(OMD\) for the Planet](#), [Wellness in the Schools](#), [Lean and Green Kids](#), [Coalition for Healthy School Food](#) and [Conscious Kitchen](#). (See Appendix B, p.36 for contact information). The growth of healthy, climate-friendly food is a natural evolution of highly successful school food movements including the [National Farm to School Network](#), [Green Schools](#) and Clean Labels in Schools that have been pioneered by NGOs.

Food is a powerful lever for fighting climate change. If every public school swapped out a beef burger for a protein-rich veggie burger just once a month, we would save 1.4 billion pounds of CO₂-eq —the equivalent of not burning 72 million gallons of gas or 700 million pounds of coal. And that is just one recipe swap 10 times a year!

Kari Hamerschlag, Deputy Director,
Food and Agriculture, Friends of the Earth

Section IV. Policy Actions for Scaling Up Healthy, Climate-friendly School Food

Policy is a vital driver of systemic change that cannot be overlooked. Despite the growth of climate-friendly school food, there are significant policy and structural barriers that inhibit schools from offering a wider array of healthy, plant-forward foods on a daily basis. In many cases, misguided incentives and taxpayer dollars promote unhealthy and unsustainable food, particularly highly processed foods and industrial meat and dairy. Building on farm to school policy and the landmark 2010 Healthy, Hunger-Free Kids Act (which required fruits, vegetables and whole grains to be served with every meal), below we identify policy actions at the district, state and federal levels that will help ensure greater access to healthy, climate-friendly food. Many of these are based on input from foodservice directors, state officials, non-profit organizations and educators.

We hope these recommendations will inspire collective discussion and action by students, parents, NGO advocates, foodservice directors, staff, teachers, school boards and policy makers. These stakeholders all have a role to play in promoting policy solutions that can help flip institutional incentives from an emphasis on highly processed, industrial animal products to healthy, fresh, climate-friendly, plant-forward meals.

“I think what is missing is the advocacy work, and the need to shift to plant-based proteins using legislation.”

—Stephen O’Brien, New York City Office of SchoolFood

A. School District-level Policy

School boards can lead the shift to healthy, climate-friendly foodservice.

- **Require a healthy, plant-based food option at every meal.**
- **Adopt the Good Food Purchasing Policy** to promote a systemic shift toward healthy, local, humane, equitable and climate-friendly foods.
- **Adopt Meatless Mondays or Lean and Green days** that feature plant-based food as the primary entrée.
- **Elect to make your district an Offer Versus Serve site**, in order to make milk optional.
- **Reduce and eventually remove processed meats** (e.g. chicken nuggets, hot dogs, bacon, pepperoni, lunch meat) from school menus and disallow purchasing contracts with fast food companies for these unhealthy foods.
- **Ensure that nutrition services job descriptions require directors to serve climate-friendly food.**
- **Adopt a climate action resolution** that commits a school district to pursue climate-friendly foodservice and **set a district-wide goal** for reducing the carbon footprint of school food.
- **Incorporate healthy, climate-friendly food goals into the school wellness policy.**
- **Pass local bond measures** that increase funding for kitchen facilities (Oakland, California [Measure J](#)).

B. State policy

By investing in nutrition education and wellness policies and encouraging schools to purchase locally sourced, climate-friendly foods, states can promote solutions that are a win win for local farmers, public health and the climate.

- **Enact healthy, climate-friendly food legislation and/or resolutions** (e.g. [California](#), [New York](#) and [Hawaii](#)) requiring or encouraging schools to serve daily vegetarian and/or plant-based and nondairy beverages to students.
- **Enact farm to school purchasing legislation and policies** that provide financial incentives for purchasing more locally sourced plant-based products.ⁱ
- **Reform state procurement bids to include more plant-based whole foods items** (e.g., beans, lentils, edamame) and non-GMO meat replacement products. This would greatly improve access and affordability.

ⁱ In Oregon, the 2017 House Bill 2038 provided \$4.5 million over 2 years for the statewide Farm to School and School Garden grant program. In New York, the recently adopted No Student Goes Hungry legislation increased the reimbursement for school lunches from 5.9 cents to 25 cents per meal for any district that purchases at least 30 percent of its ingredients from New York farms.

- **Provide web-based educational resources** (e.g. recipes, on-line trainings, sample policies) modeled on the CA Department of Education’s [Vegetarian Meal Options in Child Nutrition Programs](#) website.
- **Allocate funds and develop new resources for plant-based nutrition, wellness and environmental curriculum**, including the creation of School Wellness Policy Toolkits with information on climate-friendly options.
- **Increase funding for school food kitchen improvements** (including equipment and built infrastructure).

C. National Policy

1. The USDA’s National School Lunch Program can make important changes to Child Nutrition Programs without going through Congress:

- **Rename the Meat/Meat Alternate Category “Protein Category”** and make the nutritional content description more accurate by including plant-based proteins in the description.
- **Update the nutritional requirements for protein equivalence of plant based proteins** so they better represent nutrition science. Currently, larger quantities of plant-proteins are required in recipes than is necessary given their actual protein content.
- **Add new plant-based proteins (e.g. quinoa, tempeh and seitan) to the NSLP USDA Foods Product Information Sheets for Meat/Meat Alternates** and allow for crediting a protein food regardless of how it is presented (e.g. a mashed bean burger) by eliminating the regulation that states “if the dish does not contain at least 1/8 cup of a recognizable component then the blended foods do not contribute to the meal requirements.”⁶⁵
- **Reform USDA foods**⁶⁷ by:
 - » Spending a larger portion of its budget on plant-based foods (e.g. fresh, frozen, dried, and canned produce, whole-grain pastas, legumes and meat alternatives (e.g. veggie burgers; bean burritos); and
 - » Adding diverse products like tofu, seitan, and soy yogurt to its food offerings
- **Make all schools Offer Versus Serve for milk as a default;** remove the non-dairy milk note requirement and make non-dairy milks fully reimbursable.
- **Update the USDA’s technical resource for wellness policies** by:
 - » **Ensuring that the Core Nutrition Message better reflect the 2015-2020 Dietary Guidelines for Americans** that students —teenage boys, in particular— consume less meat and that plant-based proteins are key ingredients to a healthy diet.
 - » **Amending the USDA Wellness Policy Toolkit** to include information on climate-friendly options.
 - » **Providing professional development and technical resources** similar to those provided by the CA Department of Education on its web page: [“Vegetarian Meal Options in Child Nutrition Programs”](#)
- **Reform child nutrition (CN) labeling requirements** to make it easier for plant-based food manufacturers to meet the required CN standardized nutrition product labels.

2. Congress should amend the National School Lunch Act to:

- » Allow for higher reimbursements for all meals; and especially for meals with fresh fruits and vegetables;
- » Make dairy an optional rather than mandatory meal component;
- » Increase grant funding to farm to school programs and kitchen improvements (including equipment and built infrastructure) and simplify the grant reporting processes; and
- » Allow school food professionals to use one percent of the nonprofit school foodservice account funds for school or district nutrition education projects.

Conclusion: Healthy, Climate-friendly Food is a Team Effort

From students and parents to nutrition services staff, non profits and plant-based food companies, a diverse and dedicated movement is steadily making school foods across the country healthier and more climate-friendly. The range of commitments and pilot projects is inspiring and infectious. It demonstrates that any school community can work within its means to create healthy, positive change, despite the numerous constraints and fast food headwinds working against them. Even small steps to replace one or two recipes can generate important climate benefits while offering healthier food that can begin to make cultural shifts and inspire healthier eating habits among students. We spotlight climate-friendly food because it is underappreciated as a highly cost-effective strategy, with

potential for significant benefits. Climate-friendly food is just one component of a larger vision for healthy and sustainable school food that includes organic, sustainably produced, and non GMO ingredients; nourishing meals, cooked from scratch with care; and proud employees earning a living wage. This is the vision we must work toward. In our interviews with bold food reformers around the country, we found changemakers taking creative and courageous steps to overcome the entrenched, unhealthy fast-food culture and heavily subsidized, industrial meat and dairy food industries. Instead, these visionaries are creating nutritious, delicious, school meals that are a key part of the recipe for repairing our climate and public health crises.



Source: San Francisco Unified School District

Appendix A. Recipes, Grants and Resources for Climate-friendly School Foodservice

1. Recipes

- a. [Plant-based and plant-forward recipes featured in this report and beyond](#)
- b. Chef Ann Foundation [Lunch Box compliant recipes](#), [More Plants Please](#)
- c. Forward Foods [compliant recipes](#)
- d. Meatless Monday [compliant k-12 recipes](#)
- e. Coalition for Healthy School Foods [compliant recipes](#)
- f. [USDA what's cooking?](#) Recipes (for home and school)

2. Plant based products available for K-12

- a. [Forward Food list](#)

3. Staff training

- a. Plant-forward Culinary Training from [Forward Food](#) (over 65 districts have participated)
- b. Center for Ecoliteracy, [Making the Case - why scratch, why farm-to-school?](#)
- c. Chef Ann Foundation, [School Food Institute](#) - comprehensive staff training guide
- d. Staff education materials from state departments of education
 - i. Check with state department of education - and inquire about resources. The California Department of Education has helpful advice and resources for climate-friendly foods on their these resources maybe helpful [website](#).
 - ii. [California Department of Food and Ag. Specialty Crop Block Grant](#)
- e. USDA [Dietetic Internship Program](#)
- f. [Golden Gate Dietetic Interns](#) (Novato Unified School District)
- g. USDA [Community Food Systems Grants](#) (farm-to-school, staff training) (SBUSD, OUSD)

4. Salad bars

- a. [Salad Bars 2 Schools Program](#)
- b. [No Kid Hungry Grants](#) (North Carolina specifically)

5. Nutrition education

- a. [Project Produce](#)
- b. Tisch Center for Food, Education and Policy, [Curricula, Games & Activities, Evaluation Tools](#)
- c. Center for Ecoliteracy, [Making the Case for Fresh, Local Meals, Understanding Food and Climate Change](#)

6. Kitchen improvements

- a. [National Equipment Assistance Grants](#)
- b. Model **Bond Measures**:
 - i. Oakland Unified School District's central kitchen, urban farm garden and food system facility innovations throughout the district were funded by [Measure J](#), a bond measure approved by nearly 84% of Oakland voters in November 2012. Check out Oakland's visionary plan [Rethinking School Food \(Central Kitchen and Farm Garden\)](#)
 - ii. St. Louis Public Schools - [BOND measure 2010-2011](#) (45 schools) to improve old equipment - got warmers, new equipment, and different refrigeration units.

7. General grants and resources

- a. [Whole Kids Foundation](#)
- b. [Lifetime Foundation](#)
- c. [Austin Independent Schools Grant Database](#)
- d. [USDA Tips for Vegetarians](#)
- e. [Vegetarian Resource Group Resources for School Food](#)



Source: Boulder Valley School District

Appendix B. Organizations in Support of Healthy, Climate-Friendly Foodservice:

The organizations below are all dedicated to supporting schools districts to transition to healthier, climate-friendly foodservice.

Organization	Representative — Contact	Organization Description + Support Services
Center for Ecoliteracy	Jenn Lovewell jennifer@ecoliteracy.org	California Food for California Kids® supports district-level operational excellence, and leverages the magnitude of public school meals to effect positive changes in the food system through the purchasing power of school districts. The initiative provides an array of programs, resources, and inspiration for school food service professionals, educators, and school communities. It operates at multiple levels of scale, including a statewide network, regional clusters of school districts and their partners, and with programs operating within individual school districts. https://www.ecoliteracy.org/
Center for Good Food Purchasing	Colleen McKinney cmckinney@goodfoodpurchasing.org	The Center for Good Food Purchasing's Good Food Purchasing Program provides a metric-based, flexible framework that encourages large institutions to direct their buying power toward five core values: (1) local economies, (2) environmental sustainability, (3) valued workforce, (4) animal welfare, and (5) nutrition. Through the Program, the Center works with institutions to establish supply chain transparency from farm to fork, evaluate how current purchasing practices align with the Good Food Purchasing Standards, set goals, measure progress, and celebrate successes in using institutional purchasing power to improve the food system. www.goodfoodpurchasing.org
Chef Ann Foundation	Emily Gallivan emilyg@chefannfoundation.org	Chef Ann Foundation's mission is to provide school communities with the tools, training, resources, and funding that enables them to create healthier food and redefine lunchroom environments. The foundation's programs include online learning for school food service professionals, salad bar equipment grants and USDA-compliant recipes to help districts transition to scratch cooking. http://www.chefannfoundation.org/ , http://www.thelunchbox.org/ https://www.schoolfoodinstitute.org/ , http://www.saladbars2schools.org
Food Corps/ School Food Focus	Alexa Arnold alexa.arnold@foodcorps.org	FoodCorps believes every school should be a healthy school, and every child—regardless of race, place, or class—deserves to get the nourishment they need to focus, learn, and thrive. In underserved communities across 18 states, our trained AmeriCorps members deliver the FoodCorps program in schools, working with staff, students, and community members to implement three evidence-based strategies that get kids eating healthy: hands-on learning, healthy school meals, and schoolwide culture of health. Building on this foundation of direct impact and evaluation, FoodCorps pursues integrated strategies—leadership development, market change, and policy influence—to drive systemic change, with the goal of making healthy schools, and healthy kids, the norm nationwide.
Conscious Kitchen	Debbie Friedman debbie@consciouskitchen.org	Conscious Kitchen (CK) addresses food equity, education, and access by shifting the paradigm around school food service, while cultivating a local, ecological food system, and building nutrition literacy into school meals. Through a collaborative, replicable approach, CK partners with schools to break the cycle of packaged, overly processed food, transitioning to chef-prepared, scratch-cooked meals created in on-site school zero-waste kitchens, based on five foundational attributes: fresh, local, organic, seasonal and non-GMO. Once built, schools own and operate their Conscious Kitchens. CK provides technical support to build capacity within schools, including feasibility studies for kitchen remodels, supply chain and procurement support, chef recruitment, hiring & training, menus, recipes, and multi-level stakeholder organizing. https://www.consciouskitchen.org/

Organization	Representative — Contact	Organization Description + Support Services
Friends of the Earth, Food and Agriculture Program	Kari Hamerschlag Khamerschlag@foe.org	Friends of the Earth works to rapidly transition our food system to one that is sustainable, healthy, and just. Our Healthy and Climate-Friendly School Food Initiative is part of our Climate-Friendly Purchasing Campaign that leverages public and higher education food policies and purchasing dollars to drive market shifts and consumption toward fewer (and better) animal products and healthier, plant-forward, sustainable food. We research best practices and provide school districts with educational materials and presentations, carbon footprinting tools, helpful resources, and information on implementing climate friendly foodservice. We host regional forums on climate-friendly school food in order to share best practices and foster collaborations that can help facilitate transitions to healthy, culturally appropriate and environmentally sustainable foodservice. Finally we work with partners and our more than 1.5 million supporters to promote policy change at the district, state and federal levels. https://foe.org/projects/school-food-purchasing/
Humane Society of the United States	Rebecca Portman rportman@humanesociety.org	Forward Food, a program of The Humane Society of the United States, works with institutions interested in decreasing purchases and sales of animal-based products while increasing plant-based options on the menus. Forward Food provides institutions with recipe and concept development, hands-on culinary training, educational presentations, marketing materials and the opportunity to track reduction in GHG emissions via purchases. https://forwardfood.org/
Lean and Green Kids	Barbara Cole Gates barbara@leanandgreenkids.org	Lean and Green Kids' mission is to teach kids about the life changing, planet-saving power of eating plants - especially beans, the lean and green protein! To support school food service in serving more bean-based school lunch entrees, LGK has curated a "Cool Bean of the Month" school lunch standardized recipe collection (free from LGK website) that can be promoted in classroom with LGK's easy and free classroom nutrition education program, <i>the Daily Scoop</i> (also available at LGK website). The Daily Scoop (DS) is a series of "byte-sized" and kid-friendly nutrition tips added to a teacher's opening routine, one for every school day - elevating plant-strong nutrition education to a daily practice. Each monthly issue of the DS features a "Cool Bean of the Month", connected to a timely social studies connection (May/Pinto Beans & Cinco de Mayo). LGK also has beautiful Cool Bean cafeteria posters, as well as a standards based classroom nutrition curriculum (K-3), "Eating Lean and Green with Super Foods to Save the Planet!" www.leanandgreenkids.org
One Meal a Day for the Planet	Ashley Schaeffer Yildiz ashley@omdfortheplanet.com	OMD is about making plant-based eating mainstream as a solution to climate change through resourcing individuals to migrate to climate-friendly, plant-based diets. OMD is also about system change — expanding access and offering support to schools, businesses, restaurants and communities to move towards healthy plant-based options. https://omdfortheplanet.com/
Physicians Committee for Responsible Medicine	Maggie Neola, RD mneola@pcrm.org	The Physicians Committee for Responsible Medicine is dedicated to saving and improving human and animal lives through plant-based diets and ethical and effective scientific research. The Physician Committee educates medical professionals, government officials, foodservice professionals, and laypeople about the benefits of a plant-based diet. For resources specific to helping schools implement plant-based options, visit www.HealthySchoolLunches.org .
Schools for Climate Action	Park Guthrie empower@schoolsforclimateaction.org	Schools for Climate Action is a non-partisan, grassroots, youth-adult campaign to empower schools to speak up for climate action to protect current and future students. We help school stakeholders encourage their school boards, student councils, PTAs, and educators' unions to pass climate action resolutions which do 3 things: (1) Drive a paradigm shift so individuals and institutions recognize climate change as generational justice and human rights issue, (2) Articulate the political will for commonsense local, state, and federal climate policies, such as carbon pricing, and (3) celebrate and expand intra-district responses to climate change such as curriculum, food service, buildings and grounds, and solar initiatives. www.schoolsforclimateaction.org

Appendix C. School Districts Interviewed for Scaling Up Climate-Friendly Foodservice Report

All of the representatives below agreed to have their contact information shared. Our intention is for foodservice directors and school food stakeholders to reach out to inquire about strategies implemented in these districts described in the report.

School District	Representative	Contact Info	Date Interviewed
Austin Independent Schools	Ryan Cengel - Dietitian, Nutrition Services	ryan.cengel@austinisd.org	April 20, 2018
Boulder Valley School District	Ann Cooper - Director, Food and Nutrition Services	ann.cooper@bvsd.org	April 9, 2018
Charlotte-Mecklenburg Schools	Jody Francisco - Manager of Culinary Development	jodyw.francisco@cms.k12.nc.us	May 4, 2018
Clark County Department of Public Health	Martin, Melissa - Chronic Disease Prevention Program Manager	Melissa.Martin@clark.wa.gov	April 30, 2018
Dallas Public School District	Julie Ferris - Support Services, Food and Nutrition Services	jufarris@dallasisd.org	June 23, 2018
Kansas City Public Schools	Jordan Gordon, Director, Food and Nutrition Services	jgordon1@kcpublicschools.org	April 25, 2018
Minneapolis Public Schools	Bertrand Weber - Foodservice Director	Bertrand.Weber@mpls.k12.mn.us	April 18, 2018
New York City Public Schools	Stephen O'Brien - NYC, Office of School Food	SOBrien@schools.nyc.gov	April 25, 2018
Novato Unified School District	Miguel Villarreal - Director, Food and Nutrition Services	Mvillarreal@nUSD.org	April 28, 2018
Oakland Unified School District	Mark Chavez - Director, Food and Nutrition Services	mark.chavez@ousd.org	Not interviewed (newly hired started 9/4/2018)
Omaha Public Schools	Tamara Yarmon - Director, Nutrition Services	tamara.yarmon@ops.org	May 14, 2018
Riverside Unified School District	Kirsten Roloson - Assistant Director Nutrition Services	kroloson@rusd.k12.ca.us	June 18, 2018
San Diego Unified School District	Melanie Moyer - Menu Systems Development Dietitian	mmoyer@sandi.net	June 4, 2018
San Diego Unified School District	Tara McNamara - Marketing Coordinator	tmcnamara@sandi.net	June 5, 2018
San Francisco Unified School District	Jennifer LeBarre - Executive Director, Food and Nutrition Services Alexandra Emmott - Culinary Manager	lebarrej@sfusd.edu emmotta@sfusd.edu	April 17, 2018 (Former FNS director at Oakland Unified)
San Francisco Unified School District	Lauren Heumann - Procurement Specialist	laurenheumann@gmail.com	April 4, 2018

School District	Representative	Contact Info	Date Interviewed
San Luis Coastal School District	Erin Primer - Director, Food and Nutrition Services	eprimer@slcusd.org	April 24, 2018
Santa Barbara Unified School District	Nancy Weiss - Director, Food and Nutrition Services	nweiss@sbunified.org	April 6, 2018
School District of Lee County	Amy Carroll - Supervisor Food Procurement, RD.	AmyNC@LeeSchools.net	April 19, 2018
St. Louis Public Schools	Althea Albert-Santiago - Director, Food and Nutrition Services	Althea.Albert-Santiago@slps.org	May 21, 2018
St. Louis Public Schools	Krystal Simmons - Southwest Foodservice Excellence	krystal.simmons@sfellc.org	May 21, 2018
Ukiah Unified School District	Jim Stuart - Director, Food and Nutrition Services	jstuart@uusd.net	May 24, 2018



Source: San Francisco Unified School District

Appendix D. Carbon Footprint Methodology

In order to calculate the carbon footprint of recipes served by the four case-study school districts, we analyzed one meat-centric recipe and one plant-based recipe that either replaced the meat recipe or is offered as an option along side the meat option. We equalized all recipes to 100 servings. We excluded certain ingredients that have negligible impact on the carbon footprint (e.g. salt, spices, etc) then converted all the units in the recipes to pounds. For certain products that were listed by volume, we used an online volume to weight converter specific for each food product (Aqua-Calc).⁶⁸ Using the carbon footprint conversion factors cited below and listed in Appendix E, p. 42, we then calculated the carbon footprint per 100 servings. We also obtained information from the school district regarding the approximate number of servings per year for each recipe analyzed. We then calculated the carbon footprint associated with a given recipe based on the ingredients by the number of servings each year and then calculated the carbon savings from either replacing or supplementing a meat-centric recipe with a plant-based recipe for the number of years the district has been making the shift.

Carbon Emissions Data (for case-study recipe swap climate impact calculations)

In order to calculate the climate benefits from these recipe swaps, we primarily used carbon emissions data based on the supporting information from a 2018 peer reviewed report authored by Heller et al published by the Environmental Research Letters.⁶⁹ This data is derived from a large meta-analysis which generated global averages of life cycle assessments (LCA) of the carbon dioxide equivalence emitted per kilogram of various food products from the cradle to the farm gate or processor gate, documented in kg product CO₂-eq/kg edible product. This dataset has been adjusted for the inedible portions (e.g. apple cores, orange rinds). For the food products not covered in the Heller et al. 2018 data set, we used the following supplemental data:

- **Butter:** Clune et al. 2017⁷⁰ (also based on a meta-review),
- **Soy protein concentrate:** A. van Veghel, R. Broekema, A.J. van der Goot (2017)⁷¹ and Durlinger, B. et al. (2017a)(2017b).^{72,73} Our soy protein concentrate carbon emission factor is based on an average of the data generated by agri-footprint and data from a separate study, conducted as a collaboration between Blonk Consultants the Wageningen University and Research Center. We decided to use both of these studies in order to achieve a more accurate greenhouse gas emission factor that takes into account land use change associated with soy production in the United States.

- **Pea protein concentrate:** Durlinger, B. et al. (2017a) (2017b).^{74,75} From the agri-footprint, based on European LCAs.
- **Wheat pasta and wheat bread:** Carlsson-Kanyama et al. 2009.⁷⁶ This study was based in Sweden and assesses the kg CO₂-eq per kg edible wheat product.

See list of emission factors of select foods in Appendix E, p. 42.

Data Limitations:

It is important to note that these data sets are approximations, based on averages and do not account for significant variations and differences in agricultural production practices or micro-climates. However, we are in communication with many of the leading individuals, universities and organizations developing food-related life-cycle assessments and based on their guidance, are confident that this data represents the most appropriate peer reviewed data available. Given the nature of these data sets, the results should be understood as approximations, which portray the general trends of embedded carbon emissions. This report highlights the food-related CO₂ emissions because these impacts are often unaccounted for in greenhouse gas inventories and are therefore ignored in efforts to mitigate climate change. However, carbon footprint is only one of many environmental impacts from food production, and it should not be the sole criteria by which to choose food.

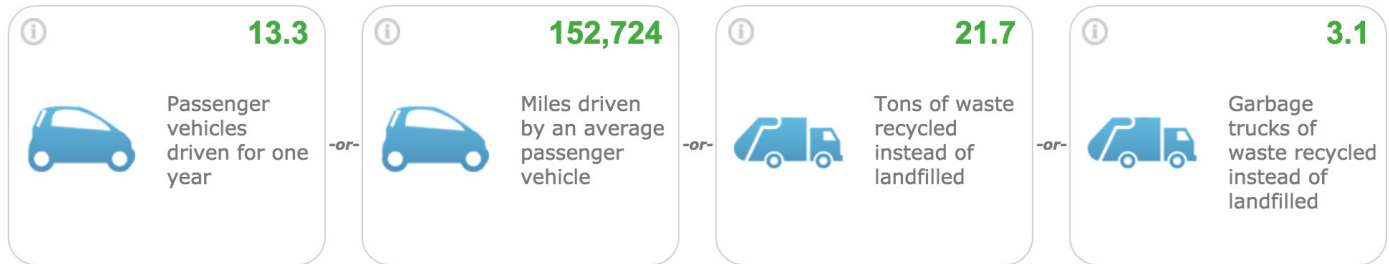


Source: Santa Barbara Unified School District

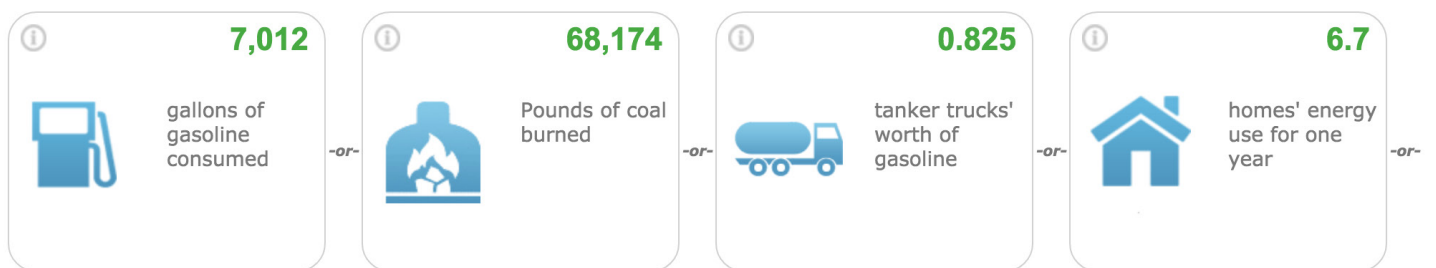
Carbon Conversion EPA Tool:

For each recipe swap, we used the U.S. Environmental Protection Agency's Greenhouse Gas Equivalency Calculator⁷⁷ in order to convert carbon savings into more tangible benefits: such as reduced car-miles driven, reduced gallons of gasoline burned and increased trees planted to sequester carbon.

Greenhouse gas emissions from



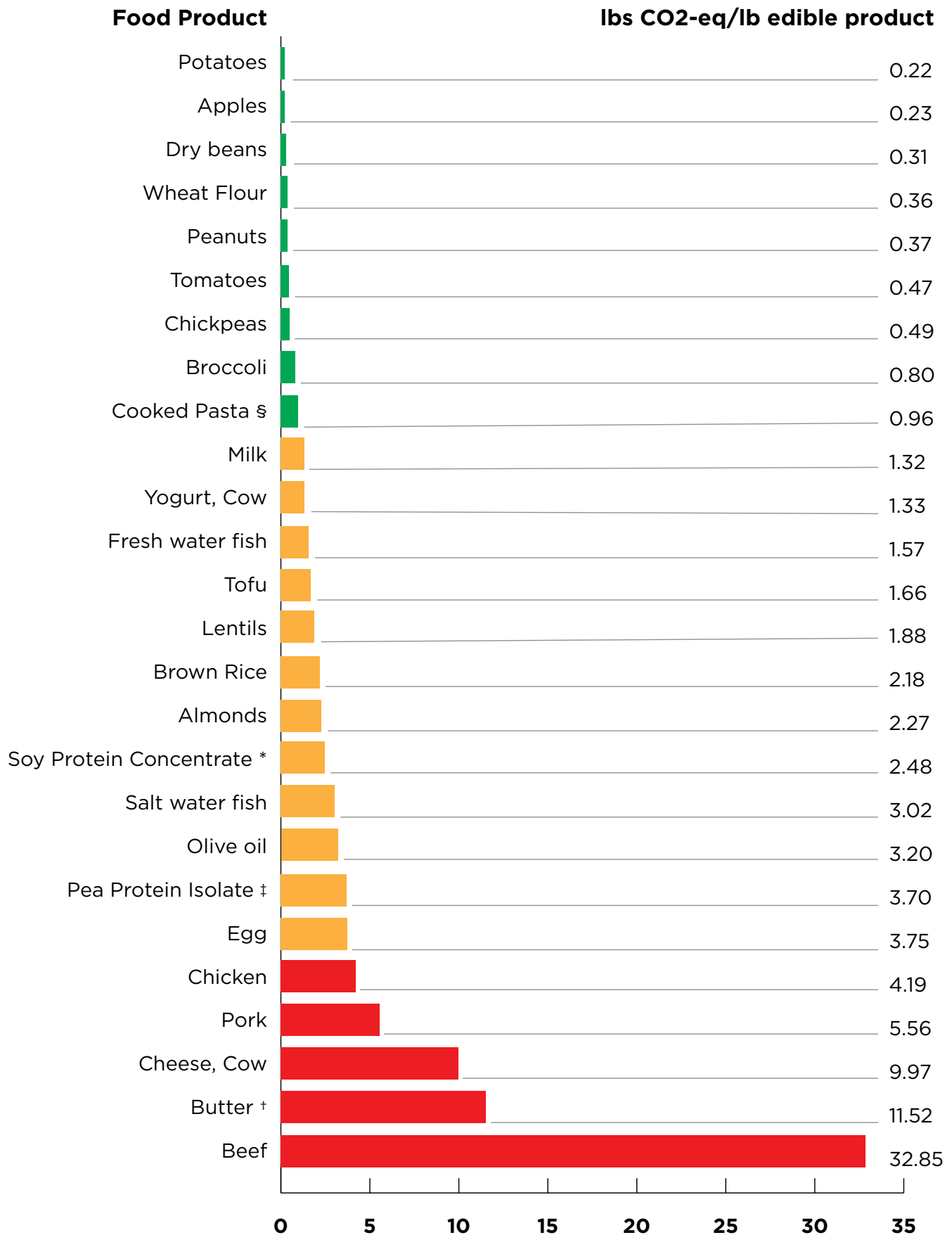
CO₂ emissions from



Source: United States Environmental Protection Agency



Appendix E. Greenhouse Gas Emissions of Select Foods



Source Heller et al. 2018, except: † Clune, et al. 2017, ‡ Durlinger, B. et al. (2017a) (2017b). * A. van Veghel, et al. (2017), and Durlinger, B. et al. (2017a) (2017b), § Carlsson-Kanyama, González 2009

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