

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

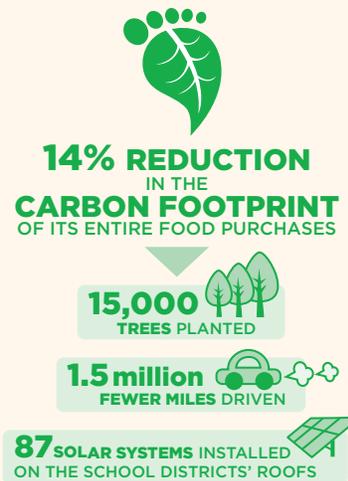
have the highest emissions per gram of protein; beef alone accounts for 36 percent of all U.S. diet-related emissions and pound for pound, is 25 to 34 times more carbon-intensive than beans and lentils (see Appendix E, p. 42 for chart comparing the GHG emissions of common foods).³⁶ Per 4 ounce serving, 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.