Denver’s Food Action Plan Program
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Abstract

Each year, it is estimated that 40% of the U.S. food supply goes uneaten. Due to the resources and energy required to grow and discard food, many are concerned by this amount of waste. Food waste is the single largest contributor to landfills and presents an environmental risk by influencing the amount of methane emitted in the form of landfill gas (LFG). In addition to environmental concerns, many are troubled by the number of Americans that suffer from food

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insecurity while much of the food sent to landfills is still edible.\textsuperscript{5} Together, the environmental realities of food waste and food insecurity create a complex social challenge for communities all across the U.S.\textsuperscript{6} Similarly, policy makers face challenges determining an appropriate allocation of resources to address this issue. Some criticize the differing opinions and definitions regarding food waste among federal agencies as a culprit to overestimating the scope of a food waste crisis, thereby potentially misdirecting government resources to areas of little impact.\textsuperscript{7} The city and county of Denver, Colorado is approaching this issue by focusing efforts to reduce food waste and the retail and consumer levels in order to help establish a healthy and sustainable food network.\textsuperscript{8} The Denver Food Matters and Food in Communities programs organize efforts from community residents, local businesses, and nonprofits to reduce food waste collection and the number of food insecurity households.\textsuperscript{9}

**Problem**

Over the last few years, as climate change has become a greater concern, many communities across the U.S. have searched for creative ways to reduce climate pollution.\textsuperscript{10} As a result, some attention has been turned to the disproportionate impact of methane generated in landfills.\textsuperscript{11} According to the EPA, food waste is the single greatest contributor to landfills, and landfills are the 3rd largest producer of methane gas (a component of LFG).\textsuperscript{12,13} Landfill gas is a natural byproduct of anaerobically decomposed organic waste and constitutes methane and carbon

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dioxide. Although carbon dioxide is branded as the culprit of anthropogenic climate change, methane is thought to be a more potent climate pollutant\(^\text{14}\), despite only having a 10% share of all U.S. greenhouse gas emissions.\(^\text{15}\) According to the EPA, methane has a warming capability 28 to 36 times greater than carbon dioxide.\(^\text{17}\) The EPA and the Environmental and Energy Study Institute recognize that 17.7% of methane emissions come from U.S. landfills.\(^\text{18}\) The EPA has created regulations that require the capture of landfill gas for burning or the use of natural gas to generate electricity.\(^\text{19}\) In other states, such as California and Vermont, food waste bans are implemented and recycling is mandatory for nearly all businesses and residents in the state.\(^\text{20}\)

Although the success of these laws is encouraging to some, the challenge of educating the public on organic recycling, fulfilling the land requirements necessary for composting, and assuring potential investors in recycling infrastructure that a supply of organic waste is available are all daunting realities against success.\(^\text{21}\) Certainly, the challenge is to find effective methods that address a community’s waste needs that also prevents harmful climate pollution.

In addition to these environmental concerns, many are troubled by the amount of the U.S. food supply that goes uneaten - approximately 40% annually.\(^\text{22}\) In 2015, that estimate was equal to 36.7 million tons of food waste.\(^\text{23}\) This costs U.S. farmers approximately $218 billion to grow food that is never eaten, and grocery stores lose nearly $15 billion annually in unsold produce.\(^\text{24}\) Behind these numbers, however, are the 42 million Americans that suffer from food insecurity,

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\(^\text{16}\) “U.S. Emissions.” Center for Climate and Energy Solutions, 1 May 2019, https://www.c2es.org/content/u-s-emissions/.


often going without meals.\textsuperscript{25} In Denver County, that number is 80,800 people (roughly 11.9\% of the county population) who struggle to put food on the table.\textsuperscript{26} To be more specific, 1 in 11 Coloradans, and 1 in 8 Colorado children, don’t always have enough money to buy food or may not always know where their next meal will come from.\textsuperscript{27} Fortunately, much of our food waste is still edible when it’s thrown away.\textsuperscript{28} In fact, the Colorado Public Interest Research Group reports 68\% of household food scraps could be eaten when thrown away.\textsuperscript{29} For this reason, groups like Move for Hunger find food rescue efforts worthwhile, estimating that 25 million Americans would be fed if 15\% of our country’s food waste could be rescued before being sent to landfills.\textsuperscript{30}

The most significant challenge to this issue, however, may not come from the food itself. Although the reality of the challenges related to food waste are real, the exact scope of the issue is not certain to policy makers. According to a report published in the \textit{American Journal of Agricultural Economics}, the EPA and DOA are failing policy makers by creating ambiguous

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definitions of food waste - directing problem solvers to possibly incorrect assumptions about the issues sources.\textsuperscript{31} As described by the EPA, food waste is the amount of food going to landfills from residences, commercial establishments and similar places. Pre-consumer food waste, however, is not considered in the EPA’s estimates.\textsuperscript{32} On the other hand, the DOA considers all food available for human consumption, but not consumed, as food waste.\textsuperscript{33} This definition views food only in its human-centered uses, neglecting to recognize the potential non-food uses of recovered waste. Certainly, it can be difficult for legislators or policy makers to find a solution to the issue of food waste with inconsistent view or definition of the origin of the food waste issue.\textsuperscript{34} As a result, creating a more simple and universal definition may be an important step toward addressing food waste more completely.

Overestimating the issue of food waste can create larger issues regarding resource allocation,\textsuperscript{35} therefore, the authors of the report also argue that in order to better define and more completely address the issue, it is important to understand the impact areas that generate waste within our food systems.\textsuperscript{36} Food waste has different stages that span a food items life-cycle through production to consumption.\textsuperscript{37} The stages are: growers, processors, retailers, and consumers.\textsuperscript{38} Because food loss can and likely does occur at each of these stages, each step can also act as policy levers or intervention points to prevent food loss from being placed in a landfill and truly becoming waste.\textsuperscript{39}

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It is apparent that food waste presents communities with challenges that impact social and environmental strength.\(^{40}\) In fact, a lot of money in the U.S. is spent on food that will never be eaten.\(^{41}\) In addition to the social, environmental, and legislative challenges that communities must address regarding food waste, it is important the enacted policy does not create additional costs preventing another costly behavior - which is itself wasteful.\(^{42}\) Cities like Denver, Colorado are addressing this issue by focusing on the stages of food systems that may contribute the most waste - retailers and consumers.\(^{43}\)

**States Experiment**

In states across the country, municipal and county governments are taking action to address the environmental and social issues related to food waste.\(^{44}\) Among those communities the city and county of Denver have created programs under the Food Action Plan that focus on consumer and business behavior to establish a sustainable food system.\(^{45,46}\) Denver is including businesses and consumers in the program because a combined 66% of U.S. food waste comes from restaurants and consumer households.\(^{47}\) More importantly, however, is that Denver recognizes the role businesses, restaurants, and consumers play in the community food system that will allow them to better address the challenges of food waste.\(^{48}\) The Food Action Plan is a program designed to set goals that help Denver progress towards their ultimate vision of reducing the number of food


insecure households by 55% and the amount of food waste collected by 57% by the year 2030.\textsuperscript{49}

To accomplish this, the overall plan is two fold and separates into pilot programs associated with Food Matters and Food in Communities projects.\textsuperscript{50}

As part of the “Food Matters” programs initiated by the Denver Department of Public Health and Environment (DPHE), the city began the Food Waste Pilot Program (FWPP) on May 1st of 2019.\textsuperscript{51} The city, in a partnership with the local chapter of the Natural Resources Defense Council (NRDC), started the program as part of a larger goal to reduce collected food waste.\textsuperscript{52} The pilot began in the Highland neighborhood of Denver and included several local restaurants registered under “Certifiably Green Denver”.\textsuperscript{53} The pilot lasted through June, and required participating restaurants to practice one food waste reduction method such as composting or donating pre-consumer food waste.\textsuperscript{54} In addition, each of the participating businesses had access to free consulting from food waste reduction leaders like Denver non-profit organizations Roots Down and Edibles Beats; as well as, free weekly food donation pick-ups by the Colorado-based non-profit We Don’t Waste.\textsuperscript{55,56} As a way of measurement, the city sent auditors to check the progress of the practices at each of the restaurants when the pilot began and ended.\textsuperscript{57} In essence, these audits would provide the city with necessary feedback from restaurants that could help gauge the sustainability of the program before considering city-wide implementation.\textsuperscript{58}

According to city officials, however, the feedback from participating restaurants strongly


supported the rollouts of smaller scale pilots across Denver, instead of a city-wide pilot. Many of the participating restaurants felt that the community would benefit more from the deeper engagement of a small, localized pilot than a broader approach that the city-wide plan offered. As a result, DDPHE is identifying restaurants in a different neighborhood to join a second round of the food waste pilot program, which is set to begin in October/November 2019.

Respectively, waste from restaurants make up 25% of landfill food waste while another 41% come from consumers. Subsequently, the NRDC suggested that the city, among other things, also increase the opportunity for households to have organic waste pickup. Currently, only 6% of households in Denver participate in organic waste collection. The collection of organic waste can better help communities compost and create healthy soil. This is especially beneficial as composting is considered one of the more environmentally friendly methods of decomposing food waste. As a result, Denver has joined the network of sustainable neighborhoods to educate residents, and to encourage lifestyle choices that reduce potential carbon pollution. Additionally, the city is considering efforts that expand organic waste collection to multi-home complexes.

As established by the goals outlined in the Food Action Plan, Denver has also created the Food in Communities project to increase the number of food access points in its neighborhoods.

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59 Interview with city officials from the Department of Public Health and Environment.
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is a fairly new project that started back in March. This is a 3 year project and will support Denver’s Food Action Plan, and similar plans in surrounding counties, to “expand equitable access to healthy, affordable, and culturally relevant food in neighborhoods across the region.” About the Food in Communities program, the Executive Director of the DDPHE said, “we’re prioritizing our residents and businesses as together we explore innovative ways and new opportunities to address...food insecurity...in our neighborhoods.” Over the next three years, Denver’s collaborative strategies will include; identifying assets and needs related to the food in individual communities, and collaborating with existing neighborhood groups to design and test food access or business pilot projects. The focus of these projects are underserved neighborhoods, who often suffer the most from food insecurity. In total, Denver hopes to help these underserved communities hit self-defined goals that focus on the health, diversity, and strength of all community food systems.

**Conclusion**

In the few months that the first two pilot programs have completed, the city of Denver has been encouraged by the results. As stated earlier, feedback from the participating restaurants was that a hands-on approach was what made the pilot successful - ultimately warning the DDPHE against creating a city program that was too broad. The city was also able to collect some preliminary data from the first pilot through waste audits at the beginning and end of the pilot. Although not perfect, the city estimated that the restaurants were diverting approximately 15-20% of their waste from landfills at the onset of the pilot. After adding composting with the program, the DDPHE estimates that approximately 70% of the food waste was being diverted on

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75 Interview with city officials from the Department of Public Health and Environment.
average. This is very encouraging to the cities goal of a 57% reduction in food waste being sent to landfills. As part of the project, the restaurants were asked to adopt an additional food waste reduction/prevention practice that was most convenient and helpful to their business. Although the city does not have specific data or a great way to measure the amount of food waste being prevented by the adoption of these strategies, the city reported that many of the restaurants were able to find creative ways to participate. For example, one restaurant made dog treats for patrons from leftover bacon, cheese, and oats, while another changed procurement practices and has been able to save $300-$400 a month. In addition, a majority of the participating restaurants continued composting after the pilot ended, allowing the city to believe that the pilots will help increase food waste diversion and increase prevention in the neighborhoods.

One potential advantage to programs associated with Denver’s Food Action Plan is that it engages a diverse network within the city’s food system: consumers, producers, processors, and retailers. Within the structure of the program, the city has established itself as a backbone that recognizes the importance of a collective community network already equipped to solve complex issues do just that. For example, in the most recent pilot program, the city was involved with larger restaurant chains within a particular neighborhood in Denver. These restaurants are what the city called “high volume,” and faced unique challenges as a result. The pilot program allows the city to have a one-on-one approach with the restaurants to learn more about the challenge of food waste practices in high-volume restaurants, as well as, help them apply food waste reduction practices that we most effective for the unique circumstances of the restaurant.

This program highlights the benefits of a federalist style approach by allowing businesses, non-profits, and residents to work together to accomplish the goal of reducing food waste and

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76 Interview with city officials from the Department of Public Health and Environment.  
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food insecurity at a local level.\textsuperscript{81} A similar ‘hands-on’ approach to the issues of food waste and food insecurity may allow communities to address them by connecting different actors. Considering the role or impact that producers, processors, retailers or consumers have in creating food waste will also help cities like Denver understand the role that they can have in reducing that waste. Denver’s Food Action Plan may be a step in the direction of accomplishing that.