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A Toolkit for Incorporating Food Waste in Municipal Climate Action Plans

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A Toolkit for Incorporating Food Waste in Municipal Climate Action Plans

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Introduction

Cities have an enormous opportunity when it comes to addressing food waste and climate change—two intractable municipal challenges. In 2019, 35% of food in the United States was wasted, contributing to 4% of all U.S. greenhouse gas (GHG) emissions.[1] Meanwhile, cities across the country are already experiencing the effects of climate change and preparing for increased natural disasters, depleted resources, and sea-level rise, among other stresses.

Rising to the challenge, cities across the country have pledged to reduce GHG emissions and develop climate action plans (CAP) that outline the measures they will use to achieve mitigation goals. These plans offer an ideal opportunity for cities to adopt food waste-related actions. As the entities primarily responsible for managing waste and safeguarding public health, including ensuring that low-income communities and communities of color do not bear disproportionate burdens, cities are well situated to leverage their on-the-ground expertise and local policymaking authorities to simultaneously address climate change, waste reduction, and environmental justice.[2]

Background

In 2019, 35% of food in the United States went unsold or uneaten.[3] Most of this food waste ends up in landfills or is incinerated, and significant amounts are left in fields to rot.[4][5] According to ReFED, close to forty percent of food waste comes from households, with restaurants, farms, and grocery stores generating much of the rest.[6]

At the same time, many households in the United States face food insecurity. In 2019, 10.5% of all U.S. households experienced food insecurity at some point.[7] Research suggests this figure

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[1] *Food Waste: The Challenge*, ReFED, https://refed.com/food-waste/the-challenge/#overview (last visited May 24, 2021).
[2] Yerina Mugica and Terra Rose, *Tackling Food Waste in Cities: A Policy and Program Toolkit*, Nat. Resources Def. Council (Feb. 2019), https://www.nrdc.org/sites/default/files/food-waste-cities-policy-toolkit-report.pdf. According to the United States Environmental Protection Agency: "environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." *Environmental Justice*, U.S. Envtl. Prot. Agency, https://www.epa.gov/environmentaljustice (last updated June 9, 2021).
[3] *Food Waste: The Challenge*, *supra* note 1.
[4] *Food: Material-Specific Data*, U.S. Envtl. Prot. Agency (2018), https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/food-material-specific-data.
[5] *Food Waste: The Challenge*, *supra* note 1.
[6] *Roadmap to 2030: Reducing U.S. Food Waste by 50%,* ReFED, https://refed.com/downloads/roadmap-to-2030-reducing-u-s--food-waste-by-50/ (last visited May 24, 2021).
[7] *Food Security in the U.S.*, U.S. Dep't of Agric., https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx/ (last updated Sept. 9, 2020).

nearly doubled during the COVID-19 pandemic.[8] Accordingly, food waste raises a significant social justice issue—as 130 billion meals go uneaten or unsold each year, millions go hungry.[9] Although 1 in 9 people in the United States are food insecure, less than one-third of the food we throw out would be enough to feed all food insecure residents.[10]

Food waste is also costly. In 2019, wasted food cost $285 billion, or approximately 1.3% of the U.S. gross domestic product.[11] When food is wasted, all the energy and resources used to grow, harvest, transport, store, and prepare food is wasted as well—posing both a financial and environmental cost. Significant resources, including up to one fifth of the cropland, fertilizers, and agricultural water used in the United States, are used to grow food that is not eaten.[12]

Wasted food is also a major contributor to climate change, leaving a GHG footprint equal to 4% of U.S. emissions. Most of these emissions are released in the process of growing, transporting, processing, and storing the food; however, after it is landfilled, food waste—the largest component of landfill waste by weight—also emits a significant amount of methane, a powerful greenhouse gas.[13] Landfills are the third-largest source of U.S. methane emissions at 14.1 percent.[14] Research by Project Drawdown identifies reducing food waste as one of the top three most impactful climate solutions for reducing greenhouse gas emissions worldwide.[15]

Wasting food while others go hungry can affect climate resilience as well. Although climate change has the potential to exacerbate food insecurity,[16] sustainable and equitable food systems, including a strong food rescue network and food waste reduction infrastructure, promote resilient cities that more effectively overcome climate-related natural disasters.[17] Community-oriented food waste initiatives, such as community composting projects, can help build ties, create jobs, and empower neighborhoods. Research indicates that communities with strong relationships and networks are more climate resilient, as neighbors offer aid and can act as first responders in the event of a crisis.[18]

ReFED uses three categories of strategies for tackling food waste based in part on the U.S. Environmental Protection Agency's Food Recovery Hierarchy: prevention, rescue, and

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[8] Diane Schanzenbach and Abigail Pitts, *How Much Has Food Insecurity Risen? Evidence from the Census Household Pulse Survey*, INST. FOR POL'Y RES. RAPID RES. REP. (June 10, 2020), https://www.ipr.northwestern.edu/documents/reports/ipr-rapid-research-reports-pulse-hh-data-10-june-2020.pdf.
[9] *Food Waste: The Challenge*, *supra* note 1.
[10] *What is Food Insecurity?* FEEDING AMERICA, https://www.feedingamerica.org/hunger-in-america/food-insecurity (last visited May 24, 2021).
[11] *Food Waste: The Challenge*, *supra* note 1.
[12] Dana Gunders and Jonathan Bloom, *Wasted: How America is Losing Up to 40% of its Food from Farm to Fork to Landfill*, NAT. RESOURCES DEF. COUNCIL (August 2017), https://www.nrdc.org/sites/default/files/wasted-2017-report.pdf.
[13] *Id.*
[14] *Why Should We Care About Food Waste?* U.S. DEP'T OF AGRIC., https://www.usda.gov/foodlossandwaste/why (last visited May 24, 2021).
[15] *The Drawdown Review*, PROJECT DRAWDOWN, https://drawdown.org/drawdown-review (last visited May 24, 2021).
[16] *Special Report on Climate Change and Land: Food Security*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE https://www.ipcc.ch/srccl/chapter/chapter-5/ (last visited May 24, 2021).
[17] *State of the Food System Report,* CITY OF AUSTIN OFF. OF SUSTAINABILITY (2018), https://www.austintexas.gov/sites/default/files/files/Sustainability/COAOS-0106_FoodReport_ForWeb_1_.pdf.
[18] Eric Klinenberg, *Want to Survive Climate Change? You'll Need a Good Community*, WIRED (Oct. 25, 2016), https://www.wired.com/2016/10/klinenberg-transforming-communities-to-survive-climate-change/.

recycling. According to this framework, prevention is the highest impact strategy (reducing the amount of food that goes uneaten or unused), followed by rescue (recovering and distributing surplus food to those who need it most) and, finally, recycling (diverting food waste from disposal in landfills or incinerators through use as animal feed, composting, anaerobic digestion, or other means).[19] In practice, these strategies are interrelated and only separated in name, as engaging in food scrap recycling actions such as composting, for example, may have the synergistic effect of inspiring food waste prevention.

The Importance of Cities in Reducing Food Waste and Addressing Climate Change

The Role of Cities: Cities are well-positioned to take actions to reduce food waste and address climate change, as local governments are primarily responsible for waste collection and disposal and for the needs of food-insecure residents. As on-the-ground players who understand unique local needs, city officials can respond quickly and proactively to manage waste and redistribute surplus food to those in need, including during climate-related extreme weather events. Cities also have the ability to improve and expand local organics recycling programs to divert food waste from landfills, which subsequently reduces the need to site and construct new landfills, many of which end up in already overburdened communities.[20]

Actions Taken by Cities: Cities have already made significant progress on food waste reduction. Businesses and residents increasingly practice food waste prevention, and food donations have grown significantly over the years.[21] In recent years, cities have led the charge on climate action in the absence of federal leadership. The Biden Administration's ambitious climate action goals, including achieving a carbon pollution-free power sector by 2035 and a net-zero economy by 2050, as well as its robust environmental justice agenda, are likely to present new opportunities for cities to continue to play a critical role in addressing climate change and integrating environmental justice.[22]

Global Covenant of Mayors for Climate and Energy Requirements: Over 10,000 cities have taken voluntary pledges to reduce their GHG emissions through the Global Covenant of Mayors for Climate and Energy (GCoM)[23] and other initiatives.[24] In aggregate, these cities could "account for 2.3 billion tons of CO_2e annual emissions reductions, matching yearly passenger road emissions from the U.S., China, France, Mexico, Russia, and Argentina combined."[25]

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[19] *Retail Food Waste Action Guide*, REFED (2018), https://refed.com/downloads/Retail_Guide_Web.pdf.
[20] Mugica and Rose, *supra* note 2.
[21] *Id.*
[22] *President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad*, THE WHITE HOUSE (Jan. 27, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/.
[23] *Our Cities*, GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY, https://www.globalcovenantofmayors.org/our-cities/ (last visited May 24, 2021).
[24] WE ARE STILL IN, https://www.wearestillin.com/ (last visited May 24, 2021).
[25] *Who We Are: This is a Powerful and Historic Response to Climate Change,* GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY, https://www.globalcovenantofmayors.org/about (last visited May 24, 2021).

GCoM requires participating cities to report a city-wide GHG emissions inventory each year, following the standards of the Global Protocol for Community-scale GHG emissions (GPC).[26] Emissions are reported for three sectors (stationary energy, transportation, and waste) and are classified into three "scopes." Scope 1 is defined by GPC as "GHG emissions from sources located within the city boundary," while Scope 2 is defined as "GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city boundary." Finally, Scope 3 is defined as "all other GHG emissions that occur outside the city boundary as a result of activities taking place within the city boundary."[27]

For the first two years upon joining GCoM, cities are required to report Scope 1 and 2 emissions for their stationary energy and transportation sectors. In the third year, cities are required to report Scope 1 and 2 emissions for stationary energy and transportation, as well as Scope 1 and 3 emissions for the waste sector.[28]

Cities participating in GCoM pledge to set emissions targets that are at least as ambitious as their country's Nationally Determined Contributions under the United Nations Framework Convention on Climate Change.[29] They are required to develop a city-wide CAP within three years that includes, but is not limited to, a city-wide target for GHG emissions reductions and the actions needed to meet the target.[30]

Once cities have set these targets, local governments are required to develop plans for climate change mitigation and adaptation. Plans must include a stakeholder engagement process, mitigation targets and/or adaptation goals, actions for priority sectors determined based on initial GHG emissions inventories and climate risk assessments, as well as "synergies, trade-offs, and co-benefits of mitigation and adaptation actions."[31]

For mitigation actions, cities are also required to provide an "assessment of energy saving, renewable energy production, and GHG emissions reductions by action, action area or sector."[32] Although not required, it is also recommended that for each action cities provide: a financial strategy; the implementation status, cost and timeframe; implementing agencies, and

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[26] GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY, A DEFINITION OF COMPLIANCE FOR CITIES THAT USE CDP OR ICLEI'S CARBON CLIMATE REGISTRY FOR REPORTING (2018), https://www.globalcovenantofmayors.org/wp-content/uploads/2018/05/GCoM-Definition-of-Compliance-2018.pdf.
[27] GREENHOUSE GAS PROTOCOL, GLOBAL PROTOCOL FOR COMMUNITY-SCALE GREENHOUSE GAS EMISSION INVENTORIES: AN ACCOUNTING AND REPORTING STANDARD FOR CITIES (2014), https://ghgprotocol.org/sites/default/files/standards/GHGP_GPC_0.pdf.
[28] A DEFINITION OF COMPLIANCE FOR CITIES, *supra* note 26.
[29] *City Journey*, GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY, https://www.globalcovenantofmayors.org/journey/ (last visited May 24, 2021).
[30] *Id.*
[31] GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY, GLOBAL COVENANT OF MAYORS COMMON REPORTING FRAMEWORK 36 (Version 6.1, Sept. 13, 2018), https://www.globalcovenantofmayors.org/wp-content/uploads/2019/04/FINAL_Data-TWG_Reporting-Framework_website_FINAL-13-Sept-2018_for-translation.pdf.
[32] *Id.*

the stakeholders involved in implementation. Local governments are further encouraged to prioritize actions, and include information on policy instruments needed to implement actions.[33]

In addition, GCoM recommends that cities consider a number of environmental justice concerns. Cities must develop inclusive plans that engage diverse stakeholders, and develop strategies to secure access to affordable and sustainable energy for all.[34] Although GCoM requires participants to submit progress reports every two years, plan updates must be provided when there are significant changes.[35]

Municipal Food Waste Climate Action Opportunities and Challenges

Adopting food waste measures in CAPs allows cities to lower their carbon footprint and increase climate resilience, while also addressing inequities in food security and public health. In doing so, both opportunities and challenges are presented.

Co-benefits: Climate actions can provide numerous, important co-benefits, including improved public health, cost savings, and environmental justice. Not surprisingly, non-climate co-benefits are a key motivator for cities that adopt climate mitigation actions, and stakeholders and decision-makers are more likely to support such measures when the full picture of the benefits is presented.[36]

Addressing food waste, in particular, yields similar environmental, cost, and environmental justice co-benefits. Rescuing and redistributing surplus food provides safe and wholesome meals to those in need and reduces food insecurity.[37] Reducing food waste also can help conserve the resources used to grow food, including "land, water, labor, energy and other inputs that are used in producing, processing, transporting, preparing, storing, and disposing of the discarded food."[38] Minimizing food waste also saves money, both for households who can purchase less food to meet their needs, and for restaurant owners, processors, and farmers who can reduce food waste disposal costs.[39] In some cases, surplus food donors can also realize tax benefits.[40]

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[33] *Id*. (According to the framework, the term "shall" indicates what is required, while "should" is used to indicate a strongly advised recommendation, rather than a requirement. The term "may" is used to indicate an option that is permissible or allowable that local governments may choose to follow.)
[34] *Id.*
[35] *Id.*
[36] *The Co-Benefits of Climate Action: Accelerating City-Level Ambition,* CDP (Aug. 2020), https://www.cdp.net/en/research/global-reports/co-benefits-climate-action.
[37] *Why Should We Care About Food Waste?* U.S. DEP'T OF AGRIC., https://www.usda.gov/foodlossandwaste/why (last visited May 24, 2021).
[38] *Id.*
[39] Randy Bell, *Reducing Food Waste Has Economic, Environmental and Social Benefits*, MICH. ST. U. (Mar. 27, 2012), https://www.canr.msu.edu/news/reducing_food_waste_has_economic_environmental_and_social_benefits.
[40] *A Donor's Guide to the Enhanced Federal Tax Deduction for Food Donation,* NASHVILLE FOOD WASTE INITIATIVE (Feb. 2018), https://www.eli.org/sites/default/files/docs/nfwi_federal_tax_donor_guide_february_2018.pdf.

In addition, food scrap recycling through community composting has many local benefits. Community composting—composting projects that are larger than backyard composting efforts but smaller than centralized, large-scale composting facilities—can be cheaper and quicker to design and launch than larger-scale and higher-diversion composting facilities. In addition to reducing GHG emissions, community composting can provide co-benefits, such as community building, increased demand for and interest in composting and sustainable practices, and greater understanding of composting practices. These projects can also help preserve and rebuild local soils, and provide useful skills and jobs training. Community composting also plays an important role in building a robust and diversified organics recycling infrastructure, and can make composting accessible to a broader group of constituents, including communities of color and low-income neighborhoods.[41]

Environmental Justice: The need for environmental justice permeates virtually all environmental issues, and food waste is no exception. Cities should consider the following forms of environmental justice when developing and adopting food waste-related climate actions:[42] procedural (meaningful engagement in decision-making processes by the communities most impacted), distributional (fair and just distribution of funding and resources), and structural (reform of governance structures to eliminate the perpetuation of environmental, economic, and social inequities).[43]

Municipal waste management policies have been historically associated with a number of environmental injustices, including the disproportionate siting of landfills and incinerators in low-income communities and communities of color. Potential concerns might also arise in implementing Pay-As-You-Throw or Save-As-You-Throw policies, in which households and other waste generators pay based on the amount of trash they produce, thereby incentivizing waste reduction.[44] Introducing such a scheme, however, requires careful consideration to avoid creating or exacerbating disproportionate financial burdens on low-income households. A well-designed approach will include strategies such as providing discounts to low-income families.[45]

Environmental justice considerations are also front and center in addressing food insecurity, which disproportionately impacts communities of color and correlates with poverty, income, and other socioeconomic factors.[46] In efforts to redistribute safe, wholesome surplus foods to

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[41] Sam Koenig and Linda Breggin, *Landscape Analysis of Community Composting in Nashville*, NASHVILLE FOOD WASTE INITIATIVE AND ENVTL. L. INST. (Feb. 2020), https://www.eli.org/sites/default/files/docs/landscape_analysis_of_community_composting_in_nashville.pdf.

[42] Although beyond the scope of this toolkit, cities should not only prioritize environmental justice and inclusion in developing and implementing food waste actions, but in developing their overall CAPs—through meaningful community participation and engagement. Detroit's CAP provides one model for achieving significant public input and contributions from a range of community stakeholders. *Detroit Climate Action Plan,* DETROITERS WORKING FOR ENVIRONMENTAL JUSTICE (Oct. 24, 2017), https://detroitenvironmentaljustice.org/wp-content/uploads/2017/11/CAP_WEB.pdf.

[43] Angela Park, *Equity in Sustainability: An Equity Scan of Local Government Sustainability Programs*, URB. SUSTAINABILITY DIRECTORS NETWORK (Sept. 2014), https://www.usdn.org/uploads/cms/documents/usdn_equity_scan_sept_2014_final.pdf.

[44] Mugica and Rose, *supra* note 2.

[45] *Id.*

[46] Danielle Xiaodan Morales, et al., *Racial/Ethnic Disparities in Household Food Insecurity During the COVID-19 Pandemic: a Nationally Representative Study*, J. RACIAL AND ETHNIC HEALTH DISPARITIES (Oct. 14, 2020),

communities in need, cities should prioritize reaching the populations most affected by food insecurity.

CAPs developed in Dallas and Baltimore provide examples of how cities can incorporate environmental justice in their food waste-related actions. Both cities recommend that recycling campaigns and public education include culturally diverse materials tailored to the needs of each community.[47] [48] For its Save-As-You-Throw program, Baltimore plans to "ensure early and ongoing input from communities" and "communicate about the program with racially and ethnically diverse materials."[49] Both cities recommend working with residents to ensure that new compost facilities do not negatively impact overburdened communities. Finally, both plans emphasize the importance of creating local jobs for "unemployed or underemployed residents," whether through composting facilities and programs, or reuse businesses.[50] [51]

Incorporating environmental justice in decision-making requires understanding the unique disproportionate impacts experienced by specific communities. This can be achieved, in part, by examining quantitative data, such as maps (e.g., EPA's EJSCREEN),[52] as well as researching historical materials and collecting information from individuals about their lived experiences. In short, understanding how and why disproportionate impacts persist is critical to designing policy solutions.[53]

Funding: Although many food waste-related actions will require funding to implement, cities should consider a full cost picture when it comes to addressing food waste. In many cases, the social and environmental benefits of the recommended actions, including improved public health, will partially or fully offset the financial costs. Furthermore, cities should consider alternative and creative funding mechanisms, including green municipal funds, which can be used to finance a range of local government infrastructure projects. Other avenues to consider include grants from philanthropies that can support specific projects or build the capacity of non-profits to advocate for or implement food waste actions in CAPs. Businesses can also sponsor specific community projects.[54] [55]

Cities may also be eligible for a number of public grant opportunities to implement food waste reduction projects and initiatives. Several are offered through the EPA, including the Regional Healthy Resilient and Sustainable Communities Grants and the Local Foods, Local Places

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7556612/#:~:text=For%20example%2C%20even%20though%20food,was%2011.1%25%20%5B2%5D.

[47] *The 2019 Baltimore Sustainability Plan*, BALTIMORE OFFICE OF SUSTAINABILITY (2019), https://www.baltimoresustainability.org/wp-content/uploads/2019/02/Sustainability-Plan_01-30-19-compressed-1.pdf.

[48] *Dallas Comprehensive Environmental and Climate Action Plan*, CITY OF DALLAS (2020) https://27aabd9a-6024-4b39-ba78-f6074e2fc631.filesusr.com/ugd/349b65_38f32c6b85ae4b20b67b79ecb5b0b106.pdf.

[49] *The 2019 Baltimore Sustainability Plan*, *supra* note 49.

[50] *Id.*

[51] *Dallas Comprehensive Environmental and Climate Action Plan*, *supra* note 50.

[52] *EJSCREEN*, https://www.epa.gov/ejscreen.

[53] Charles Lee, *Confronting Disproportionate Impacts and Systemic Racism in Environmental Policy*, ENVTL. L. REP. (Mar. 2021) https://www.eli.org/sites/default/files/docs/elr_pdf/51.10207.pdf.

[54] Anna Flin, "Renewable Energy in REAL School Gardens," MOTHER EARTH NEWS https://www.motherearthnews.com/renewable-energy/real-school-gardens-zmaz09djzraw (last visited May 25, 2021).

[55] *Dallas Comprehensive Environmental and Climate Action Plan*, *supra* note 50.

grant, co-sponsored by the U.S. Department of Agriculture (USDA), which provides technical assistance to help communities develop their local food economies. USDA also funds the Community Food Projects Competitive Grant Program, as well as Food and Agriculture Service Learning Program.[56] More funding opportunities, including non-government grants, may be found on the ReFED website.

Explanation of Toolkit

This toolkit is intended to provide municipalities and stakeholders with model food waste provisions that can easily be incorporated into municipal CAPs. To date, there do not appear to be any CAP materials available for free online that specifically address food waste.[57] As a result, cities are left with the labor-intensive task of researching best practices from other cities or drafting their own measures. Consequently, it is likely that many cities do not include in their plans the full panoply of food waste mitigation and adaptation actions because of the time and effort required to do so.

This toolkit starts to fill this gap by providing an easily-accessible menu of options for cities to incorporate food waste reduction into municipal CAPs and other sustainability efforts.[58]

The following information is presented in the spreadsheet that accompanies this narrative:

1. A menu of mitigation and adaptation actions related to food waste that can be included in CAPs and/or sustainability plans;
2. Links to example provisions in existing climate actions plans and/or sustainability plans for each action when available; and
3. An icon that denotes key strategies and approaches, including: policies and ordinances, public awareness and education, incentives and funding, leadership and recognition, and environmental justice.

The list reflects an effort to include state-of-art provisions, although cities that conduct their own planning processes and risk assessments may uncover other opportunities to incorporate food waste reduction.

[56] *Search Grants*, GRANTS.GOV, https://www.grants.gov/web/grants/search-grants.html (last visited May 25, 2021).
[57] In developing CAPs, cities often rely on resources provided by nongovernmental organizations, some of which support particular climate initiatives. Chief among them are C40 Cities (which offers a Climate Action Planning Framework) and ICLEI—Local Governments for Sustainability, which collaborate with GCoM. Some of the most sophisticated tools must be purchased along with consultant hours to support their effective use, although many resource materials are available for free online such as: GLOBAL PROTOCOL FOR COMMUNITY-SCALE GREENHOUSE GAS EMISSION INVENTORIES: AN ACCOUNTING AND REPORTING STANDARD FOR CITIES, *supra* note 27.
[58] ELI intends to develop model language and provisions at a later date, in an effort to further reduce the transaction costs to municipalities of including food waste measures in their CAPs.

Methodology

ELI compiled food waste-related actions from municipal CAPs, as well as food system and sustainability plans, from 36 different cities in the United States, ranging from large cities leading in climate action (such as Seattle, Portland, and San Francisco) to small and midsize cities such as Nashville, Providence, Fayetteville, and others.[59] The list is not intended as a fully comprehensive, exhaustive resource, but rather represents an effort to produce a robust, geographically representative sampling that draws from a minimum of four plans from each of the following regions of the United States: West, Midwest, Southwest, Southeast, and Northeast.

Similar actions were then grouped together as sub-actions (highlighted in blue) that serve to expand upon a broader action (highlighted in yellow). For example, the sub-action “Require businesses and institutions to submit waste reduction plans” was placed under the broader action, “Adopt an organic waste ban or mandatory diversion policy.” Links to examples of these actions from existing municipal climate action and sustainability plans are provided. Actions do not, however, match the associated examples word-for-word. Rather, the actions provided are modified, simplified, or summarized amalgamations of various provisions from existing plans. Furthermore, because cities frame actions in a wide variety of ways, actions are not always completely distinct and may overlap in some cases. The purpose of the text provided is to allow cities to quickly scan for actions that fit their needs for a future or updated CAP, and refer to links to existing plans for more in-depth examples and ideas.

The actions are organized into separate sections according to the U.S. EPA Food Recovery Hierarchy framework, as adapted by ReFED. As discussed in more detail above, food waste reduction strategies (in priority order) are: prevention, rescue, and recycling.[60] As noted earlier, however, in practice, these strategies are interrelated and have synergistic effects. Consequently, for purpsoes of this report, prevention actions are in a category labeled "Overarching/Prevention," due to overlapping aspects of many prevention actions with rescue and recycling. By organizing actions according to the hierarchy, ELI intends that cities can have a better understanding of the impacts of various food waste reduction strategies, and how to prioritize efforts for maximum environmental and social benefits.

Finally, the spreadsheet includes icons that indicate if an action fits within five key strategies employed by cities in food waste reduction: 1) policies and ordinances; 2) public awareness and education; 3) incentives and funding; 4) leadership and recognition; and 5) environmental justice. These common tools used by municipalities in addressing food waste reduction are highlighted to help cities conceptualize the variety of approaches that can be included in CAPs.

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[59] CAPs and other municipal sustainability plans were compiled from: Asheville, Atlanta, Austin, Baltimore, Boca Raton, Boston, Charlotte, Chicago, Cleveland, Dallas, Denver, Detroit, Fayetteville, Iowa City, Los Angeles County, Louisville, Memphis, Nashville, New York, North Manhattan, Orlando, Philadelphia, Phoenix, Portland, Princeton, Providence, San Francisco, Santa Fe, and Seattle.

[60] *Retail Food Waste Action Guide*, *supra* note 19.

Emissions reductions

This document does not include estimates of emissions reductions. While a few plans include such estimates, lack of data and lack of uniformity among the sources and applications of these estimates, as well as differences in local context and existing capacities among cities, make it difficult to assign emissions reductions to particular actions. Another complicating factor is that cities use a variety of methodologies to estimate emissions.

Nevertheless, many cities use U.S. EPA's Waste Reduction Model (WARM), a free, downloadable tool that calculates GHG emissions along with several other metrics for waste management practices, such as source reduction, recycling, composting and anaerobic digestion. WARM recognizes 60 material types, including food waste, food waste (meat only), fruits and vegetables, mixed organics, yard trimmings, and others. GHG mitigation amounts are calculated by comparing emissions produced from alternative management practices with emissions produced from a baseline scenario (i.e., current practices).

In practice, however, many cities engage outside technical experts to assist in developing estimates tailored to their local factors.

Many of the food waste reduction measures that have the greatest mitigation potential are considered Scope 3 emissions that a city does not control directly but nevertheless impact the overall footprint of the municipal entity and its community. These "value chain emissions" are not typically included in municipal greenhouse gas inventories—however, as discussed earlier, GCoM requires participating cities to report Scope 3 emissions **for waste** during their third year of participation. Furthermore, developing Scope 3 emissions estimates is critical for cities to calculate whether planned climate actions will add up to community climate mitigation targets.

In the meantime, in addition to the tools discussed above, cities that are interested in estimating emissions reductions potential can reference documents that already include quantified emissions. For example, Cleveland (page 64) and Los Angeles County both provide emissions reductions estimates for food waste and organic waste diversion efforts combined as a whole. Denver provides emissions reductions estimates for broad strategies, including for fully implementing its Solid Waste Master Plan and for its environmentally preferred purchasing program." Memphis (pages 128 and 204) includes emissions reductions estimates for strategies, including for cutting the portion of yard and wood waste in half by 2035. And, Iowa City provides a graph with projected reductions in tons of waste by specific action, including for increased composting. Similarly, Nashville's Solid Waste Master Plan provides estimates of tons of diverted waste as a result of zero-waste strategies such as enforcement procedures for its proposed mandatory recycling and organics collection ordinance, which it estimates has a diversion potential of 77,500 tons by 2027.

Cost estimates

Few CAPs include cost estimates for food waste-related actions. In addition, actions may differ in scope and form, resulting in varying degrees of required funding depending on the

implementation approach. Although this report does not provide cost estimates, ELI plans to develop an approach for providing cost ranges for capital and operating costs at a later date.

Some examples of cost estimates include Los Angeles County's plan which classifies the magnitude of cost for actions using dollar signs. Food waste-related actions ranged from "$$ - 500,000 to 2 Million USD" (e.g., "expand food donation and redistribution program "to divert edible food from landfills and make it available to food insecure communities") to "$$$$ - 15 Million to 150 Million USD" (e.g., "[m]aximize organics diversion through neighborhood and regional composting, anaerobic digestion, chipping/grinding operations, and biomass conversion facilities"). Memphis (pages 204-206) estimated costs for broad-stroke priority actions such as "organic waste diversion" and "waste reduction" that achieve concrete reductions in organic waste.

More comprehensive data may be found in the Nashville Solid Waste Master Plan, which provides detailed cost estimates for a wide range of waste management strategies. Drawing from this data, Nashville Mayor John Cooper's Sustainability Advisory Committee's Report on Metropolitan Government of Nashville and Davidson County's Climate Change Mitigation Action Plan offers a capital cost range and operational cost range for each food waste-related action (minimal — less than $100,000, moderate — $100,000 to $1 million, and substantial — $1 million). Actions that fit under the minimal cost range for both capital and operational costs include launching a public awareness campaign on food waste prevention in partnership with the state. On the other end of the spectrum, actions designated as "substantial" for both capital and operational costs include establishing a "Save-As-You-Throw" recycling and composting system.

Although some of these recommended actions may entail a significant financial cost, cities should consider a full cost picture when it comes to addressing food waste. As discussed above, in many cases, the social and environmental benefits of the recommended actions, including improved public health, will partially or fully offset the financial costs. Furthermore, financing mechanisms, and public and private grants can help defray certain costs.

How to Use the Toolkit

Organization and columns
The toolkit is organized into three sections—prevention, rescue, and recycling. Headings are highlighted in green, with corresponding content located below each heading.

Column C includes food waste-related actions and sub-actions. Actions are highlighted in yellow with corresponding sub-actions highlighted in blue located beneath each action. Blue sub-actions expand upon or provide specific examples of the broader action highlighted in yellow.

Column D includes links to examples of these actions from existing municipal climate action and sustainability plans. Links go directly to the page where the example provision is located,

with exceptions of Cleveland and Memphis, in which case the page number is indicated in the cell.

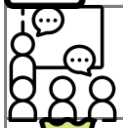
Column E includes icons that indicate if an action fits within five key strategies employed by cities in food waste reduction: 1) policies and ordinances; 2) public awareness and education; 3) incentives and funding; 4) leadership and recognition; and 5) environmental justice. In a few cases, one action may correspond to multiple strategies. A key for the icons is included on the first sheet of the spreadsheet ("Key").

While the spreadsheet is intended as an easy-to-use menu to select options, view examples, and draw inspiration for future CAPs, users should carefully consider how to adapt actions to the needs of specific cities.

For more information and questions: Linda Breggin (breggin@eli.org) and Akielly Hu (hu@eli.org).

A Toolkit for Incorporating Food Waste in Municipal Climate Action Plans

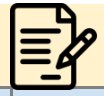
Key for Strategy

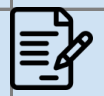
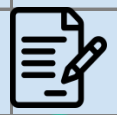
Icon	Strategy
	Policies and ordinances
	Public awareness and education
	Incentives and funding
	Leadership and recognition
	Environmental justice
Icons are sourced from flaticon.com	

A Toolkit for Incorporating Food Waste in Municipal Climate Action Plans

Access Google Sheets with live links to examples:
https://docs.google.com/spreadsheets/d/18AP-tuN9iXD3LOhmNk0CtghyZ5IqM8EEiAZ6TJXimJo/edit?usp=sharing

Overarching/Prevention

		Examples	Strategy
Action	Adopt an organic waste ban or mandatory diversion policy		
	Mandate diversion (covered entities must contract with compost hauler)	Austin (p. 20); Princeton (p. 50); Seattle (p. 48)	
	Ban organic waste (food scraps or organic waste generally cannot be landfilled) — commercial and/or residential	Charlotte (p. 60); Fayetteville (p.93); Nashville (p. F-61); Baltimore (p. 31); Metro Boston (p. 26); Dallas (p. 117)	
	Require businesses and institutions to submit waste reduction plans; link plans to certificates of occupancy from construction and health departments, if applicable	Princeton (p. 50)	
	Develop and implement enforcement procedures and rules to support mandatory recycling efforts	Nashville (p. G-9)	
	Enforce any mandate implemented	Seattle (p. 48)	
Action	Adopt governance measures that lay the foundation for food waste reduction actions		
	Establish a Solid Waste Authority to provide governance structures necessary for implementing policies such as a food waste ban and mandatory recycling	Nashville (p. 10)	

Develop and implement a solid waste master plan	Baltimore (p. 48); Iowa City (p. 47); Nashville; Princeton (p. 49)	
Set goals for food waste reduction	California (p. 125); Memphis (p. 130); Metro Boston (p. 26)	
Establish task forces for reduction of each high-priority waste stream including organic waste	Charlotte (p. 58)	
Require waste contracts to employ zero waste methods	Detroit (p. 25)	
Ensure garbage haulers are allowed under city code to also offer recycling and organics collection (including where service is not currently available)	NRDC (p. 24)	
Explore use of franchised collection zones to reduce inefficiencies and redundancies and make separate organics collection cheaper	Nashville (p. 6-11)	
Include a requirement that new commercial and multi-family buildings include space for organics bins on loading docks in any changes to building codes	Fayetteville (p. 98); NRDC (p. 24)	
Leverage partnerships with community-based nonprofits to amplify voices of those not typically heard in the waste management planning process	Austin Food For All (p. 4)	

Action Support and encourage voluntary residential food waste prevention efforts 

Encourage residential food waste prevention through education and raising awareness	Boca Raton (p. 16); Charlotte (p. 58); Iowa City (p. 46); Nashville (p. 6-9)	
Foster residential food waste reduction actions in climate action plan	Iowa City (p. 60); Dallas (p. 110)	
Create and implement a household waste audit program or system for tracking household food waste, possibly including distribution of smart trash cans to city residents	Baltimore Food Waste (p. 29)	

Launch campaigns to encourage citizens to reduce waste and compost organic waste	Baltimore (p. 48); Nashville (p. G-10)	
Encourage a plant-rich diet to reduce environmental impacts of wasted food	Iowa City (p. 58)	

Action Reduce food waste at and through schools

Support compost projects at schools, including through grants/revolving loans	Baltimore (p. 38); Seattle (p. 50)	
Provide sustainability education alongside school service projects that include composting	Santa Fe (p. 62); Austin (p. 7)	
Take steps to reduce food waste at school through approaches such as share-tables and flexible and right-size food ordering	Baltimore (p. 45); NRDC K-12	
Include the topic of food waste reduction in educational curricula	Austin (p. 8); Baltimore (p. 38); Nashville (Urban Green Lab)	
Connect teachers across schools and with partners for support, mentoring, and exchange of lessons learned on sustainability education and practices, including food waste reduction	Baltimore (p. 38)	
Include training on food waste reduction at culinary schools	Charlotte (p. 60)	

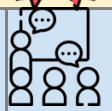
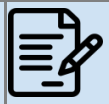
Action Support food waste action at the county, state, and regional level

Advocate for improved waste policies at county and state level	Princeton (p. 50)	
Advocate at county and state level for improved organic waste collection and processing infrastructure	Princeton (p. 50)	
Support state legislation related to mandatory organic waste diversion	Baltimore Food Waste (p. 24)	

	Coordinate messaging with other local actors / support regional partnerships that seek to increase organic waste diversion	Fayetteville Energy (p. 50); Nashville (p. G-6)	
	Join campaigns for standardized food date labeling practices	Cleveland (p. 65)	
	Support state legislation providing additional liability protections for food donors and sellers of recovered food	Baltimore Food Waste (p. 23)	

Action Support voluntary efforts to address food waste by businesses and large-scale generators

	Encourage or incentivize businesses to reduce the amount of food they waste, donate surplus food, and compost food scraps, and provide technical assistance to help them do so	Baltimore Food Waste (p. 24); Cleveland (p. 64); Iowa City (p. 46); Princeton (p. 47); Nashville (p. G-15)	
	Recognize businesses that reduce their food waste through a Restaurant Challenge or other recognition program	Nashville (G-8); Princeton (p. 46)	
	Develop educational programs and toolkits to help commercial kitchens prevent food waste	Seattle (p. 47); Dallas (p. 156)	
	Support creation of marketplaces and networks for distributing "ugly" produce	Baltimore Food Waste (p. 24); Cleveland (p. 65)	
	Create/support a waste audit program for commercial generators	Baltimore Food Waste (p. 24)	

Action	Lead by example		
	Communicate about the city's commitment to food waste reduction (or zero waste generally)	Baltimore (p. 48); Fayetteville Energy (p. 50); Nashville (p. G-12)	
	Communicate importance of food waste reduction to city staff	Detroit (p. 26)	
	Use city facilities such as zoos, museums, and airports to highlight food waste reduction efforts	Denver (p. 30)	
	Reduce food waste at city buildings (including through composting and promoting prevention)	Detroit (p. 25); Iowa City (p. 47); Nashville (p. G-5); NRDC (p. 27)	
	Require public events to be zero waste or adopt waste reduction strategies; include educational signage	Cleveland (p. 64); Nashville (p. G-8); Princeton (p. 50); Dallas (p. 165)	
	Provide composting bins alongside trash bins in public spaces	Nashville (p. 6-9)	

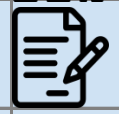
Rescue

Action	Establish centers for collecting and distributing surplus food		
	Study feasibility and consider establishing a frozen food facility to act as a hub for aggregation and distribution of local food	Cleveland (p. 66)	
	Create network of "resilience hubs" where surplus food can be collected and distributed	Providence (p. 57)	

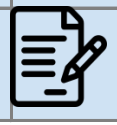
Action	Expand policies and networks to support surplus food donation		
	Support surplus food capture and donation through incentive programs	Baltimore Food Waste (p. 24); Nashville (p. G-8)	
	Implement an ordinance supporting a surplus food capture program	Nashville (p. G-8)	
	Expand food rescue networks to connect to hunger services	Cleveland (p. 65)	
	Expand city food donation and redistribution programs	LA County (p. 80)	
	Incorporate surplus food rescue as part of broader efforts to assist residents in accessing healthy foods	Austin Food For All (p. 3)	

Action	Support local food rescue, food security, and food justice organizations		
	Partner with organizations to address regulatory and other barriers that hinder diverting surplus food from food retailers to communities in need	Dallas (p. 165)	

Recycling

Action	Support voluntary efforts by businesses and large-scale generators		
	Provide organics recycling collection for businesses	Fayetteville (p. 85); Nashville (p. 6-11)	
	Provide guidance for on-site composting and anaerobic digestion	LA County (p. 75)	
	Create incentives for commercial food waste generators to divert food waste, such as rebates for food waste receptacles, "green certifications," tax deductions	Baltimore Food Waste (p. 34)	
	Develop a technical assistance program to help businesses, institutions, and multi-family complexes prepare for new recycling initiatives, including organics recycling	Fayetteville Energy (p. 50)	

Action	Save As You Throw / Pay As You Throw	Atlanta (p. 25); Baltimore (p. 49); Nashville (p. 6-8); NRDC (p. 23); Princeton (p. 49)	
	Enact trash disposal surcharge that funds prevention (and possibly other efforts to address food waste)	NRDC (p. 23)	
	Extract / "unbundle" cost of waste collection services from city property tax and then provide rebates / cost reductions for residents who compost	Baltimore Food Waste (p. 31); Charlotte (p. 60); NRDC (p. 24)	
Action	Support development of curbside organics/compost collection		
	Provide curbside organics recycling collection for residences or require that private waste haulers offer organics collection	Baltimore Food Waste (p. 30); Cleveland (p. 65); Detroit (p. 25); Nashville (p. G-9); NRDC (p. 23)	
	Provide free organics bins to residents	Baltimore Food Waste (p. 30)	
	Initiate/expand organics recycling collection at multi-family properties	Atlanta (p. 25); Cleveland (p. 64); Detroit (p. 25); Fayetteville Energy (p. 50); Iowa City (p. 46); Nashville (p. 6-10), NRDC (p. 23)	
	Increase frequency of organics collection and decrease frequency of landfill collection	NRDC (p. 23); Seattle (p. 50)	

Conduct outreach and education related to curbside organics recycling collection	Baltimore Food Waste (p. 30); Cleveland (p. 64); Nashville (p. 6-9); Seattle (p. 48)	
Provide education on backyard composting	Seattle (p. 50); Nashville (Public Works)	
Rebrand / color coordinate collection bins to increase compliance and decrease contamination	Nashville (p. G-12)	

Action Support development of local compost collection and processing infrastructure

Site a local composting facility or expand capacity and/or efficiency of existing facilities, and work with residents to ensure placement does not disproportionately impact overburdened neighborhoods	Baltimore (p. 48); Iowa City (p. 46); Seattle (p. 50)	
Create a revolving loan fund for investment in composting infrastructure	Baltimore (p. 49)	
Partner with local farmers to transport residential food waste to farms for composting alongside agricultural waste	Metro Boston (p. 41)	
Support community centers in setting up food scrap collection for composting	Charlotte (p. 58)	
Include composting in green jobs training programs; create workforce development programs in green industries such as circular waste management and include youth and people experiencing homelessness	Baltimore (p. 126); Charlotte (p. 58); Providence (p. 66); Dallas (p. 161)	
Establish or expand convenience centers where residents can drop off residential food scraps	Nashville (p. 6-10)	

Action	Adopt compost-friendly procurement policies		
	Adopt a procurement policy favoring use of finished compost products in earth-disturbing activities	Baltimore (p. 49); Charlotte (p. 61); Denver (p. 30); Iowa City (p. 59); Nashville (p. G-5); Seattle (p. 47)	
	Update policies to expand institutional purchasing of local and climate-friendly foods, including food grown locally using local compost	Cleveland (p. 66)	
Action	Support community composting	Metro Boston (p. 40); LA County (p. 80); Princeton (p. 48)	
	Reduce regulatory barriers, including zoning, to establishment of compost projects and community gardens	Baltimore Food Waste (p. 30); Charlotte (p. 61) Phoenix (p. 73); Denver (p. 35)	
	Provide funding and equipment for community composting efforts	Metro Boston (p. 128)	
	Provide education on community composting	Austin Food For All (p. 3); Baltimore (p. 102); Boca Raton (p. 17) Nashville (Food Waste Webinars)	
	Provide or inventory city-owned land (that could be used) for composting projects	Boca Raton (p. 17); Seattle (p. 50)	

Action	Support composting at community gardens	Atlanta (p. 44); Austin Food For All (p. 8); Baltimore (p. 53); Iowa City (p. 58); Metro Boston (p. 40)	
	Promote composting at community gardens and urban farms		
	Support use of vacant city-owned properties as community gardens that compost	Seattle (p. 63); Phoenix (p. 23); Dallas (p. 159)	
	Promote use of rooftops for community gardens that compost	Denver (p. 35); Seattle (p. 63)	
	Provide resources and technical assistance to local food growers	Austin Food For All (p. 8); Baltimore (p. 53); Charlotte (p. 61)	
	Partner with schools and nonprofits to develop community gardens/composting in neighborhoods with low food access; divert percentage of food to families in need	Dallas (p. 159)	
	Make locally produced compost available to local food growers	San Diego (p. 49)	
	Create a revolving fund for community gardens with compost projects	Charlotte (p. 58)	
	Include composting in community garden training efforts	Boca Raton (p. 17)	
	Encourage local food production by waiving water restrictions for community gardens	Austin (p. 6)	
	Ensure that initiatives to increase access to healthy local foods/community gardens include composting projects	Austin Food For All (p. 8); Iowa City (p. 58)	

Action	Promote anaerobic digestion at wastewater treatment facilities	Seattle (p. 26); Denver (p. 35); Metro Boston (p. 27)	
	Consider co-digestion of food scraps at wastewater treatment plants	Iowa City (p. 48); Nashville (Co-Digestion Study)	

Examples: Climate Action Plans and Municipal Food and Sustainability Plans

Atlanta - Atlanta Climate Action Plan (2015) https://atlantaclimateactionplan.files.wordpress.com/2016/02/atlanta-climate-action-plan-07-23-2015.pdf

Austin - State of the Food System Report (2015) https://austintexas.gov/sites/default/files/files/Sustainability/AustinFoodReport050115_-_FINAL.pdf

Austin Food For All - Food for All: Inclusive Food Planning in Austin, Texas https://planning-org-uploaded-media.s3.amazonaws.com/document/Plan4Health-Case-Study-Food-for-All-Austin-Texas.pdf

Baltimore - Baltimore Sustainability Plan (2019) https://www.baltimoresustainability.org/wp-content/uploads/2019/02/Sustainability-Plan_01-30-19-compressed-1.pdf

Baltimore Food Waste - Baltimore Food Waste and Recovery Strategy (2018) https://www.baltimoresustainability.org/wp-content/uploads/2018/09/BaltimoreFoodWasteRecoveryStrategy_Sept2018_FINAL.pdf

Boca Raton - City of Boca Raton Sustainability Action Plan Target 2025 (2019) https://www.myboca.us/DocumentCenter/View/22546/Sustainability-Action-Plan-Boca-Raton

California - Short-Lived Climate Pollutant Reduction Strategy, California Environmental Protection Agency Air Resources Board (2017) https://ww2.arb.ca.gov/sites/default/files/2018-12/final_slcp_report%20Final%202017.pdf

Charlotte - Circular Charlotte: Towards a zero waste and inclusive city (2018) https://www.charlottenc.gov/SWS/CircularCharlotte/Documents/Circular%20Charlotte_Towards%20a%20zero%20waste%20and%20inclusive%20city%20-%20full%20report.pdf

Cleveland - Cleveland Climate Action Plan (2018) https://drive.google.com/file/d/1Z3234sMp7S7MjaXvMgcZtcAaYs4x2oHE/view

Dallas - Dallas Comprehensive Environmental and Climate Action Plan (2020) https://27aabd9a-6024-4b39-ba78-f6074e2fc631.filesusr.com/ugd/349b65_38f32c6b85ae4b20b67b79ecb5b0b106.pdf

Denver - City and County of Denver Climate Action Plan (2015) https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/Climate/CAP%20-%20FINAL%20WEB.pdf

Detroit - Detroit Climate Action Plan (2017) https://detroitenvironmentaljustice.org/wp-content/uploads/2017/11/CAP_WEB.pdf

Fayetteville - Solid Waste Reduction, Diversion, and Recycling Master Plan (2016) https://www.fayetteville-ar.gov/DocumentCenter/View/10583/Fayetteville-Master-Plan-Final?bidId=

Fayetteville Energy - Fayetteville Energy Action Plan (2018) https://fayetteville-ar.gov/DocumentCenter/View/14807/Energy-Action-Plan_Final-Draft-?bidId=

Iowa City - Iowa City Climate Action and Adaptation Plan (2018) https://www8.iowa-city.org/weblink/0/edoc/1803121/Climate%20Action%20Plan.pdf

LA County - Los Angeles County Climate Action Plan (2020) https://planning.lacounty.gov/assets/upl/case/2019-002015_cap-public-review-draft.pdf

Memphis - Memphis Area Climate Action Plan (2020) https://www.dropbox.com/s/bda2m1eusfrun1w/Memphis%20Area%20Climate%20Action%20Plan%202019%20FINAL_4_JANUARY%202020.pdf?dl=0

Metro Boston - Municipal Food Systems Planning Toolkit for MAPC Communities (2013) http://www.mapc.org/wp-content/uploads/2017/11/Food_system_guide_3-18-14.pdf

Nashville - Solid Waste Master Plan: Achieving Zero Waste (2019) https://www.nashville.gov/Portals/0/SiteContent/pw/docs/recycle/MasterPlan/SWMP%20Complete.pdf

Nashville (Co-Digestion Study) - Metro Nashville Public Works Commercial Food Waste Anaerobic Digestion Study Summary https://www.nashville.gov/Portals/0/SiteContent/pw/docs/recycle/MasterPlan/Nashville%20Food%20Waste%20AD%20Study%20Final.pdf

Nashville (Food Waste Webinars) - Community Composting in Nashville Webinar Series https://www.eli.org/food-waste-initiative/publications

Nashville (Public Works) - Composting Education https://www.nashville.gov/Public-Works/Community-Education/Composting.aspx

Nashville (Urban Green Lab) - Sustainable Classrooms https://www.google.com/url?q=https://urbangreenlab.org/sustainable-classrooms/&sa=D&source=editors&ust=1618351016506000&usg=AFQjCNHTzDj4S55FrgjXX806fBviHvrBrg

NRDC - Tackling Food Waste in Cities: A Policy and Program Toolkit (2019) https://www.nrdc.org/sites/default/files/food-waste-cities-policy-toolkit-report.pdf

NRDC K-12 - Wasting Less Food in K-12 Settings: Best Practices for Success https://www.nrdc.org/sites/default/files/k-12-food-waste-best-practices-ib.pdf

Phoenix - City of Phoenix Climate Action Plan Framework (2020)
https://www.phoenix.gov/oepsite/Documents/Climate%20Action%20Plan%20Framework%2011182020.pdf

Princeton - Princeton Climate Action Plan (2019)
https://www.sustainableprinceton.org/wordpress/wp-content/uploads/2019/11/princeton-climate-action-plan-report.pdf

Providence - The City of Providence's Climate Justice Plan (2019)
https://www.providenceri.gov/wp-content/uploads/2019/10/Climate-Justice-Plan-Report-FINAL-English-1.pdf

San Diego - Assessing the San Diego County Food System: Indicators for a More Food Secure Future (2010)
https://static1.squarespace.com/static/54b30bbae4b0fc4c2291385e/t/56096c47e4b0566c6094504f/1443458119325/SDFSWG_Final_Report_optimized.pdf

Santa Fe - Sustainable Santa Fe 25-Year Plan (2018)
https://www.santafenm.gov/media/files/Sustainable_SF_Commission/Sustainable%20Santa%20Fe_October_Printsm.pdf

Seattle - Seattle Climate Action Plan (2013)
https://www.seattle.gov/Documents/Departments/Environment/ClimateChange/2013_CAP_20130612.pdf

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