

## Estimating quantities of food waste generation and the food rescue potential in the St. Louis Region that includes 8 counties covered by the East-West Council of Governments: City of St. Louis, St. Louis County, St. Charles County, Franklin County, Jefferson County, Madison County, St. Clair County, and Monroe County

### About our research and the calculator

Estimating a baseline of amounts currently being wasted is a critical first step in addressing food waste. Without understanding some basic information about how much food is being wasted and where that occurs, it is impossible to assess progress. Though actual measurement of wasted food is optimal, waste audits can be costly, time-consuming, or sometimes impractical. Similarly, few cities have tried to estimate how much surplus food could potentially be rescued and directed to people in need. Having data on this potential clarifies the scale and sources of rescuable food and can inform strategies for increasing participation in food donation efforts and bolstering food rescue infrastructure. It also highlights what portion of the region's "meal gap" could potentially be addressed through increased food donation.

The first phase of NRDC's Food Matters project was focused on original research with two aims: developing methodologies by which to estimate how much food is going to waste in a city and how much food that is currently being discarded could potentially be rescued to assist food insecure people in the community. To make our methodologies more accessible and the research applicable to other locations, NRDC developed a calculator to help cities estimate sources and quantities of food waste generated in both the city's residential and commercial sectors, as well as to estimate the quantity of potentially rescuable food from the commercial sector. This tool can help estimate the initial scope of food wasted in a city and or region, but as it is a high-level, sector-based estimate, this tool is not applicable for evaluating progress in reducing food waste generation and increasing food donation over time, nor is it capable of deriving facility-level estimates. Further, the calculator is a snapshot based on national estimates and cannot factor in past or future efforts to reduce the amount of food going to waste – any work that St. Louis has already done at the local level will not be captured in the estimates, nor can the calculator be used to assess progress at a future date.

Our calculations are based on a range of national data sources and NRDC's research related to wasted food generation and food rescue potential in cities. Our research findings are presented in full under the report titles *Estimating Quantities and Types of Food Waste at the City Level (Report and Technical Appendices)* and *Modeling the Potential to Increase Food Rescue: Denver, New York City and Nashville*. Final reports for the first phase of research can be found at: <https://www.nrdc.org/resources/food-matters-what-we-waste-and-how-we-can-expand-amount-food-we-rescue>. Please reference the methods sections of both reports for more detailed information about the source models.

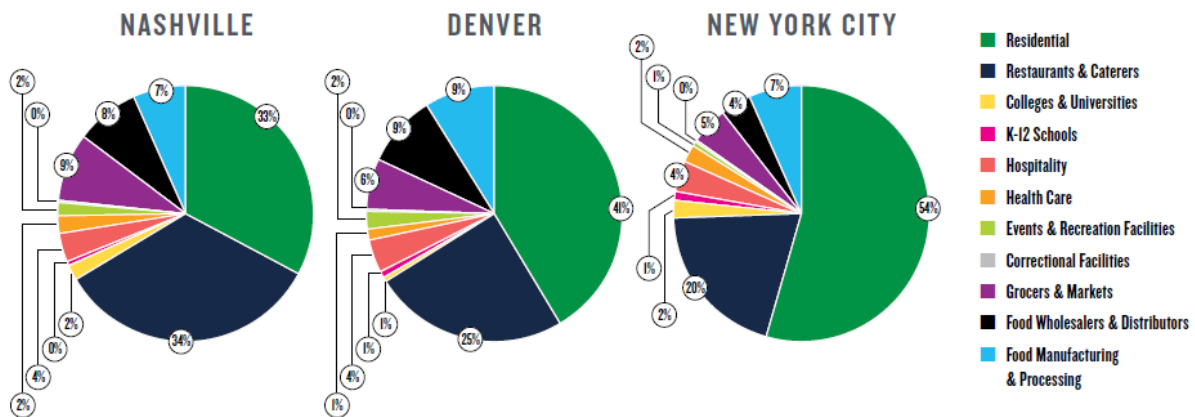
Though this assessment is an estimate, we are hopeful that this analysis presents a more detailed picture than existing evaluations to date.

## The Results for the St. Louis Region

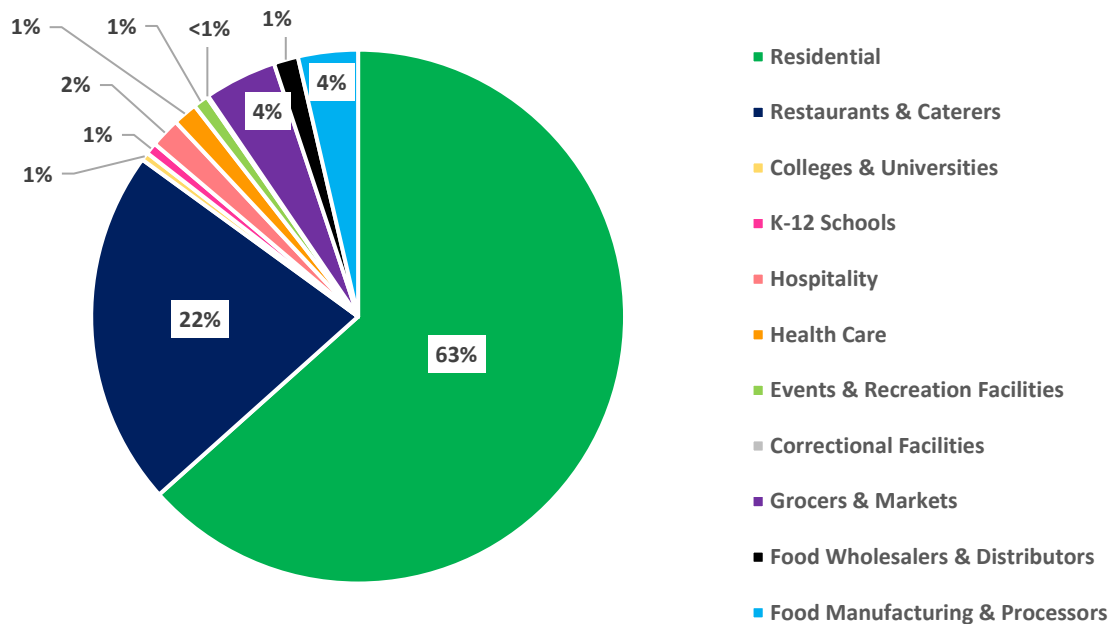
### Estimating Food Waste Generation by Sector

The estimates for food waste generated in the St. Louis Region (which includes the following: City of St. Louis, St. Louis County, St. Charles County, Franklin County, Jefferson County, Madison County, St. Clair County, and Monroe County) show some slight variance from the three cities we studied in our first phase of research, in part because of the large geographic area beyond the city limits that was included in this analysis, but the overarching trends are consistent with other cities analyzed. We define food waste as any uneaten food and inedible parts, excluding packaging, that are landfilled, incinerated, disposed of down the drain/sewer, dumped, spread onto land, anaerobically digested, composted, or used for animal feed.

#### ESTIMATED FOOD WASTE GENERATED BY SECTOR



### Estimated Food Waste Generated By Sector in the St. Louis Region



In all, we estimate approximately 666,600 tons of food waste are generated in the region each year. The residential sector is the highest food waste producing sector at more than 422,500 tons of food waste per year. The largest industrial, commercial, and institutional (ICI) sector generating food waste is restaurants, totaling more than 144,100 tons, more than all other ICI sectors combined. Other substantial contributors include retail grocery stores and food manufacturing and processing generating approximately 29,300 and 24,000 tons each respectively. Food wholesalers and distributors and healthcare bring up the next tier of food waste generation, each generating more than 9,800 tons annually. Five sectors bring up the least amount of food waste generation in the region, each generating 6,000 tons or less annually: Event facilities, K-12 schools, higher education, and correctional facilities.

Although the residential sector and the restaurant sector are the largest estimated contributors to food waste generation, these are also the sectors with the most members, meaning a large number of entities are each producing on average a relatively small amount of waste. On the other hand, there are significantly fewer food wholesalers and health care entities in those respective sectors, meaning each of those facilities may be producing a considerable amount of food waste.

**Summary of Estimated Tons of Food Waste Generated in the St. Louis Region**

Sector	Estimated Tons of Food Waste Generated	% of Total (ICI only)
Restaurants	144,156	59%
Grocers & Markets	29,310	12%
Food Manufacturing & Processors	24,183	10%
Hospitality	12,047	5%
Health Care	9,897	4%
Food Wholesalers & Distributors	9,863	4%
Events & Recreation Facilities	6,018	3%
K-12 Schools	4,705	2%
Colleges & Universities	3,271	1%
Correctional Facilities	640	<1%
Residential	422,543	
<b>Total</b>	<b>666,632</b>	

**Modeling the Potential for Food Rescue**

Our second scope of analysis looks at the amount of surplus food that could potentially be rescued and redirected to address food insecurity. Our analysis provides a guidepost for “what’s possible,” to better inform further development of the food rescue system. Below, we will look at the two scenarios explored in this component of our research. The scenarios differ by the rate of donation explored and the percentage of area businesses included as potential food donors. Our methodology addresses grocery retail, convenience stores, restaurants, caterers and various types of institutional foodservice; these are the commercial sectors where reliable sources of national data on current, actual donations were available to drive our calculations.

Maximum Scenario: Our maximum scenario characterizes the maximum amount of surplus food in the retail, restaurant, and institutional sectors within each city that we believe could, hypothetically, be donated. We define surplus food as food (including inedible parts) that is not sold or used for its initially intended purpose and that is suitable for donation. This scenario estimates potentially rescuable surpluses at 100% of area businesses and institutions and our most optimistic assumptions about the amounts of surplus food that could potentially be suitable for donation under optimal conditions. As such, the maximum scenario describes the upper-most limit of what we believe to be theoretically possible.

Ambitious Scenario: The ambitious scenario describes the amount of rescuable food that could potentially be available using more realistic assumptions and existing donation patterns (based on national data for the business sectors evaluated) to describe an ambitious yet attainable set of possibilities. As such, the ambitious scenario is more rooted in current rescue realities in these sectors nationally and embodies a more “middle of the road” set of assumptions. It acknowledges, for instance, that donation activity in sectors such as restaurants is currently more limited and will take time to grow given the challenges of rescuing prepared food from many disparate locations.

The chart below highlights the potential for food rescue envisioned under NRDC's methodology. Note that these figures reflect the potential from businesses located only within the region and don't reflect donated foods that would be sourced from other places. Some portion of the calculated amounts below are likely already being donated, particularly in the grocery sector.

RESCUE POTENTIAL BY SECTOR FOR THE ST. LOUIS REGION		
Sector	Potential under <b>Ambitious Scenario</b> (Tons/Year)	Potential under <b>Maximum Scenario</b> (Tons/Year)
Retail Grocery	7,881	9,851
Convenience Stores	873	7,005
Healthcare	350	1,049
Hospitality	285	855
Full-Service Restaurants	199	1,955
K-12	103	820
Caterers	81	242
Limited-Service Restaurants	74	901
Universities & Colleges	58	173
Coffee Shops	13	112
<b>Total</b>	<b>9,915</b>	<b>22,964</b>

The estimates for additional food rescue potential in the region show some variance from the cities we studied in our first phase of research as well as the other cities investigated since then, but the overarching trends are consistent with other cities analyzed.

Looking first at the maximum scenario, approximately 23,000 tons of food could potentially be rescued annually. The majority (73%) of this food comes from larger grocery stores (9,800 tons/year) and from small retail/convenience stores (7,000 tons/year). Another 2,800 tons of food (12%) could come from restaurants, with most of that coming from full-service restaurants. Hospitality, healthcare, and K-12

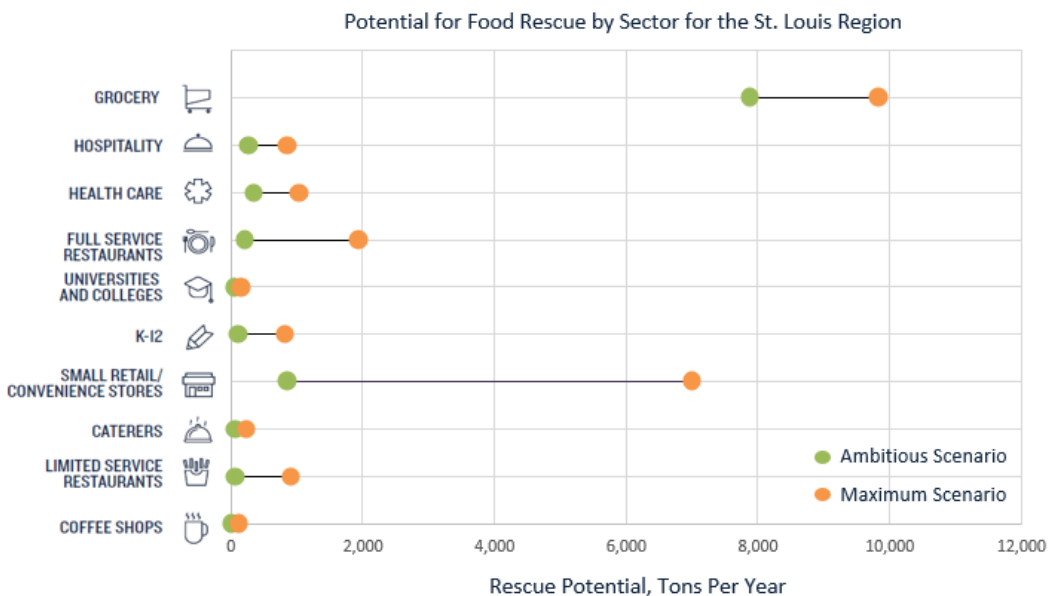
school sectors are likely an untapped potential source of rescuable food, each representing about 4% of the total estimated rescue potential.

Alternatively, the ambitious scenario suggests that, more feasibly, just over 9,900 tons of surplus food could be rescued from these sectors in the region. Under this scenario, which takes into account both smaller amounts of rescuable food as well as much lower participation rates for convenience stores, the small retail sector drops down to 870 tons of surplus food per year, or 9% of the total ambitious potential. Healthcare and hospitality show promise, collectively representing 6% of the total ambitious potential. In this scenario the rescue potential for restaurants drops substantially to less than 300 tons, reflecting the significant logistical barriers to food rescue in that sector.

While restaurants represent a larger portion of overall wasted food, much of that waste occurs after the food is served and is unsuitable for rescue. Also, NRDC estimates that fewer than 5% of all restaurants in the country currently donate. Our ambitious scenario assumes that 15% of restaurants would donate surplus food.

In both scenarios, the retail grocery sector has the largest potential for food rescue. Under the maximum scenario, retail grocery stores and corner markets offer 73% of the total potential, whereas in the ambitious scenario, these sectors offer 88% of the total potential. However, large retailers are often well-connected to food rescue organizations and this sector is likely well-tapped. Often, small retail stores are less familiar with donation incentives, and fewer of them currently donate. Food quality concerns in that sector may be more significant, and the combination of small amounts and many disparate locations can make rescue logistics challenging. Grocery stores that donate at the highest rates are often able to do so by ramping up donation of perishable items. Perishable food categories including produce, dairy, meat, and deli represent a substantial 53% of all U.S. grocery sales. This large share of perishables among U.S. grocery sales and input from industry leaders suggest that donation rates could expand substantially if rescue infrastructure for perishables was fully scaled up.

The chart below highlights the regions' data in a schematic format:



### *Meals gap*

In addition to estimating how much additional surplus food could potentially be rescued in Denver, Nashville, and New York, we compared those amounts of food to each community's estimated meal gap, working from Feeding America data<sup>1</sup>. To translate food tonnage into meal equivalents, we assume that "meals" weigh 1.2 pounds on average. In doing so, we also acknowledge that some food may go to waste after the point of donation (whether within the hunger relief system or after it is provided to food insecure individuals). We did not attempt to deduct these amounts due to the limited availability of data.

Feeding America estimates the food insecurity rate in the St. Louis Region to be 8% (similar than the US rate of 10%) or 17,600,000 meals per year for a total annual food budget shortfall of \$66.7 million.

**Under the ambitious rescue potential model, we estimate that approximately 16.5 million meals could be rescued from the sectors under review located within the St. Louis region, representing 94% of the meal gap.** The value of that rescuable food is estimated to come close to \$62.4 million. The maximum recoverable potential model identified more than 38 million meals that could potentially be rescued, or enough to fill the entire meal gap for the region. Note that some portion of the estimated potential is likely already being rescued, although we expect that the untapped potential remains sizeable, particularly for perishables in the grocery sector as well as prepared foods in the hospitality and healthcare sectors.

### *Differences between Rescue Potential and Waste Generation Models*

At this point it may be helpful for us to provide a note on the sectors analyzed in this research relative to the previously mentioned waste generation assessment. Because of the availability of data and the unique data sources utilized for this research, the results presented in this assessment are not wholly parallel with the results from the waste generation assessment. For example, there is a dearth of data available to assess the surplus food rescue potential from food wholesalers and distributors, food manufacturing and processing, event and recreation facilities, correction facilities, etc. Though the data is not available, it does not mean that there is no potential to rescue surplus food from these facilities, but rather that a meaningful estimate is not possible. The residential sector was not assessed for its food rescue potential because the food wasted at the household level is not appropriate for donation.

Additionally, for the waste generation assessment, sufficient data was not available to assess how much food is wasted from the convenience store and small retail sector; therefore, it is not featured in the previously mentioned research. Furthermore, more granular data is available for the rescue potential from different kinds of restaurants – full service, limited service, coffee shops, caterers – enabling us to disaggregate those sectors for the rescue analysis.

### *Recommendations for further action*

- Together, households and restaurants likely contribute more than three-quarters of the food waste generated in the St. Louis Region. Engaging residents in educational outreach about food waste prevention should be a key element of food waste reduction efforts in the region. Additionally, food scraps collection from urban residences and consumer-facing businesses will

---

<sup>1</sup> Feeding America reports County level data. We assume an even distribution of food access across the county in order to estimate the city level meal gap. This may be a false assumption. If you have more nuanced data of city-level food insecurity, we would be happy to revise the analysis with your data.

pose challenges but is a critical component of meeting food waste reduction and zero waste goals.

- Targeting restaurants with food waste prevention and recycling technical assistance may prove to significantly curtail the amount of food going to waste in the St. Louis Region. Some of them may already be implementing food waste prevention techniques; a restaurant challenge could be another method for ramping up solutions and engaging businesses in food waste reduction and recycling to improve waste management.
- Small retail stores and corner markets are often less familiar with donation incentives, and fewer of them currently donate. When corner stores are located near one another or near last-mile food organizations logistical challenges may be surmountable. Food donation, food scrap recycling, and food waste prevention education could pair well with existing outreach efforts to these businesses.
- Local rescue organizations likely have information about what food is currently being donated and from where. We recommend future coordination with rescue organizations operating in the St. Louis Region to identify current donation levels and the untapped portion of the estimates above.