From: kiko denzer
To: Coffin Butte Landfill Appeals
Subject: Deny LU-24-027 to improve waste management in Benton Co.
Date: Wednesday, October 15, 2025 7:51:07 AM
Attachments: MassWasteBanImpactReport.pdf

My name is Kiko Denzer. I live at 928 n. 9th street in Philomath. Thank you for considering more testimony.

Allowing Republic Services to expand Coffin Butte will not only destroy the character of the county and place enormous burdens on the entire community, but will drag the whole county deeper into a mess we could be cleaning up instead.

Instead, Benton county could work with it's waste contractor to meet the highest standards (rather than the current lowest standards).

Massachusetts offers one example of how government can do something about waste. Here are some sample paragraphs from their website and from an attached file documenting the positive economic impacts of their ban on the commercial disposal of organic solid waste (which is only one of many more sustainable, and more economically beneficial waste-reduction strategies):

Waste bans boost recycling and support the recycling industry, which contributes thousands of jobs and millions of dollars to the Massachusetts economy. By cutting down on disposal, the waste bans also help us capture valuable resources, save energy, reduce greenhouse gas emissions, and lessen our reliance on landfills and incinerators.
(https://www.mass.gov/guides/massdep-waste-disposal-bans)

Since the 2022 expansion, the commercial organics waste ban continues to drive a growing industry in Massachusetts and solidifies the foundation for a more robust organic waste diversion industry in the years to come. The…report demonstrate[s] that the organics waste industry is growing, not only in terms of job creation and investments, but also in terms of people's perceptions of waste and waste diversion. If the ban continues to normalize composting and food rescue and helps keep food materials out of landfills, it will undoubtedly have a tremendous positive impact on the environment and will change the way people view food and define "waste." …Across many companies, Mass DEP's leadership on the organics waste ban has been repeatedly praised for the detailed and thoughtful approach that has prevented many of the challenges faced in other regions.
("Massachusetts Commercial Organics Waste Ban Economic Impact Analysis," June, 2025, see full report, attached)

June 2025

Massachusetts Commercial Organics Waste Ban Economic Impact Analysis

Submitted to:
Massachusetts Department of Environmental Protection
Submitted by:
ICF
230 3rd Avenue, Suite 300
Waltham, MA 02451

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I. Introduction

In October 2014, the Massachusetts Department of Environmental Protection (MassDEP) amended its existing waste ban regulations, adding commercial organic material[1] (which is primarily food material) to the list of materials banned from disposal in Massachusetts. Under these regulations, businesses and institutions may not dispose of one ton or more of commercial organic material per week in the trash. There are many ways for businesses and institutions to comply with the ban, including donating food, or sending it for animal feed, composting, or anaerobic digestion.

In November 2022, the existing waste ban regulations were amended again, lowering the quantity of organic material businesses and institutions are allowed to dispose of every year. Under the new rules, the threshold is lowered from one ton per week to a half ton per week.

As outlined in the MassDEP Organics Action Plan, since the implementation of the commercial organics waste ban, Massachusetts food waste diversion increased from 100,000 tons (prior to the ban) to 380,000 tons in 2023. The number of businesses receiving separate food waste collection also increased from 1,350 in 2014 to 3,120 in 2023. In addition, a number or organizations providing food rescue and donation services have grown in Massachusetts. The collective impact of these actions has resulted in a 17% decrease in food waste entering the landfill stream (decreasing from 26% in 2016 to 21.6% in 2022).

MassDEP contracted ICF to analyze the recent trends in the Massachusetts organics waste industry as well as potential impacts of the expansion of the Commercial Food Waste Disposal Ban. To understand these trends and impacts, ICF developed and administered a survey targeting industry stakeholders in Massachusetts and subsequently conducted an economic impact analysis using data derived from this survey. The economic impact analysis relied on the commonly utilized Lightcast model to estimate the job creation, labor income generation, value add, and industry activity resulting from recent activity in the organics waste industry. Additionally, ICF conducted interviews with organizations affected by the ban in order to understand current trends, challenges, and future opportunities for businesses, schools, and municipalities that seek to incorporate organic waste separation into their management operations.

Results from ICF's quantitative and qualitative analyses indicate that organic waste diversion activities, including composting and food rescue, are continuing to gain traction across the Commonwealth. Stakeholder segments, including organic waste haulers, processors, and food rescue organizations, have experienced significant growth in the three years since the ban was amended to the lower half ton threshold. Companies are also planning significant capital investments in facilities and equipment, suggesting a stable market and a positive long-term outlook.

[1] MassDEP defines commercial organic material as food material or vegetative material, where "food material means material produced from human or animal food production, preparation and consumption activities and which consists of, but is not limited to, fruits, vegetables, grains, and fish and animal products and byproducts" and "vegetative material means plant material." Final Amendments to 310 CMR 19.000 Regulations, http://www.mass.gov/eea/docs/dep/service/regulations/wbreg14.pdf.

While the ban itself is undeniably beneficial in promoting organic waste diversion, an equally important factor is public support and cultural acceptance. Stakeholder interviews allowed ICF to gain insight into the perception of the ban and the challenges faced by core segments of the organics waste industry. Cultural acceptance for diverting organic waste, especially to compost, was strong in the greater Boston area for some residential and commercial food waste producers before the ban took effect. While support for organic waste diversion may be strong, key barriers include lack of space for composting facilities, better source separated waste in order to prevent contamination, and more stringent enforcement of the ban.

The following sections of this report discuss ICF's study methodology and findings in detail.

II. Study Methodology

Survey and Interview Approach

To assess industry trends and estimate the statewide impact of the organics waste industry,[2] ICF developed and implemented a survey to collect information directly from those organizations engaged in the organics waste industry in Massachusetts. The survey was developed in collaboration with MassDEP and was targeted at four stakeholder groups: organic waste haulers/collectors, processors and composters, food rescue and recovery organizations, and other organizations (e.g. food manufacturing, compostable products distribution, hot meals & emergency food pantry). Respondents were asked questions about recent trends in their revenue, employment, capital investments, and their experience with the ban. The survey was distributed to 117 industry contacts provided by MassDEP. Contacts received the survey link via an email from a MassDEP email address directly. The survey collected 37 unique responses from 30 companies over a 10-week period from January 7, 2025, through March 14, 2025, for an overall response rate of 32%[3]. Upon completion of the survey, ICF cross-checked raw results to ensure that no survey was duplicated, incomplete surveys were not incorporated into results, and usable responses were all accounted for. The sample as well as key metrics gained from the survey for each segment can be found in Table 1.

[2] For the purposes of this study, MassDEP defines the organics waste industry to include organic waste hauling/collecting, composting, food processing, animal feed and anaerobic digestion, and food rescue and donation.
[3] The survey response rate resulted in a 95% confidence interval (CI), +/- 16%.

Table 1. Survey Results

	All Responses	Collectors/ Haulers	Processors	Food Rescue	Other
Number of Survey Responses (# of companies)	37 (30)[4]	15	10	8	4
Company Count (2015)	98	39	44	15	---
Company Count (2024)	117	55	35[5]	21	6
Average 2015 Revenue (2024$)	$1,139,703	$1,495,722	$658,250	$900,218	---
Total Revenue 2015 (2024$)	$100,799,000	$58,333,000	$28,963,000	$13,503,000	---
Average 2024 Revenue	$1,220,902	$1,506,926	$967,476	$1,357,585	$575,000[6]
Total Revenue 2024	$175,222,513	$103,971,210	$33,861,677	$28,509,286	$190,087,500
Average 2015 Payroll (2024$)	$244,748	$293,042	$179,619	$234,274	---
Average 2024 Payroll	$466,351	$679,923	$209,517	$345,716	$301,494
Total Number of Employees 2016	493	259	146	88	---
Total Number of Employees 2024	751	506	94	107	23
Average Salary per Employee 2016 (2024$)	$36,599	$41,134	$32,619	$34,977	---
Average Salary per Employee 2024	$55,501	$60,145	$57,758	$55,370	$57,758

Source: Data from survey, compiled by ICF. Results rounded.

[4] Responses were received from 30 companies. A company that indicated it had operations in multiple segments was counted for each respective segment for a total of 37 unique responses. Incomplete responses were excluded.

[5] It should be noted that companies that are categorized as 'other' in the 2025 study were likely categorized as processors in the 2016 study so the decrease in count may be explained by the more descriptive sector definitions used in the 2025 study.

[6] There was 1 significant outlier (Greater Boston Foodbank - $100M annual revenue) that was excluded from the average. Their revenue is included in the total revenue estimate.

Economic Impact Analysis Methodology

In addition to analyzing industry trends and projections, this analysis also quantified the economic impact associated with current organic waste hauling, processing, food rescue, and other organizations across the Commonwealth. To conduct this analysis, ICF used Lightcast, an economic impact model.

Understanding the Lightcast Model

Lightcast™ is a tool that is widely used by federal agencies and state and local organizations for industry and labor market analyses. The Lightcast model is an input-output model that relies on North American Industry Classification System (NAICS) codes, the standard used by Federal statistical agencies in classifying business establishments, to categorize inputs.

Input-output models describe and predict the economy-wide impact of an economic stimulus occurring in a subset of sectors. ICF used the Lightcast input-output model to calculate the indirect and induced impacts associated with current organics waste industry activity in Massachusetts. ICF obtained the latest data from Lightcast for the Commonwealth of Massachusetts and developed a customized model framework for analysis. The model uses region-specific multipliers to trace and calculate the flow of dollars from the industries that originate the impact to supplier industries. The analysis used Lightcast outputs to determine three types of impacts:

- **Direct Impacts**, which are impacts in the primary industries that engage with organic waste collecting/hauling, processing and food rescue.
- **Indirect Impacts**, which are impacts in the industries that supply or interact with the primary industries. For example, when a waste collecting/hauling business expands and purchases new equipment, the industry sectors supplying the equipment experience indirect impacts.
- **Induced Impacts**, which represent increased spending by workers who earn money due to increased economic activity, such as when organics processor employees use their wages to purchase goods from local shops.

Whenever new industry activity or income is injected into an economy, it starts a ripple effect that creates a total economic impact that is much larger than the initial input. This is because the recipients of the new income spend some percentage of it and the recipients of that share, in turn, spend some of it, and so on. The *total impact* of the new activity/income is the sum of these progressively smaller rounds of spending within the economy. This total economic impact creates a certain level of value added jobs, and industry activity. Throughout these rounds of impacts, some proportion of activity within each industry drops out of the region due to a lack of capacity to support additional activity, or a lack of local production for a specific input, these are call leakages. Lightcast then uses this total impact to calculate subsequent impacts such as total jobs created.

The results of this analysis are reported using commonly used metrics, consistent with best practices. A summary of each metric is provided below:

- **Industry Activity**: Represents the total industry activity generated by the direct spending (sales).

- **Employment**[7]: Represents the jobs created by industry, based on the output per worker and output impacts for each industry.
- **Labor Income**: Includes all forms of employment income, including employee compensation (wages and benefits) and proprietor income.
- **Value added**: The difference between an industry's total output and the cost of its intermediate inputs; sometimes referred to as an industry's total value added

The model also determines which industry sectors throughout the economy experience the greatest impact. For example, although there is no direct spending from the organics waste industry dedicated to hospital expenditures, hospitals and other healthcare industries may see increased employment due to the secondary effects of activity in the organics waste industry when employees in directly related sectors spend money on healthcare.

Developing Model Inputs

The first step in conducting an economic impact modeling requires calibrating the model and preparing the inputs. ICF identified the NAICS industry codes most appropriate for describing the four segments of the organics waste industry (See Table 2). ICF extrapolated and weighed the survey results to the larger industry population to prepare the model inputs. ICF used 2023 processing tons to weight the survey results for processing data and 2023 commercial customer counts to weight collection and hauling data do address potential bias in the survey results. Next, ICF used the average employment per business derived from the survey data to estimate the total population of employees engaged in organics waste activity in Massachusetts. The average number of employees per business was weighted and extrapolated to the entire population of Massachusetts businesses within each segment (organic waste collectors/haulers, processors, food rescuers, and other organizations) through the following calculation: *(Average weighted employment per business) x (Total number of related Massachusetts businesses) = Estimated total number of employees*

Similar to the calculation used to estimate total employment, total payroll was calculated by taking the average annual earnings for the industry and multiplying it by the total number of Massachusetts businesses and institutions within the segment. The result was an estimate of the total statewide payroll for each of the four segments.

[7] Due to the static nature of the Lightcast model, the employment impacts are presented in terms of annual job-years as the model calculates the annual impact of annual activity. It is likely that once the job is created, it will be sustained; however to ensure that the impact is not overstated, it is conservatively assumed that the job impact is annual.

Table 2. Employment and Employee Compensation as Inputs

Model Inputs	Collection/ Hauling	Processing	Rescue	Other
NAICS code	562998; 562119	624210; 624229; 562998; 562119	624210; 624229; 562998; 562119	624210; 624229; 562998; 562119
Sector Name	All Other Miscellaneous Waste Management Services; Other Waste Collection	Community Food Services; Other Community Housing Services; All Other Miscellaneous Waste Management Services; Other Waste Collection	Community Food Services; Other Community Housing Services	Community Food Services; Other Community Housing Services; All Other Miscellaneous Waste Management Services; Other Waste Collection
Payroll/ Employee Compensation	$46,912,00	$7,333,000	$7,260,000	$1,809,000

The impact modeling analysis consisted of four separate input vectors accounting for each of the segments. An input-output model was run for each of the four segments. Each segment required multiple NAICS codes to accurately map industry impacts. Table 2 presents the model inputs for each modeling scenario. Inputs are based on 2024 values.

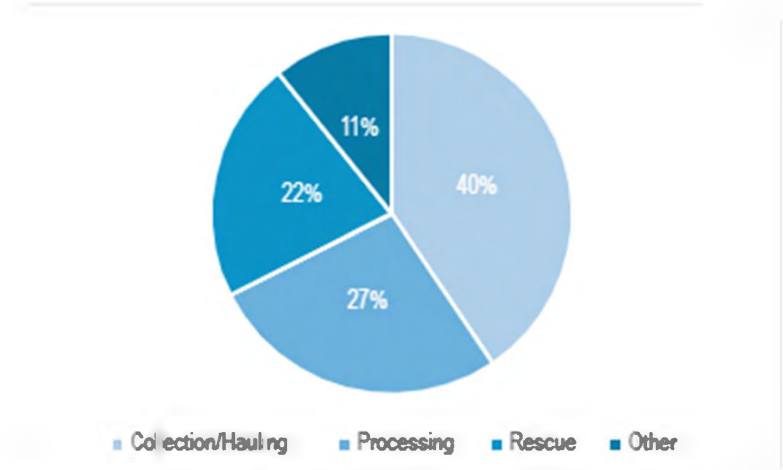
III. Study Findings

This section of the report describes the findings of ICF's industry analysis, beginning with a discussion of the industry trends that were derived from the survey responses, followed by themes that emerged from the synthesized interview findings. Lastly, the economic impact analysis articulates the importance of this growing industry in supporting economic activity across the Commonwealth.

Snapshot of Industry Trends

The following discussion relies on the analysis of the 37 valid survey responses across the organics waste industry in Massachusetts. The response by industry segment is presented in Figure 1. Organic waste collectors/haulers made up 40% of respondents, followed by organic waste processors (27%), food rescue organizations (22%), and finally other organizations (11%), which include food manufacturing, compostable products distribution, and other organizations that don't fit neatly in the other categories.

Figure 1. Survey Respondents by Industry Segment 2024

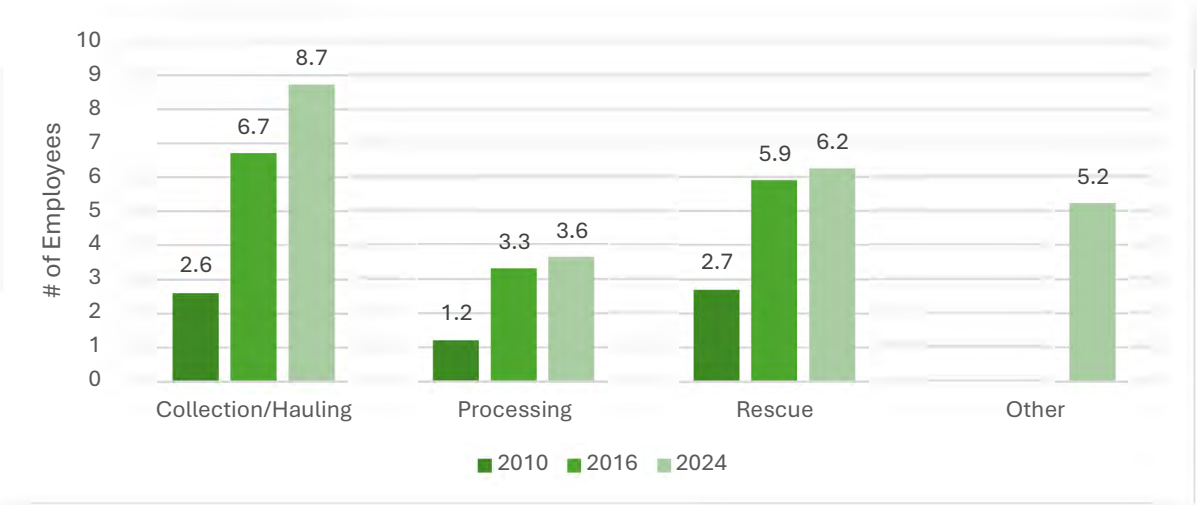


Source: Data from survey, compiled by ICF.

Employment

Figure 2 shows the historical growth in employment across all four industry segments. As shown in the figure, on average, collectors/haulers and food rescue organizations tend to be larger than processors. All four industry segments reported a positive change in the average number of employees between 2010 and 2024.

Figure 2. Average Number of Full-Time Employees per Business 2010 - 2024



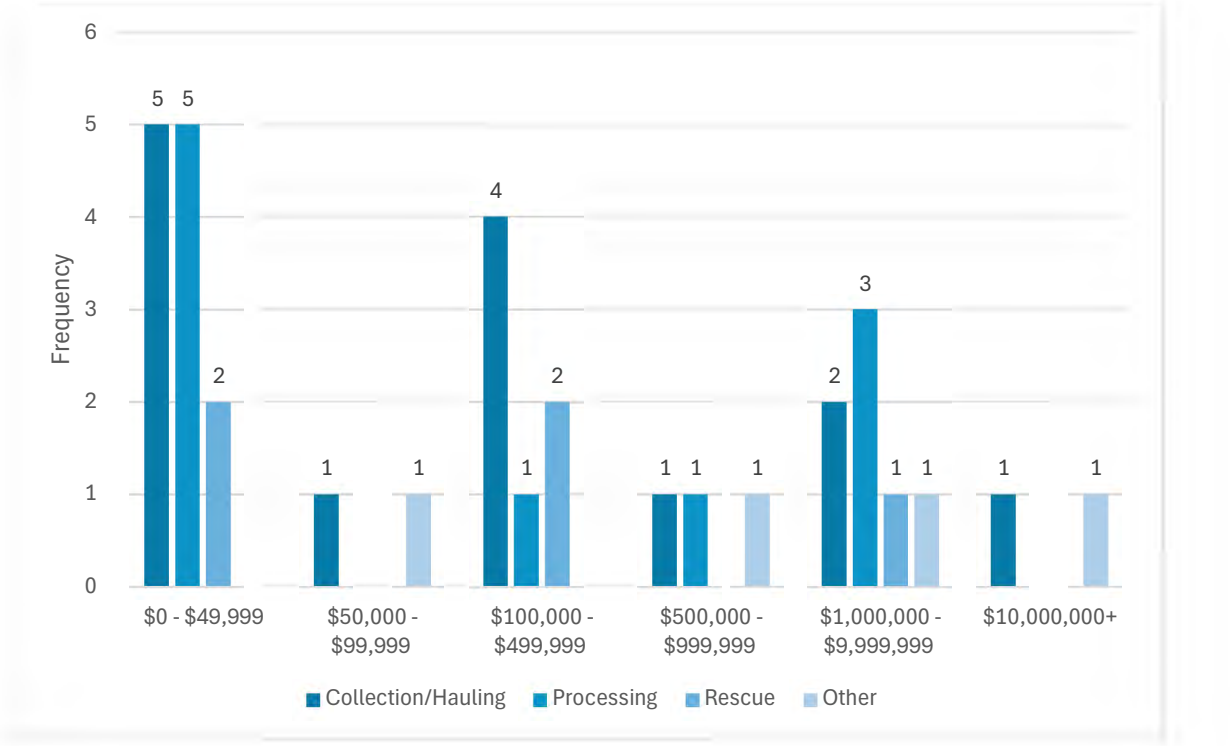
Source: Data from survey, compiled by ICF.

Based on the average employee per organization in each segment, ICF estimated the total employment across all segments to be roughly 750 in 2024, a 53% increase from 2015, in which there were roughly 490 employees.

Revenue

ICF calculated an average revenue of $1,220,902 across all responses (Table 1). However, the largest frequency of responses indicate that the majority of companies have a revenue of less than $49,999 (Figure 3).[8] Figure 4 shows that the collecting/hauling sector has the highest average revenue, followed by rescue and processing, respectively. Rescue and collection/hauling generate over $1 million annually on average, with collection/hauling generating closer to $2 million on average. Other companies generate only $500,000 annually on average.

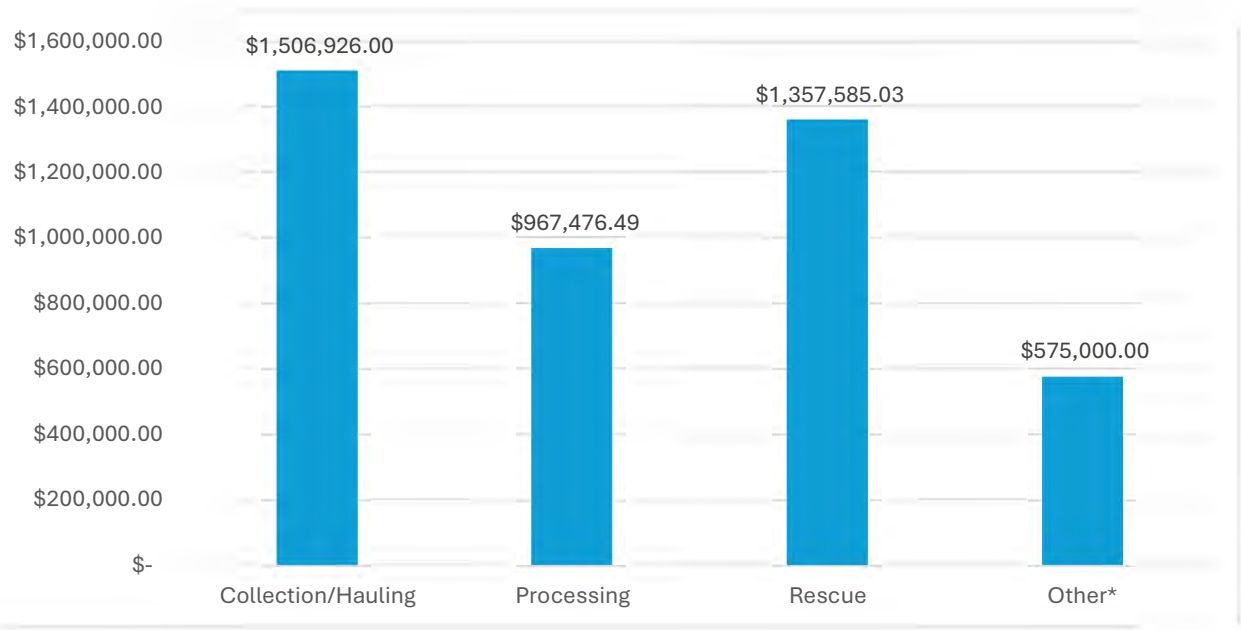
Figure 3. 2024 Revenue Responses by Segment



Source: Data from survey, compiled by ICF.

[8] Respondents were instructed to report on their Massachusetts-based organics waste-related services only.

Figure 4. 2024 Average Gross Revenue by Segment

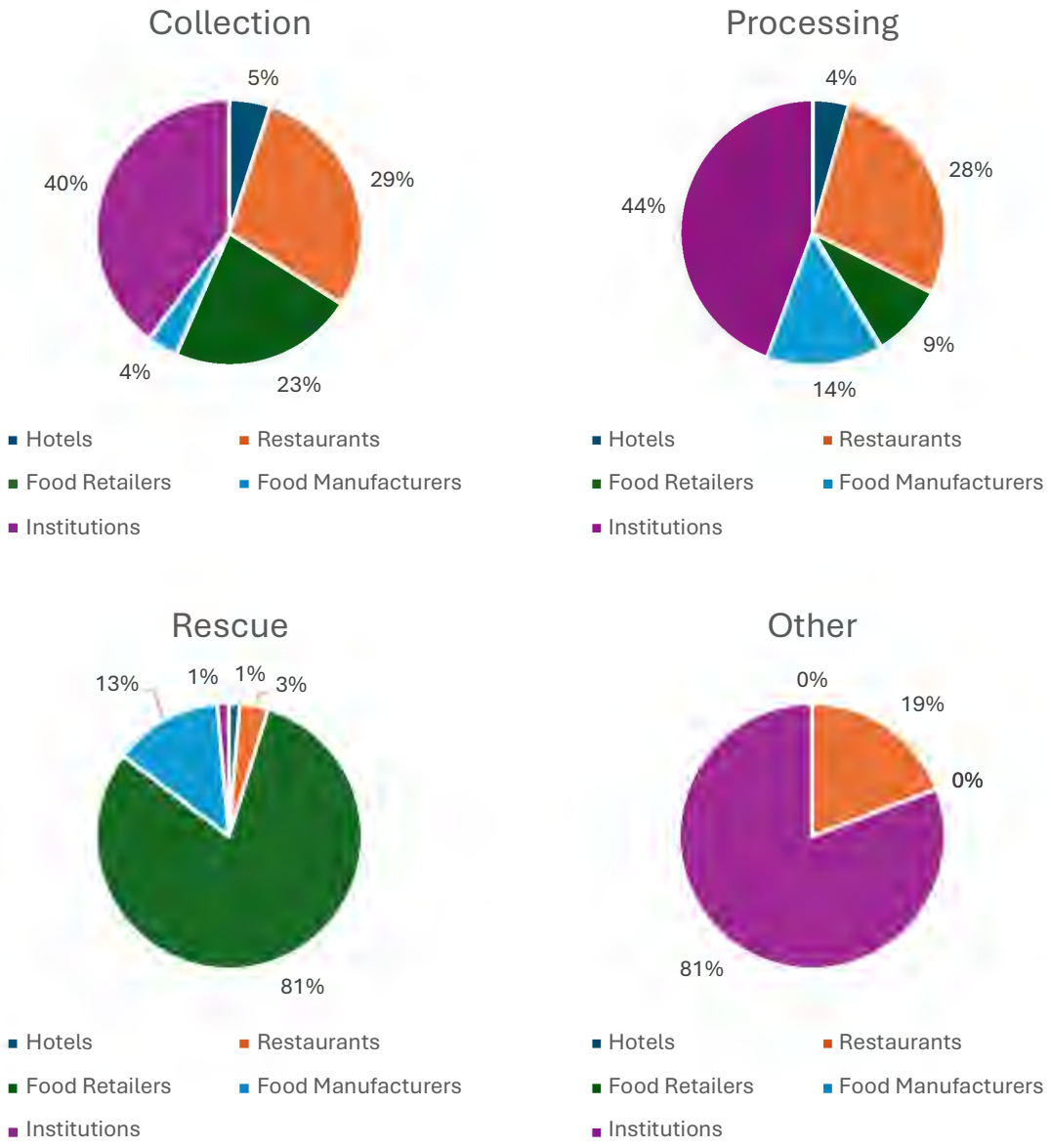


*There was 1 significant outlier (Greater Boston Foodbank) that was excluded from the average
Source: Data from survey, compiled by ICF.

Customers

Figure 5 presents the customer profile for each industry segment. Institutions are the main customers for the collection/hauling segment, accounting for approximately 40% of their customer base. Restaurants and food retailers are the second and third largest customer segments respectively, followed by hotels and food manufacturers. While haulers/collectors reported a diverse customer base, food rescue organizations reported receiving 81% of their food from food retailers. Some of the companies surveyed reported that they had customers that were not hotels, restaurants, food retailers, food manufacturers, or institutions. These customers were primarily households receiving residential curbside pick up. Residential waste is not included in the Massachusetts commercial organics waste ban, therefore those customers were not included in Figure 5 below.

Figure 5. Customer Distributions by Segment

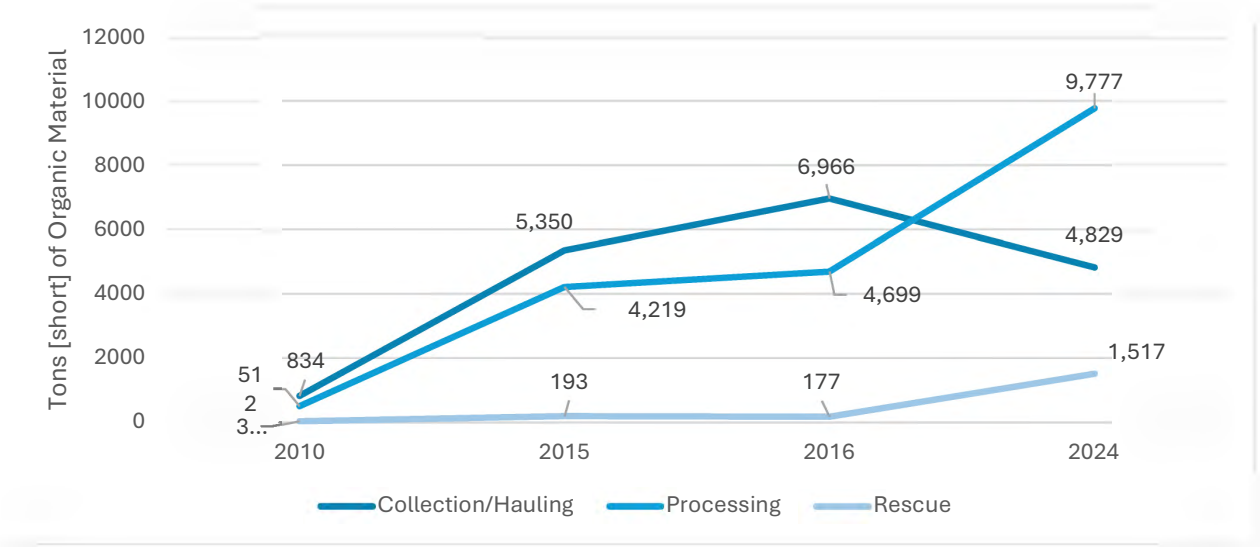


Source: Data from survey, compiled by ICF.

Food Tonnage

Figure 6 presents the average annual tonnage handled by companies from 2010 to 2024, and Figure 7 presents the total estimated tonnage for each industry segment based on the number of companies in each segment. Between 2015 and 2024, processors and rescue companies had a growth in average annual tonnage, translating to a 84% and 121% increase in industry wide total tonnage for each industry segment, respectively. Collectors/haulers had a decrease in average tonnage between 2015 and 2024 but had a 59% increase in total tonnage when accounting for total companies in the industry segment.

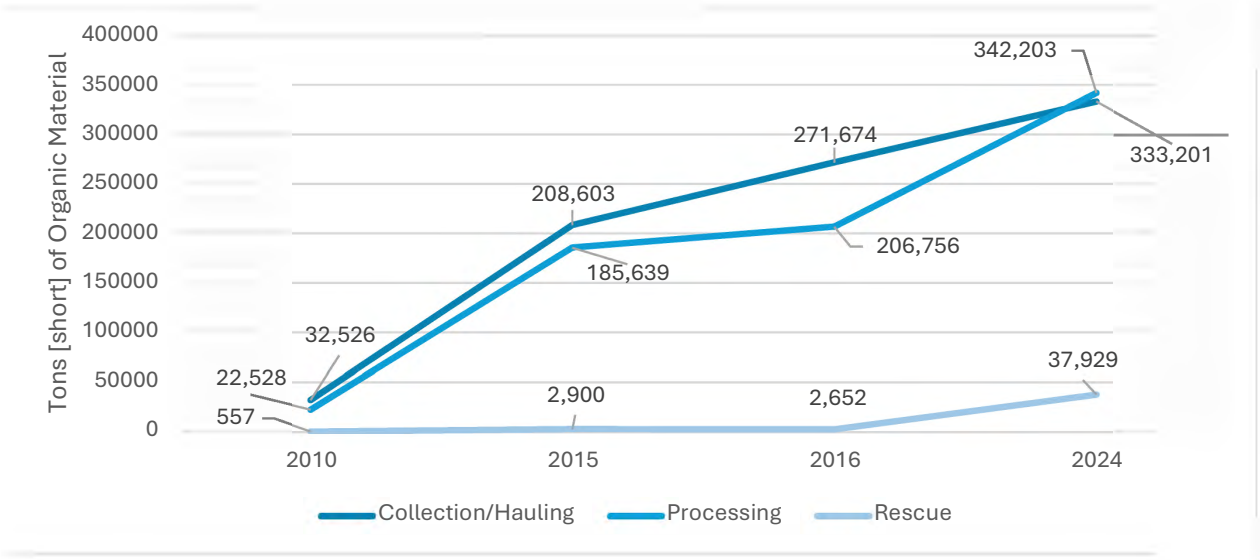
Figure 6. Average Annual Tonnage of Food Received by Industry Segment, 2010-2024



Note: 2016 is an estimate of tonnage (survey done July 2016 - asked for projected total 2016 tonnage)

Source: Data from survey, compiled by ICF.

Figure 7. Estimated Total Tonnage of Food Received by Industry Segment, 2010-2024



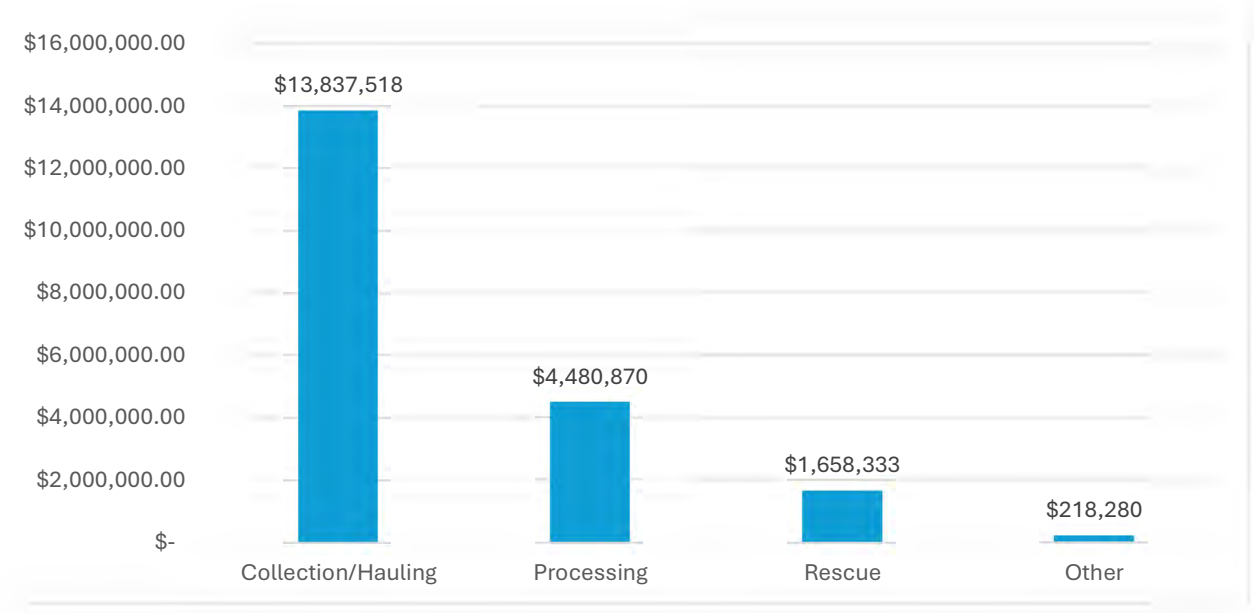
Note: 2016 is an estimate of tonnage (survey done July 2016 - asked for projected total 2016 tonnage)

Source: Data from survey, compiled by ICF.

Capital Expenditures

As evident in Figure 8, below, average annual capital investments in 2024 varied greatly across the four segments, with collection/hauling showing the largest average investments. These variations in investments are likely attributable to differences in facility and equipment needs across the four segments.

Figure 8. 2024 Average Annual Capital Investment by Segment



Source: Data from survey, compiled by ICF.

Economic Impact Results

The following section presents each segment's impact on the economy in 2024, based on the results of the economic impact analysis, and allows for a more nuanced understanding of the relative impacts of collectors/haulers, processors, rescue, and other organizations in the organic waste industry. Economic impact metrics include employment, labor income, value added and industry activity. The direct economic activity in each segment creates a ripple effect throughout the Massachusetts economy, from which additional jobs, revenue, and economic activity stem. The modeling results below provide quantitative context for comparison across industries and an estimate of the impact on the economy as a whole.

Organic Waste Collectors/Haulers

The organic waste collecting/hauling sector had the highest total direct employment and employee compensation and thus contributed the largest impacts in terms of employment, labor income, total value added, and industry activity. In 2024, economic activity in this sector supported a total of 1,236 jobs in Massachusetts—the 506 direct jobs in this sector drive the creation of over 484 additional indirect and induced jobs (Table 3). These indirect and induced jobs occur in industries not necessarily related to waste diversion, as they are driven by spending by businesses in the supply chain (such as computer equipment) or by employees spending their

wages on a variety of goods and services (such as real estate) (See detailed Table A-2, in the Appendix)

In 2024, the hauling segment generated over $111 million in labor income in Massachusetts, providing salaries to a wide range of employees and initiating a ripple effect that has benefits for the regional economy. Direct spending in the hauling segment drove over $322 million of industry activity in Massachusetts, and nearly $160 million in total value added. Compared to 2016 results (adjusted for inflation), the impact of collectors/haulers in 2024 increased across all impact variables: 155% employment, 253% labor income, 203% value add, and 158% industry activity.

Table 3. Impact Results—Organic Waste Collectors/Haulers, 2024

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	506	$46,911,691	$77,838,439	$156,531,559
Indirect Effect	273	$25,324,904	$33,563,854	$67,496,247
Induced Effect	484	$39,095,570	$48,834,253	$98,204,717
Total Effect	1,236	$111,332,165	$160,236,546	$322,232,523

Note: Numbers may not sum due to rounding.

Source: Lightcast Analysis, compiled by ICF

Organic Waste Processors

Organic waste processor activity had the second highest total direct employment and payroll, after haulers. Accordingly, this segment generated the second largest impact.in 2024. The 94 direct jobs in the processing segment generate approximately 179 jobs throughout Massachusetts, via indirect and induced impacts (Table 4). Outside industries experiencing increased employment due to direct spending in the organic material processing industry include engineering design firms and industrial equipment maintenance and repair businesses (See Table A-3). Direct employment and employee compensation in the processing segment drove nearly $35 million in industry activity and approximately $17.5 million in total value added in Massachusetts. Compared to 2016 results (adjusted for inflation), the impact of processor activity saw a decrease across impact variables: -37% employment, -26% labor income, -45% value add, and -51% industry activity, likely due to the decrease in company count and employment[9].

[9] It should be noted that companies that are categorized as ‘other’ in the 2025 study were likely categorized as processors in the 2016 study so the decrease in impact for this segment is likely inflated due to the more descriptive sector definitions used in the 2025 study.

Table 4. Impact Results—Organic Waste Processors, 2024

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	94	$7,333,090	$8,604,664	$17,218,777
Indirect Effect	26	$2,322,154	$3,080,989	$6,165,361
Induced Effect	59	$4,682,283	$5,876,938	$11,760,330
Total Effect	179	$14,337,527	$17,562,591	$35,144,468

Note: Numbers may not sum due to rounding.

Source: Lightcast Analysis, compiled by ICF

Food Recovery, Rescue, and Donation Organizations

Although food recovery and rescue organizations had a smaller direct impact compared to collectors/haulers and processors, food rescue organizations still contributed a measurable impact to the Massachusetts economy in 2024. The 128 direct employees in this segment supported roughly 60 additional jobs through indirect and induced spending, for a total of 189 jobs (Table 5). The ripple effects impact employment beyond the food rescue industry, including other industries such as full-service restaurants and insurance companies (See Table A-4). Labor income is nearly doubled when accounting for indirect and induced labor income. Direct employment and employee compensation drove more than $23 million in industry activity and generated nearly $12 million in total value added. Compared to 2016 results (adjusted for inflation), rescue organizations saw growth across most impact metrics: 22% employment, 69% labor income, and 6% industry activity.

Table 5. Impact Results—Rescue Organizations, 2024

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	128	$8,642,911	$5,921,919	$11,792,393
Indirect Effect	11	$830,049	$1,096,431	$2,183,337
Induced Effect	50	$3,852,022	$4,873,375	$9,704,414
Total Effect	189	$13,324,982	$11,891,725	$23,680,144

Note: Numbers may not sum due to rounding.
Source: Lightcast Analysis, compiled by ICF

Other Organizations

Unlike the 2016 survey, the 2024 survey gave respondents the opportunity to provide information for activities that were not categorized as collection/hauling, processing, or food rescue. Some respondents provided descriptions for their activities which included: food manufacturing, compostable products distribution, and hot meals & emergency food pantry. The 23 direct employees in this segment supported close to 50 total jobs throughout Massachusetts (See Table

6). These jobs occur in industries such as healthcare and accommodation/food services (See Table A-5). The initial direct labor income of almost $2 million close grew to more than $3.5 million when including indirect and induced effects. Direct employment and employee compensation also drove nearly $9 million in industry activity and generated more than $4 million in total value added. There was no other segment designation in 2016, so it is not possible to compare growth to 2016 results.

Table 6. Impact Results—Other Organizations, 2024

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	23	$1,808,965	$2,128,969	$4,260,275
Indirect Effect	7	$598,148	$803,468	$1,607,817
Induced Effect	15	$1,155,580	$1,455,101	$2,911,801
Total Effect	45	$3,562,693	$4,387,538	$8,779,893

Note: Numbers may not sum due to rounding.
Source: Lightcast Analysis, compiled by ICF

Impact Modeling Results Summary

The total 2024 impact results by segment are compared to 2016 results in Table 7. Combined, the four industry segments supported almost 1,700 total jobs in 2024 in Massachusetts (an 57% increase over the 1,067 total jobs supported in 2016), and generated over $140 million in labor income, a 74% increase from 2016. These industries contributed over $190 million in value added, a growth of 61% from 2016, and produced $389 million in industry activity, a growth of 61%, in the Commonwealth. It is important to note that the 2016 study used the IMPLAN model to calculate economic output instead of Lightcast, and 2016 model inputs were converted to Lightcast to facilitate easier comparison to 2024 study results. As a result, the figures shown in Table 7 are not the same as those in the 2016 report given the differences in model methodologies and the inflation adjustments.

Table 7. Summary Impact Results by Segment, 2016* vs 2024 (2024 USD)

Impact Type	Collectors/ Haulers		Processors		Rescue Organizations		Other**	Cumulative Impact	
	2016	**2024**	**2016**	**2024**	**2016**	**2024**	**2024**	**2016**	**2024**
Employment	646	1,263	291	179	130	189	45	1,067	1,676
Labor Income ($ millions)	$48.8	$111	$23.8	$14.3	$9.2	$13.3	$3.6	$81.9	$142.5
Value Added ($ millions)	$82.2	$160	$30.1	$17.6	$8.2	$11.9	$4.74	$120.5	$194.1
Industry Activity ($ millions)	$165.3	$322	$60.3	$35.1	$16.3	$23.7	$8.8	$242.0	$389.8

*2016 numbers are adjusted for inflation **Other industry segment not included in 2016 study
Note: Numbers may not sum due to rounding.
Source: Lightcast Analysis, compiled by ICF.

Perceptions of the Industry

Over the course of the study, ICF conducted interviews and asked surveyed companies to discuss perceptions and impacts of the Commercial Food Waste Disposal Ban from a qualitative perspective. The findings discussed below are based on a synthesis of their responses.

Across all segments, companies identified that the ban has encouraged their customers to adopt better organic waste practices and has pushed industries to consider the market opportunities associated with organic waste diversion. The deliberate and well-communicated changes to the ban have allowed industries to plan and meet additional market demand, reducing inefficiency and the risk of oversupply and contamination. Each industry segment indicated that continued growth in customer awareness has been a core driver of growth. Several interviewees emphasized the importance of Mass DEP's initiatives and the long-term capacity building approach to create a sustainable food waste diversion industry within Massachusetts.

Organic Waste Hauler Trends

Organic waste haulers explained that their customer base after the 2022 expansion of the ban has continued to grow but at a slower rate, with continued areas for expansion into residential markets as well as schools and restaurants. Many of these opportunities depend on a combination of proximity to a processing site and capacity for hauling the additional organic waste. Haulers and processors continued to emphasize that customers have participated in organic waste diversion, such as pick up or self-composting, since the 1990s, and that the change from 1 ton to ½ ton did not result in a significant increase partly because some of the customers covered under the expansion were already participating.

One identified trend since 2016, is the increase in solid waste dispoal tipping fees which has promoted more municipalities to evaluate diversion and hauling of organic waste as a financial cost savings to the community. Haulers also noticed a growing market for compost and increased cultural acceptance of composting, especially among residences, schools, and restaurants that are adopting waste diversion solutions without being prompted by the ban. As conversations about a residential organics waste ban become more prevalent, haulers emphasized that a similar approach of a gradual implementation over time would help mitigate risks that other constituencies have experienced with contamination.

Organic Waste Processor Trends

One of the most common challenges still faced by processors is the large amounts of residuals and contamination found in organic waste, especially food scraps. Continued education and promotion of diversion will help reduce the quantity of organic waste entering the landfill at processing site due to contamination. Processors mentioned that residuals have decreased since 2016, likely due to increased awareness at the customer level. Processors reiterated that more stringent enforcement of the ban would help ensure that all required entities were participating in organic waste diversion, and would mitigate challenging conversations with clients around compliance. Lastly, there seems to be continued concern about access to low-cost/high-volume composting site options to process large quantities of organic waste. Processors explained that because of the current zoning regulations around composting, expansion of these facilities has been slow. In addition to the processing challenges, haulers in the Boston area mentioned the challenge of proximity to compost sites, noting that much of the available land is far from pick up

locations. One cause of this issue is the zoning requirement for compost facilities, which limits where compost facilities can be sited. Reducing haul distance not only increases the efficiency of operations but reduces the environmental impact of transporting organic waste.

Trends in Food Recovery and Rescue

Food rescue organizations reported significant growth in volume of food, as well as a greater interest from institutions that were willing to donate food that would otherwise enter the waste stream. A major change since 2016, is the broader recognition and acceptance of the value of rescue and recovery organizations. The addition of the tax incentives for food recovery have promoted additional adoption and helped these companies expand operation to larger customers. Previously, the perception and financial benefits of rescue was quite apprehensive, but continued promotion and awareness has undone much of the misconception. Multiple interviewees noted that they were hoping to expand pick up operations but repeatedly mentioned size limitations to expand to smaller customers. These companies emphasized the important role that Mass DEP has played in the growth of their industry, by promoting rescue as the first best use for food, more customers are aware of the opportunity, and the social and financial benefits. Food rescue organizations identified key opportunities that align with the practices encouraged under the Commercial Food Waste Disposal Ban. Some of these include:

- Education about food rescue and best practices among stakeholders and government officials
- Continuing support for the tax incentives for vendors who choose to have their food donated, as well as expanding those incentives to the state tax credit
- Outreach materials generated because of the ban
- Using the ban as a marketing tool
- Increased awareness on organic waste diversion options

Since 2016, most of the growth in the sector has resulted from the transfer of large customers to the rescue and recovery sector from compost. The change in the 2022 expansion of the ban did not result in additional small customers in most cases and rather has helped drive growth through more awareness at the corporate level. Food rescue organizations pointed out that transportation (which requires refrigeration) is often costly, and parking can be difficult, especially in the Boston area. These challenges often limit the ability to onboard new customers in high-density areas.

Independent of the ban, several of the major factors that have impacted this sector over the last several years are the COVID-19 pandemic and inflation, both of which have increased food insecurity. Rescue organizations repeatedly emphasized that demand is high for their services, and expanding collection capacity and participation from larger customers is crucial. A continued challenge is that many food waste producers prefer to compost their waste due to the ease of the process, which requires less handling on both the disposer and processor side, less effort to keep food uncontaminated, and less coordination involved in preventing food spoilage.

IV. Conclusion

Since the 2022 expansion, the commercial organics waste ban continues to drive a growing industry in Massachusetts and solidifies the foundation for a more robust organic waste diversion industry in the years to come. The survey and interview findings, coupled with the economic impact analysis described in this report demonstrate that the organics waste industry is growing, not only in terms of job creation and investments, but also in terms of people's perceptions of waste and waste diversion. If the ban continues to normalize composting and food rescue and helps keep food materials out of landfills, it will undoubtedly have a tremendous positive impact on the environment and will change the way people view food and define "waste." The commercial organics disposal ban appears to be doing just that, supporting progress across the industry and in the public mindset, and ultimately propelling Massachusetts forward as a leader in waste management innovation. As the tonnage threshold continues to decrease over time, higher adoption and compliance rates will become normalized among customers. Across many companies, Mass DEP's leadership on the organics waste ban has been repeatedly praised for the detailed and thoughtful approach that has prevented many of the challenges faced in other regions.

Appendix A: Tables of Detailed Results

Table A- 1. Detailed Lightcast Results by Industry Segment 2024

	Collectors/Haulers	Processors	Rescue Organizations	Other
Employment				
Initial (Direct)	506	94	128	23
Indirect	273	26	11	7
Induced	484	59	50	15
Total	**1,263**	**179**	**189**	**45**
Labor Income ($ millions)				
Direct	$ 46.9	$7.3	$8.6	$1.8
Indirect	$ 25.3	$2.3	$0.8	$ 0.6
Induced	$39.1	$4.7	$3.9	$1.2
Total	$111.3	$14.3	$13.3	$3.6
Value Added ($millions)				
Direct	$77.8	$ 8.6	$5.9	$2.1
Indirect	$33.6	$3.1	$1.1	$0.8
Induced	$48.8	$ 5.9	$4.9	$1.5
Total	$160.2	$17.6	$11.9	$4.4
Industry Activity ($ millions)				
Direct	$156.5	$17.2	$11.8	$4.3
Indirect	$67.5	$6.2	$2.2	$1.6
Induced	$98.2	$11.8	$9.7	$2.9
Total	$322.2	$35.1	$23.7	$ 8.8

Note: Numbers may not sum due to rounding.
Source: Lightcast Analysis

Table A- 2. Top 10 Industries Experiencing Job Creation—Organic Waste Collectors/Haulers

NAICS	Industry	Change in Jobs
56	Administrative and Support and Waste Management and Remediation Services	598.2
62	Health Care and Social Assistance	103.2
81	Other Services (except Public Administration)	65.1
53	Real Estate and Rental and Leasing	65.0
54	Professional, Scientific, and Technical Services	60.9
72	Accommodation and Food Services	58.5
44	Retail Trade	53.0
48	Transportation and Warehousing	42.4
52	Finance and Insurance	39.3
23	Construction	27.3

Source: Lightcast Analysis

Table A- 3. Top 10 Industries Experiencing Job Creation—Organic Waste Processors

NAICS	Industry	Change in Jobs
62	Health Care and Social Assistance	67.3
56	Administrative and Support and Waste Management and Remediation Services	48.0
72	Accommodation and Food Services	7.5
81	Other Services (except Public Administration)	6.9
53	Real Estate and Rental and Leasing	6.8
54	Professional, Scientific, and Technical Services	6.6
44	Retail Trade	6.6
52	Finance and Insurance	5.0
48	Transportation and Warehousing	4.6
61	Educational Services	2.7

Source: Lightcast Analysis

Table A- 4. Top 10 Industries Experiencing Job Creation—Rescue Organizations

NAICS	Industry	Change in Jobs
62	Health Care and Social Assistance	139.6
72	Accommodation and Food Services	7.2
44	Retail Trade	5.8
54	Professional, Scientific, and Technical Services	4.5
81	Other Services (except Public Administration)	4.5
52	Finance and Insurance	4.4
53	Real Estate and Rental and Leasing	4.1
48	Transportation and Warehousing	3.1
56	Administrative and Support and Waste Management and Remediation Services	2.9
61	Educational Services	2.4

Source: Lightcast Analysis

Table A- 5. Top 10 Industries Experiencing Job Creation—Other Organizations

NAICS	Industry	Change in Jobs
62	Health Care and Social Assistance	16.6
56	Administrative and Support and Waste Management and Remediation Services	12.0
72	Accommodation and Food Services	1.9
81	Other Services (except Public Administration)	1.8
53	Real Estate and Rental and Leasing	1.7
54	Professional, Scientific, and Technical Services	1.7
44	Retail Trade	1.7
52	Finance and Insurance	1.2
48	Transportation and Warehousing	1.2
61	Educational Services	0.7