Massachusetts Commercial Food Waste Ban Economic Impact Analysis

October 2016

Presented for the Massachusetts Department of Environmental Protection

ICF

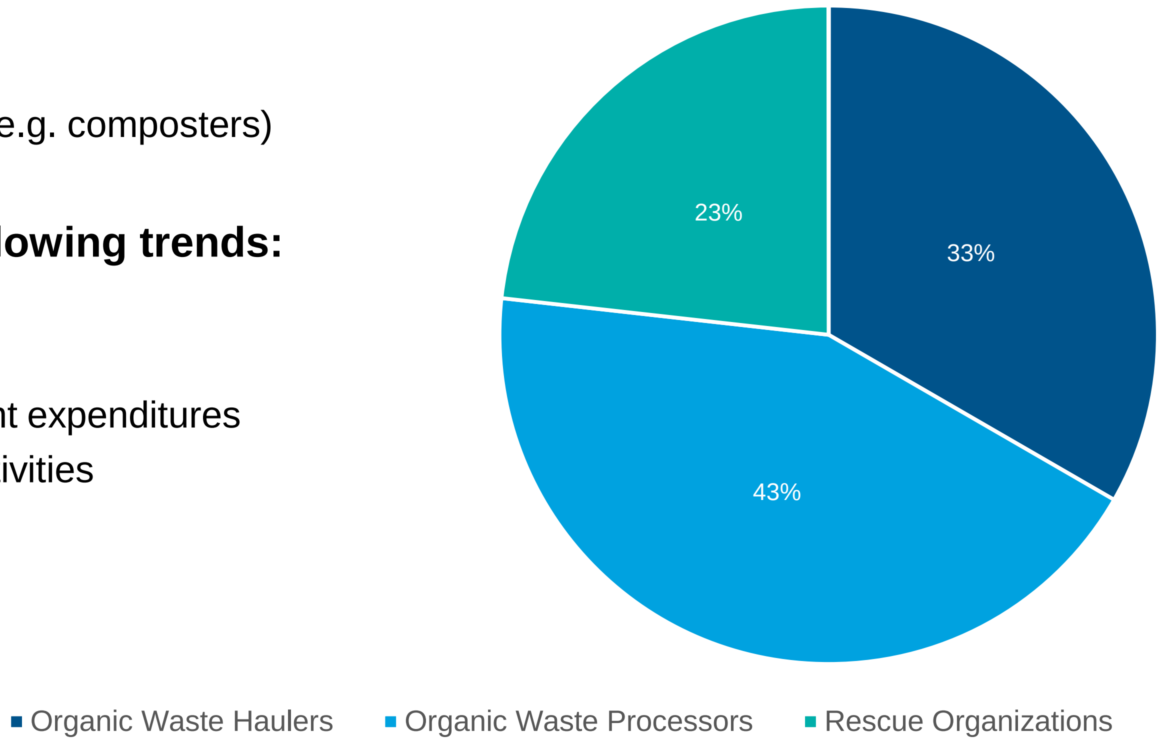
Methods

Study Methods

- **Survey**
  - ICF conducted a survey reaching out to 98 organizations in organic waste hauling, processing and food rescue
- **IMPLAN**
  - IMPLAN (IMpacts for PLANning) is an input-output model economic model
  - ICF ran IMPLAN to calculate the indirect and induced impacts associated with food waste industry activity in Massachusetts
- **Series of Stakeholder Interviews**
  - ICF interviewed 9 representative organizations to gauge challenges, opportunities, and impact of the ban

Survey Methodology

- **Distributed to 98 industry contacts provided by MassDEP**
- **Survey period:** June 16th-August 22nd; 10 Weeks
- **Responses:** 39* unique responses, 30 complete responses used for analysis
- **Targeted Stakeholders:**
  - –Organic Waste Haulers
  - –Organic Waste Processors (e.g. composters)
  - –Food Rescue Organizations
- **Questions aimed at the following trends:**
  - –Revenue
  - –Employment
  - –Capital facility and equipment expenditures
  - –Plans for future business activities
  - –Experience with the ban



*Overall response rate of 44%, resulting in a 95% confidence interval (CI), +/- 15%.

Source: Data from survey, compiled by ICF.

IMPLAN Methodology

- **Model used:** IMPLAN Version 3.1 input-output model calculates the indirect and induced impacts associated with current organics waste industry activity in Massachusetts.

Three types of impacts are calculated by the model:

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

- ICF obtained the latest data from IMPLAN for the Commonwealth of Massachusetts, and developed a customized model framework for analysis.

Deriving the Model Inputs from Survey Findings

2010 & 2016 Employment Inputs for Processors, Haulers, and Rescuers =
(Average employment per business)* x (Total Massachusetts population of sector)
*Average employment per business derived from survey results

IMPLAN Inputs	Haulers	Processors	Rescue
Employment	260	150	90
Payroll/Employee Compensation	$8,615,000	$5,958,000	$2,649,000

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

IMPLAN industry sectors :

Sector 471: Waste management and remediation services → **Food Haulers and Food Processors**

Sector 486: Community food, housing and other relief services, including rehabilitation services. → **Food Rescuers**

Understanding Modeling Outputs

Total economic impact is reported at these commonly-used metrics:

- **Industry Activity**: Represents the total industry activity generated by the direct spending (sales).
- **Employment** : 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 or GSP**: 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 or Gross State Product (GSP).
- **Tax Impact**: Breakdown of taxes collected by the federal, state and local government, including corporate taxes, household income taxes, and other business taxes.

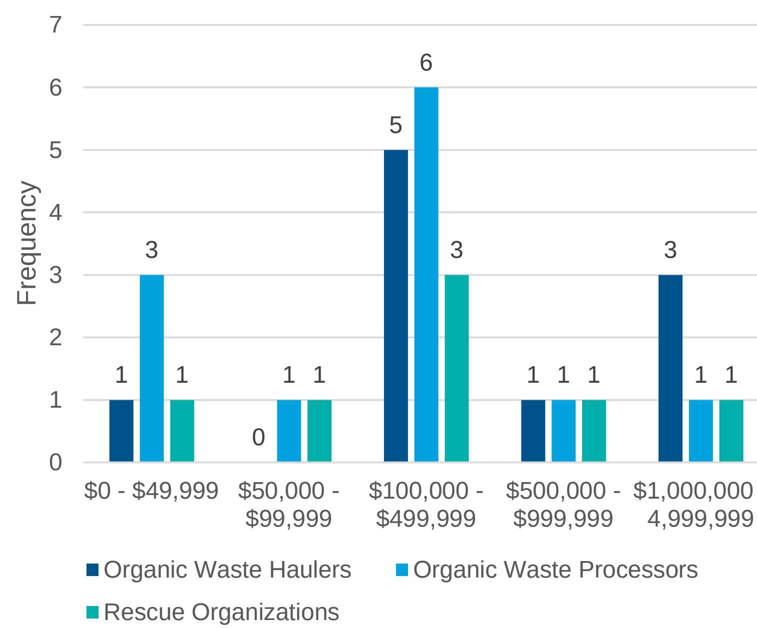
Survey Results

Snapshot of Industry Trends

EMPLOYMENT GROWTH 2010-2016

All three industry segments reported a significant positive change in the number of employees between 2010 and 2016, and indicated that additional growth is planned for 2017.

REVENUE 2015

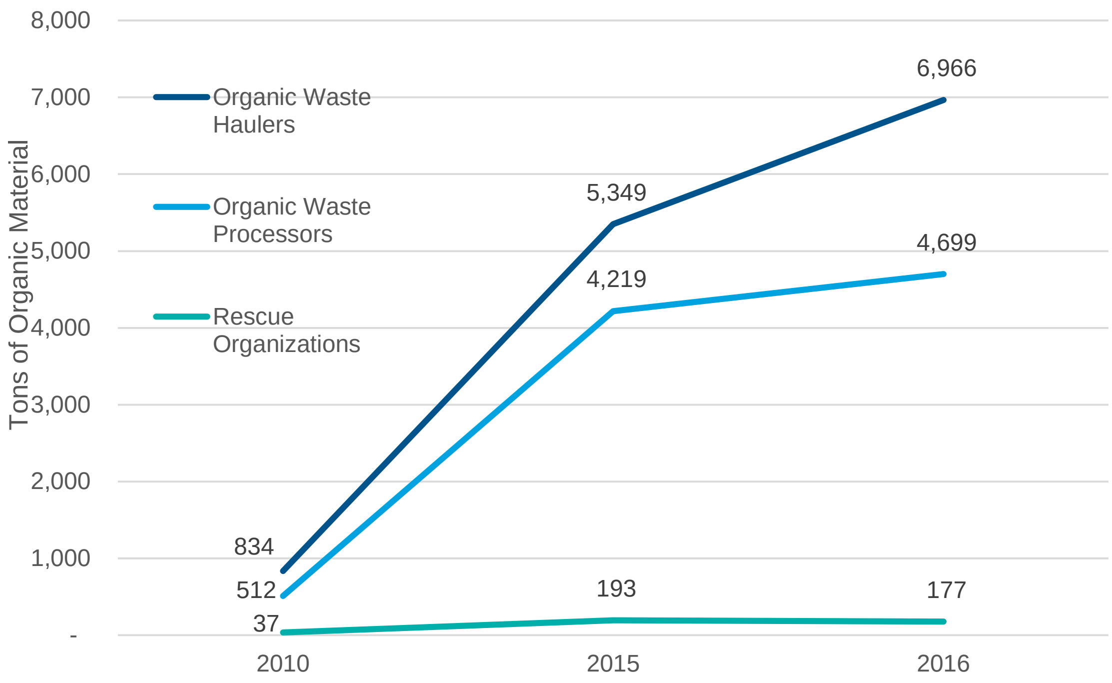


Sixty percent of the respondents who reported revenues of $1 million or higher were engaged in the food hauling industry

Source: Data from survey, compiled by ICF.

Snapshot of Industry Trends

AVERAGE FOOD TONS PER ORGANIZATION 2010-2016



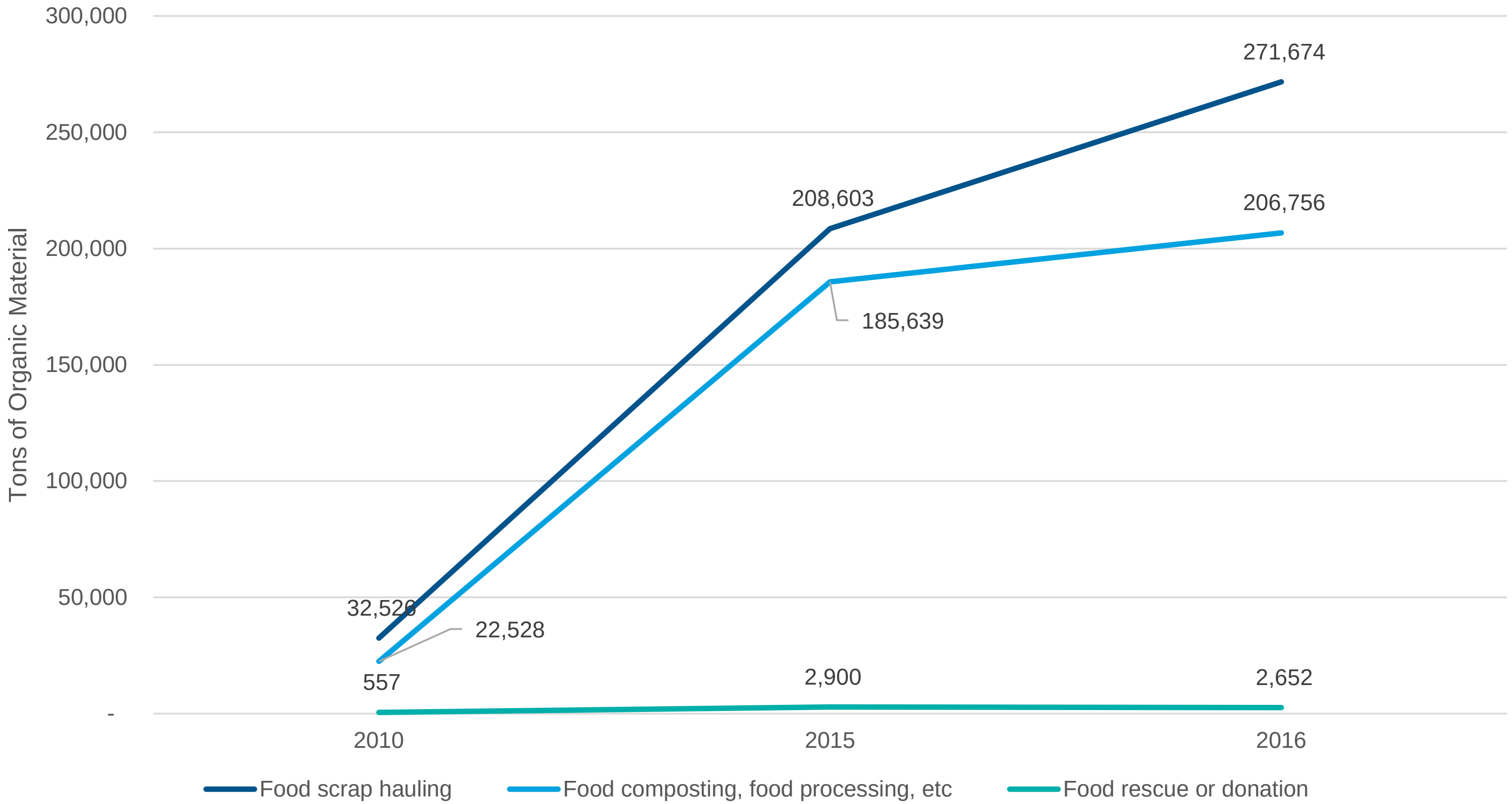
- **Haulers and processors handled between six and eight times as much material in 2015 as they did in 2010**
- **The food rescue segment saw gains between 2010 and 2016, but reported less tonnage in 2016 compared to their 2015 high of 193 tons**

Note: There were a smaller number of survey respondents in the food rescue organization category than in the organic waste hauler and processor categories, and these results only reflect information collected from the survey, not extrapolated out to the entire industry.

Source: Data from survey, compiled by ICF.

Snapshot of Industry Trends

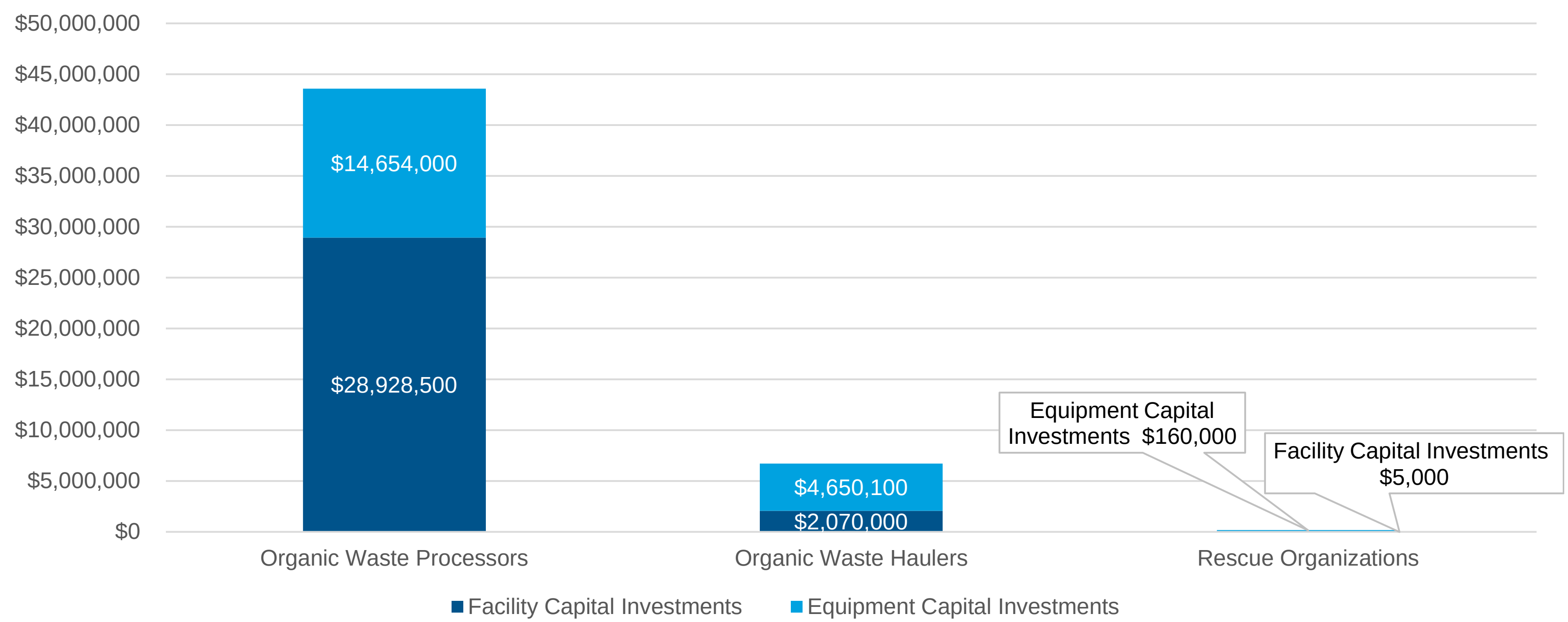
ESTIMATED TOTAL FOOD TONS 2010-2016



Source: Data from survey, compiled by ICF.

Snapshot of Industry Trends

FACILITY AND EQUIPMENT CAPITAL EXPENDITURES 2016-2017

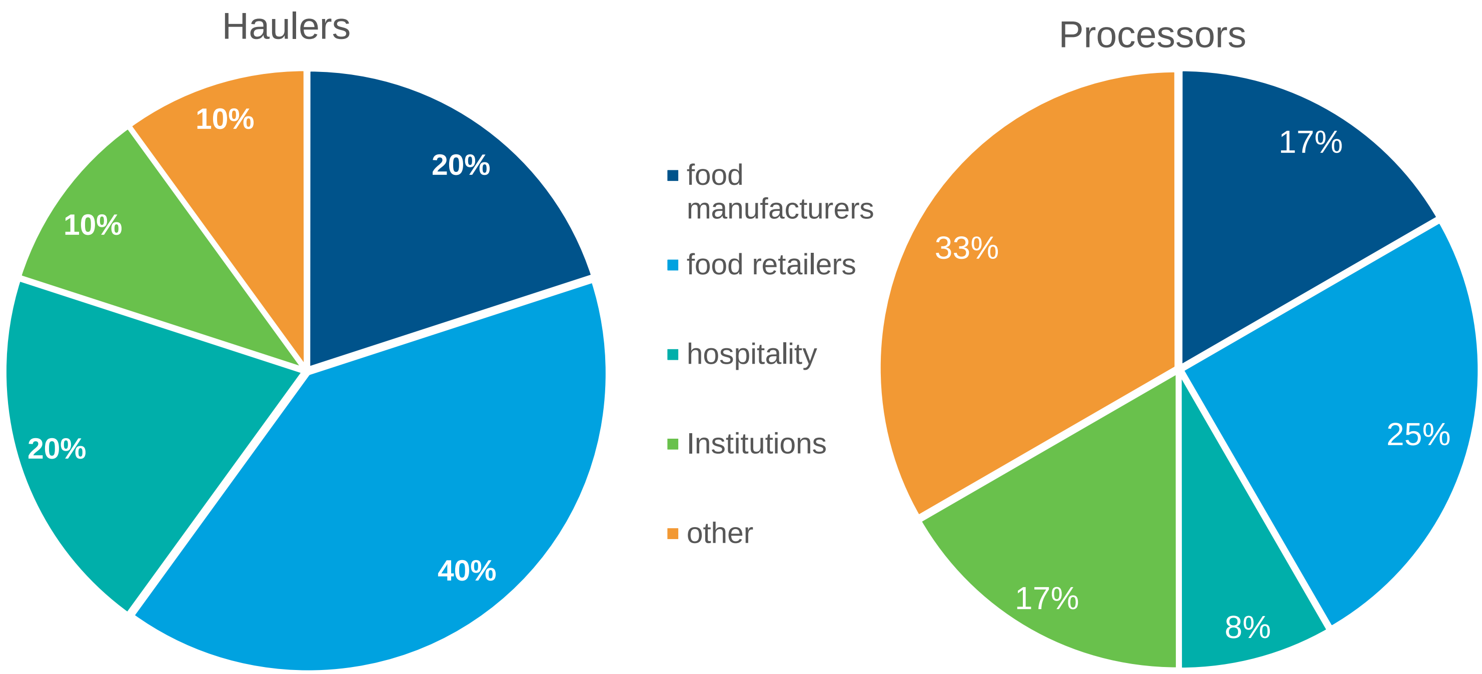


Looking ahead to 2017, processors are planning the highest capital investments, followed by haulers.

Source: Data from survey, compiled by ICF.

Snapshot of Customer Trends

KEY CUSTOMERS BY SEGMENT



*Food rescue organizations reported receiving 100% of their food from food retailers.

Notes: "Other" processor customers include town transfer stations, liquid organic waste haulers and out-of-state food manufacturing. Source: Data from survey, compiled by ICF.

Economic Impact Results

IMPLAN Results

SUMMARY RESULTS BY SEGMENT

Impact Type	Haulers	Processors	Rescue Organizations	Total Impact
Employment	500	290	130	910
Labor Income ($ millions)	$25.6	$15.8	$ 5.4	$46.8
Value Added ($ millions)	$42.9	$25.8	$8.1	$76.8
Industry Activity ($ millions)	$101.5	$58.0	$15.1	$174.6
State & Local Taxes ($ millions)	$3.1	$1.8	$0.5	$5.4

The hauling sector had the **highest total direct employment and employee compensation**, and **thus experienced the largest impacts**

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

Interview Findings

Trends: Haulers and Composters & Processors

Challenges	o Composting facilities have issues with large volumes of residuals o Limited access to low-cost/high-volume composting site options o Anaerobic processors require large capital expenditures o Residential and school customers have high quantities of food, but their food scraps tend to be contaminated o MassDEP funding for residential pilot programs is temporary (uncertainty of future market)
Opportunities	o Growing market for compost (product) o Increasing cultural acceptance of compost, especially among residential, schools and restaurant customers has grown the market
Impact of Ban	o Ban helped encourage reluctant customers

ICF also interviewed Greater Lawrence Sanitation District, Black Earth Compost and Agresource

Trends: Food Recovery and Rescue

Challenges	o Ban doesn't differentiate between food compost and food rescue o Big vendors still prefer to compost due to ease and safety concerns o Growth limited by transportation (trucks with refrigeration) and transportation infrastructure (parking)
Opportunities	o Increasing education about food rescue and best practices o Prepared food from universities, hospitals, conference centers is a huge (untapped) market o Tax incentives for vendors who choose to have their organics recused
Impact of ban	o Outreach materials have been generated o Ban has been used as a marketing tool o Ban has raised awareness on organic waste diversion options

Spoiler Alert

Food For Free

lovin' spoonfuls
a food rescue

Conclusions

- Commercial Food Waste Disposal Ban has supported the **growth of the industry** and **increased cultural mindset** oriented towards organics waste diversion and broader waste management innovation.
- Across all segments growth in employment, investments, and tonnage of material.
- Combined, the three industry segments generated:
  - 900 jobs
  - $46 million in labor income
  - $77 million to gross state product
  - $175 million in industry
  - $5 million in state and local tax revenue

Q&A

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Appendix of Detailed Results

Survey Summary Results

	All Responses	Processors	Haulers	Food Rescue
Number of Responses (complete data)	30 (39)	13 (16)	10 (14)	7 (9)
Average 2015 Revenue	$749,200	$496,200	$1,127,500	$678,600
Average 2015 Payroll	$176,100	$135,400	$220,900	$176,600
Average % Change in Employees 2010 to 2016*	150%	190%	160%	120%
Planned Growth (Employees 2016 to 2017)	50%	50%	50%	70%
Average Annual Facilities Capital Investments 2010-2016	$85,900	$196,500	$1,800	$700
Average Annual Equipment Capital Investments 2010-2016	$40,600	$54,400	$45,900	$7,600
Average Planned Facilities Capital Investments 2016-2017	$1,240,100	$2,410,700	$258,800	$1,000
Average Planned Facilities Equipment Investments 2016-2017	$778,600	$1,332,200	$516,700	$32,000
Average Salary per Employee	$27,700	$24,900	$31,400	$26,700

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

IMPLAN Results

ORGANIC WASTE HAULERS

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	260	$ 9,340,700	$ 18,735,900	$ 61,075,800
Indirect Effect	140	$ 10,354,400	$ 14,848,400	$ 25,223,100
Induced Effect	100	$ 5,872,900	$ 9,350,100	$ 15,179,100
Total Effect	500	$ 25,568,000	$ 42,934,500	$ 101,478,000

The hauling sector had the **highest total direct employment and employee compensation**, and **thus experienced the largest impacts**

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

IMPLAN Results

ORGANIC WASTE PROCESSORS

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	150	$ 6,359,800	$ 11,651,300	$ 34,399,000
Indirect Effect	80	$ 5,831,800	$ 8,362,900	$ 14,206,100
Induced Effect	60	$ 3,634,800	$ 5,787,000	$ 9,394,700
Total Effect	290	$ 15,826,400	$ 25,801,300	$ 57,999,000

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

IMPLAN Results

FOOD RESCUE ORGANIZATIONS

Impact Type	Employment	Labor Income	Total Value Added	Industry Activity
Direct Effect	90	$ 2,675,300	$ 3,712,300	$ 8,118,400
Indirect Effect	20	$ 1,516,500	$ 2,360,200	$ 3,762,600
Induced Effect	20	$ 1,249,200	$ 1,988,900	$ 3,228,900
Total Effect	130	$ 5,441,000	$ 8,061,500	$ 15,109,900

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