



Office of the Auditor General of Ontario

Value-for-Money Audit:
Non-Hazardous
Waste Reduction
and Diversion in the
Industrial, Commercial
and Institutional
(IC&I) Sector



November 2021

Ministry of the Environment, Conservation and Parks

Non-Hazardous Waste Reduction and Diversion in the Industrial, Commercial and Institutional (IC&I) Sector

1.0 Summary

Ontarians who recycle their packaging and compost their food waste at home can know they are helping reduce the amount of waste going to landfill. It is a different story, however, for waste thrown out outside the home. The paper, bottles and food containers we place in the recycling bin at work, school or the mall are likely to end up as garbage in landfill.

More than 98% of industrial, commercial and institutional (IC&I) establishments are not required to recycle. (See **Appendix 1** for a glossary of terms.) Recyclables thrown out at most small businesses, movie theatres and warehouses, among other places, are disposed of as garbage. Poor signage, too few recycling bins and waste collected in shared spaces also means that items end up in the wrong bin, which contaminates and lowers the quality of otherwise recyclable materials. Businesses may also generate a lot of material that is expensive or technologically hard to recycle—such as coffee cups, plastic food containers, clothing and other textiles—meaning that this waste can end up going to landfill instead.

The Ministry of the Environment, Conservation and Parks (Ministry) is responsible for regulating the management of waste in Ontario. According to the Ministry, approximately 12 million tonnes of non-hazardous waste (referred to as “waste” in this report) is generated in Ontario each year, although other data sources indicate it may be closer to 15 million tonnes. The amount of waste generated in Ontario, and Canada as a whole, is among the highest levels of waste generated per person in the world.

If Ontario continues on its current trajectory of waste generation and disposal, existing landfill capacity in the province will be filled within the next 11 to 14 years. Generating and disposing all of this waste has other negative impacts too. Disposing items squanders the resources—such as metals, minerals and nutrients—contained in them, as well as the energy, water, pollution and other environmental and financial costs associated with manufacturing those items in the first place. Disposing organic waste, such as food and yard waste, in landfill also causes greenhouse gas emissions that contribute to climate change.

Approximately 40% of Ontario’s waste is generated inside the home, known as residential waste, which

is collected and managed by municipalities. The other 60% of waste is generated outside the home, by almost 1.6 million businesses and institutions known as the IC&I sector. The IC&I sector includes:

- industrial facilities, such as manufacturers;
- commercial businesses, such as retail stores, restaurants, hotels and offices;
- institutions, such as schools, colleges, universities and hospitals; and
- construction and demolition projects.

IC&I establishments are responsible for managing their own waste, at their own cost, through contracts with private waste management businesses. Multi-residential buildings (apartments and condominiums) straddle the IC&I and residential sectors. They are responsible for managing their own waste privately and are regulated along with IC&I establishments. However, almost 80% of multi-residential households receive municipal garbage and recycling collection, which is counted as residential waste for data purposes.

In addition to generating more waste than the residential sector, the IC&I sector also diverts—that is, reuses, recycles or composts—much less of its

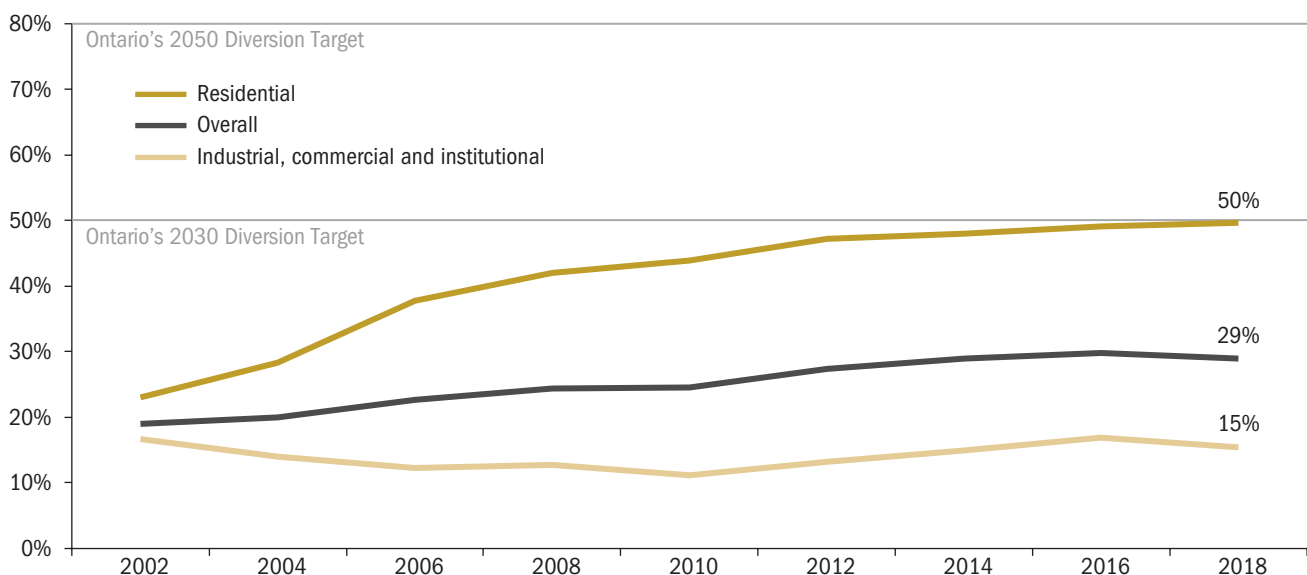
waste (see **Figure 1**). According to Statistics Canada data for 2018 (the most recent available), Ontario's IC&I sector diverted an estimated 15% of its waste, which is lower than its diversion rate of 17% in 2002, when Statistics Canada began its waste reporting. By comparison, the Ministry estimates that the residential sector diverted 50% of its waste in 2018, which has driven an increase in Ontario's overall diversion rate from 19% in 2002 to 29% in 2018.

Despite this improvement in Ontario's diversion rate, persistently high levels of waste generation have resulted in continuing high amounts of waste disposed. According to the Ministry, the amount of waste disposed annually decreased by 12% between 2002 and 2018, but data from Statistics Canada indicates that annual waste disposed actually increased by 4% over this period.

The Ministry set a goal in 2017 to reduce total waste disposed per person each year (including both IC&I and residential waste), as well as set targets to divert 50% of the total waste generated (both IC&I and residential) by 2030 and 80% by 2050. To help meet these targets, the Ministry has taken recent steps to amend the residential Blue Box recycling

Figure 1: Ontario's Waste Diversion Rates, 2002–2018 (%)

Sources of data: Statistics Canada and Ontario's Datacall



Note: Figure uses Statistics Canada data, produced biennially from 2002 to 2018, with Ontario's Datacall data, produced annually since 2006, for residential waste only. This follows the Ministry of the Environment, Conservation and Parks' methodology for estimating total waste, allowing for consistent trend analysis over time.

program to improve waste diversion in the residential sector. The Ministry has also taken recent steps to improve diversion of a few specific waste products from both residential and IC&I sectors, including used tires, electronics, batteries, paints and solvents. Improving diversion of these waste products will provide important environmental benefits, but will not significantly affect Ontario's overall diversion rate, as they collectively make up less than 5% of the province's total waste stream.

Our audit found that improving waste management in the IC&I sector—which generates and disposes of the majority of Ontario's waste—holds the key to meeting the province's waste goals, as well as to avoiding Ontario's looming landfill shortage. Yet, we found that the Ministry has not taken concrete actions to drive a reduction in the amount of IC&I waste generated and disposed of to put Ontario on track to meet its targets. We also found that the Ministry does not have the data it needs to reliably track the IC&I sector's progress toward Ontario's waste goals.

The Ministry has two regulations introduced in 1994 under the *Environmental Protection Act* that require IC&I establishments that meet type and size thresholds to take steps to reduce and divert waste:

- the Waste Audits and Waste Reduction Work Plans Regulation (Waste Audit Regulation) requires the IC&I establishments to take inventory of their waste and to develop and implement a plan to reduce waste; and
- the Source Separation Programs Regulation (Source Separation Regulation) requires the IC&I establishments, as well as multi-residential buildings, to separately collect specified materials to be recycled or reused.

We found that less than 2% of all IC&I establishments in Ontario are subject to these regulations. The Ministry does not have sufficient data to determine what portion of IC&I waste is generated by the regulated 2% of establishments. However, estimates suggest they may be responsible for anywhere between one-third to two-thirds of total IC&I waste.

Further, we found that the requirements that apply to those establishments that are regulated—to operate

a recycling program and make “reasonable efforts” to collect and divert recyclable waste—have not been effective at driving widespread improvement in waste reduction and diversion. In the absence of requirements to achieve a specific outcome, we found that diversion rates varied widely (6% to 90%) among regulated establishments, with many operating poorly performing recycling programs with high contamination levels.

In 2018, the Ministry also introduced the *Food and Organic Waste Policy Statement* (Organic Waste Policy), which requires certain IC&I establishments and multi-residential buildings to meet targets to reduce their organic waste by 2025. However, at the time of our audit, the Ministry had not done outreach to promote compliance with these targets.

In addition, waste management service providers, such as waste collectors, transfer stations and sorting facilities, are not required to divert the IC&I waste they handle. We found that waste management service providers frequently send collected IC&I source-separated recyclables and organic wastes, intended for diversion, to landfill instead. We found three key interrelated reasons why this occurs:

- collected IC&I source-separated materials are too heavily contaminated to be feasibly diverted;
- the cost of diverting collected IC&I materials is significantly higher—up to six times higher—than the cost of landfilling them; and
- a lack of end markets, such as processors or manufacturers interested in buying the materials, prevents waste management companies from diverting IC&I waste.

Significantly, we found that the Ministry has not implemented key measures to help address these underlying barriers, such as landfill bans or landfill levies, which have been implemented in other jurisdictions with higher diversion and lower waste disposal rates than Ontario, including Nova Scotia, Prince Edward Island and Quebec (see **Appendix 2**).

Finally, we found that it is difficult to obtain information about waste management operations, including where waste is taken or how much

and which types of materials waste management facilities divert. As a result, IC&I establishments cannot access reliable information to determine whether their materials are, in fact, being diverted.

The following are some of our significant detailed findings:

Waste Management Industry

- **Waste management companies often send IC&I source-separated materials intended for diversion to landfill.** We found that waste collectors take roughly half of the IC&I source-separated recycling that they collect to transfer stations, but only 34% of the transfer stations we examined transfer loads of IC&I recycling to facilities that sort and process the materials. The other 66% of the transfer stations accept the IC&I recycling as garbage, which they mostly send to landfill or energy-from-waste facilities. We also found that waste collectors take about one-fifth of collected IC&I organic waste directly to landfill. This means that many materials that are collected separately by IC&I establishments, such as retail stores, restaurants, offices and hotels, with the intent of being diverted, never reach a processing facility to be recycled or composted.
- **Establishments do not have access to information about waste industry activities to verify where recyclables are taken or to make informed decisions when contracting waste services.** The Ministry does not compile or publish information about waste management companies' operations, such as their diversion rates, the types of materials they divert, or what they do with the materials they handle. We found that it was difficult to obtain reliable information about waste facilities' operations. For example, our review of a sample of 20 waste company websites found that the information about how the facility manages the IC&I materials that it accepts was unclear in 19 cases, and misleading in four of those cases. For example, some facilities advertised recycling services when in practice they send almost all of the materials they receive to landfill as garbage.
- **Contracts between regulated establishments and waste management companies rarely require the waste collectors to divert the IC&I materials.** Our review of 40 agreements between regulated establishments with source-separation programs and their waste collectors found that only three required the collectors to divert the customers' waste. Most of the agreements gave collectors—either explicitly or through the absence of terms about how materials were to be managed—discretion to make operating decisions that balance costs against waste diversion goals, such as taking materials that cannot be recycled economically to landfill.

Underlying Barriers to Waste Reduction and Diversion

- **Ontario has not implemented key tools used in other jurisdictions to overcome barriers to IC&I waste diversion and encourage waste reduction.** We found that several interrelated barriers—high costs, high contamination of IC&I waste, and weak end markets—prevent or hinder waste management companies from diverting more IC&I waste. For example, we found that it can cost up to six times more to divert IC&I mixed recyclables than to dispose of them in landfill. As private businesses driven by profit, higher costs to recycle or compost compared to landfill deter waste management companies from diverting materials. Some IC&I waste loads are too contaminated to divert. Some loads contain materials, such as plastic film and polystyrene, that lack viable end markets or buyers for the materials. We found that other leading jurisdictions with higher diversion, in Canada and abroad, have implemented measures to overcome the barriers to diversion. For example, we found that landfill bans in many jurisdictions, including Nova Scotia, Germany and Scotland, have been effective in increasing diversion of recyclable and organic waste. To offset lower disposal costs, Quebec charges a landfill levy, and Prince Edward Island has surcharges for mixed recycling and waste. Japan's green procurement law, which

requires government entities to purchase products with high levels of reclaimed or recycled content, helped create a market for these materials. To encourage waste reduction, Nova Scotia has developed a program that rewards municipalities for achieving low overall—residential and IC&I—disposal rates, by providing funding to them for their waste diversion initiatives.

Regulated Businesses and Institutions and Multi-residential Buildings

- More than 98% of the almost 1.6 million IC&I establishments in Ontario are not regulated, limiting the potential of existing regulations to drive better overall IC&I waste practices.** The Ministry’s IC&I waste regulations—the Source Separation Regulation and Waste Audit Regulation—apply to less than 2% of Ontario’s total number of businesses and institutions. The remaining 98% of IC&I establishments have no obligations under the regulations to reduce or divert any of their waste. The 2% of establishments that are regulated are the largest ones in each subsector and therefore are assumed to generate more waste than the smaller ones. However, the Ministry does not have sufficient data to determine what portion of IC&I waste is generated by regulated establishments. Applying data from a 2015 California waste study, the Ministry roughly estimates that between half to two-thirds of IC&I waste is generated by regulated establishments. However, data from a 2008 Ontario waste study suggests that this amount is likely closer to one-third.
- The Source Separation Regulation has driven regulated businesses, institutions and multi-residential buildings to operate recycling programs, but has not led to widespread improvement in diversion rates.** Our review of waste data from a sample of regulated IC&I establishments from 2014 to 2019 found that diversion rates ranged from 6% to 90%. Diversion rates for multi-residential buildings in a sample of municipalities ranged from 17% to 28%. Regulated establishments are required to operate a recycling program and to make “reasonable efforts” to collect and divert recyclable waste. We found that 88% of all establishments inspected by the Ministry between 2014/15 and 2018/19 (the most recent year with complete inspection data) had implemented a recycling program as required by the regulation. However, with no requirement to achieve a specific outcome, such as a diversion target, nor other government measures to support and encourage diversion, their diversion rates varied widely.
- The list of materials that establishments must collect to be recycled has not been updated in over 25 years, and excludes now common materials, such as coffee cups, compostable packaging and most plastics.** The list of materials that regulated establishments must separately collect for diversion was made in 1994 and focused on common packaging wastes at that time, including glass containers, metal cans, cardboard and paper. This list, set out in the Source Separation Regulation, has not been amended since it was enacted. As a result, several materials commonly found in today’s waste stream, such as plastic waste from most subsectors, including retail, offices, schools and hospitals, are excluded from the list. Plastics make up an increasingly large share of IC&I waste: an estimated 10% by weight, and much more by volume.
- Establishments deemed by the Ministry to be fully complying with the Source Separation Regulation may still be operating poorly performing recycling programs.** We found that Ministry inspectors do not assess the effectiveness of an establishment’s recycling program, such as the amount of contamination (garbage or food waste) in the collected recycling, when determining compliance with the Source Separation Regulation. The Ministry told us that the language in the regulation—such as the requirement to make “reasonable efforts”—limits the scope of how strictly inspectors can enforce it. As a

result, establishments can be deemed compliant by the Ministry even if they have poorly performing recycling programs, such as heavy contamination. Further, our review of a sample of Ministry inspection files found that, in 40% of cases, the documents that establishments provided to the Ministry about their waste collection did not demonstrate that their recyclables were being taken to an appropriate final destination to be recycled. In all but one of these cases, the inspectors concluded that the establishments had made “reasonable efforts” to ensure their materials were recycled. We found that, in half of the cases we examined, the inspected establishments’ collected recyclables were being taken by waste collectors to facilities that disposed the recyclables as garbage.

- **The Ministry has stopped enforcing the Waste Audit Regulation in regular inspections, but has not assessed the effect of the regulation on establishments’ waste practices.** We found that 63% of all regulated IC&I establishments inspected by the Ministry for compliance with the Waste Audit Regulation between 2014/15 and 2018/19 had not complied with this regulation. As of April 2019, the Ministry stopped enforcing the regulation in all regular inspections to focus inspection efforts on the Source Separation Regulation, on the basis that that regulation provides more verifiable outcomes (the operation of a recycling program) than the Waste Audit Regulation. However, at the time of our audit, the Ministry had not reviewed the effect of the Waste Audit Regulation, such as whether completing waste audits and waste reduction work plans helps IC&I establishments reduce waste, improve the quality of their recycling programs or track waste performance.
- **Large IC&I establishments and condo and apartment buildings may not know that they must meet organic waste targets by 2025 because the Ministry has not taken steps to promote the Organic Waste Policy.** Organic waste, such as food waste, soiled

paper and compostable packaging, makes up about one-quarter of total IC&I waste, but it is not included in the Source Separation Regulation as waste that establishments must divert. The Ministry introduced the Organic Waste Policy in 2018 to address this gap. At the time of our audit, the Ministry had not taken steps needed to effectively implement this policy. For example, the policy requires multi-residential buildings and large establishments to reduce and divert organic waste by either 50% or 70%, depending on their size and subsector, by 2025. This could result in added costs for the affected multi-residential buildings and establishments that require budgeting, but the Ministry has not yet provided essential guidance on how to calculate the baseline for the target, nor undertaken outreach activities to promote compliance with the policy.

Data Gaps in IC&I Waste

- **The Ministry has major data gaps with respect to IC&I waste, which hinder the province’s ability to develop effective waste policies and to reliably track progress toward Ontario’s waste goals.** Statistics Canada publishes high-level data every two years, based on data submitted by the waste management industry, on total residential and IC&I waste diverted and disposed in each province. This data is intended to provide a national overview of waste activities across Canada, not to provide comprehensive data to meet the specific needs of each province. The province collects its own detailed data for residential waste but it does not collect data for IC&I waste. Without IC&I data of its own, we found that the Ministry has major gaps in its understanding of the state of IC&I waste in Ontario, including which types of establishments generate and dispose the most IC&I waste. We also found that the Ministry is likely underestimating total waste disposed by up to 3.1 million tonnes per year.
- This report contains 17 recommendations, with 38 action items, to address our audit findings.

Overall Conclusion

We found that the Ministry does not have effective systems and processes in place to improve IC&I waste reduction and diversion rates to enable Ontario to meet its provincial waste goals. These goals are to reduce total waste per person disposed and divert 50% of total waste generated (by both IC&I and residential sectors) by 2030, and 80% of waste by 2050. We also found that the Ministry does not have policies or programs in place, nor has it taken concrete actions at the time of our audit to implement new policies and programs, to reduce the amount of IC&I waste generated and disposed of to ensure that Ontario does not run out of landfill space within the next 11 to 14 years.

Specifically, we found that the province's regulations for IC&I waste—the Source Separation Regulation and Waste Audit Regulation—apply to less than 2% of all IC&I establishments. While the regulated establishments are larger and generate more waste than the smaller unregulated ones (potentially one- to two-thirds of IC&I waste), the limited application of the regulations significantly reduces the impact that they may have on improving the IC&I sector's overall waste disposal and diversion rates. Further, the regulations, which have been in place for over 25 years, have not been effective in improving waste performance across the regulated IC&I sector. Although the Ministry has committed since at least 2004 to review the IC&I waste regulations and develop a more effective approach, it had not begun to do so at the time of our audit.

We also found that, for most materials, the current economics of diversion favour disposal in landfill over recycling or composting. As a result, we found that waste management companies, which are not required to divert the collected IC&I waste, often send IC&I source-separated materials intended for diversion to landfill instead. The Ministry has not developed programs and policies needed to address

the economic barriers or otherwise support and encourage IC&I establishments and waste management companies to divert more IC&I waste.

We further found that, despite a long-term inspection program for the IC&I waste regulations, some subsectors continue to have low compliance rates yet receive few inspections from the Ministry.

Finally, we found that the Ministry does not have the data needed to inform the design of policies and programs to address IC&I waste, or to reliably measure and report on progress toward achieving the province's waste reduction and diversion goals.

OVERALL MINISTRY RESPONSE

The province continues to take action to reduce waste sent to landfill and is committed to creating more opportunities to reduce and recycle all waste.

Over the last year, we have finalized three new producer responsibility regulations for electronics, batteries, hazardous and special products (e.g., paints and solvents), finalized changes to enhance the Blue Box program, and established Ontario's Provincial Day of Action on Litter, while working with other jurisdictions on a Canada-wide plastics strategy.

We recognize the need to expand the amount of waste diverted by our businesses and institutions and appreciate the Auditor's suggestions on how we can do so.

We want to engage with businesses, stakeholders and First Nations to determine how we can build on our efforts in the most cost-effective ways.

Our goals are to improve waste reduction and diversion, minimize costs to our businesses and institutions, improve data collection, and improve compliance.

We will consider the Auditor's comments carefully as we continually work to divert more waste and protect and improve our environment for future generations.

2.0 Background

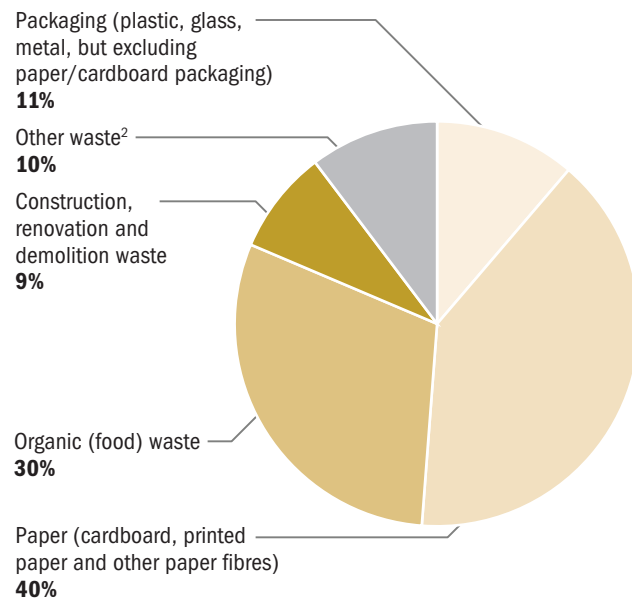
2.1 Overview of Waste in Ontario

According to the Ministry of the Environment, Conservation and Parks (Ministry), Ontario generates approximately 12 million tonnes of non-hazardous waste each year, although other data sources indicate it may be closer to 15 million (see **Section 4.1.1** for discussion of data issues). As shown in **Figure 2**, the majority of this waste is made up of cardboard, paper, food waste and plastic packaging.

Most of Ontario's waste is discarded in landfills. In 2018 (the most recent year with full data), municipalities (who handle residential waste) and IC&I establishments collectively sent at least 8.5 million tonnes of non-hazardous waste

Figure 2: Estimated Composition of Non-hazardous Waste Generated in Ontario¹

Sources of data: Statistics Canada, Ontario's Datacall, and Ministry of the Environment, Conservation and Parks



1. Figure is based on data compiled from various sources, providing only an approximation of waste composition (see **Section 4.1.2** for discussion of data issues).
2. "Other waste" includes items such as used tires, electronics, beer and alcohol containers, furniture, textiles, wood, scrap metals and manufacturing non-hazardous wastes.

to disposal, although some estimates put it as high as 11.6 million tonnes (see **Section 4.1.1**). Of that total, IC&I establishments sent about 3.2 million tonnes to the United States, mostly to landfills in Michigan. A small amount (less than 300,000 tonnes) was disposed in energy-from-waste facilities (see Glossary in **Appendix 1**), and the remainder (ranging from five to eight million tonnes depending on the data source) was disposed in Ontario landfills.

Ontario's overall diversion rate—the portion of generated waste that is reused, recycled or composted, and therefore diverted from landfills—has increased gradually over the past two decades. Based on combined data from Statistics Canada and the province, overall diversion increased from 19% in 2002 to 29% in 2018.

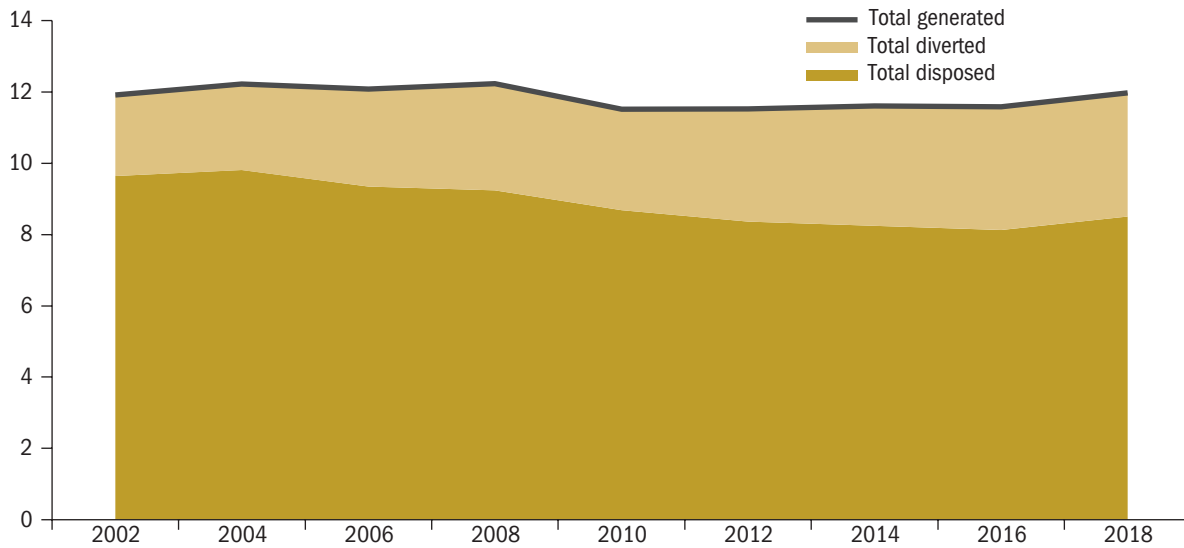
Despite this improvement in the diversion rate, persistently high levels of waste generation have resulted in continuing high amounts of waste disposed (see **Figure 3**). According to the Ministry, annual waste disposed decreased by 12% from 2002 to 2018, but data from Statistics Canada indicates that annual waste disposed has increased by 4% over the same period.

2.1.1 Waste from the Industrial, Commercial and Institutional Sector

The IC&I sector generates 60% of Ontario's total waste and the residential sector generates the other 40%. In addition to generating more waste, the IC&I sector also diverts much less waste than the residential sector. As shown in **Figure 1**, the IC&I sector diverted only 15% of its waste in 2018—which is lower than its diversion rate of 17% in 2002. By comparison, the residential sector has steadily improved its diversion rate, with households diverting 50% of their waste in 2018, up from 23% in 2002. Residential diversion has been achieved primarily through municipal Blue Box (paper and packaging) recycling and Green Bin (organics) programs.

Figure 3: Ontario Non-hazardous Waste Generated, Diverted and Disposed, 2002–2018 (million tonnes)

Sources of data: Statistics Canada and Ontario's Datacall*



* Figure uses Statistics Canada data, produced biennially from 2002 to 2018, with Ontario's Datacall data, produced annually since 2006, for residential waste only. This follows the Ministry of the Environment, Conservation and Parks' methodology for estimating total waste, allowing for consistent trend analysis over time.

2.1.2 Waste from Multi-residential Buildings

Multi-residential buildings (apartments and condominiums with six or more units) are a hybrid that straddle the residential and IC&I sectors. Owners of multi-residential buildings are, like IC&I establishments, responsible for their building's waste services. This includes responsibility for both the management and separation of wastes within the building and the removal of waste from the building.

In practice, however, the majority of Ontario municipalities have chosen to collect waste from multi-residential buildings in their municipality, alongside single-family residential waste. Under the *Environmental Protection Act*, municipalities are required to provide Blue Box recycling services for any residents for whom they provide garbage collection services. Collectively, almost 80% of multi-residential households receive municipal collection for waste and recycling (and in a few large cities, also organic waste), with the remaining 20% of multi-residential buildings retaining responsibility for private waste collection.

Regardless, all multi-residential building owners, even those that receive municipal collection, retain responsibility for source separation of materials within the building.

2.2 Impacts of Waste

Disposing waste in a landfill has a number of negative impacts. Foremost, any valuable resources contained in the discarded waste, such as metals, minerals and nutrients, are permanently lost. Disposal loses not just the tangible materials, but also the labour, energy and water that went into mining, refining, growing, harvesting and manufacturing all of the discarded items.

Further, when wastes are disposed in a landfill, rain or snowmelt that enters the landfill can absorb contaminants from the waste as it breaks down. This contaminated liquid is called leachate. Many everyday items, from textiles to toys to cosmetics, contain substances, such as metals, flame retardants and phthalates (chemicals used to make plastics flexible), that can potentially make leachate toxic. All new

landfills in Ontario approved after 1998 must include a leachate collection system in their design, but these systems do not eliminate all risk of toxic substances seeping out and contaminating nearby soil or water.

Landfills are also contributors to global climate change. When food and other organic wastes are disposed in landfill, they decompose without oxygen, releasing methane, a potent greenhouse gas. Most large landfills in Ontario are required to have a landfill gas collection system that collects and manages the gases generated. However, emissions from landfills without these capture systems remain a major source of greenhouse gases in Ontario. Landfills emit almost 90% of the waste sector's emissions, which make up 4% of Ontario's total greenhouse gas emissions.

Perhaps the most pressing concern related to waste disposal in the province is a diminishing landfill capacity. Despite their negative impacts, landfills continue to be the primary form of waste management in Ontario. However, if Ontario continues on its current trajectory of waste generation and disposal, all existing landfill capacity in Ontario will be filled within 11 to 14 years (by 2032 to 2035).

The IC&I sector is particularly vulnerable to landfill shortages: the Ontario Waste Management Association estimates that municipalities own 47% of Ontario's remaining landfill capacity, which they mostly reserve for their own residential waste. Private sector landfills hold the remaining 53% of landfill capacity, which mostly accept both residential and IC&I waste. With fewer landfills accessible to the IC&I sector, Ontario businesses rely heavily on cheap disposal in Michigan. If the United States were to halt waste imports, Ontario businesses would be forced to find alternative domestic waste management options at much higher cost. Further, if the United States were to close its borders to Ontario's waste, landfill space within the province would be exhausted even earlier, potentially by 2029.

Only two new landfills, located in the Niagara and Ottawa regions, have been approved in Ontario since 1999, with most additional landfill capacity over the past 20 years coming from the expansion of existing

sites. In July 2020, in recognition of the strong opposition by many communities to new local landfills, the province required that the proponent of any new landfill obtain support from the host municipality and specified adjacent municipalities.

2.3 Ontario's Waste Reduction and Diversion Goals

For over three decades, the province has expressed an aspirational goal to reduce waste in Ontario. Over this time, the province has proposed various specific targets, as well as numerous policy and regulatory initiatives to help achieve the goal to reduce waste (see **Appendix 3** for a list of key initiatives and targets).

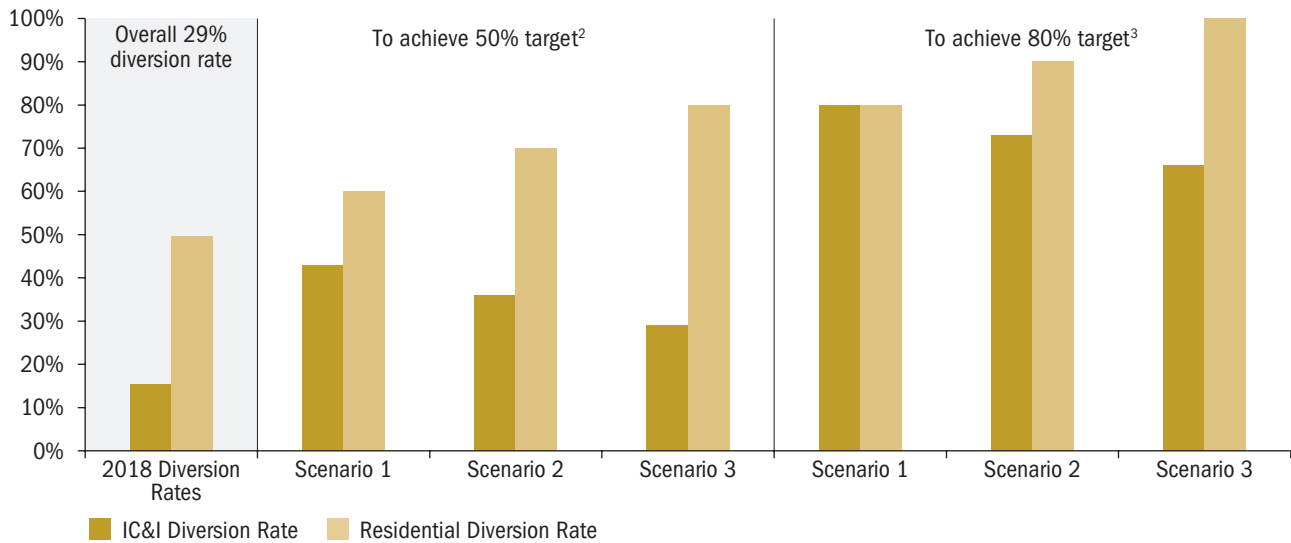
Despite its ambitions, Ontario has made little progress toward its waste goals. For example, in 1989, the former Ministry of the Environment announced a goal to divert 25% of the province's waste by 1992 and 50% by 2000. However, by 2000, Ontario's actual diversion rate was only 21%. In 2004, the Ministry proposed a new goal to divert 60% of provincial waste by 2008. But in 2008, the diversion rate was only 24% (see **Figure 1**).

In 2017, the government released a *Strategy for a Waste-Free Ontario: Building the Circular Economy*, which set a new goal to move toward a circular economy—a system in which products are never discarded, but reused and recycled into new products—and to ultimately achieve zero waste. To work toward this goal, the Ministry established an internal key performance indicator to reduce the amount of waste disposed per person each year (including both IC&I and residential waste). The Strategy also set interim targets to divert 30% of total waste generated by 2020, 50% by 2030, and 80% by 2050. As of 2018 (the most recent data available), Ontario diverted 29% of its waste, up from 24% in 2008.

Though Ontario does not have distinct targets for either IC&I or residential waste, the IC&I sector is key to meeting the province's overall 2030 and 2050 diversion targets. To date, diversion by the residential sector has been sufficient to pull up Ontario's overall diversion rate to almost 30% to meet

Figure 4: Examples of Waste Diversion Scenarios to Meet Ontario’s Targets¹

Prepared by the Office of the Auditor General of Ontario



1. Based on assumption that industrial, commercial and institutional (IC&I) and residential sectors generate 60% and 40%, respectively, of total waste.
2. Hypothetical mixes of IC&I and residential diversion rates that would achieve an overall 50% diversion rate.
3. Hypothetical mixes of IC&I and residential diversion rates that would achieve an overall 80% diversion rate.

the 2020 target. However, to achieve the overall diversion targets of 50% by 2030 and 80% by 2050, the IC&I sector will need to significantly increase its diversion rate. For example, as shown through various hypothetical future waste diversion scenarios in **Figure 4**, if the proportion of IC&I and residential waste were to remain constant and the residential sector were to increase its diversion rate as high as 80%, the IC&I sector would still need to increase its diversion rate from 15% to at least 30% by 2030, and 80% by 2050, for Ontario to meet its targets.

2.3.1 Strategies to Reduce, Reuse, Recycle and Recover

Waste management strategies can be used to reduce and divert waste from disposal. All of these strategies decrease pressure on landfill capacity, but some provide greater benefits than others. The “waste hierarchy” is a tool used by jurisdictions around the world to set out waste management strategies in order of most to least favoured based on their environmental

benefits, starting with reduce and reuse, followed by recycle (including “recycling” organic waste through composting or anaerobic digestion), energy recovery, and lastly, disposal (see **Figure 5**). The waste hierarchy is also used as a tool to work toward a circular economy.

Recovering Energy

Recovering energy from waste provides benefits over traditional disposal in landfills or incinerators. Energy-from-waste facilities recover energy from the process of incinerating waste and use that energy to heat buildings or generate electricity, replacing other energy sources. These facilities can relieve pressure on landfill capacity, as well as emitting fewer greenhouse gases than landfills. Despite these benefits, the energy-from-waste process is typically more expensive than landfill, it releases some harmful air pollutants and, like landfill, it similarly loses all valuable materials contained in waste. For these reasons, the waste hierarchy recommends energy-from-waste as a waste management option strictly for materials that cannot feasibly be recycled, composted or reused.

Figure 5: Hierarchy of Waste Management Approaches, from Most to Least Favoured, Used by Jurisdictions Around the World

Prepared by the Office of the Auditor General of Ontario

Reduce

Preventing waste from being created in the first place, such as eliminating unnecessary packaging, replacing single-use disposable items with reusable items, or improving food purchasing and preparation to avoid food waste.

Reuse

Giving products a longer or second life before they become waste, such as donating items for second-hand use, repairing items, or repurposing materials for a new use.

Recycle

Processing waste materials into new products, such as green bin organic waste into compost, used metal cans into new cans, or electronic waste into its multiple component materials.

Recover Energy

Recovering some of the energy that is produced when waste is incinerated (burned) or landfilled and using such energy to heat buildings or generate electricity.

Dispose

Discarding waste in a landfill or burning waste in an incinerator without energy recovery.

Recycling

Recycling is next in the hierarchy, because it recovers the resources contained in waste, creating new products that replace the need for virgin materials. For many materials, such as paper, cardboard, metal, glass and plastic bottles, recycling uses less energy, emits less greenhouse gases and produces fewer environmental impacts (such as air and water pollution and land contamination) than extracting and manufacturing virgin materials. Further, composting and anaerobic digestion produce less greenhouse gas than landfilled organic waste. Plus, the resulting compost can be put back in the soil, which increases nutrients and carbon stored in the soil, as well as reducing the need for chemical fertilizer.

In addition to the environmental benefits, a 2014 Conference Board of Canada study showed that the recycling industry also provides greater economic benefits for the province, creating more jobs and economic growth than disposal. However, for most materials, recycling is currently a more expensive waste management option than landfill.

Reduce and Reuse

Reduce and reuse are prioritized at the top of the waste hierarchy because they avoid the need for new materials and all the impacts associated with manufacturing, transporting, and disposing or recycling a product. Reduction is especially important for materials that are not commonly recycled. For example, only 9% of plastic waste was recycled in Canada in 2016—90% was disposed and 1% (29,000 tonnes) entered the environment as litter. In addition, measures to reduce and reuse, such as eliminating unnecessary packaging or replacing single-use items with reusable items, can cut business purchasing and waste collection costs, sometimes resulting in substantial savings, which can be passed on to consumers.

2.4 Regulation and Oversight of IC&I Waste Management

The Ministry regulates waste management in Ontario under the *Environmental Protection Act* and the *Resource Recovery and Circular Economy Act, 2016*. For IC&I waste, this includes regulating both:

- **IC&I establishments:** the businesses and institutions that generate waste; and
- **the waste management industry:** the service providers that collect, transfer, sort, recycle, compost, incinerate or landfill waste.

Multi-residential buildings with six or more units are also partially regulated along with IC&I establishments (see **Section 2.4.1**).

The Ministry also regulates the producers—brand holders, importers or retailers—of certain products, including used tires, electronics and

batteries, under the *Resource Recovery and Circular Economy Act, 2016*, by requiring the producers to operate programs to collect and divert the waste that results from their products (see **Section 4.9** for details). However, the requirements under this regulatory framework that apply to IC&I waste cover less than 5% of Ontario's total waste stream and are not included in the scope of this audit.

See **Appendix 4** for a chart of the entities involved in the oversight of IC&I waste.

2.4.1 IC&I Establishments and Multi-residential Buildings

Businesses, institutions and multi-residential buildings are responsible for managing the waste they generate onsite and, except for multi-residential buildings that receive municipal collection services, for arranging the collection and subsequent management of their waste through contracts with private waste companies.

IC&I Waste Regulations

The Ministry has two regulations under the *Environmental Protection Act*, introduced in 1994, that require certain establishments to take some steps to reduce and divert their waste (referred to collectively in this report as the IC&I waste regulations).

The first regulation, the Waste Audits and Waste Reduction Work Plans Regulation (Waste Audit Regulation), requires large businesses and institutions that meet the thresholds set out in the regulation (see **Appendix 5**) to:

- conduct a waste audit (that is, an inventory of their waste);
- develop and implement a work plan to reduce, reuse and recycle waste; and
- update both the audit and work plan annually, and implement any updates.

The second regulation, the IC&I Source Separation Programs Regulation (Source Separation Regulation), requires the same list of regulated establishments, plus all multi-residential buildings with six

or more units, to implement a recycling program with specific obligations to:

- collect the recyclable materials specified in the regulation (see **Appendix 5**) separately from other waste;
- provide facilities (bins) to collect and store the recycling, which are adequate for the anticipated quantity of the recyclable materials;
- provide information to inform and encourage proper use of the recycling program;
- ensure that the source-separated recyclables are removed from their site; and
- make “reasonable efforts to ensure that full use is made of the program and that the separated waste is reused or recycled.”

Inspection and Enforcement of IC&I Waste Regulations

Since 2007, the Ministry's Sector Enforcement Section has been responsible for inspecting and enforcing the IC&I waste regulations. This section inspects and enforces compliance in two ways—through regular inspections and its “corporate initiative” program. The corporate initiative is an approach used by inspectors to maximize inspection resources, in which a company, such as a retail or fast food chain, commits to the Ministry to achieve compliance at all of its locations within an agreed-upon time frame. Once the company confirms that it is compliant, the Ministry inspects a sample of the company's locations and, if they pass inspection, the Ministry deems all locations compliant.

Since 2017/18, the Ministry has redirected some of the Sector Enforcement Section's inspection focus to compliance of other programs, including greenhouse gas reporting and end-of-life vehicle management. The Ministry informed us that this shift in inspection focus is based on the Ministry's risk evaluation and priority setting.

See **Section 4.7** for a discussion of our findings related to the Ministry's IC&I waste inspection program.

Organic Waste Policy

The Ministry introduced the *Food and Organic Waste Policy Statement* (Organic Waste Policy) in 2018, under the *Resource Recovery and Circular Economy Act, 2016*. The Organic Waste Policy requires municipalities, multi-residential buildings and IC&I establishments that meet the thresholds in the Policy to:

- reduce and divert food and organic waste by either 50% or 70%, depending on their size and sub-sector, by 2023 or 2025; and
- implement separate collection for food and organic waste in time to meet the 2025 target.

2.4.2 Waste Management Industry

The waste management industry includes the following service providers:

- **Waste collectors** – collect waste from establishments and take it to a transfer station, or sorting, processing, disposal or energy recovery facility, depending on the type of waste and their contract with the establishment.
- **Waste haulers** – transport (rather than collect) waste over longer distances, such as from transfer stations to landfills in Michigan.
- **Transfer stations** – function as an interim destination where waste is consolidated into larger loads before being transported to the next destination. Most transfer stations consolidate garbage for transfer to landfills, and occasionally remove select valuable recyclables if feasible, while some consolidate loads of source-separated recyclables and organics for transfer to sorting or processing facilities.
- **Material recovery (sorting) facilities** – sort and bale mixed recyclables into their individual commodities (such as plastics, paper, metals and glass), to be sold to processing facilities or directly to end-users, such as manufacturers.
- **Processing (recycling or organic processing) facilities** – process materials such as paper, plastics or electronics into usable products that can be sold to manufactures or end-users;

composting and anaerobic digestion facilities process organics to produce compost or digestate and biogas, respectively.

- **Disposal and energy recovery facilities** – dispose the waste in a landfill or energy-from-waste facility.

Figure 6 shows how waste moves through these waste services.

Ontario's waste management industry comprises approximately 470 businesses, but the majority of IC&I waste is managed by just 25 to 30 of these businesses, with the five largest businesses collecting, sorting and processing over half of all IC&I waste in Ontario. Hundreds more businesses provide other waste services, such as operating transfer stations, processing organic wastes or leasing waste equipment (see **Appendix 6** for a summary of Ontario's IC&I waste management service providers). According to the Conference Board of Canada, Ontario's waste management sector employed over 17,000 employees and contributed \$2.8 billion to Ontario's gross domestic product in 2018.

Approval and Oversight of Waste Management Industry

The Ministry's Environmental Assessment and Permissions Division regulates the waste management industry under the *Environmental Assessment Act* and the *Environmental Protection Act*.

All waste management facilities (transfer stations, sorting, processing and disposal facilities) are required to operate in accordance with an environmental compliance approval issued by the Ministry. These approvals typically include conditions, such as limits on the types and quantities of waste the facility can receive, operating hours and approved equipment. The purpose of such conditions is to provide for environmental protection and public health and safety, such as reducing the risk of fires, leaks and spills from waste management operations. These approvals are not intended to regulate IC&I waste diversion, such as requiring transfer stations to divert the recyclables they receive.

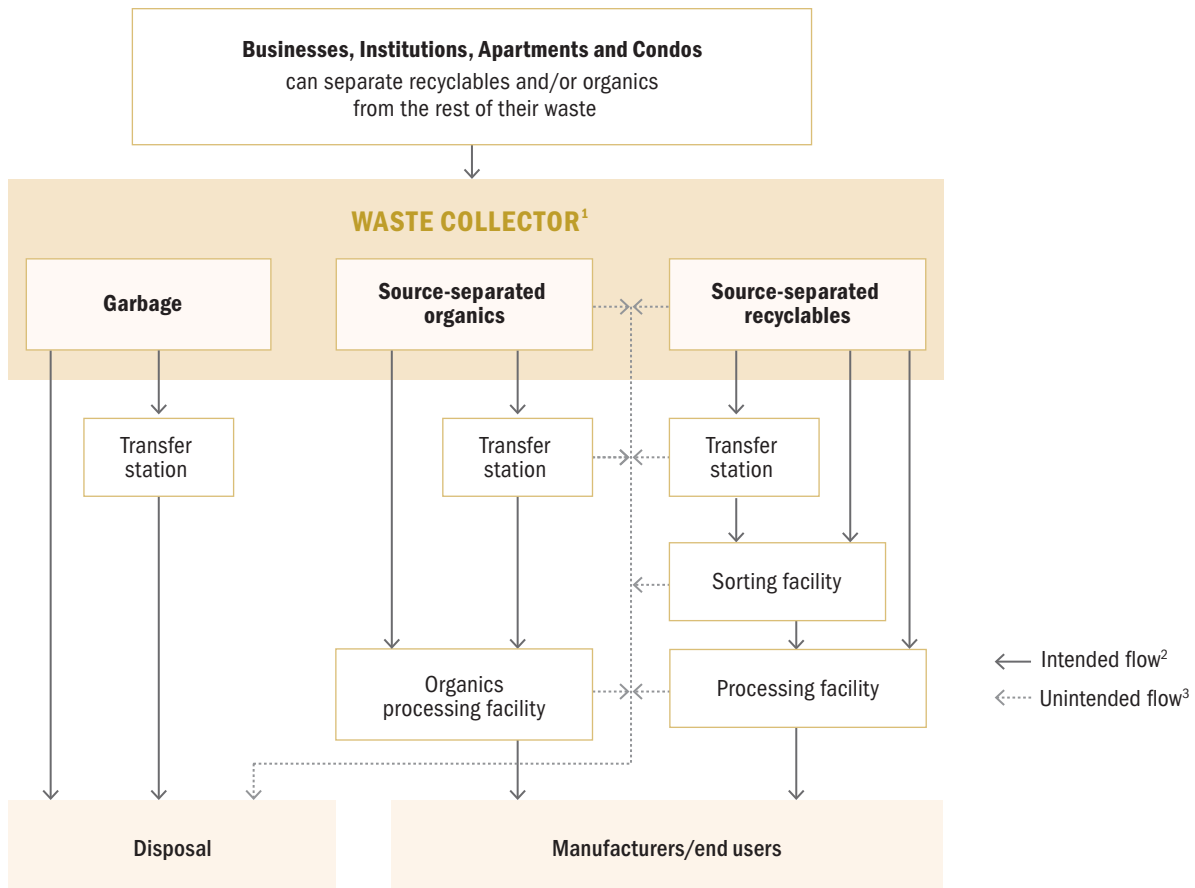
All waste transportation vehicles are required to obtain an environmental compliance approval or register under the Ministry’s Environmental Activity and Sector Registry. The vehicles must operate in accordance with the requirements set out in the approval or regulation, such as types of waste they are approved to transport, service area, driver training and insurance. These requirements are similarly intended to provide for safe transport, not to regulate diversion, such as requiring waste collectors to

take recyclable materials to a facility that diverts such materials.

Environmental Officers from the Ministry’s 16 District Offices located across Ontario, as well as the Environmental Investigations and Enforcement Branch’s on-road enforcement team, are responsible for inspecting waste management vehicles and facilities across the province and enforcing compliance with these requirements. The Ministry’s Central Region Office provides additional support and advice.

Figure 6: Movement of Industrial, Commercial & Institutional (IC&I) Waste

Prepared by the Office of the Auditor General of Ontario



1. Waste collectors manage the majority of IC&I waste; however, establishments may take certain materials that have specialized producer-run recycling programs, including beer and alcohol containers, used tires, electronics and batteries, directly to the collection site (see Section 4.9).
2. As indicated by the solid arrows, waste collectors may first take source-separated materials to a transfer station for consolidation, or they may take materials directly to a facility for sorting or processing. Recyclables can be taken to a sorting facility, where they are sorted and baled into individual material types before they are sent for processing at a specialized facility. Materials that have already been separated out (such as bundled cardboard or shredded office paper) may bypass this sorting stage and go directly to a processing facility.
3. As indicated by the broken arrows, some materials that IC&I establishments place in the recyclable or organic stream with the intention of diversion end up in landfill, either because the materials were placed in the incorrect stream or the waste management company otherwise deemed the materials impractical to recycle or compost due to contamination, degradation or economic factors (see Section 4.3). In addition, sorting and processing facilities may dispose of unrecyclable by-products from their operations.

3.0 Audit Objective and Scope

The objective of our audit was to assess whether the Ministry of the Environment, Conservation and Parks has effective systems and processes to:

- achieve a reduction in the amount of Industrial, Commercial & Institutional (IC&I) non-hazardous waste that is generated and disposed, to enable Ontario to meet its waste reduction and waste diversion goals;
- promote and enforce compliance with relevant legislation, regulations and policy requirements to reduce and divert IC&I waste; and
- reliably measure and publicly report on its effectiveness in achieving the province's waste reduction and waste diversion goals.

In planning for our work, we identified the audit criteria that we would use to address our audit objective. We established these criteria based on a review of applicable legislation, policies and procedures, internal and external studies and best practices. Senior management at the Ministry reviewed and agreed with the suitability of our objectives and associated criteria as listed in **Appendix 7**.

Our audit scope focused on IC&I waste reduction and diversion. The scope of this audit does not cover diversion programs under the *Resource Recovery and Circular Economy Act, 2016*, because the requirements under this regulatory framework that apply to IC&I waste cover less than 5% of Ontario's waste stream.

We conducted our audit between January 2020 and April 2021. We obtained written representation from the Ministry that effective October 16, 2021 it had provided us with all the information that it was aware of that could significantly affect the findings or the conclusion of this report.

Our audit work was conducted initially at the Ministry's Drinking Water and Environmental Compliance Division and Policy Division offices in Toronto from January to mid-March 2020. Due to the COVID-19 pandemic, we were unable to complete our audit work onsite at the Ministry offices, but we continued to hold discussions with Ministry

representatives by telephone and video conference, and Ministry staff electronically provided us with all documents and data we required.

As part of our audit work relating to IC&I establishments:

- We interviewed Ministry inspection staff to understand their practices to promote, inspect and enforce compliance with the IC&I waste regulations. We reviewed inspection data from 2014/15 to 2018/19 (the last year for which complete inspection data was available) to analyze inspection frequency, compliance rates and enforcement actions. Due to the COVID pandemic, as of March 2020, the Ministry adapted its inspection program to conduct desktop audits (by telephone) to gather information about establishments' compliance, which inspectors plan to use to prioritize future in-person inspections as well as reduce the time required for the inspections. We also reviewed a sample of 30 inspection files from 2018/19 and 2019/20 to examine the Ministry's IC&I inspection practices.
- We visited 30 establishments, including stores, malls, restaurants, hotels, office and multi-residential buildings, to observe the quality of recycling programs that the Ministry had deemed compliant with the IC&I waste regulations. As part of our audit work relating to the waste management industry:
 - We spoke with various stakeholders from the waste industry to better understand the waste management industry. This included interviews with dozens of waste collectors, transfer stations, sorting facilities and organics processing facilities, as well as expert consultants and the Ontario Waste Management Association (OWMA), which represents over 250 companies and organization in the public and private sector that collectively manage over 85% of Ontario's waste.
 - We conducted a survey, in May 2020, of the OWMA's members that collect, transfer, sort or process IC&I recycling and organic waste to obtain information about waste operations

and the challenges the industry faces in diverting IC&I wastes. We received 20 responses, an 80% response rate of the targeted 25 members that provide the relevant services.

- To verify what happens to IC&I waste after it is collected from establishments:
 - We contacted all 20 transfer stations listed in our sample of inspection files as a destination for establishments' source-separated recycling as a "secret shopper" seeking waste management services. We asked each facility whether it would accept our commercial mixed recycling or construction and demolition waste, as applicable, and how it would manage it.
 - We reviewed annual reports from a sample of 46 waste facilities across Ontario that handle IC&I waste, including 20 transfer stations, 20 sorting facilities and six compost facilities, to analyze facilities' diversion rates. These facilities collectively receive almost three million tonnes of waste per year, over 20% of all waste generated in Ontario.

As part of our audit work relating to IC&I waste data:

- We reviewed all available data relating to IC&I waste generation, disposal and diversion in Ontario, including from Statistics Canada, the Resource Productivity and Recovery Authority, industry associations, and various consultants.
- We held discussions with staff in the Ministry's Resource Recovery Policy Branch and from Statistics Canada about the waste data collection methodology.

See **Appendix 8** for details on additional work done to perform the audit.

We conducted our work and reported on the results of our examination in accordance with the applicable Canadian Standards on Assurance Engagements—Direct Engagements issued by the Auditing and Assurance Standards Board of the Chartered Professional Accountants of Canada. This included obtaining a reasonable level of assurance.

The Office of the Auditor General of Ontario applies the Canadian Standard on Quality Control and, as a result, maintains a comprehensive quality-control system that includes documented policies and procedures with respect to compliance with rules of professional conduct, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of Ontario, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

3.1 Subsequent Events

Subsequent to our audit, in June 2021, the Ministry passed a new regulation to update the province's residential Blue Box program. The Blue Box Regulation makes producers (brand holders, importers or retailers) of paper and packaging responsible for delivering Blue Box services starting in 2023, with full responsibility by 2026. It also expands the list of materials collected in the Blue Box, including more types of plastic packaging, packaging-like products such as boxes and trays, and single-use items, such as cutlery and straws. The regulation also sets out diversion targets for each material category.

Several of these changes are relevant to this report. The Blue Box Regulation expands collection to include materials from various IC&I sources, including multi-residential buildings, elementary and secondary schools, and municipal and non-profit long-term-care and retirement homes. The regulation also expands collection to public spaces, such as parks, playgrounds and transit stations. In addition, the producers of ready-to-drink beverage containers will be responsible for meeting diversion targets for all such containers sold in Ontario, including those supplied to the IC&I sector.

These changes will shift some amount of IC&I waste that was previously privately managed into

the more successful Blue Box program, which has a current diversion rate of 60%. The Ministry has estimated that, once fully implemented, the Blue Box Regulation would result in over 200,000 additional tonnes of diversion each year (from both IC&I and residential sectors). However, our analysis suggests that the increased amount of diverted IC&I waste will be relatively small, as some of the added sources were already being voluntarily collected by municipalities for inclusion in the Blue Box.

4.0 Detailed Audit Observations

4.1 Data Gaps in Industrial, Commercial and Institutional Waste

Ontario collects its own data on residential waste but it relies entirely on Statistics Canada for data about IC&I waste generated, disposed and diverted. Statistics Canada publishes high-level data every two years, based on information collected from waste management service providers, on total residential and IC&I waste diverted and disposed. Statistics Canada does not provide data on waste generated, but for the purposes of this report, we estimate it as the sum of waste diverted and disposed.

The Ministry has noted, including in its 2017 *Strategy for a Waste-Free Ontario* and its 2019 *Reducing Litter and Waste in Our Communities: Discussion Paper*, that the province has significant gaps in its understanding of IC&I waste. The Ministry informed us during the audit that these information gaps present a barrier to developing new waste policies and programs. Nonetheless, the Ministry has not taken steps to obtain additional data or better utilize existing data sources regarding IC&I waste in Ontario.

4.1.1 Data Gaps for IC&I Waste Mean Ministry Unable to Reliably Track Progress toward Province's Waste Reduction and Diversion Goals

Statistics Canada IC&I and residential waste data is a valuable source of information. However, its purpose is to provide a national, province-by-province, overview of waste activities in Canada, not to provide comprehensive data to meet the specific needs of each province. Without supplemental IC&I data of its own, we found that the province has major gaps in its understanding of the state of IC&I waste in Ontario. These gaps present a barrier to the Ministry's development of new waste policies and its ability to reliably track progress toward Ontario's waste goals. We also found, based on data from the Ontario Waste Management Association (OWMA), that the province is likely grossly underestimating total waste disposed.

Statistics Canada publishes its waste report every two years, based on data from one to two years prior to the report release. Therefore, at any given time, the Ministry is relying on data that is between two to four years old for its understanding of the "current" status of IC&I waste generated, disposed of and diverted in Ontario.

Furthermore, Statistics Canada only captures data reported by the waste management industry. This excludes all waste that is diverted by IC&I establishments without the use of a waste management service provider, including:

- waste, such as manufacturing off-cuts, that is reused or recycled within a facility; or
- waste, such as scrap metal, textiles or excess food, that is taken, sold or donated directly to others for reuse or recycling.

These excluded forms of diversion are poorly tracked, leading to an unknown underestimation of the total amount of IC&I waste that is generated and diverted.

Figure 7: Estimates of Ontario Non-hazardous Waste Diverted, Disposed and Generated in 2018, by Various Data Sources

Sources of data: Statistics Canada, Ontario's Datacall and Ontario Waste Management Association

	Generated (million tonnes)	Disposed (million tonnes)	Diverted (million tonnes)	Diversion Rate (%)
Statistics Canada¹				
Residential	6.0	4.0	2.0	33
Industrial, Commercial and Institutional (IC&I)	7.2	6.1	1.1	15
Total	13.2	10.1	3.1	23
Ministry of the Environment, Conservation and Parks²				
Residential	4.8	2.4	2.4	50
Total²	12.0	8.5	3.5	29
Ontario Waste Management Association (OWMA)³				
Total	No data	11.6	No data	No data

1. Statistics Canada publishes data of waste disposed and diverted biennially, with the most recent data for 2018. Waste generated was calculated as the sum of waste diverted and disposed. Statistics Canada's data excludes materials diverted through producer-run programs: tires, electronics and alcohol/beer containers.
2. Ontario's Datacall provides annual data for residential waste generated and diverted. Data is available up to 2019, but we used 2018 data for comparison across sources. Waste disposed was calculated as the difference between waste generated and waste diverted. The Ministry of the Environment, Conservation and Parks calculates total waste using the Datacall data for residential waste and Statistics Canada's data for IC&I waste.
3. The OWMA publishes a landfill report biennially, in alternate years to Statistics Canada. To compare with 2018 data across sources, we used an average of its 2017 and 2019 disposal data, which were 11.4 million and 11.8 million tonnes of non-hazardous waste, respectively.

Statistics Canada data also excludes waste that is exported to landfills in the United States by long-haul transporters, which are not waste companies. The OWMA conducts its own biennial survey of Ontario's waste disposal. The OWMA's estimate of Ontario's total waste disposed (11.6 million tonnes) is 1.5 million tonnes higher than Statistics Canada's estimate (10.1 million tonnes) (see **Figure 7**). The OWMA informed us that its higher total for waste disposed includes some waste—such as asphalt, concrete and bricks—that is not fully accounted for in Statistics Canada's disposal totals, but also that its data more accurately captures the total amount of IC&I waste exported for disposal in the United States.

The disparity between the province's and Statistics Canada's residential waste data highlights a further data issue. The province collects its own data for residential waste directly from Ontario municipalities, through the Resource Productivity and Recovery

Authority's annual "Datacall" (see **Section 4.9** for details on the Resource Authority). The Datacall data, which the Ministry considers more reliable than Statistics Canada data, consistently estimates residential waste generated much lower than Statistics Canada: about 1.2 million tonnes lower in 2018 (see **Figure 7**). The Datacall data also estimates more diverted and less disposed residential waste, resulting in a much higher residential diversion rate: 50% in 2018, compared with 33% based on Statistics Canada 2018 data.

Neither Statistics Canada nor the Ministry is able to fully account for the disparity, but both noted to us differences in their data collection methodologies and, in particular, both noted that they treat multi-residential waste differently. Ontario's Datacall captures only multi-residential waste that is municipally collected, whereas Statistics Canada residential data includes both municipally and privately collected

multi-residential waste. The Ministry's practice of estimating Ontario's total waste as the sum of Data-call residential data plus Statistics Canada IC&I data therefore omits all privately collected multi-residential waste.

Collectively, these data issues suggest that the province is likely underestimating both IC&I and total provincial waste. For example, the OWMA's estimate of total disposed waste was 3.1 million tonnes higher than the Ministry's estimate for 2018 (see **Figure 7**).

4.1.2 Ministry Cannot Identify Which Establishments Generate and Dispose of the Most Waste Due to Lack of Data

Our Office's 2010 audit of Non-hazardous Waste Disposal and Diversion found that the Ministry lacked information on the specific sources and types of Ontario's IC&I waste and recommended that the Ministry obtain such information. Our review of the Ministry's current data found that, over 10 years later, the Ministry still does not have this information.

In particular, the Ministry does not have data about:

- how much of Ontario's total IC&I waste is generated by each IC&I subsector (such as retailers, restaurants, manufacturers, hospitals and construction);
- the breakdown of how waste is generated within each subsector, such as between large and small establishments; or
- the diversion and disposal rates of each subsector.

Without this data, the Ministry cannot determine what portion of the IC&I waste stream is generated by establishments that are subject to the IC&I waste regulations. Nor can the Ministry identify what other types of establishments are significant generators of IC&I waste, and should potentially be included in future regulations or programs.

The Ministry also does not have reliable data on the composition of the IC&I waste stream by type of material. Statistics Canada provides only partial data on the breakdown of waste by material type:

- Statistics Canada can break out disposed IC&I waste into "construction, renovation and demolition" waste and all other IC&I waste, but it does not provide data on other types of disposed materials (such as plastics, textiles or organic waste) beyond these two broad categories.
- Statistics Canada publishes a breakdown of diverted waste in Ontario by material type. However, without any data about waste disposed by material type, it is not possible to determine which materials have high or low diversion rates.

The Ministry commissioned three studies between 2016 and 2018 to improve its understanding of the most common materials in the IC&I waste stream. These studies broadly estimate the amounts of IC&I paper and packaging, organic waste, and construction, renovation and demolition waste generated and diverted in Ontario. However, the Ministry advised us that there are limitations to relying on these studies for precise information, as they were based on modelling rather than reported data.

4.1.3 Existing Sources of Waste Data Are Not Being Utilized

During our audit, the Ministry informed us that it is considering options to obtain IC&I waste data to supplement the Statistics Canada data. Among possible options for data collection, we found that there are several opportunities to better utilize existing data sources. For example, we found that the following sources of data are underutilized:

- **Waste Management Facility Reports:**

All waste management facilities, including transfer, sorting, processing and disposal facilities, are required by their environmental compliance approvals (see **Section 2.4.2**) to maintain waste data records—including the quantities, types, sources and outbound destinations of the waste they handle—and to prepare annual reports. Our review of a sample of annual reports found that these reports contain valuable data on

IC&I waste, but several limitations prevent them from being better utilized:

- there are no standard data requirements or direction for reporting on waste “type,” so the contents of the reports vary widely, with some facilities reporting on only some recyclable materials or, in some cases, only garbage;
 - some facilities are required to maintain their annual reports onsite, while others are required to submit the reports to the Ministry. Ministry inspectors may review the annual report, such as to inspect compliance with a facility’s approved tonnage limits, but the Ministry does not compile or analyze the information to assess diversion and disposal trends; and
 - the few reports that must be submitted are held, often in hard copy, in district offices across the province (rather than in a central database).
- **Waste Audits by Regulated Establishments:** Regulated IC&I establishments are required to take an inventory of their waste and produce a waste audit report every year. Our review of a sample of waste audits found that they include useful data about IC&I waste composition from regulated establishments, but several limitations prevent them from being better utilized:
 - the Ministry does not require waste audits to be submitted. Ministry inspectors reviewed the waste audits during inspections to determine compliance with the Waste Audit Regulation until 2019 (see **Section 4.6**), but the Ministry has not analyzed or used the data for policy development;
 - the Ministry’s audit report template does not provide detailed direction on content, which results in inconsistent reporting between companies, such as different categorization of materials, and gaps in key information, such as overall diversion rate; and
 - the Ministry’s template is not an electronically editable form, which means data cannot

be easily entered or extracted and calculations must be done manually.

- **3Rcertified data:** The Recycling Council of Ontario, a non-profit, received funding from the Ministry in 2010 to develop 3Rcertified, a voluntary certification program that helps IC&I establishments monitor their waste stream and review their waste reduction policies and procedures. IC&I establishments can achieve various certification levels by completing standardized waste audits. The lowest certification level is based on requirements in the Waste Audit Regulation. We found that the program provides streamlined reporting for IC&I establishments, and an opportunity for the Ministry to collect standardized IC&I waste data.
- **Ontario Waste Management Association (OWMA) data:** The OWMA offers another potential source of data. The OWMA collects data, which is not collected by the Ministry, from its members on the annual quantity, source and category of waste received at landfills and organic processing facilities. The OWMA has used this information, collected through waste data management software (Re-TRAC), to create its own private database of information about waste disposal and organic processing facilities in Ontario. The OWMA analyzes and presents high-level findings from this database in its annual reports.

Many governments in other jurisdictions have more effective waste data collection and reporting than Ontario. For example, the state of Vermont uses Re-TRAC to streamline data collection from all waste facilities. South Carolina offers generators free access to the Re-TRAC software to encourage businesses to voluntarily report on annual recycling activities. Scotland not only tracks waste management data from all sources to obtain generation, diversion and recovery tonnages by waste category and material type, but also makes the facility-specific waste information publicly available in an interactive database.

RECOMMENDATION 1

To inform the province's review of its current waste regulations and the development of effective policies and programs to address industrial, commercial and institutional (IC&I) waste, and to reliably track progress toward the province's waste reduction and diversion goals, we recommend that the Ministry of the Environment, Conservation and Parks:

- utilize existing data from IC&I establishments and waste management facilities, including waste audits, waste facility reports and data collected by other organizations, to help fill gaps in baseline data about total IC&I waste generated, diverted and disposed, as well as gaps in data about the types of IC&I waste materials and the sources of waste by sub-sectors and size of establishments;
- implement measures to streamline and simplify existing data reporting requirements and provide for electronic reporting of the standardized data from IC&I establishments and waste management facilities about the types, quantities and destinations of IC&I waste they generate or manage; and
- publicly report summarized IC&I waste data based on the collected information, and to the extent that any published data does not align with Statistics Canada data, include a clear explanation of the factors that contributed to the different results.

MINISTRY RESPONSE

The Ministry agrees with the Auditor General that data is a valuable resource that can be used to inform the development of effective policies and programs. We will use reliable sources of available data to improve Ontario's baseline data on IC&I

waste generation, diversion and waste composition, which we will use when considering how to improve our current framework.

The Ministry will also consider approaches to streamline how we collect, report and receive data and publicly share information.

4.2 Waste Management Industry

The Ministry does not require waste management service providers—the companies that collect, transfer, sort and process waste—to divert the IC&I recyclables or organic waste they handle (see **Section 2.4.2**), nor to report on their waste diversion activities.

Our audit of waste industry practices found that many materials that are source-separated by establishments such as stores and office buildings, with the intent of being diverted, never reach a processing facility. We found that waste collectors take roughly half of the IC&I source-separated recyclables and organics that they collect to transfer stations. Yet, only 34% of the transfer stations we examined transfer loads of IC&I recycling to sorting or processing facilities to be diverted. The other 66% of the transfer stations we examined accept the IC&I recyclables as garbage, which they send to landfill or energy-from-waste facilities. We also found that waste collectors take about one-fifth of collected IC&I organic waste directly to landfill. (For a discussion of why waste companies send the materials to landfill, see **Section 4.3**.)

We also found that it was difficult to obtain information about waste industry operations. Without access to such information, establishments cannot easily verify whether their recyclables are being sent to a facility that actually diverts them and, therefore, cannot make informed decisions when contracting waste services.

4.2.1 Waste Collectors Not Required by Ministry to Report Where Source-Separated Recycling and Organic Waste Is Taken

The Ministry does not require waste collectors to divert the IC&I recyclable or organic waste that they collect, or to report where they take waste or how much they divert.

We obtained information through several means to determine where waste collectors take collected IC&I mixed recyclables (see **Section 4.2.2** for details on what happens to materials taken to transfer stations):

- In a 2016/17 information gathering project by the Ministry, Ministry inspectors found that 65% of the waste collection vehicles that they observed took the source-separated recyclables from IC&I establishments to a transfer station, while 35% of the vehicles took the recyclables to a sorting facility. In 24% of the cases, the inspectors observed the collectors load and compact the recycling and garbage together in the vehicle before taking the materials to a transfer station. One vehicle operator, when asked, confirmed to the inspector that this was normal practice. Another vehicle operator told the inspector that all collected recyclables on that route, except cardboard, are regularly taken to the transfer station as garbage.
- In our review of information provided by regulated establishments to the Ministry during inspections conducted in 2018/19 and 2019/20, 66% of the establishments indicated that their waste collector took their recyclables to a transfer station and 34% indicated that they were taken to a sorting facility.
- In response to our May 2020 survey to members of the waste management industry, on average, waste collectors reported taking 43% of collected IC&I source-separated recyclables to transfer stations, 53% to sorting or processing facilities, and 4% directly to landfill.

For organic waste, in response to our survey, on average, waste collectors reported taking 54% of source-separated IC&I organic waste to an organic

processing (composting or anaerobic digestion) facility, 23% to a transfer station, and 22% directly to landfill. However, the amounts sent to landfill varied considerably among respondents. For example, two reported taking 50% to 60% of the collected organics to landfill, one reported taking as much as 90% and the remaining six collectors reported taking no source-separated organics to landfill.

Some other jurisdictions require waste collectors to report where they take collected waste, and in some cases, hold both IC&I establishments and waste collectors responsible for ensuring collected waste is brought to appropriate final destinations. For example, Scotland requires that IC&I source-separated waste be accompanied by a waste transfer note (chain of custody) to verify that materials are diverted.

RECOMMENDATION 2

To increase the accountability of waste collectors taking source-separated materials from industrial, commercial and institutional (IC&I) establishments to appropriate waste management facilities for diversion rather than disposal, we recommend that the Ministry of the Environment, Conservation and Parks:

- require waste collectors to maintain documentation, to be provided to IC&I establishments upon request, to verify how collected source-separated materials are being managed;
- require waste collectors to report information to the Ministry (or a delegate) to track the quantities, types and destinations of IC&I materials diverted and disposed; and
- develop and implement a framework to inspect and enforce these requirements.

MINISTRY RESPONSE

The Ministry agrees with the Auditor General that waste collectors play an important service in the waste chain-of-custody. As such, the Ministry is currently looking at the role of waste collectors

under the IC&I regulatory framework. The Ministry will look at potential roles and responsibilities for waste collectors that will support improved diversion outcomes in the most efficient and least burdensome way.

4.2.2 Ministry Does Not Require Transfer Stations to Divert; IC&I Recyclables Often Sent to Landfill

Transfer stations operate as an interim destination, where the priority is rapid and efficient consolidation of large volumes of waste. Transfer stations that handle IC&I waste often lack the space or equipment to sort incoming materials to divert them from landfill. The Ministry does not require transfer stations to divert the IC&I recyclable or organic waste they handle, nor to report on their diversion rates or which specific materials they divert.

We examined the handling of IC&I waste at 50 transfer stations located across the province by reviewing transfer stations' annual reports submitted to the Ministry and information from the Ministry's 2016 and 2018 project on how transfer stations manage commercial mixed recycling and construction and demolition waste. We also independently contacted transfer stations as a "secret shopper" seeking waste management services to verify operations.

Our examination of the 50 transfer stations found the following:

- 35 transfer stations accept IC&I garbage and mixed (Blue Box-type) recyclables. However, only nine (26%) of these 35 transfer stations consolidate and transfer loads of mixed IC&I recyclables to sorting or processing facilities, of which six are operated by the same company. The other 26 (74%) of the 35 transfer stations accept loads of mixed recycling as garbage, which they send to landfill, with the exception of a few materials (such as wood, metal and clean cardboard) that some transfer stations pull out and divert if feasible.
- Five transfer stations are co-located with sorting facilities. All of these transfer stations told us that

the transfer station would accept only garbage, but would redirect the mixed recyclables to the adjacent sorting facility for diversion.

- 10 transfer stations receive primarily mixed construction and demolition waste. We found that only three (30%) of the 10 facilities consistently sort and divert these materials. The other seven send the materials to landfill, with the exception of a few valuable materials, which are diverted if feasible.

We also reviewed the incoming and outgoing waste data reported in annual reports from 20 transfer stations that had "process" and/or "transfer" in their facility description to determine average diversion rates. These transfer stations receive a combined total of 1.7 million tonnes of waste annually, or about 14% of all waste generated in Ontario. The average diversion rate at the 20 transfer stations was 7%. The majority of diverted waste was made up of cardboard, leaf and yard waste and wood. Diverted mixed recyclables cumulatively accounted for 18,000 tonnes annually, or just 1% of the materials managed by the transfer stations. Annual reports from two transfer stations that receive construction and demolition materials reported that they divert less than 5% these materials.

4.2.3 Sorting Facilities Divert Most Waste They Accept, but Some Do Not Accept IC&I Mixed Recyclables

Sorting facilities clean, sort and bale mixed recyclables into their individual commodities (such as plastics, paper, metals and glass) to be sold to processing facilities or directly to end-users, such as manufacturers. The Ministry does not require sorting facilities to divert any specific amount of the IC&I recyclable waste they handle, nor to report on their diversion rates. We found that sorting facilities in Ontario divert, on average, about 86% of the mixed recyclables that they accept. However, we also found that some sorting facilities will only handle residential waste and refuse to accept loads of IC&I mixed recyclables.

We reviewed annual reports from 20 sorting facilities that receive both IC&I and residential materials to determine average diversion rates. Collectively, these facilities receive over one million tonnes of source-separated mixed recyclables or construction and demolition waste annually. We found:

- The 18 sorting facilities that receive mixed recyclables reported diverting an average of 86% of materials they accept, with diversion rates at the two largest sorting facilities that receive IC&I waste ranging from 54% to 94%. The facility that achieved 94% diversion had invested in enhanced equipment and facilities, based on a business model focused on recovering materials rather than diverting waste.
- The two facilities that exclusively receive construction and demolition recyclables reported diverting 31% and 86% of materials.

In response to our waste management industry survey, the responding sorting facilities reported, on average, diverting 87% of recyclables. However, the two facilities that exclusively handle IC&I waste reported diverting 70%, much less than the three facilities that handle mostly residential waste.

Further, we found that some facilities with higher diversion rates will rarely accept IC&I mixed recyclables. For example, two of the five largest waste management companies told us that their sorting facilities will not accept mixed recyclables from IC&I establishments because contamination and lack of end markets make diversion of IC&I mixed recyclables too costly, or in some cases unfeasible (see **Section 4.3**). As a result, the waste collectors and transfer stations send these materials to landfill as garbage instead.

4.2.4 Ministry Does Not Compile Information about Waste Companies' Operations, Leaving Establishments in the Dark When Contracting Waste Management Services

The Ministry does not compile or publish information about waste management companies' operations, such as their diversion rates, the types

of materials they divert, or what they do with the materials they handle. We found that it is difficult to obtain reliable information about waste facilities' operations. Without access to such information, establishments cannot easily verify whether recyclables are being sent to facilities that divert their materials, nor make informed decisions when contracting waste services.

The Ministry has a database of waste management facilities. At our request, the Ministry compiled a list from this database of facilities that are approved to manage IC&I waste in Ontario, based on approvals that include the terms industrial, commercial and institutional. We found, however, the list is not up-to-date and does not provide complete information about facility operations. For example:

- The list classifies waste management facilities based on the approved activities in their environmental compliance approval, such as "transfer," "process" or "compost;" however, these terms indicate any possible activity for which a facility has been approved, but are not necessarily helpful for either Ministry staff or the public to determine a facility's current or principal operations in practice. For example, facilities may be approved to "process and transfer," but, in practice, may exclusively transfer materials without diverting any recyclables.
- In addition, 24 facilities that we examined that manage IC&I waste were not included in the Ministry's list. The Ministry acknowledged that its list included facilities that were no longer approved, had never been approved, or their operational status was unknown.

Other jurisdictions, such as California, Vermont and Scotland, require waste management facilities to report on their annual recycling activities, such as the amount and kinds of materials they handle each year. In California, waste facilities that do not comply with the reporting requirements have their names posted publicly online. Scotland publishes the facility-specific waste information, including waste diversion tonnages by material type, in a publicly available interactive database.

4.2.5 Waste Companies' Information Unclear or Misleading to Public, Transfer Stations Treating Recyclables as Garbage

Our review of a sample of 20 waste companies' websites found that it is difficult for the public to find information online about how transfer stations are managing the waste they receive. We cross-checked transfer stations' website information against their annual reports and through secret shopper phone calls asking the facilities about their services. We found that the information on 19 of the 20 websites was unclear about how the facility manages the IC&I materials it accepts, and in four cases, was also misleading. For example:

- One transfer station's website lists a variety of common materials that it accepts as recyclables, noting that the materials can be reused instead of landfilled. When we inquired by phone, facility staff informed us that all materials received would be sent to landfill.
- The website of another transfer station, with "recycling" in its name, indicates that it accepts and manages both waste and recycling. When we contacted the facility, staff initially informed us that it would accept our mixed recyclables and quoted the fee. After further questioning, staff eventually explained that these materials would not be sorted, but rather would "just be tossed into the [garbage] pile."

Moreover, when we contacted transfer stations as a secret shopper, seven (44%) of the 16 transfer stations that do not divert IC&I mixed recyclables provided misleading information to us. In each case, the employee we spoke with failed to explain that, although loads of mixed recyclables would technically be accepted, the materials would be treated as garbage.

RECOMMENDATION 3

To increase transparency about the waste management industry and help industrial, commercial and

institutional establishments make more informed business decisions about the management of their waste, we recommend that the Ministry of the Environment, Conservation and Parks (Ministry):

- require waste management facilities to report their annual diversion rate, as well as the specific materials they regularly divert, to the Ministry (or a delegate); and
- provide publicly accessible information, such as an online central database, of waste management facilities' past reported diversion rates and materials diverted.

MINISTRY RESPONSE

The Ministry recognizes the importance of increasing transparency about the waste management industry to enable businesses and institutions to make more informed waste management decisions. The Ministry will consider options for increasing transparency about the waste management industry, including looking at appropriate reporting requirements and making information publicly accessible.

4.2.6 Establishments' Contracts with Waste Management Companies Rarely Require IC&I Materials to Be Diverted

For establishments that have invested in source-separation programs and want to ensure their source-separated materials are diverted, it is important that their contracts with their waste service providers expressly require that materials are diverted, as well as requiring collectors to report back about where materials are taken. There is, however, minimal public information to guide establishments about waste service agreements. Our review of 40 service agreements between regulated establishments that have source-separation programs and their service providers found that only three of the agreements required the collectors to divert the customers' waste. As noted

in **Sections 4.2.1** and **4.2.2**, without contractual terms that require diversion, waste companies often send these source-separated materials to landfill.

IC&I establishments (and multi-residential buildings that receive private collection) enter into agreements with waste companies to remove and manage their waste. Because these are private contracts between private parties, businesses typically maintain their confidentiality and do not share contract terms. We were able to obtain copies of 40 waste service agreements from establishments, covering the five largest waste companies operating across Ontario. The agreements varied widely, ranging from short, basic contracts to very sophisticated, detailed contracts. Our review found the following:

- Only three of the 40 agreements expressly required the waste collector to take all collected recyclables to a recycling facility. The other 37 agreements allowed the waste collectors flexibility to manage collected materials based on market conditions. Each of these agreements gave collectors—either explicitly or through the absence of terms about how materials were to be managed—discretion to make operating decisions that balance costs against waste diversion goals, such as taking materials that cannot be recycled economically to landfill.
- Only six of the 40 agreements included requirements for the collector to report back to the establishment on the final disposition of the collected materials, which enables the establishment to confirm to what extent diversion occurred.

Our review of the agreements, as well as discussions with several of the largest waste management companies in Ontario, found that, despite the higher cost to process mixed recyclables (see **Section 4.3.1**), waste collectors typically charge establishments the same or less to collect recycling than garbage, for one of two reasons:

Several waste management companies informed us that they often dispose collected IC&I mixed recyclables as garbage due to high contamination

(see **Section 4.3.3**) and challenges securing suitable end markets (see **Section 4.3.2**). By treating mixed recyclables as garbage, waste management companies are not incurring the higher costs of sorting and processing, and so the costs remain the same as garbage. Further, mixed recyclables tend to include lighter-weight materials, often weighing half as much as a typical load of garbage. Therefore, collection and transport fees, for which weight is a major factor, are lower than the transport costs for garbage.

- Where loads of recycling are properly separated with minimal contamination and contain more profitable recyclables with reliable markets, such as metals, clean cardboard and high-value plastics, the cost to collect and process these materials can be lower than landfill disposal.

RECOMMENDATION 4

To support efforts by industrial, commercial and institutional (IC&I) establishments to have their source-separated waste diverted by their waste management service providers, we recommend that the Ministry of the Environment, Conservation and Parks develop and distribute resources for IC&I establishments, such as guidance and template terms, that promote waste service agreements that require diversion of materials and reporting back on final disposition.

MINISTRY RESPONSE

The Ministry is committed to improving the management of source-separated waste from the IC&I sector to ensure it does not end up in landfill. The Ministry will work with Ontario businesses and institutions to better understand what kind of information and resources are necessary to achieve this outcome, and will provide appropriate information and resources as identified.

4.3 Underlying Barriers to Waste Reduction and Diversion

Our audit found that several major, interrelated barriers—namely, high diversion costs, high contamination rates and weak end markets—prevent or hinder waste management companies, and in turn IC&I establishments, from diverting more IC&I waste.

Other governments, in Canada and around the world, have increased waste diversion, as well as reduced the amount of waste disposed, by implementing measures that address these barriers and improve the economic conditions for waste diversion. These overarching measures, such as landfill bans, landfill levies and programs to develop end markets, can be used in conjunction with, or even as an alternative to, the direct regulation of businesses (IC&I establishments, producers and/or waste management companies). We found, however, that the Ministry has not implemented any such key measures needed to drive waste reduction and diversion in Ontario.

4.3.1 Diverting IC&I Waste Can Cost Up to Six Times More than Disposal

Several factors affect the economics of diverting a particular load of waste, including the market value of the specific materials, the mix of materials in the load, and the contamination levels (see **Appendix 9** for more details on the economic factors). We found that although some IC&I materials—such as aluminum, steel, clean cardboard and certain high-value plastics—can be recycled economically, most loads of IC&I waste are cheaper to dispose in landfill than to divert. Unlike the municipal sector, higher diversion costs deter waste management companies—as private, profit-driven businesses—from voluntarily diverting much of the IC&I waste that they collect or receive.

When waste collectors take the collected IC&I materials to a waste management facility—such as a transfer station, sorting facility, organic processor or landfill—they are charged a “tipping fee” to deposit the waste. This tipping fee is set at a rate to cover the facility’s operating costs and is usually negotiated

Figure 8: Average Tipping Fees Charged by Different Types of Waste Management Facilities to Receive Industrial, Commercial and Institutional (IC&I) Waste

Prepared by the Office of the Auditor General of Ontario, based on information from a sample of waste management service providers that handle IC&I waste

Facility Type	Service	Average Range of Tipping Fees (\$/tonne)
Landfills in Michigan	Dispose IC&I waste	10–20
Private landfills in Ontario	Dispose IC&I waste	40–70
Compost/anaerobic digestion ¹ facilities	Process IC&I organic waste	80–120
Sorting facilities ²	Sort and bulk mixed construction, renovation and demolition waste	70–80
	Sort and bulk mixed IC&I recyclables	100–250
Transfer stations ³	Transfer IC&I waste to landfill	80–120
	Transfer IC&I mixed recyclables to sorting facility	100–250
	Transfer IC&I organic waste to processing facility	110–130

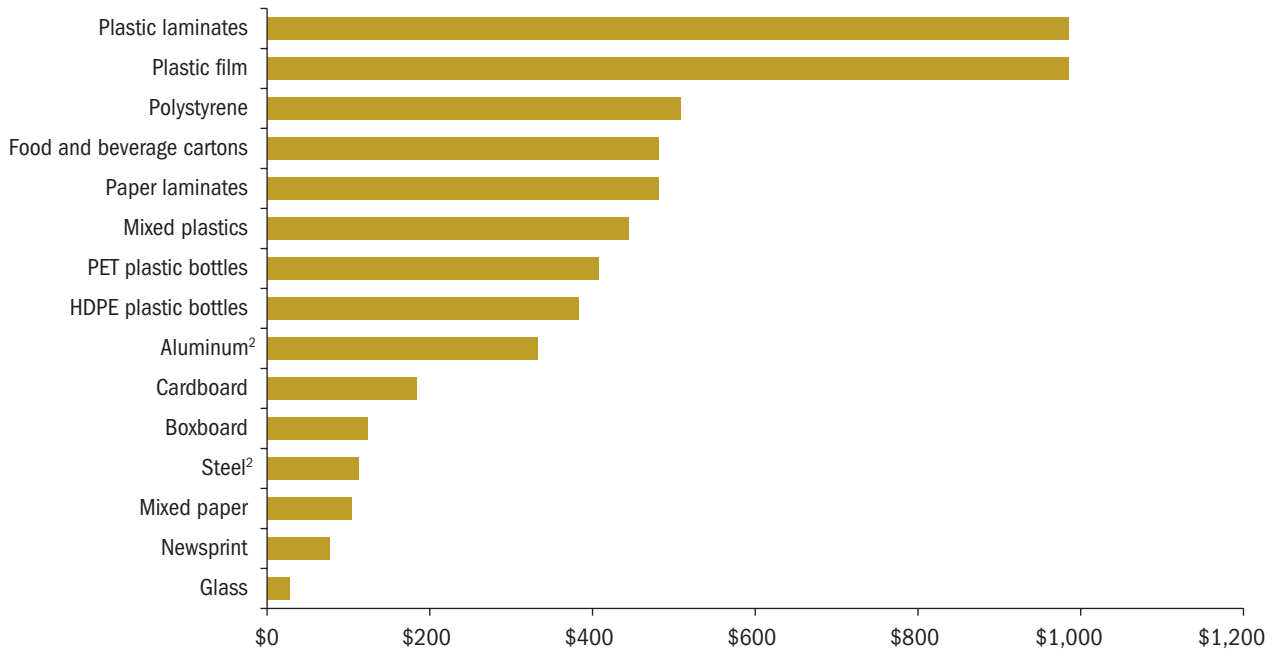
1. Anaerobic digestion is the processing of organic waste without oxygen to generate biogas, which can be used to produce electricity.

2. The tipping fees charged by sorting facilities are highly variable, depending on the mix of materials, as well as the contamination levels. Sorting facilities may receive loads of mixed recyclables containing over 20 different types of materials.

3. Transfer stations typically charge fees that cover the tipping fee of the final destination where the materials will be sent (such as landfill fee for garbage or sorting fee for recyclables), plus a charge for their services. For some materials that the transfer station can sell to processors, such as clean cardboard and scrap metal, the transfer station may charge low fees or even pay for the materials.

Figure 9: Municipal Processing Costs for Residential Mixed Recyclables in 2020¹ (\$/tonne)

Source of data: Stewardship Ontario



1. Processing costs are approximately 35% of the participating municipalities' total gross costs for the residential Blue Box program. The costs set out assume that processing costs are 35% of the municipalities' cost for each material (other costs include collection, transfer, education and administration). However, some materials, such as plastics, have a higher proportion of the total processing costs, while others, such as paper and cardboard, have a lower proportion of the total processing costs.
2. Aluminum and steel are the only materials where revenue exceeds processing costs, at \$1,311/tonne and \$215/tonne, respectively, in 2020.

privately between the waste companies. We obtained information from dozens of waste industry sources to determine an average range of fees charged by different types of facilities (see **Figure 8**). We found that, while tipping fees vary, the cost to divert IC&I waste can be up to six times the cost to landfill it.

For example, a collector may pay \$120/tonne to deposit organic waste at a composting facility, or \$250/tonne to deposit IC&I mixed recyclables at a sorting facility, compared with \$40/tonne to dispose of these wastes in landfill. We found that it can cost much more to divert IC&I mixed recyclables, in particular, for several reasons:

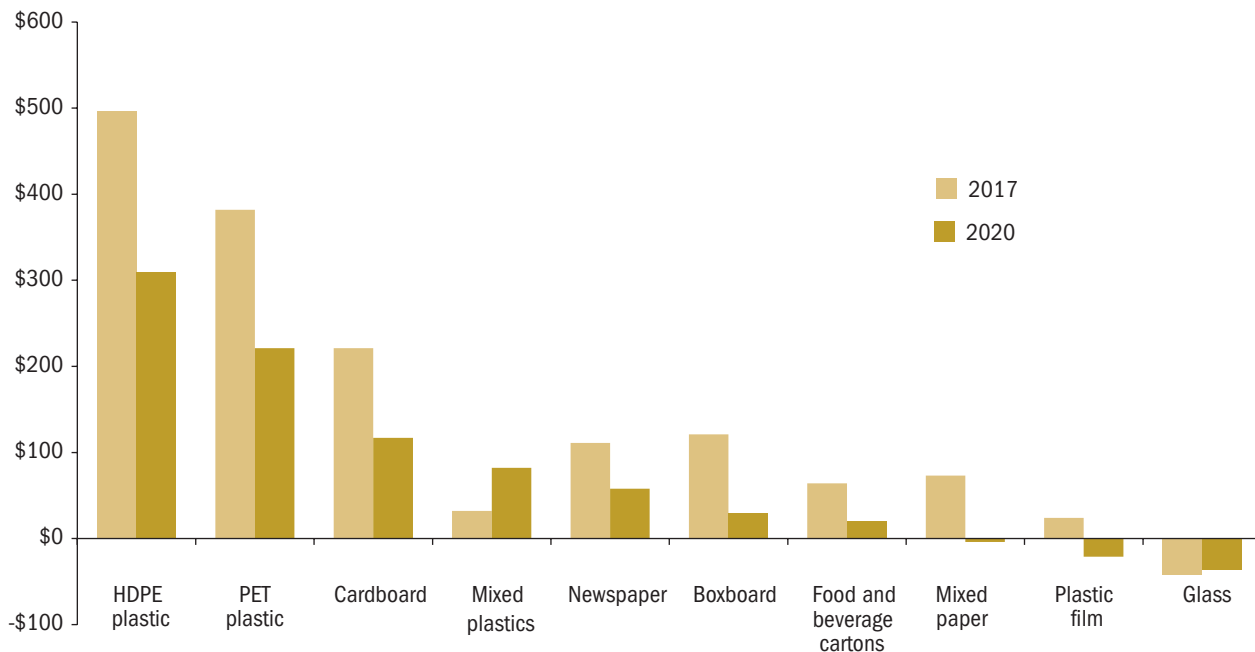
- Loads of mixed recyclables can contain over 20 different types of materials, many of which are expensive to process (see **Figure 9**). Further, Ontario's waste stream is increasingly comprised of more lightweight materials, such as plastic and multi-layer packaging, while heavier materials, like glass and printed paper, have

decreased. These changes in composition have increased costs, as the cost to process a typical tonne of plastic packaging is over five times higher than printed paper. The result is that facilities now have to sort and process a greater volume of materials to achieve the same tonnage.

- IC&I mixed recyclables tend to have high contamination levels, particularly when collected from establishments with publicly accessible bins, which dramatically increases processing costs, as well as decreasing revenue (see **Section 4.3.3**).
- In January 2018, China and other countries in Southeast Asia began banning most imports of paper and plastic waste due, in large part, to excessive contamination and poor quality of the imported recyclable materials. These bans and contamination restrictions disrupted global recycling markets, reduced commodity revenue (see **Figure 10**) and increased operational costs. Data from the residential sector, for example, shows

Figure 10: Market Value* for Ontario Recyclables in 2017 and 2020 (\$/tonne)

Source of data: Continuous Improvement Fund Price Sheet



Note: On January 1, 2018, China implemented its National Sword Policy, which banned many mixed recyclable materials by reducing the allowable contamination rate to 0.5%. The policy disrupted global recycling markets, and has resulted in lower revenue for most recycled commodities produced in Ontario. The policy mainly impacted various fibre and plastic materials, but steel cans declined by 17% (\$215/tonne in 2020) and aluminum cans declined 26% (\$1,311/tonne in 2020).

* Values are based on municipal market prices for recyclable commodities. Industrial, commercial and institutional recyclables are typically sorted and processed in similar, or sometimes the same, facilities, and are often sold to the same end markets.

that residential Blue Box net recycling costs went up 35% from 2017 to 2019, largely because revenue for collected recyclables decreased by 51% after the bans were implemented.

As noted in **Section 4.2.6**, despite these higher processing costs, waste companies typically charge establishments lower collection fees for mixed recyclables because they are generally lighter-weight and cheaper to transport. For heavier materials, like organics and construction and demolition waste, collectors charge IC&I establishments collection fees based largely on the transport distance. Where processing facilities are closer than landfills, the lower cost to transport the heavy materials shorter distances can offset the higher processing costs to divert the materials.

In contrast to the IC&I sector, we found that municipalities divert more recyclable materials despite the higher costs, on account of several factors, including:

- Municipalities with a population above 5,000 are required by law to operate residential Blue Box

recycling programs. The residential Blue Box program has a target to divert 60% of generated Blue Box materials, which helps to drive diversion of materials that would not otherwise be diverted economically.

- Municipalities are reimbursed for up to 50% of the net costs of running Blue Box programs by the producers (brand holders, importers or retailers) of the packaging materials. The Blue Box Regulation, finalized in June 2021, will make producers responsible for delivering Blue Box services starting in 2023, with producers 100% responsible upon full implementation in 2026.
- Municipalities can also pass on the higher costs of other diversion programs, such as organic diversion, to municipal residents.
- Municipalities invest in educational materials to promote awareness of what goes in the Blue Box and Green Bin to achieve less contamination of residential waste.

4.3.2 Many Materials, like Coffee Cups and Plastic Film, Sent to Landfill Due to Lack of Buyers or Low Market Prices

Lack of stable end markets—processing facilities or manufacturers that buy clean, sorted materials from sorting facilities—is the other side of the economic barrier. We found that there are currently no accessible or viable end markets in Ontario to support diversion of a large number of IC&I materials, such as textiles, coffee cups, plastic film, glass and drywall. Sorting facilities will either refuse IC&I materials for which they cannot secure stable and profitable end markets, in which case the materials are landfilled, or charge higher fees to cover their costs.

The Ministry conducted a survey in 2016 of 17 facilities that transfer and sort mixed recyclables. Of the 17, 11 (or 65%) identified the lack of stable and accessible end markets as a challenge that regularly impacts their operations.

In our waste industry survey, facilities similarly listed lack of stable markets as a barrier to diverting materials. We found that waste management facilities face several challenges related to end markets, including:

- For a few materials, like textiles and coffee cups, the technological capacity does not yet exist to viably recycle the materials.
- Compostable packaging and products, such as fibre takeout containers, can technically be diverted in laboratory conditions. However, many organic processing facilities in Ontario have reported that in practice, facilities cannot feasibly recycle compostable products because they require a significantly longer time to compost compared with organic material. The facilities therefore must pay to send these materials to landfill.
- For other materials, the technology to process the materials exists, but the cost is currently too high to sustain the end markets. For example, a waste management company built a processing facility in Ontario in 2013 to recover wood, concrete, drywall and metal from construction and demolition waste for reuse. However, the facility shut down after just nine months because it was not economically sustainable to continue operations.
- For many other materials, end markets exist, but the commodity price for the material is low or negative, and often volatile. The IC&I waste stream includes many materials that have low or even negative market value, such as multi-layer packaging, polystyrene, drywall, glass and plastic film. In addition, a waste management company told us that the time that it takes for staff to find the end markets also increases diversion costs. Because receiving lower value IC&I recyclables without a secure end market is risky, transfer stations and sorting facilities often will not accept them without having a secure contract with processors or manufacturers to buy all of the materials. For example, one sorting facility reported that, in 2016, it baled several hundred tonnes of plastic bags as part of a grocery bag recovery program, but had to pay to landfill the materials instead when the prospective buyer was no longer interested. Several waste management companies noted that since several countries banned or restricted imports of mixed paper fibres and mixed plastics in 2018 (see **Section 4.3.1**), end markets for these materials have declined. One company told us that since the bans lowered the contamination thresholds for plastics, it now primarily manages all mixed containers as garbage.
- Lack of nearby end markets is another challenge, especially in Northern Ontario and rural areas. Sorting and transfer facilities informed us that the added cost of hauling recyclables long distances to processing facilities limits what they can accept for recycling. For example, we found that a municipal waste facility in Northern Ontario, which received mixed recyclables from local IC&I establishments, diverted less than 1% of IC&I waste received.

4.3.3 Contamination Is a Major Barrier to Diverting IC&I Waste

Contamination of recyclable or organic materials with other waste can dramatically increase the cost to process those materials. This is due to both higher labour and equipment costs to remove the contaminants, as well as lower quality and value end materials, such as when food waste degrades paper products (see **Appendix 9**). At a certain level of contamination, recycling or composting become unfeasible. Our audit found that high contamination levels are a major barrier to diverting IC&I waste.

IC&I establishments can take steps to reduce contamination and achieve higher diversion, but such actions often require an investment of human and/or financial resources. Further, there are no requirements for establishments, even those that are regulated, to reduce contamination levels (see **Section 4.5.3**).

We conducted a survey of members of Ontario's waste management industry that handle (collect, transfer, sort, recycle or compost) IC&I recycling and organic waste, to understand their practices and challenges diverting IC&I waste. The survey responses indicated that contamination is one of the main reasons IC&I recyclable and organic materials are disposed rather than diverted. Specifically:

- Of the respondents that collect primarily IC&I waste, 80% indicated that the recyclable or organic materials they collect are “too heavily contaminated to be diverted” and are taken to disposal more than 30% of the time, while the other 20% of respondents indicated that this occurred 5% to 15% of the time. One of these respondents noted that recyclables from IC&I establishments and multi-residential building are “generally over 50% contaminated and rarely can be recovered.” By contrast, all respondents who collect primarily single-family residential waste indicated that they encounter loads that are too contaminated less than 15% of the time.
- One operator of a sorting facility that handles exclusively IC&I waste stated that it rejects

inbound loads of recycling over 30% of the time because of contamination. By contrast, three sorting facilities that primarily handle residential waste stated that they reject inbound loads of recycling less than 5% of the time.

- The operators of organic waste processing facilities indicated that they send, on average, 24% of the materials they receive to disposal, most of which are contaminants. Organic processing facility operators told us that contamination is increasing and includes more compostable packaging (see **Section 4.3.2**).

IC&I establishments can take steps to reduce contamination, such as improve signage or hire and train employees to source separate materials better. Most notably, establishments can reduce contamination by collecting different types of materials separately (multi-stream) rather than multiple materials mixed together (single-stream). Data from the municipal sector indicates that residential Blue Box materials collected single-stream have over twice the contamination as materials collected multi-stream.

However, IC&I establishments are not required to reduce contamination to achieve any specific diversion rate. Further, meeting acceptable contamination thresholds is particularly challenging for some types of IC&I establishments, where bins are shared by more than one business, accessible to the public, or used by multiple residents.

Waste management companies advised us that they implement various policies and procedures to address contamination, such as setting maximum contamination thresholds, installing cameras on collection trucks to monitor the sources of contamination, setting requirements for multi-stream collection, and charging higher collection and tipping fees for contaminated materials. One waste facility operator advised us that it charges almost double the regular fee to accept contaminated recycling. Another company told us that, to address high contamination rates, it requires its client establishments to use three separate bins: for mixed paper, mixed cardboard and loose containers. Other waste management companies told us that they have addressed contamination

by working with their customers through enhanced education and by investing in better facilities and equipment. However, several other waste management companies told us that, in cases of highly contaminated recyclables, they treat the collected materials as garbage.

4.3.4 Ministry Lacks Key Measures, Such as Landfill Bans or Levies, Used in Other Jurisdictions to Encourage IC&I Waste Reduction and Diversion

Many jurisdictions, in Canada and around the world, have increased diversion and reduced the amount of landfilled IC&I waste by implementing measures, such as landfill bans or levies, to help overcome the underlying barriers to waste diversion (see **Appendix 2** for waste policies and performance by province and territory). These measures are used either in conjunction with, or as an alternative to, the direct regulation of IC&I establishments, producers and the waste management industry, to support waste reduction and diversion activities. We found that the Ministry has not implemented key measures needed to address the barriers to diverting IC&I waste and to encourage waste reduction in Ontario.

Landfill Bans

Landfill bans, which prohibit the disposal of specific recyclable or organic materials, have been used effectively by many jurisdictions to reduce the amount of waste disposed. For example, we found that landfill bans in many jurisdictions, including Nova Scotia, Massachusetts, Austria, Germany, the Netherlands and Scotland, have been effective in both increasing their diversion and reducing their disposal rates. The disposal rate in Nova Scotia, which implemented its disposal ban in 1997, decreased 46% from 1990 to 2018. We also found that the regulatory certainty provided by landfill bans drives development of end markets for the banned materials. For example, after Nova Scotia banned organic waste from landfill, several new organic processing facilities opened in that province.

Landfill bans also enable governments to enforce waste management activities more efficiently by focusing enforcement at the final landfill stage, which tends to be concentrated in fewer sites, rather than at the waste generation stage, which can encompass thousands of establishments. For example, in Ontario, enforcement of a landfill ban could target the 15 landfills that hold 85% of the province's remaining landfill capacity, as well as the transfer stations that export waste to the United States for disposal, rather than targeting enforcement of the source-separation requirements at the almost 1.6 million IC&I establishments.

The Ministry has committed, most recently in the 2020 progress update on the *Made-in-Ontario Environment Plan* (2018), to consult on a plan to ban, or phase-out, organic waste from landfill by 2030. However, at the time of our audit, the Ministry had not taken steps toward developing the proposed landfill phase-out.

Landfill Levies

Landfill levies (or surcharges) are another measure used by many jurisdictions to help offset the economic bias toward landfill. In Canada, the provinces of Quebec and Manitoba charge a landfill levy, and Prince Edward Island has relatively high tipping fees as well as surcharges for mixed waste. We found that higher landfill costs can help drive development of processing capacity and end markets. For example, when landfill tipping fees in some parts of Ontario increased to \$150/tonne in the early 1990s, private recycling businesses started up and expanded because they were able to provide a cheaper waste management option. However, it soon became cheaper to export IC&I waste to the United States, and many of the new or expanded recycling companies went out of business or shifted their services from recycling to transfer stations.

In British Columbia, regional districts are responsible for solid waste management planning and have the authority to create bylaws related to collection and disposal of waste generated in their area. Metro Vancouver, which has the highest overall diversion

rate (64%) of major Canadian municipalities, has both landfill bans on recyclables and organics and imposes a levy (\$42/tonne) for garbage.

Measures to Improve End Markets

We also found a number of jurisdictions have implemented measures directed at improving end markets for recycled materials. For example, to help make recycled materials competitive with virgin materials, some European countries, including Belgium and the Netherlands, have added levies on virgin materials, such as virgin aggregate, as well as levies on landfilling waste. In Japan, a green procurement law requires government entities to purchase products with high reclaimed or recycled content, which helped create a market for these materials. In the 2017 *Strategy for a Waste-Free Ontario*, the Ministry committed to reviewing its government purchasing policies to buy materials with recycled content to support those markets. However, at the time of our audit, the Ministry had not implemented any changes to support end markets.

Other Jurisdictions Focus on Waste Reduction

Finally, we found that other top performing jurisdictions place a greater focus on waste reduction over diversion. Ontario's waste management programs, policies and performance metrics focus almost exclusively on improving waste diversion rates. In contrast, Nova Scotia's programs, policies and metrics focus on reducing the amount of waste generated and disposed of. Recognizing that waste reduction and reuse are preferable to diversion, in addition to its landfill ban, Nova Scotia has developed a funding program that rewards municipalities with the lowest overall disposal rates, including both residential and IC&I. The less waste sent to disposal, the more funding a municipality receives for its waste diversion initiatives.

Measures directed at reducing waste generation at its source are particularly important for materials that cannot be easily recycled or that currently lack viable end markets, such as textiles and many plastics. To this end, in October 2020, the federal government proposed to ban six single-use plastic items—plastic

checkout bags, food service ware made from hard-to-recycle plastics, stir sticks, six-pack rings, cutlery and straws—across Canada, under the federal *Canadian Environmental Protection Act*. However, at the time of our audit, the federal government had not yet introduced a regulation to enact this ban.

In Ontario, the Ministry implemented a program in 2020 to support IC&I food waste reduction: a food rescue program that helps organizations secure funding to safely donate surplus food before it becomes waste. However, aside from this program, Ontario has implemented no other measures to address the province's high levels of waste generation.

RECOMMENDATION 5

To overcome the underlying barriers to reducing and diverting waste from the industrial, commercial and institutional (IC&I) sector, including high diversion costs, contamination and lack of stable end markets, we recommend that the Ministry of the Environment, Conservation and Parks:

- look to jurisdictions that have achieved significant reductions in their waste disposal rates to assess their use of policies and programs—including landfill bans, landfill levies and measures to support end markets for IC&I materials—to encourage waste reduction and improve the viability of diversion;
- based on this review, implement measures demonstrated to be most effective at reducing and diverting IC&I waste; and
- promptly develop a concrete plan for an organic waste landfill phase-out with firm dates for implementation.

MINISTRY RESPONSE

The Ministry recognizes the importance of looking at other jurisdictions to identify effective waste reduction and diversion policies and measures, including landfill bans and levies, as a key component of policy development. The Ministry is currently undertaking this jurisdictional work

and will evaluate different measures to reduce and divert IC&I waste based on the outcome of this review.

The Ministry is also considering a proposal to phase out food and organic waste from landfill and will develop a plan informed by the outcome of the consultation and final policy approvals.

RECOMMENDATION 6

To encourage waste reduction by the industrial, commercial and institutional (IC&I) sector, we recommend that the Ministry of the Environment, Conservation and Parks:

- introduce a target for reducing total amount of IC&I waste disposed annually; and
- track and publicly report on progress toward the IC&I waste reduction target.

MINISTRY RESPONSE

The Ministry agrees that targets can be an effective approach to increasing diversion of waste from landfills. We stand by our *Reducing Litter and Waste in Our Communities: Discussion Paper* commitment to mark our overall diversion rate goals of 30% diversion by 2020, 50% diversion by 2030 and 80% diversion by 2050. We also agree with the Auditor General that reducing and diverting waste in the IC&I sector is fundamental to meeting Ontario's waste goals, and therefore, targets for the IC&I sector could be important means to meeting the province's overall waste targets.

The Ministry has also set targets and taken action through the 2018 *Food and Organic Waste Policy Statement*, which directs municipalities, businesses and institutions to reduce and divert food and organic waste and to meet individual targets by 2023–25. The Ministry commits to report on provincial progress achieved through the *Food and Organic Waste Policy Statement*. The Ministry is considering amendments to the *Food and Organic Waste Policy Statement* that would require municipalities, businesses and institutions

to publicly report on their progress towards meeting their targets.

We also agree with the Auditor on the importance of data to measure waste diversion. The Ministry is considering and will consult with stakeholders on how to best collect information that will support results-based outcomes and modernized compliance, while cutting red tape and minimizing regulatory burden.

4.4 Portion of Businesses and Institutions That Are Regulated

4.4.1 More than 98% of All IC&I Establishments Are Not Required to Recycle

The IC&I waste regulations (the Source Separation Regulation and Waste Audit Regulation described in **Section 2.4.1**) apply to only certain IC&I subsectors and, within those subsectors, apply to only establishments that meet the size thresholds set out in the regulations (see **Appendix 5**). Our audit found that less than 2% of all businesses and institutions in Ontario are subject to the regulations. This means that over 98% of the almost 1.6 million IC&I establishments in the province are not required to take the measures set out in the regulations to reduce and divert their waste. Some non-regulated establishments may still choose to voluntarily reduce and divert their waste, but the regulations' narrow application significantly limits their potential to drive better overall IC&I waste practices.

The regulations apply only to the listed IC&I subsectors, which include retail stores and malls, office buildings, hotels and motels, schools, hospitals, restaurants, manufacturers and construction and demolition. The list leaves out whole types of IC&I establishments, such as:

- transit stations, like TTC and GO stations;
- warehouses and wholesale establishments; and
- institutions other than schools and hospitals, including prisons, long-term-care homes and other health-care institutions.

Figure 11: Estimated Portion of Establishments Regulated under Industrial, Commercial and Institutional (IC&I) Waste Regulations in 2019¹

Prepared by the Office of the Auditor General of Ontario

Subsector	Total # of Establishments	# of Regulated Establishments	Portion of Establishments That Is Regulated (%)
Construction and demolition ²	140,500	100-600	<1
Restaurants	32,500	400-2,500	1-6
Retail (stores and malls)	80,000	1,500-4,000	2-5
Manufacturing	36,500	1,500	4
Office buildings ³	93,000	7,000	8
Hospitals	500	100	20
Hotels and motels	2,500	800	32
Educational institutions	8,000	3,000	40
IC&I establishments in designated sectors	393,500	14,500-19,500⁴	4-5
IC&I establishments (including all sectors)	1,580,000		<2

1. Most recent data available.

2. The construction and demolition subsector is regulated based on the size of the construction or demolition project; however, as there is no available data on the number of projects by size, which is always changing, estimates are based on the number of businesses engaged in the construction of buildings.

3. Estimates are for number of office buildings because the subsector is regulated at the building level. Because multiple establishments can reside in a single building, tens of thousands of smaller establishments may be included.

4. Because office buildings can include multiple establishments, the number of regulated establishments, including those captured indirectly, is higher, but would not alter the overall portion of regulated establishments.

Other venues, like movie theatres, entertainment complexes and sports stadiums and arenas, are also not listed in the regulation, but the Ministry told us that it has applied the regulation to these establishments in a few cases as part of the retail sector.

According to Statistics Canada, as of 2019, there were approximately 1.6 million businesses and institutional establishments in Ontario. Based on Statistics Canada's categorization of establishments by subsector, an estimated 400,000 (25%) of the total establishments fall within one of the regulated subsectors. The Ministry does not have the business-specific information—such as annual revenue for restaurants or square footage of stores—to determine the precise number of these establishments that meet the size thresholds and are therefore regulated.

Ministry staff have, instead, estimated the portion of IC&I establishments that are regulated using other available information, such as number of employees per establishment, as a proxy for size. Using this method, and refining the estimates with additional

information from industry associations about the number and size of establishments within their subsectors, we estimated that roughly 14,500 to 19,500 establishments are subject to the IC&I waste regulations (see **Figure 11**). By these estimates, only 4% to 5% of establishments within the regulated IC&I subsectors, and less than 2% of all businesses and institutional establishments in Ontario, are subject to the regulations.

The IC&I establishments that are regulated are the very largest businesses and institutions in each subsector and are assumed to generate more waste per establishment than smaller ones. However, as noted in **Section 4.1.2**, the Ministry does not have sufficient data to determine what portion of IC&I waste is generated by the regulated establishments versus the unregulated ones.

The best data available of IC&I waste generated and disposed of by establishment size is from a 2008 consultant's study, conducted for the Ministry, of all IC&I waste generated, diverted and disposed of in

the City of Owen Sound, Ontario. The study found that large businesses (with over 50 employees) comprised 6% of the total 615 businesses in the city (excluding 47 businesses with insufficient data), but disposed of 36% of the total IC&I waste. Because businesses were classified by number of employees rather than the regulations' size thresholds, the study could not conclude what precise portion of IC&I waste was generated by regulated establishments; however, it suggests that unregulated smaller businesses may generate up to two-thirds of the IC&I waste stream. The Ministry has separately estimated, applying data from a 2015 California waste study, that unregulated establishments generate roughly between one-third to half of the total IC&I waste stream.

4.4.2 Organic Waste Policy's Requirements Exclude Thousands of IC&I Establishments That Generate Organic Waste

Ontario's *Food and Organic Waste Policy Statement* (Organic Waste Policy) requires only the following IC&I establishments to source separate to meet the organic waste diversion targets (see **Section 2.4.1**) in the Organic Waste Policy:

- restaurants, retail stores and shopping centres, office buildings, hotels, and large manufacturers that generate over 300 kilograms of organic waste per week; and
- educational institutions and hospitals that are subject to the IC&I waste regulations and that generate over 150 kilograms of organic waste per week.

The Organic Waste Policy also formally encourages, but does not require, all other restaurants, retail stores and shopping centres, office buildings, hotels and manufacturers that generate less than 300 kilograms of organic waste per week to source separate food and organic waste.

As noted in **Section 4.1.2**, the Ministry does not have data about IC&I waste to determine what portion of organic waste is generated and disposed of by establishments subject to the Policy requirements.

In the absence of waste audits, we applied food waste calculators developed in other jurisdictions (California and Massachusetts) to estimate the amount of food waste generated by Ontario establishments. While the calculators include assumptions that may not represent the true amounts generated, we roughly estimated that, conservatively, thousands of IC&I establishments in Ontario that generate organic waste would not be required to take steps to reduce or divert their organic waste. For example:

- Based on the food waste calculators, restaurants with fewer than 20 employees would not likely meet the Policy's threshold of 300 kilograms, which requires them to meet the waste reduction targets. According to Statistics Canada data, nearly 6,000 (or 24%) of Ontario restaurants have fewer than five employees, which falls far below the threshold.
- Similarly, based on the food waste calculators, hotels with fewer than 100 rooms would not likely meet the Policy's threshold of 300 kilograms, which requires them to meet the waste reduction targets. According to the Ontario Restaurant, Hotel & Motel Association, about 1,450 (or 64%) of Ontario hotels have fewer than 75 rooms, which falls below the threshold.

In addition, the Organic Waste Policy does not apply to certain types of IC&I establishments, such as long-term-care homes, which generate considerable food waste. In our *2019 Annual Report* audit on Food and Nutrition in Long-Term-Care Homes, we recommended that the province establish a goal of diverting food waste generated in long-term-care homes. The Ministry told us that it is reviewing potential expansion of the range of establishments covered by the policy, including long-term-care homes. However, at the time of our audit, there has not yet been progress on this.

The requirements in the Organic Waste Policy to divert organic waste apply broadly to all multi-residential buildings with six or more units, which could help close the gap for buildings that do not yet have Green Bin organic collection. There is no province-wide data on organic diversion in multi-residential

buildings, but information from municipalities suggests that it is low. Several municipalities, such as Peel Region and Durham Region, collect organics from single-family residences, but not from the multi-residential buildings that they service for garbage and recycling. The City of Ottawa does collect organics from buildings, but reports that, as of 2020, only 36% of the multi-residential buildings it services are registered for the Green Bin program. The City of Toronto requires all buildings that it services to participate in the Green Bin program, but condo and apartment buildings may opt for private collection for all of their waste services rather than meet the City's requirements.

RECOMMENDATION 7

So that the scope of Ontario's regulatory framework enables meaningful improvement in overall industrial, commercial and institutional (IC&I) waste diversion and disposal rates, and to facilitate identification and inspection of regulated establishments, we recommend that the Ministry of the Environment, Conservation and Parks:

- review options for significantly expanding the application of the IC&I waste regulatory framework to additional businesses and institutions, with possible exemptions for small establishments (based on quantity of waste generated, number of employees or other metrics); and
- based on the outcome of the review, expand the application of the IC&I waste regulatory framework such that a significant majority of IC&I waste is covered.

MINISTRY RESPONSE

The Ministry agrees to examine and review frameworks currently in place in other jurisdictions, including the levels and types of thresholds (e.g., waste generation, number of employees), used to determine what establishments are subject to regulatory requirements. We will

consult with businesses and stakeholders on any options to expand the number and types of IC&I establishments regulated, while recognizing the strain that a number of businesses are under due to the global pandemic.

4.5 Mandatory Recycling Programs

The Source Separation Regulation (see **Section 2.4.1**) requires regulated IC&I establishments and multi-residential buildings to operate a source separation program to collect recyclable materials (such as cans, bottles, paper and cardboard) specified in the regulation and to make reasonable efforts to ensure that those materials are diverted.

4.5.1 Compliance with Regulation Has Not Improved Overall IC&I Diversion Rate

Our audit found that 88% of the 1,262 IC&I establishments and multi-residential buildings that were inspected by the Ministry between 2014/15 and 2018/19 had implemented a recycling program as required by the Source Separation Regulation (see **Figure 12**). Compliance was high (between 74% and 94%) across all regulated IC&I subsectors, except for the manufacturing subsector, which had a 40% compliance rate (see **Section 4.7** regarding enforcement).

We found, however, that broad compliance with the Source Separation Regulation does not necessarily result in higher waste diversion. The regulation does not require establishments to achieve a specific performance outcome, such as a diversion target, only to make "reasonable efforts" to divert collected materials. Without either targets or other government measures to support diversion (see **Section 4.3**), the waste performance of regulated establishments is wide ranging.

We reviewed the waste diversion performance of a sample of 60 regulated IC&I establishments. Based on establishments' self-reported data, the diversion rates

Figure 12: Compliance with Source Separation Regulation by Subsector, 2014/15–2018/19*

Source of data: Ministry of the Environment, Conservation and Parks

Subsector	# of Establishments Inspected	Compliance Rate (%)
Manufacturing	10	40
Hotels and motels	141	74
Restaurants	43	79
Construction	184	84
Educational institutions	37	86
Retail (stores and malls)	119	88
Hospitals	20	90
Multi-residential buildings	582	92
Office buildings	126	94
Overall	1,262	88

* Most recent year with complete inspection data.

ranged from 6% to 90% (see **Figure 13**). Restaurants had the lowest diversion rates in our sample and construction sites had the highest.

In multi-residential buildings, municipalities consistently report low diversion. Low diversion is attributed in part to lack of space in older buildings for multiple chutes on each floor and inconvenience for residents to take recycling to a centralized area. For example, waste studies undertaken by the following Ontario municipalities have shown that the estimated diversion rate for multi-residential waste is less than half the rate of single-family residences in each of their jurisdictions:

- 28% for multi-residential waste in Toronto in 2019, compared with 64% for single-family residential waste;
- 17% for multi-residential waste in Ottawa in 2018, compared with 49% for single-family residential waste; and
- 20% for multi-residential waste in London in 2017, compared with 45% for single-family residential waste.

Despite some individual establishments reporting high diversion rates, the fact that the diversion rate

Figure 13: Range of Diversion Rates from a Sample* of Regulated Establishments

Source of data: Waste audits from a sample of regulated businesses and institutions from 2014 to 2019

Subsector	Range of diversion rates (%)	
	Low	High
Restaurants	6	70
Education (universities)	11	81
Hotels	22	85
Office buildings	36	90
Hospitals	37	57
Construction	38	90
Retail (stores and malls)	50	83
Overall	6	90

Note: Insufficient data was available to estimate diversion for the following omitted subsectors: i) multi-residential buildings are not subject to the Waste Audit Regulation; ii) the Ministry of the Environment, Conservation and Parks has not conducted a demolition inspection since 2012/13; iii) the Ministry inspected only 10 manufacturers since 2014, none of which complied with the Waste Audit Regulation.

* This figure is intended to show the range of diversion rates among regulated establishments; it does not, however, provide a representative average diversion rate of regulated establishments or the entire IC&I sector. Establishments that conducted waste audits may be more likely to have dedicated efforts to diverting waste (and therefore have higher diversion rates) compared with establishments that did not conduct waste audits, for which we do not have diversion data. It should also be noted that true diversion rates (material diverted from landfill) may be lower than those self-reported in waste audits (material diverted from garbage onsite).

of the IC&I sector as a whole (15% in 2018) has not improved in the 25 years that the Source Separation Regulation has been in place suggests that the regulation has not been effective at driving regulated establishments to improve their waste diversion rates.

The Ministry has itself concluded that the Source Separation Regulation has not been effective at driving diversion. Over the past 15 years, the Ministry has stated that the IC&I waste regulations need to be reviewed, including in *Ontario's 60% Waste Diversion Goal Discussion Paper* (2004), *Strategy for a Waste-Free Ontario: Building the Circular Economy* (2017), and *Reducing Litter and Waste in Our Communities: Discussion Paper* (2019) (see **Appendix 3**). At the time of our audit, the Ministry had not begun its review.

RECOMMENDATION 8

So that the requirements imposed on industrial, commercial and institutional (IC&I) establishments and multi-residential buildings effectively drive waste reduction and diversion, we recommend that the Ministry of the Environment, Conservation and Parks revise or replace the requirements in the IC&I Source Separation Programs Regulation (Ontario Regulation 103/94) with clear and enforceable outcomes-based requirements for establishments to separately collect and divert recyclables, such as diversion targets, disposal caps or contamination thresholds.

MINISTRY RESPONSE

The Ministry agrees with the recommendation to review and update the regulatory framework for IC&I waste. Building on the success of our other diversion programs for electronics, tires, hazardous and special products, and the Blue Box program, we will consider how to improve waste reduction and diversion rates from the IC&I sector, and will seek input from stakeholders and First Nations communities.

4.5.2 List of Materials That Must Be Diverted Has Not Been Updated in Over 25 Years; Excludes Now Common Materials, Such as Most Plastics

Regulated establishments are required to separately collect for recycling the materials that are listed for their subsector in the Source Separation Regulation (see **Appendix 5**). The list of materials that must be collected was made in 1994 and focused on common packaging wastes at that time, including glass containers, metal cans, cardboard and paper. This list has not been amended since it was enacted, despite major shifts in the composition of the waste stream. As a result, common types of materials found in today's waste stream are excluded from the list of materials that must be recycled.

Most notably, there has been a major increase in the use of plastic, in Ontario and globally, with plastic use more than doubling since the 1990s. According to a 2016 study prepared for the Ministry, plastic packaging comprised roughly 10% of all IC&I waste generated in Ontario (by weight), which was more than twice as much as metal cans and glass bottles and jars combined.

However, the Source Separation Regulation only requires a few subsectors—restaurants, hotels, manufacturers and multi-residential buildings—to collect and recycle a few types of plastics (see **Appendix 5**). Most plastics, including all plastic thrown out in shopping malls, stores, offices, colleges, universities and hospitals, are excluded. According to the 2016 study, the retail sector, which is not required to recycle any plastics, generates between 70% to 87% of all IC&I plastic waste (excluding multi-residential buildings). The study estimated that only 12% of plastics generated by IC&I establishments were recycled, with the rest sent to landfill.

Given the gaps in information on the composition of IC&I waste (see **Section 4.1.2**), we reviewed data from a sample of 45 waste audits from regulated IC&I establishments to analyze the composition of their waste. Our results aligned with the Ministry's studies, finding that food waste (27%), cardboard (16%), paper fibres (19%) and plastics (9%) were the most common materials (see **Figure 14**). We found that, on average, only 41% of the IC&I establishments' generated waste (by weight) in our sample is regulated under the Source Separation Regulation and 59% are non-regulated materials, including food waste, paper towels, coffee cups, plastic packaging and compostable packaging such as fibre takeout food containers.

The Ministry has developed a separate approach, outside the Source Separation Regulation, to drive the reduction and diversion of food and organic waste; however, our audit identified issues that may limit its effectiveness (see **Section 4.8**).

Figure 14: Composition of a Typical¹ Regulated Establishment's Generated Waste by Weight (%)

Source of data: Waste audits from a sample¹ of regulated businesses and institutions from 2014 to 2019

Materials Regulated by Industrial, Commercial and Institutional (IC&I) Source Separation Programs Regulation	
Paper fibres ²	19
Corrugated cardboard	16
Metal cans and glass ³	6
Total	41
Materials Not Regulated by IC&I Source Separation Programs Regulation	
Food waste	27
Recyclable plastics (such as PET and HDPE) ⁴ and polystyrene	9
Paper towels	5
Coffee cups	4
Compostable packaging	3
Wood (including skids) ⁵	2
Other metals (excluding food and beverage cans) ⁵	2
Other (includes non-recyclable packaging, textiles, and other residual wastes)	7
Total	59

1. The list of materials regulated, and types of materials generated, vary significantly among subsectors. This figure is based on a representative sample of waste audits from the commercial subsectors (restaurants, retail, offices and hotels) and universities, but excludes the unique waste composition of manufacturers, construction sites and hospitals.
2. Includes both fine paper and newsprint, which are regulated, as well as other paper fibres (such as boxboard and magazines), which are not regulated but could not be broken out.
3. Includes glass bottles, which are regulated, as well as other non-regulated glass that could not be broken out.
4. Includes a small amount of plastics that are regulated (such as polyethylene terephthalate (PET) plastic bottles generated by restaurants and hotels) but that could not be broken out.
5. Wood and other metals (except metal cans) are regulated only for manufacturing and construction sectors.

RECOMMENDATION 9

So that Ontario's waste regulatory framework applies to a sufficient portion of the waste stream to significantly contribute to Ontario's waste diversion rates, we recommend that the Ministry of the Environment, Conservation and Parks:

- expand the list of materials, in the current or revised regulatory framework, that industrial, commercial and institutional (IC&I) establishments must separately collect and divert to include common recyclable materials in the waste stream, including plastics, to cover a larger portion of the IC&I waste stream; and
- develop and implement a process to update the list to align, as required, with shifts in the waste stream and with residential recycling programs.

MINISTRY RESPONSE

The Ministry agrees with the Auditor General about the need to divert more types of waste materials and to provide improved consistency between the IC&I and residential sectors. The Ministry will look to update the list of materials that must be diverted in the IC&I sector and will consider the Blue Box Regulation for potential material categories. This approach would seek to not only capture more types of materials, such as different plastics, but also provide improved consistency in what materials are diverted in the IC&I and residential sectors.

4.5.3 Poor Quality Recycling Programs Passed Ministry Inspections

The Ministry found that 88% of the 1,262 regulated IC&I establishments and multi-residential buildings that it inspected between 2014/15 and 2018/19 fully complied with the Source Separation Regulation. However, we found that establishments can be deemed by the Ministry to be fully complying with the regulation even if they are operating poorly performing recycling programs, such as programs that do not capture most recyclables and/or contain high contamination (such as garbage or food waste) in the recycling.

The Source Separation Regulation requires establishments to meet specific onsite requirements, including providing adequate bins to

separately collect and store recycling and information to support use of the recycling program, as well as to make “reasonable efforts to ensure that full use is made of the program.”

The Ministry developed a *Guide to Source Separation of Recyclable Materials for Industrial, Commercial and Institutional Sectors and Multi-Unit Residential Buildings* in 2016, which provides additional guidance and tips for effectively implementing all of the program requirements set out in the Source Separation Regulation.

We reviewed a sample of inspection files from 2018/19 and 2019/20 to assess in detail how Ministry inspectors determined compliance with the regulatory requirements. The Ministry had found that 80% of these establishments had met the onsite requirements for their recycling program, 10% had not implemented a recycling program, and the other 10% had flaws, such as not providing separate bins, with their recycling programs.

Our review of the inspection files found that Ministry inspectors applied differing interpretations of the requirements; but, overall, inspectors generally concluded that establishments complied with the regulation so long as the establishment had implemented each of the basic program elements, regardless of the quality or overall performance of the recycling program. For example, we found:

- When inspecting for compliance with the requirement to provide information, inspectors typically deemed an establishment compliant if it had provided any, but not necessarily all, of the applicable components of information, such as signage for customers near the bins, employee training, or information for building tenants.
- Inspectors applied differing interpretations of what constituted adequate facilities; for example, in one case, the inspector concluded that a mall that had only waste bins, but no recycling, at the mall entrances did not have adequate facilities, but at another mall with the same circumstances, another inspector concluded that the mall was compliant.

The Ministry advised us that the language in the regulation limits the scope of how strictly it can enforce the requirements. So, although it has developed guidance to encourage more consistent and effective implementation, it does not enforce those guidelines.

As such, we found that Ministry inspectors do not inspect for, or consider, indicators of program quality, such as the amount of contamination in the recycling stream, or the amount of recyclables in the garbage. Similarly, inspectors do not inspect for, or require, establishments to implement any best practices. For example, we identified a number of best practices used by some establishments to improve recycling, including:

- replacing solitary waste bins with adjacent recycling bins;
- using colour-coded or differently shaped bins or slots to help users identify the correct place for their waste or recyclable item;
- increasing the number of collection streams, such as collecting paper fibres separately from glass, metal and plastic containers, to reduce contamination;
- providing clear and informative signage, such as including images that depict the site-specific materials, to help individuals use the correct bins;
- eliminating plastic bags for collection where possible and using transparent bags so staff can visually identify contamination and remove such items (when safe to do so); and
- employing staff in high-use areas (such as food courts) to help sort materials correctly as they are placed into bins.

Similarly, several voluntary third-party certification standards, such as LEED, BOMA or 3RCertified, also include best practices for waste management, which we found resulted in higher diversion rates by establishments that held those certifications.

We visited 30 establishments that the Ministry had deemed compliant with the Source Separation Regulation since 2014, to observe the quality of recycling programs of regulated, compliant establishments. During our visits, we observed:

- waste bins, in most cases unlabelled, that were not accompanied by recycling bins in 57% of the establishments;
- recycling bins without signage to indicate which materials were accepted in 33% of the establishments that had visible recycling bins; and
- moderate to high levels of contamination, such as garbage in the recycling bin or recyclables in the garbage bin, in 92% of the establishments where the contents of the bins were visible.

RECOMMENDATION 10

To promote effective recycling programs by industrial, commercial and institutional (IC&I) establishments and multi-residential buildings, we recommend that the Ministry of the Environment, Conservation and Parks:

- develop and distribute more detailed guidelines and educational resources for effective recycling programs in IC&I establishments and multi-residential buildings, including best practices to reduce contamination and increase capture of recyclables; and
- in consultation with stakeholders, implement measures to encourage or require IC&I establishments and multi-residential buildings to collect IC&I materials, such as paper fibres and containers, in multiple streams to reduce contamination.

MINISTRY RESPONSE

The Ministry agrees with the recommendation. Ontario has already taken steps to improve diversion in multi-unit residential buildings by making all buildings eligible for producer-run Blue Box services starting in 2026. In addition, we have committed to releasing guidance to help municipalities, businesses and institutions reduce food waste and meet their obligations under the *Food and Organic Waste Policy Statement*.

The Ministry will consider the types of support tools, such as guidelines and educational resources,

that would be the most useful for IC&I stakeholders and waste service providers to reduce contamination and increase diversion of recyclables from landfills, and will provide the supports needed based on consultation.

4.5.4 Ministry Inspections Do Not Verify the Final Destination of Mixed Recyclables; Often Go to Landfill as Garbage

In addition to operating a recycling program onsite, the Source Separation Regulation requires regulated establishments, including multi-residential buildings that do not receive municipal collection, to ensure that their separately collected recyclables are removed and to make “reasonable efforts to ensure that ... the separated waste is reused or recycled.” In other words, establishments must hire a waste company to separately collect their recyclables and take steps to verify that the collector takes these materials to be recycled or reused, rather than landfilled.

We found that, despite these requirements, establishments frequently do not know where their collected source-separated materials are being taken. Further, our examination of waste management facilities’ handling of IC&I recyclables found that, in 47% of the cases we reviewed, the establishments’ mixed recyclables were being sent to landfill.

To assess whether reasonable efforts for reuse or recycling have been made, the Ministry implemented a procedure in 2014 to obtain information from all inspected establishments about the collection and destination of their recyclables, including:

- the name of the waste company that collects their recyclables;
- invoices or other documents from the waste collector that provide proof of the separate collection of the recyclables; and
- information about the final destination of the materials—the sorting or recycling facility where the collector takes the recyclables; or, if the recyclables are first taken to a transfer station (which

is an interim destination), the sorting or recycling facility where the recyclables are ultimately sent.

Our review of 30 Ministry inspection files found that inspectors consistently checked to ensure establishments had contracted a licensed waste collector to manage their waste and obtained documentation from the establishments about the collection and destination of the recyclables. However, in 12 (40%) of the 30 inspection files, the information obtained did not demonstrate that the source-separated materials were being separately collected and taken to an appropriate final destination to be recycled. Specifically:

- In three cases, the establishments provided no evidence to show that their recyclables were being separately collected or diverted. None of these three establishments provided an invoice for waste collection with a collection charge for recycling. Each establishment provided the name of a transfer station where their materials were being taken, but not a final destination to show that their materials were actually being diverted rather than sent to landfill.
- In six other cases, establishments provided proof that their recyclables were being separately collected and taken to a transfer station, but did not provide an appropriate final destination—sorting or processing facility—where materials were sent to from there. Four of these establishments did not provide any final destination and the other two provided addresses for landfills.
- In another three cases, the establishments provided the names of sorting or processing facilities where their materials were to be sent, but did not provide proof, such as an invoice or report, to show that their waste collector was in fact collecting and taking their recyclables to the listed addresses.

In all but one of these cases, the inspectors concluded that the establishment had made “reasonable efforts” to ensure its materials were recycled. The Ministry noted to us that, while they encourage businesses to discuss with their collectors that the intended final destination of their waste is a

recycler, the language in the regulation limits the scope of how strictly it can enforce the requirement.

Further, our examination of the handling of IC&I recyclables by waste management facilities (see **Section 4.2.2** for more details) found that:

- in eight (67%) of the 12 cases where establishments had not provided complete information (that is, had not provided proof of separate collection or an appropriate final destination), their recyclables were being taken to transfer stations where most materials would be sent to landfill as garbage; and
- in six (or 33%) of the 18 cases where establishments had provided documentation that materials were being separately collected and taken to an appropriate final destination, their recyclables were, in fact, also being taken to facilities where most mixed recyclable materials would be sent to landfill as garbage.

Therefore, although the Ministry had deemed all but one of the 30 inspected establishments as having made reasonable efforts to ensure their materials were recycled, 14 (47%) of the 30 were having their collected mixed recyclables sent to landfill as garbage.

RECOMMENDATION 11

To promote and more consistently enforce the recycling or reuse of source-separated materials by industrial, commercial and institutional establishments and multi-residential buildings with private collection, we recommend that the Ministry of the Environment, Conservation and Parks:

- implement processes for inspectors to consistently obtain all necessary documentation from establishments about the collection and final destination of their source-separated materials; and
- implement processes for inspectors to verify, based on the documentation, that establishments have hired a waste collector to separately collect and take their source-separated materials to an appropriate facility for reuse or recycling.

Figure 15: Compliance with Waste Audit Regulation, by Subsector, 2014/15–2018/19

Source of data: Ministry of the Environment, Conservation and Parks

Subsector	# of Establishments Inspected	Compliance Rate (%)	# of Corporate Initiative Inspections ¹	Adjusted Compliance Rate ² (%)
Manufacturing	10	0	0	0
Hotels and motels	124	14	0	14
Construction	184	17	0	17
Restaurants	37	65	21	19
Retail (stores and malls)	87	71	54	27
Educational institutions	37	59	1	58
Hospitals	5	60	0	60
Office buildings	50	80	0	80
Overall	534	37	76	27

1. These inspections (included in total inspections) were conducted as part of the corporate initiative program.

2. The adjusted compliance rate excludes corporate initiative inspections, which occur after a company has confirmed to the Ministry of the Environment, Conservation and Parks that all of its establishments are fully complying with the regulations. The adjusted compliance rate more accurately reflects the rate of compliance within a subsector before involvement of Ministry inspectors.

MINISTRY RESPONSE

The Ministry accepts the Auditor General’s recommendation. The Ministry’s new information technology (IT) system for tracking compliance has incorporated workflows for inspectors to consistently document required information and will improve access to data to support quality program delivery.

The Ministry will review its inspection procedures and training to determine opportunities to improve consistency in obtaining documentation from establishments about the collection and final destination of source separated materials and assessment of “reasonable efforts.”

4.6 Waste Audits and Waste Reduction Work Plans

The Waste Audits and Waste Reduction Work Plans Regulation (Waste Audit Regulation) requires regulated IC&I establishments to complete and implement annual waste audits and work plans to reduce

waste. Multi-residential buildings are not subject to this regulation.

4.6.1 Only 37% of IC&I Establishments Complied with Waste Audit Regulation in Five-Year Period

The Ministry inspected 534 IC&I establishments for compliance with the Waste Audit Regulation between 2014/15 and 2018/19. Of the inspected establishments, only 199 or 37% had complied with the regulation (see **Figure 15**). If we exclude inspections done as part of the Ministry’s corporate initiative program—which occur after a company has confirmed that it is fully compliant—only 27% of establishments complied. All subsectors, except for the office sector, had low compliance, with manufacturers, hotels and construction having especially low compliance (see **Section 4.7** regarding enforcement).

Of the 335 inspected establishments that did not comply with the regulation, 270 (81%) had not prepared a waste audit or work plan at all. The other

65 (19%) had a waste audit or work plan that was incomplete, flawed or not updated.

The Ministry has noted in internal briefing documents that compliance with the Waste Audit Regulation does not relate to, or affect, compliance with the Source Separation Regulation. Our review of the inspection data from 2014/15 to 2018/19 confirms the Ministry's conclusion that waste audits and work plans are not prerequisites to operating a recycling program: of the 335 establishments that failed to comply with the Waste Audit Regulation, 241 (72%) still complied with the Source Separation Regulation.

At the time of our audit, the Ministry had not, however, reviewed whether the failure to implement the requirements in the Waste Audit Regulation had other impacts on waste performance and waste tracking. As noted in **Section 4.5.3**, although most regulated establishments have recycling programs, the quality of programs can be poor. The Waste Audit Regulation is intended to guide establishments to examine their waste practices and identify measures to improve their recycling program, as well as identify new ways to reduce, reuse or divert materials.

The Ministry has not assessed the effect of compliance with each of the requirements in the Waste Audit Regulation on establishments' waste management, such as whether:

- completing an initial waste audit and work plan leads to improved waste reduction and diversion rates by establishments;
- updating the waste audit and work plan every year provides continuing value, or if resources spent on updates could be redeployed to more effective measures; and
- waste audits provide information, such as baseline data about waste generation, diversion and disposal, data about the composition of the IC&I waste stream, or data to track establishments' progress in reducing and diverting waste over time, that is not otherwise available.

4.6.2 Ministry No Longer Inspects for Waste Audit Regulation Compliance in Regular Inspections but Has Not Reviewed, Revised or Repealed the Regulation

The Ministry informed us that, as of April 2019, Ministry inspectors no longer inspect for compliance with the Waste Audit Regulation, except in corporate initiative inspections or where warranted by a risk assessment or complaint. Instead, they focus IC&I inspections predominantly on the Source Separation Regulation. The Ministry also focused some prior IC&I inspections exclusively on the Source Separation Regulation, including 146 inspections in 2015/16 and 2016/17.

The Ministry informed us that its decision to focus IC&I waste inspections on the Source Separation Regulation is based on risk, as that regulation provides more verifiable outcomes (that is, the operation of a recycling program) than the Waste Audit Regulation.

Ministry inspectors also noted to us that the Waste Audit Regulation is hard to enforce in a meaningful way. For example, inspectors can assess and enforce if a waste audit is complete, but not if it is accurate. Similarly, inspectors can assess and enforce if a waste reduction work plan is complete, but cannot enforce the extent to which establishments implement it. Further, establishments may choose to make their work plan as ambitious, or as unambitious, as they choose.

As noted in **Section 4.5.1**, the Ministry has committed to review the IC&I waste regulations, but had not begun to do so at the time of our audit. The delay in reviewing the regulations has particular consequences for the Waste Audit Regulation, given the Ministry's decision to stop enforcing it. Having a regulation remain in force, but that is not being enforced, creates regulatory confusion and undermines the concept of the rule of law.

This issue also applies to another related regulation, the Packaging Audits and Packaging Reduction

Work Plans Regulation. This regulation, which was implemented in 1994 at the same time as the Waste Audit Regulation and the Source Separation Regulation, requires large manufacturers of packaged products to develop plans to reduce their use of packaging and improve the recyclability of packaging. However, the Ministry subsequently shifted its approach to regulating producers of packaging, which are now regulated through the *Resource Recovery and Circular Economy Act, 2016* instead (see **Section 4.9** for details), and has never enforced this regulation, except for a single inspection in 2007.

RECOMMENDATION 12

So that requirements imposed on regulated industrial, commercial and institutional establishments are effective and efficient, and enforced where needed, we recommend that the Ministry of the Environment, Conservation and Parks:

- undertake its promised review, in consultation with stakeholders, to assess the efficacy of each of the requirements in the Waste Audit and Work Plans Regulation (Ontario Regulation 102/94) and the Packaging Audits and Packaging Reduction Work Plans Regulation (Ontario Regulation 104/94) at driving waste reduction and diversion or at providing useful data to measure progress by establishments;
- based on the review, revise or revoke any requirements that are found to be ineffective or inefficient, and replace them with alternative measures to drive waste reduction and diversion and track progress as appropriate; and
- continue Ministry inspections of any requirements that remain in force.

MINISTRY RESPONSE

The Ministry agrees with the recommendation to undertake a review of Ontario Regulation 102/94 – Waste Audit and Work Plans Regulation and Ontario Regulation 104/94 – Packaging Audits and Packaging Reduction Work Plans. Based

on the findings of the review, the Ministry will develop a proposed path forward to address identified inefficiencies.

The Ministry undertakes risk-based compliance for all regulated activities and will continue to assess activities related to Waste Reduction Audits and Work Plans in the context of broader Ministry responsibilities.

4.7 Ministry Inspections of Regulated Establishments

4.7.1 Some Subsectors with Low Compliance History Are Rarely Inspected

The Ministry advised us that it uses a risk-based inspection planning process that includes looking at past inspection numbers, past compliance rates, size of establishments and size of sectors. The objectives are to focus resources on the higher-risk sectors and to reach the greatest number of regulated establishments. However, our review of inspection data from 2014/15 to 2018/19 found that Ministry inspections do not consistently align with these risk-based factors, and that the Ministry has inspected only a small portion of establishments within the subsectors with the lowest compliance rates.

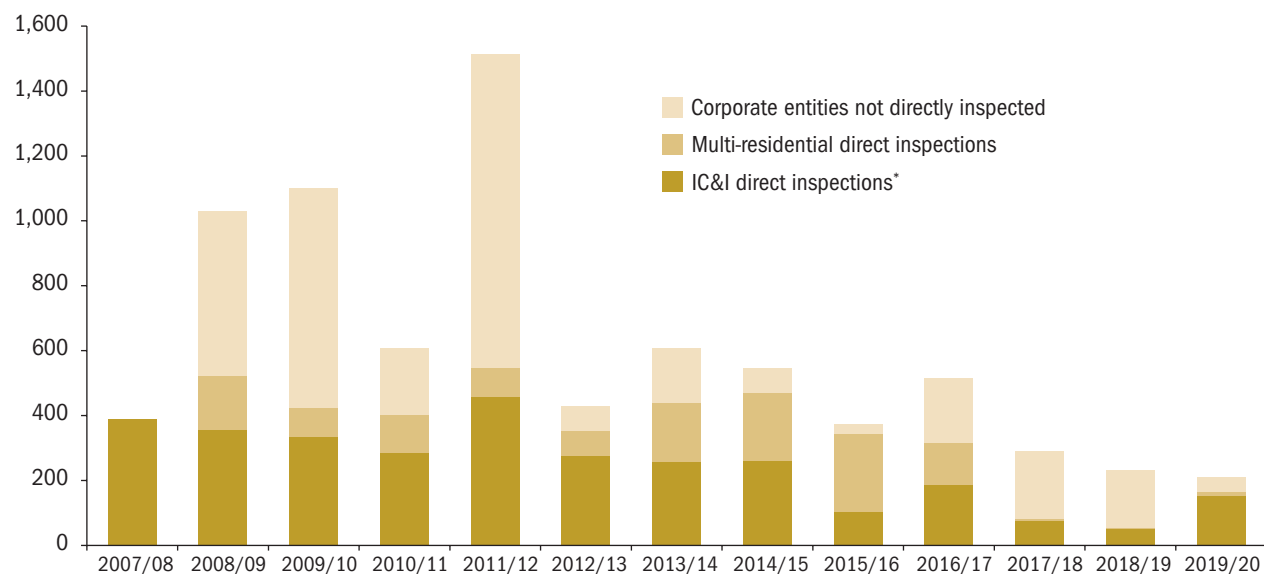
Between 2007, when the Ministry began a dedicated inspection program of the IC&I waste regulations (see **Section 2.4.1**), and the end of 2019/20, Ministry inspectors inspected or otherwise assessed the compliance of approximately 7,850 establishments. The Ministry:

- directly inspected approximately 3,200 businesses and institutions and 1,300 multi-residential buildings; and
- indirectly covered roughly an additional 1,650 business establishments and 1,700 schools through the corporate initiative program (see **Section 2.4.1**).

Overall, the Ministry has inspected, directly or indirectly, roughly only 35% to 45% of all regulated IC&I establishments since the IC&I waste inspection program began in 2007.

Figure 16: Number of Industrial, Commercial and Institutional (IC&I) Establishments Directly Inspected or Addressed Through Corporate Program, 2007/08–2019/20

Source of data: Ministry of the Environment, Conservation and Parks



* Excludes multi-residential buildings.

Figure 17: Number of Direct Inspections and Non-compliance Rates with the Industrial, Commercial and Institutional (IC&I) Waste Regulations, by Subsector, 2014/15–2018/19

Source of data: Ministry of the Environment, Conservation and Parks

Subsector	# of Establishments Inspected ²	Failure Rate (%)		Adjusted Failure Rate ¹ (%)	
		Source Separation Regulation	Waste Audit Regulation	Source Separation Regulation	Waste Audit Regulation
Manufacturing	10	60	100	60	100
Restaurants	43	21	35	32	81
Hotels and motels	141	26	86	26	86
Retail (stores and malls)	119	12	29	22	73
Construction	184	16	83	16	83
Educational institutions	37	14	41	14	42
Hospitals	20	10	40	10	40
Multi-residential buildings	582	8	n/a ²	8	n/a ²
Office buildings	126	6	20	6	20
Overall	1,262	12	63	13	73

1. The adjusted failure rate excludes corporate initiative inspections, which occur *after* a company has confirmed to the Ministry of the Environment, Conservation and Parks (Ministry) that it is fully complying with the regulations. The Ministry conducted 76 inspections as part of the corporate initiative program: 54 of retail stores, 21 of restaurants, and one educational institution. The adjusted failure rate more accurately reflects compliance within a subsector before Ministry involvement.
2. The Ministry conducted 1,262 total inspections, but inspected only 534 establishments for compliance with the Waste Audit Regulation. Multi-residential buildings are not subject to the Waste Audit Regulation, and the Ministry focused 146 IC&I inspections in 2015/16 and 2016/17 exclusively on the Source Separation Regulation.

As seen in **Figure 16**, the number of annual inspections has decreased since 2011/12. The Ministry informed us that, based on its risk evaluation and priorities, it has directed some of the inspectors' focus on other Ministry priority risk areas since 2017/18. While the Ministry is conducting fewer annual IC&I inspections, our audit found that Ministry inspections have addressed only a small portion of subsectors that have the lowest compliance rates (see **Figure 17**):

- **Manufacturing subsector:** the manufacturing subsector had the lowest compliance rate of any subsector—60% of inspected sites failed to comply with the Source Separation Regulation and 100% failed to comply with the Waste Audit Regulation. Despite the low compliance rate, the Ministry inspected only 10 manufacturers over five years—fewer than any other subsector. Further, since the inspection program began in 2007, the Ministry has inspected only 116 manufacturing sites, which is an estimated 8% of all regulated manufacturers in Ontario.
- **Restaurant subsector:** the restaurant subsector also had a high non-compliance rate, but the Ministry inspected only 43 restaurants from 2014/15 to 2018/19. Of the 22 regular inspections (excluding the corporate initiative inspections, which take place after the company has achieved full compliance), 32% of the restaurants failed to comply with the Source Separation Regulation, and 81% failed to comply with the Waste Audit Regulation. Since the inspection program began in 2007, the Ministry has inspected only 85 restaurants in Ontario. The Ministry has, however, worked with several large restaurant chains through the corporate initiative program to address compliance at an additional 253 restaurant locations. Several more restaurants may have been indirectly addressed through the inspection of malls or office buildings in which they are located. Even so, the long-term inspection rate for restaurants remains relatively low.
- **Demolition subsector:** The Ministry has not conducted a single demolition inspection since 2012/13. The Ministry has undertaken numerous

construction inspections, but staff told us that demolition projects, which are regulated alongside construction projects, are very hard to identify and plan for due to their short-term nature.

4.7.2 Size Thresholds in Regulation Create Inspection Inefficiencies

We found that the IC&I waste regulations' method for defining which establishments are regulated—by setting minimum thresholds—creates several inspection inefficiencies. For example, Ministry inspectors told us that a key reason they inspect fewer restaurants is that they have difficulty identifying which restaurants meet the threshold for minimum annual revenue, which determines whether they are regulated. Restaurant chains with franchisee-owned locations must each be evaluated on their individual revenue to determine whether they meet the threshold, adding to the challenge to identify regulated restaurants. Some other jurisdictions, such as Nova Scotia, Prince Edward Island and Scotland, require all establishments, regardless of size, to source-separate materials, which simplifies enforcement.

Ministry staff also advised us that, when planning inspections, they must research the business-specific information for each establishment to determine if it meets the threshold and is therefore regulated. This information could include a restaurant's annual revenue, number of rooms in a hotel, or an office building's square footage. Staff use various sources, such as online searches, paid directories and other resources, but the information is often difficult and time-consuming to obtain.

The regulatory thresholds also result in further inefficiencies through unsuccessful inspections, when inspectors are unable to determine in advance whether establishments are regulated and discover at the site visit that the establishment falls below the threshold. In our review of the inspection data, we found that 137 (10%) of the total 1,399 IC&I inspections attempted by the Ministry between 2014/15 and 2018/19 were unsuccessful. In some of these cases, inspectors advised us that they were still

able to gather information and provide education to the site operator.

RECOMMENDATION 13

To improve risk-based inspection planning of establishments across all industrial, commercial and institutional (IC&I) subsectors, to maximize the effectiveness of inspections, and to avoid unsuccessful inspection visits to non-regulated establishments, we recommend that the Ministry of the Environment, Conservation and Parks:

- establish processes to obtain better information to identify which establishments are regulated, such as through the use of private directories or data sharing agreements with other government agencies;
- prioritize inspections of establishments that are likely not complying with the regulations, including establishments within subsectors that have a history of lower compliance rates; and
- review, in consultation with stakeholders, options to revise the thresholds set out in the IC&I waste regulations so that they are easier to apply and enforce.

MINISTRY RESPONSE

The Ministry agrees there are continued opportunities to improve the information used to determine which sites require compliance checks.

The Ministry's new information technology (IT) system for compliance supports additional regulatory profile information and enables assessments of regulated facilities. Opportunities for obtaining information from other sources will be explored.

The Ministry will continue to utilize and refine its risk-based approach to prioritize compliance activities related to IC&I waste management.

We will examine and review frameworks currently in place in other jurisdictions, including the levels and types of thresholds (e.g., waste generation, number of employees), used to determine

what establishments are subject to regulatory requirements.

4.7.3 Minimal Risk for Establishments Found Not Complying with IC&I Waste Regulations

There is minimal risk or penalty for establishments found non-compliant with the IC&I waste regulations. As such, establishments may defer, without consequence, implementing required measures until directed to do so by a Ministry inspector.

Ministry inspectors reported to us that most establishments they inspect are aware of the requirements in the IC&I waste regulations. They observed that the reason establishments often do not comply is not due to unfamiliarity with the regulations, but rather to avoid the added costs of the required measures.

A failure to comply with the IC&I waste regulations is considered to be an "administrative failure." Per the Ministry's *Compliance Policy for Applying Abatement and Enforcement Tools*, inspectors typically address such failures through "soft" compliance approaches, working with the establishments to comply voluntarily.

Our review of inspection data from 2014/15 to 2018/19 found that inspectors addressed non-compliance with the IC&I waste regulations by issuing a warning or non-compliance letter in 50% of cases and a formal notice of violation in 45% of cases. In the other 5% of cases, the Ministry issued a Provincial Inspector's Order or referred the matter to the Ministry's Environmental Investigations and Enforcement Branch.

Our review found that, using these measures, inspectors brought violators into full compliance, on average, within three months of identifying a failure. However, we also found that many establishments do not remain fully compliant over the long term. The Ministry has completed 114 regular re-inspections since the inspection program began in 2007. During the re-inspections, 28 (25%) of 114 re-inspected establishments failed to comply with the Source Separation Regulation, and 79

(69%) failed to comply with the Waste Audit Regulation. The Ministry also completed 20 re-inspections in 2019/20 of establishments in the corporate initiative program. Of the 20 re-inspected establishments, nine (45%) failed to comply with the Source Separation Regulation and 16 (80%) failed to comply with the Waste Audit Regulation. All were subsequently brought into compliance.

The Ministry told us that, while it considers re-inspections as part of its risk-based inspection planning, its goal is to reach as many regulated establishments as possible and, therefore, inspectors primarily target previously uninspected establishments.

RECOMMENDATION 14

So that industrial, commercial and institutional waste (IC&I) establishments and multi-residential buildings proactively comply with the IC&I waste regulations, and remain in compliance with the regulations, we recommend that the Ministry of the Environment, Conservation and Parks:

- review its compliance and enforcement approach to determine whether stronger measures, such as administrative fines, are needed to address non-compliance with the IC&I waste regulations; and
- based on the outcome of the review, implement any changes to its compliance and enforcement policies.

MINISTRY RESPONSE

The Ministry appreciates the Auditor General's recommendation. Legislative amendments were made in 2019 to enable the expansion of administrative penalties. The Ministry is already engaging with industry, agricultural sectors, environmental groups, municipalities and other stakeholders on how to implement the new administrative monetary penalties and will review and implement other measures as appropriate.

4.8 Organic and Food Waste Reduction and Diversion

Although organic waste—such as food waste, soiled paper, leaf and yard waste and compostable products—makes up approximately one-quarter of the IC&I waste stream, it is not included in the Source Separation Regulation's list of materials to be diverted. To address this gap, the Ministry introduced the *Food and Organic Waste Policy Statement* (Organic Waste Policy) in 2018—a new approach that focuses on prevention, reduction and rescue of food and organic waste, above waste diversion. However, at the time of our audit, the Ministry had not taken steps needed to effectively implement this policy.

The Organic Waste Policy requires multi-residential buildings and IC&I establishments (as well as municipalities) that meet the thresholds in the policy to:

- reduce and divert food and organic waste by either 50% or 70%, depending on their size and sub-sector, by 2025; and
- implement separate collection for organic waste in time to meet the 2025 target.

4.8.1 Ministry Has Not Begun Outreach to Ensure IC&I Establishments, Condos, Apartments Know They Must Meet Organic Waste Targets by 2025

At the time of our audit, the Ministry had not engaged in education or outreach regarding the Organic Waste Policy, outside of the consultation process prior to the release of the Organic Waste Policy. The Ministry advised us that it has put outreach on hold until it completes supporting guidance, which it intends to release in late 2021, and a food waste calculator. However, without outreach from the Ministry, establishments may not be aware that they are subject to the policy and, therefore, may not yet be taking steps to put themselves on track to meet the 2025 targets. These steps could include, for example, condo buildings budgeting for the costs of

added space and equipment that may be needed for onsite collection of organic waste.

In addition, the policy requires certain establishments—restaurants, hotels, retailers that generate food and food manufacturers that meet the thresholds—to have implemented programs to educate consumers about reducing food waste by April 30, 2019. At the time of our audit, the Ministry had not conducted any inspections or enforcement of this requirement.

4.8.2 Enforcement Relies on Collaborative Approach

The Ministry's only legal tool to enforce compliance with the Organic Waste Policy is its power under the *Resource Recovery and Circular Economy Act, 2016* to require establishments to report on past and proposed steps to comply with their obligations in the Organic Waste Policy and to publicly disclose this information. The Ministry told us that this more collaborative approach could achieve compliance more effectively than traditional enforcement approaches. The Ministry stated that this method could, for example, leverage a business's interest in protecting its brand image from public disclosure of its lack of compliance with the policy, as incentive for the company to reduce organic waste. The Ministry also noted that financial penalties may not provide an incentive for waste reduction, particularly for larger businesses with high revenue.

Despite this being a novel approach to enforcement, the Ministry has not developed internal guidance for applying this approach and monitoring its effectiveness.

4.8.3 Lack of Guidance on Organic Waste Targets Weakens Policy to Reduce Food Waste at IC&I Establishments and Multi-residential Buildings

The Organic Waste Policy leaves it up to each establishment to determine the baseline for the targets (to reduce and divert food and organic waste by either

50% or 70%, depending on the establishment's size and subsector) from which to calculate the percentage of waste reduction achieved. The Ministry has not provided guidance on how these targets are to be measured. Given that the targets are the central feature of the policy, this lack of direction on calculating a baseline could undermine the effectiveness of the entire policy to reduce food waste.

The Ministry told us that it is working on both guidance and a food waste calculator to help establishments determine their baseline and progress toward the targets. The Ministry plans to give establishments flexibility to determine their own baseline, so that past measures taken by businesses to reduce food waste can be counted toward the target, and to provide flexibility in how they achieve the targets, whether through front-end reduction, food donations or composting. However, the Organic Waste Policy is three years old and the calculator and guidance were still being developed at the time of our audit. Without this information, establishments cannot properly plan ahead to ensure that they are on track to meet the 2025 organic waste reduction targets.

Furthermore, the policy recommends, but does not require, that establishments conduct food waste audits to quantify the amount and type of food waste. If establishments do not measure and record their food waste, there will be no means for either the establishments or the Ministry to monitor establishments' progress in reducing organic waste.

RECOMMENDATION 15

To promote and enforce the reduction and diversion of food and organic waste by industrial, commercial and institutional waste (IC&I) establishments and multi-residential buildings, in accordance with the *Food and Organic Waste Policy Statement*, we recommend that the Ministry of the Environment, Conservation and Parks:

- promptly provide guidance on calculating the baseline from which establishments are to measure progress toward the 2025 targets;

- require establishments to measure and track their organic waste to demonstrate progress toward the targets; and
- develop and implement a strategy for education, outreach and enforcement of the policy, and for tracking the effectiveness of enforcement measures.

MINISTRY RESPONSE

The Ministry accepts the Auditor General's recommendation and is working on guidance along with an online calculator to help municipalities, businesses and institutions meet their targets under the *Food and Organic Waste Policy Statement*. The guidance will include tools and best practices for municipalities, businesses and institutions to measure and track their progress toward their targets under the Policy Statement.

The proposed amendments to the *Food and Organic Waste Policy Statement* that were consulted on in fall 2020 also included reporting requirements for municipalities, businesses and institutions to publicly report on their progress toward their targets.

To ensure that the *Food and Organic Waste Policy Statement* is effective at reducing food and organic waste from IC&I establishments, the Ministry will conduct outreach as needed on the guidance and calculator as well as on the amendments to the Policy Statement that require public reporting on the targets.

4.9 Delegating Duties to Resource Productivity and Recovery Authority

The Resource Productivity and Recovery Authority (Resource Authority) is a non-Crown, not-for-profit corporation. The province created the Resource Authority in November 2016 to deliver services to support the province's efforts to transition to a waste-free Ontario. The Resource Authority receives its powers primarily from the *Resource Recovery and*

Circular Economy Act, 2016 (Act), which sets out its various responsibilities (see **Appendix 4**). The Ministry is responsible for overseeing the Resource Authority and has the power to delegate other duties relating to waste reduction and diversion, beyond those directly set out in the Act, to the Resource Authority.

The Resource Authority operates on a cost-recovery basis and is financed exclusively through fees charged to the producers regulated under the Act (see **Section 4.9.2**).

4.9.1 Ministry Has Not Assessed Delegating Responsibility to the Resource Authority to Collect, Analyze and Report IC&I Waste Data

As discussed in **Section 4.1**, the province has significant data gaps relating to the total amount of Ontario's IC&I waste, as well as the breakdown by source and type, hindering the Ministry's development of effective waste policies. Further, as discussed in **Section 4.2.4**, lack of data and tracking of IC&I waste also hinder IC&I businesses' ability to verify whether their recyclable waste is being diverted. Despite these long-standing issues, the Ministry has not begun to gather additional data or improve the tracking of IC&I waste, nor assessed the potential for delegating this responsibility to the Resource Authority.

Our discussions with the Resource Authority confirmed that it already has the information technology and systems in place for waste data collection and analysis, which it currently uses for other waste diversion programs and which it can efficiently expand to additional programs. The Resource Authority has also been developing in-house staff expertise related to waste data collection, verification and analysis.

Further, our review of the Resource Authority's legislation and operating documents found that a complete framework is already in place to govern waste data collection, analysis and reporting by the Resource Authority, including:

- provisions to ensure data privacy and confidentiality of reported information; and

- requirements for the Resource Authority to publish annual reports on collected data and annual business plans, providing financial transparency on program costs and fees.

As well, we found that the Resource Authority's data collection system can reduce administrative burdens and create efficiencies for businesses that are required to report waste data, such as waste management companies that provide various waste services, by enabling businesses to register and report in a single data reporting system.

In recognition of the Resource Authority's ability to provide efficient waste data collection and reporting services, the Ministry announced in 2020 that it would transition its hazardous waste reporting framework from the Ministry to the Resource Authority starting on January 1, 2023, with the stated goal of improving the quality and efficiency of data reporting and tracking of hazardous waste.

Despite the potential to further leverage the Resource Authority's assets and expertise, we found that the Ministry has not yet assessed the potential for delegating responsibility to the Resource Authority for data collection, analysis and reporting for IC&I waste. Among other priorities, the Resource Authority's current roles and responsibilities include overseeing the transition of the waste diversion programs under the Act (see **Section 4.9.2**) and implementing the new hazardous waste digital reporting program, slated to occur by January 1, 2023. As a result, the Resource Authority's operational capacity to take on new programs may be limited in the near future. However, based on the timelines directed by the Ministry, the Resource Authority's business plan indicates that the Resource Authority should have capacity to take on additional programs beginning in 2023.

RECOMMENDATION 16

To collect and analyze industrial, commercial and institutional (IC&I) waste data, we recommend that the Ministry of the Environment, Conservation and Parks:

- assess the feasibility of assigning responsibility for collecting, analyzing and reporting on IC&I waste data to the Resource Productivity and Recovery Authority (Resource Authority), including assessing the Resource Authority's operational capacity to take on additional data collection and analysis responsibilities over the next two years; and
- based on the review, develop and implement a plan for assigning responsibility to the Resource Authority, or alternatively an appropriate body within the Ministry, for collecting, analyzing and reporting on IC&I waste data.

MINISTRY RESPONSE

The Ministry recognizes the potential benefits of a centralized one-window reporting system for the collection of information from those involved in the recycling of materials in the IC&I sector. As a part of its ongoing review of the IC&I waste framework, the Ministry will consult on the most appropriate mechanism for collecting information on materials diverted from landfill, including considering an appropriate role for the Resource Productivity and Recovery Authority. Any initiative to collect information must minimize the burden on businesses.

4.9.2 Material-Specific Programs Achieve Higher Diversion than Other IC&I Wastes

The *Resource Recovery and Circular Economy Act, 2016* (Act) provides a second waste diversion framework, separate from the IC&I waste regulations, for select materials. Under the Act, producers (brand holders, importers or retailers) of designated products and packaging are required to collect and divert the waste that results from their products. There are currently five producer-responsibility waste diversion regulations under the Act that regulate:

- printed paper and packaging (Blue Box) waste from the residential sector;

- electronic waste;
- used tires;
- used batteries; and
- wastes that require special handling, including used paints, propane tanks, oil filters, solvents, pesticides and fertilizers.

Producer-run diversion programs achieve significantly higher diversion rates than other IC&I materials. We found that there is a potential opportunity to increase IC&I diversion rates by including more materials under the producer-run diversion framework.

Producer-run programs provide an exception to an IC&I establishment's general responsibility to manage its own waste. IC&I establishments may return designated items, such as used electronics, batteries or oil filters, directly to a collection depot for the producer-run diversion program, and it is the producer's responsibility to divert them from disposal.

Each of the regulations under the Act includes legally enforceable targets, as well as mandatory data reporting. In addition, the Resource Authority is responsible for overseeing and enforcing compliance with the regulatory requirements. We found that the program framework under the interim *Waste Diversion Transition Act* has resulted in all of the diversion programs achieving high collection and recycling efficiency (the portion of collected materials that is diverted) rates, generally ranging from over 70% to 100%. For example, the electronic waste program reported a recycling efficiency rate of 84% in 2019 (most recent data).

The Ministry has stated that not all forms of waste are suited to the producer-run framework; however, the Ministry has committed, including in the 2017 *Strategy for a Waste-Free Ontario: Building the Circular Economy*, to assess and identify appropriate new materials—such as textiles, mattresses and carpets—and to designate such materials under producer-run diversion regulations. At the time of our audit, the Ministry had proposed to designate beverage containers, such as water, juice and soft drink bottles, from the IC&I sector, by including them in the

producer-run diversion regulation for residential Blue Box packaging waste.

RECOMMENDATION 17

To achieve higher diversion rates for materials generated by the industrial, commercial and institutional waste (IC&I) sector, similar to the rates achieved by the producer-run diversion programs overseen by the Resource Productivity and Recovery Authority, we recommend that the Ministry of the Environment, Conservation and Parks:

- undertake an assessment of potential candidate materials, including materials from the IC&I sector, to identify materials that are suited to producer-run diversion requirements under the *Resource Recovery and Circular Economy Act, 2016*; and
- designate additional products and materials from the IC&I sector that have been identified as appropriate.

MINISTRY RESPONSE

The Ministry agrees that making producers responsible for the waste derived from their products and packaging is an important part of a comprehensive strategy to reduce waste and increase diversion. The Ministry will continue to work with partners to identify materials, including materials from the IC&I sector, that could be part of future regulations under the *Resource Recovery and Circular Economy Act, 2016*.

Appendix 1: Glossary of Terms

Prepared by the Office of the Auditor General of Ontario

Term	Definition
Anaerobic digestion	The processing of organic waste without oxygen to generate biogas, which can be used to produce electricity. The resulting solid digestate can be composted or used as fertilizer.
Construction and demolition waste	Waste generated by construction, renovation and demolition activities, from businesses or residences. Includes materials such as brick, concrete, wood, drywall, metal, cardboard, brick, doors, windows and wiring.
Contamination	Occurs when a waste stream, separated for diversion, is contaminated with non-targeted materials. For example, organic materials may be contaminated with plastic packaging, or mixed recyclables may be contaminated with garbage (such as straws or coffee cups). Contamination can increase the cost or make it unfeasible to divert the materials.
Datacall	The annual residential waste data reported to the Resource Productivity and Recovery Authority by Ontario municipalities and First Nation communities that collect Blue Box waste.
Dispose/Disposal	When waste is discarded in either landfill (which is how the majority of Ontario's IC&I waste is disposed) or in an energy-from-waste facility.
Divert/Diversión	When materials are reused, recycled, composted and are therefore diverted from landfills or energy-from-waste facilities.
Energy-from-waste or energy recovery facility	A facility that recovers energy from the waste incineration process and uses the energy to heat buildings and generate electricity. The Ministry of the Environment, Conservation and Parks considers energy-from-waste to be disposal, not diversion.
Establishment	A business or institution, corresponding to an individual site, such as store, hotel or restaurant, of a company.
Generate/Generation	The production of waste materials, which are eventually either disposed or diverted.
HDPE plastic	High-density polyethylene (HDPE) is a stiff, durable plastic that is often used for containers, such as milk jugs, shampoo bottles and laundry detergent containers. HDPE, which has the #2 resin identification code, is one of the easiest plastics to recycle.
Industrial, commercial and institutional (IC&I) waste	Waste that is generated by non-residential sources (i.e., outside of the home) by industrial facilities (e.g., manufacturers), commercial businesses (e.g., retail stores, restaurants, hotels and offices) and institutions (e.g., schools, universities and hospitals). Under Ontario's waste regulations, waste from construction and demolition projects and multi-residential buildings is also regulated along with IC&I waste. IC&I waste is generally managed by the establishment, at its own expense, through contract with private waste service providers.
IC&I Waste Regulations	The two regulations (Ontario Regulation 102/94 – Waste Audit Regulation and Ontario Regulation 103/94 – Source Separation Regulation) introduced in 1994 under the <i>Environmental Protection Act</i> that require certain establishments to take some steps to reduce and divert some of their waste.
Mixed recyclables	Blue Box-type recyclables, which may be collected in one or more streams. Mixed recyclables include recyclable containers (e.g., plastic, aluminum, steel, glass and polycoat containers) and fibre materials (e.g., mixed paper, newspaper and thin cardboard). We do not include corrugated cardboard, as it is often collected and managed separately from mixed recyclables for IC&I establishments.

Term	Definition
Multi-residential	Residential buildings with six or more units, including apartments and condominiums, high-rises and low-rises. Multi-residential buildings are regulated under the Source Separation Regulation along with IC&I establishments. However, most multi-residential waste is collected and managed by municipalities with other residential waste, and is often included in residential waste data.
Non-hazardous waste	Refers to both garbage, recyclables and organic materials generated by the residential and IC&I sectors. It does not include hazardous wastes, which due to their flammability, corrosiveness or toxicity cannot be handled by normal waste and recycling programs.
Organic waste materials/organics	Organic (green bin) material, such as food scraps, soiled paper and compostable products, and yard waste, such as leaves, grass and wood waste.
Organic processing	The breakdown of organic waste materials into useful products (compost or electricity) at either compost facilities or anaerobic digestion facilities.
PET plastic	Polyethylene terephthalate (PET) is a clear, lightweight plastic that is widely used for food and beverage packaging, especially water bottles and soft drink beverage containers. PET, which has the #1 resin identification code, is the most commonly recycled plastic globally.
Processing facility	Recycling facilities that chip, bale, grind, melt, or otherwise process recyclables or organics into materials that can be used to create new products. Processing facilities receive specific materials that were either collected separately from the garbage (e.g., organics or clean cardboard) or have been baled into individual commodities (e.g., glass or plastic) at sorting facilities.
Producer/Producer-run programs	Producers are the brand holders, importers, or retailers of products and packaging, which eventually become waste. Producer-run programs are diversion programs for specific designated materials that are operated and funded by the producers.
Residential waste	Waste generated by residents for personal, family or household purposes that is diverted or disposed in residential settings. In Ontario, multi-residential buildings (apartments, condominiums and high-rises), however, are currently regulated under the Source Separation Regulation along with the IC&I sector.
Recyclables	Materials that can be recycled, or have been designated or identified for collection, source separation or diversion, including corrugated cardboard, mixed recyclables, construction and demolition waste, and other specialized items, such as tires and electronics.
Reuse	Giving products a longer or second life, such as donating used items for second-hand use, repairing items, or repurposing materials for a new use.
Sorting facility	A waste management facility that sorts and bales or bulks one or more types of mixed recyclables, including fibres (paper products and cardboard), plastic, glass, aluminum, steel and scrap metal. Commonly referred to as a material recovery facility or a material recycling facility.
Source-separated	Waste materials that have been separated from the general garbage stream with the intent of diversion. An IC&I establishment may source-separate waste into multiple streams, such as mixed recyclables, organics, cardboard, steel or wood.
Source Separation Regulation	Ontario Regulation 103/94 – Industrial, Commercial and Institutional Source Separation Programs. The regulation requires regulated establishments, plus all multi-residential buildings with six or more units, to implement a recycling program with specific obligations.
Transfer station	A waste management facility that serves as an interim destination, where waste loads are consolidated for transport to the next destination (either a landfill, or an energy-from-waste, sorting or processing facility). Most transfer stations' main operation is the quick transfer of large quantities of garbage. Some also consolidate and transfer mixed recyclables or organics, and some will separate select materials onsite to be sent for diversion.

Term	Definition
Waste	In this report, refers to solid, non-hazardous materials for which the waste generator (residence or IC&I establishment) has no further use, including both garbage as well as recyclables and organic materials separated for diversion.
Waste Audit Regulation	Ontario Regulation 102/94 – Waste Audits and Waste Reduction Work Plans. The regulation requires large businesses and institutions that meet the thresholds set out in the regulation to conduct a waste audit (i.e., an inventory of their waste), implement a work plan to reduce, reuse and recycle waste, and update both the audit and work plan annually.
Waste collector/ collection	Waste collectors are hired by businesses, institutions or multi-residential buildings to collect waste and take it to a waste management facility, in accordance with a service agreement between the waste collector and the establishment. Waste may be collected in separate streams (e.g., garbage, mixed recyclables, organics and cardboard).
Waste facility	Refers to waste management facilities that receive waste from IC&I establishments, including transfer stations, sorting facilities and processing facilities.
Waste haulers/waste hauling	The transportation of waste from one site or geographic area to another. This excludes the collection of waste from an establishment and is limited to activities such as waste exporting or transport of waste from transfer station to disposal or processing facility.
Waste stream	A type of material that is collected separately from other waste, such as mixed recyclables or organics.
Waste management activities/service providers/businesses	Includes waste collection, waste hauling, transfer, sorting, processing (organic processing or recycling services) and waste disposal facilities and services. Collectively referred to as the waste management industry.

Appendix 2: Waste Performance and Policies in Canadian Provinces and Territories

Prepared by the Office of the Auditor General of Ontario

	Direct Regulation of Industrial, Commercial and Institutional (IC&I) Establishments	Other Key Policies and Programs to Drive IC&I Waste Reduction and Diversion ¹	IC&I Diversion Rate, 2018 ² (%)	Total Waste Disposed Per Person, 2018 ³ (kg)
PE	All businesses and institutions required to source-separate organics and certain recyclables for diversion.	Relatively high disposal fee (\$100–\$115) with surcharge for mixed waste (\$230); requires transparent bags to enable enforcement.	43	348
NS	All businesses and institutions required to source-separate organics and certain recyclables for diversion.	Disposal ban on recyclables and organics; research and development funding for waste reduction initiatives.	36	407
BC	—	Various regional policies, including landfill bans on organics and recyclables, waste levies and contamination surcharges.	35	540
NB	—	—	9	657
QC	—	Landfill levy of \$24/tonne added to cost of tipping fee; portion of revenue funds organic processing infrastructure.	40 ⁴	660
ON	Very large businesses and institutions required to source-separate certain recyclables for diversion.	—	15	701
MB	—	Landfill levy of \$10/tonne added to cost of tipping fee.	8	709
NL	—	—	7	711
YT, NW and NU	—	—	23	730
SK	—	—	6	742
AB	Local requirements (Calgary and Lethbridge) for businesses and institutions to source-separate certain materials for diversion.	—	10	954

1. Other policies not mentioned in this figure include single-use plastic bans in several regions, as well as (non-alcoholic) beverage container deposit-return systems in all jurisdictions except Manitoba (which instead has a producer recovery system that includes IC&I), Nunavut and Ontario.
2. IC&I diversion rates are based on Statistics Canada data and exclude tires and electronics. IC&I diversion rates for Nova Scotia, New Brunswick, Manitoba, Newfoundland and Labrador, and Saskatchewan may be underestimated due to exclusion of several materials in the Statistics Canada dataset.
3. Includes both residential and IC&I sources. We used data from Statistics Canada from all provinces to enable consistent comparison across jurisdictions.
4. Waste diversion data for Quebec is derived by Statistics Canada from a survey administered by RECYC-QUÉBEC. The IC&I diversion rate for Quebec may be overestimated due to its differing methodology.

Appendix 3: Key Provincial Waste Reduction and Diversion Initiatives, Commitments and Goals, 1989–2021

Prepared by the Office of the Auditor General of Ontario

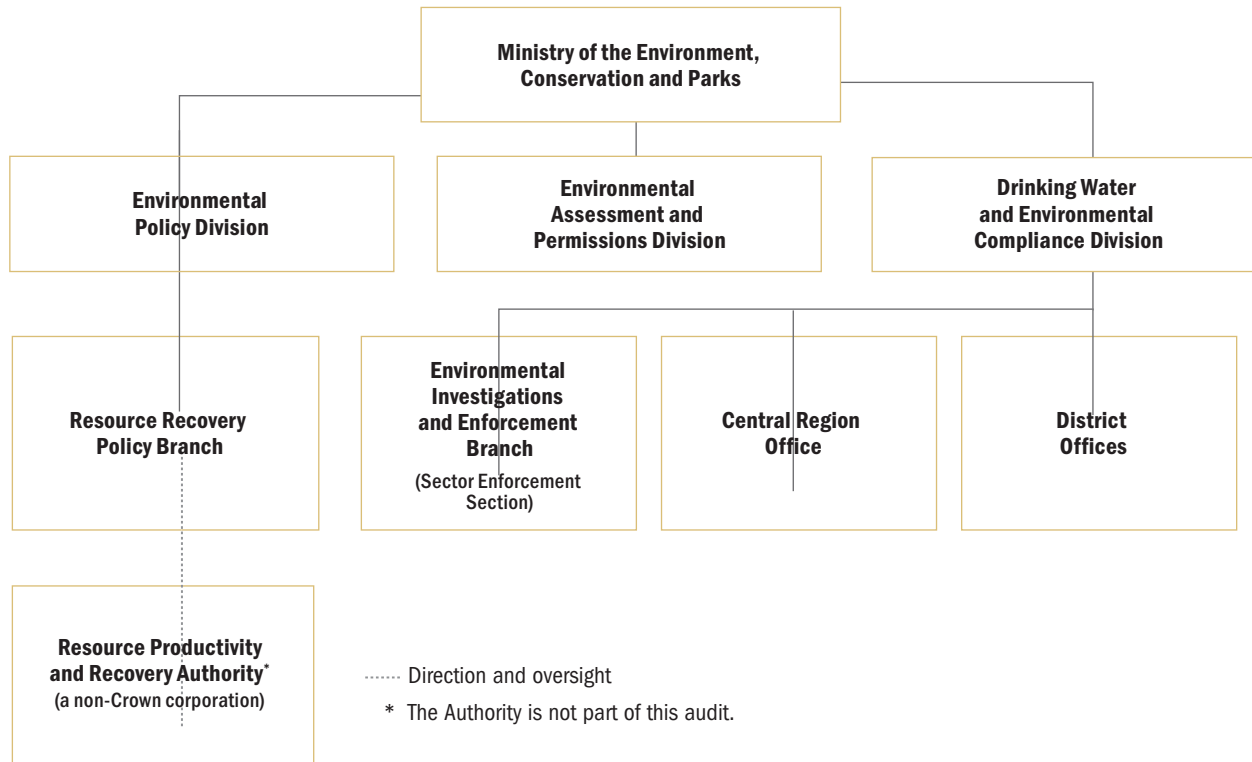
	Provincial Initiatives and Goals	Status as of June 2021
1989	Ministry of the Environment announces target to divert 25% of Ontario's waste by 1992 and 50% of waste by 2000.	Goal not met
1994	Ministry implements four regulations under the <i>Environmental Protection Act</i> , which require: <ul style="list-style-type: none"> • municipalities to operate residential Blue Box program; and • certain industrial, commercial and institutional (IC&I) establishments to conduct waste audits, develop waste reduction work plans, separately collect some common recyclables, and make reasonable efforts to have those materials reused or recycled. 	In effect
2002	Ontario enacts <i>Waste Diversion Act, 2002</i> , which: <ul style="list-style-type: none"> • requires producers to fund 50% of the cost of the municipal-run residential Blue Box program; and • creates a framework to establish other producer-run diversion programs (for both residential and IC&I wastes). 	Repealed in 2016 (replaced by <i>Waste-Free Ontario Act, 2016</i>)
2004	Ministry releases discussion paper, <i>Ontario's 60% Waste Diversion Goal</i> , which proposes: <ul style="list-style-type: none"> • goal of 60% diversion rate by 2008; • strategies to meet the goal, including enhancing enforcement of the IC&I waste regulations to increase IC&I recycling; and • to review and revise the IC&I Source Separation Programs Regulation. 	Goal not met
2007	Ministry releases a proposed <i>Policy Statement on Waste Management Planning</i> , which: <ul style="list-style-type: none"> • identifies that the province is facing "critical waste management challenges"; and • proposes a plan for increasing waste diversion, including directing municipalities to develop waste management plans and challenging IC&I establishments to generate less waste. 	Not finalized or implemented
2008	Ministry releases discussion paper, <i>A Review of the Waste Diversion Act, 2002: Toward a Zero Waste Future</i> , which: <ul style="list-style-type: none"> • recognizes the need to increase diversion and aim for zero waste; • proposes greater focus on producer responsibility (i.e., making producers responsible for waste generated by their products), reduction and reuse, and increasing IC&I waste diversion. 	Input on discussion paper incorporated into 2009 Minister's Report
	Ministry implements diversion program for electronic waste (from residential and IC&I sources) under the <i>Waste Diversion Act, 2002</i> .	Replaced with new program in 2020
	Ministry implements diversion program for household hazardous waste under the <i>Waste Diversion Act, 2002</i> .	Being transitioned to new program to be completed Oct 2021
2009	Ministry implements diversion program for used tires (from residential and IC&I sources) under the <i>Waste Diversion Act, 2002</i> .	Replaced with new program in 2018
	Ministry releases <i>From Waste to Worth: Minister's Report on the Review of the Waste Diversion Act, 2002</i> , which: <ul style="list-style-type: none"> • conveys the results of the five-year review of the <i>Waste Diversion Act, 2002</i>; and • proposes changes to Ontario's waste management framework and the <i>Waste Diversion Act, 2002</i>. 	Input on Minister's Report incorporated into 2013 proposed Bill 91 and Strategy (which were not implemented)

	Provincial Initiatives and Goals	Status as of June 2021
2013	Ministry introduces Bill 91, <i>Waste Reduction Act, 2013</i> , which would implement a new producer responsibility approach, and releases its Waste Reduction Strategy, which proposes several actions to address stalled waste diversion.	Bill died and strategy not implemented. Superseded by <i>Waste-Free Ontario Act, 2016</i> and <i>2017 Strategy for a Waste-Free Ontario</i>
2016	Province enacts <i>Waste-Free Ontario Act, 2016</i> , which: <ul style="list-style-type: none"> • repeals and replaces the <i>Waste Diversion Act, 2002</i>; • enacts the <i>Resource Recovery and Circular Economy Act, 2016</i>, which establishes a framework for full producer responsibility waste diversion programs; and • enacts the <i>Waste Diversion Transition Act, 2016</i>, which provides interim rules for waste diversion programs while they transition to the <i>Resource Recovery and Circular Economy Act</i>. 	In effect
2017	Ministry releases its <i>Strategy for a Waste-Free Ontario: Building the Circular Economy</i> , which: <ul style="list-style-type: none"> • sets overarching goal to reduce waste and targets to divert 30% of waste by 2020, 50% by 2030, and 80% by 2050; • commits to amend the IC&I waste regulations; and • commits various measures to support waste reduction and diversion (such as regulating additional materials, landfill bans, and focusing on increasing IC&I waste diversion). Ministry sets a key performance indicator to reduce the amount of waste disposed per capita each year.	In effect
	Ministry releases a discussion paper, <i>Addressing Food and Organic Waste in Ontario</i> , to consult on reducing organic waste from both residential and IC&I sources.	Supported development of <i>2018 Policy Statement and Framework</i>
2018	Ministry releases <i>Food and Organic Waste Policy Statement</i> , which sets waste reduction and resource recovery targets for municipalities and IC&I establishments to reduce organic waste by 50% or 70%, by 2025, depending on the type of establishment.	In effect
	Ministry releases <i>Food and Organic Waste Framework</i> , which outlines commitments to address food and organic waste, including a proposal to ban food waste from landfill, to accompany the <i>Food and Organic Waste Policy Statement</i> .	Superseded by the 2018 <i>Made-in-Ontario Environment Plan</i> and the 2019 <i>Reducing Litter and Waste in Our Communities: Discussion Paper</i>
	Ministry implements regulation to transition the Used Tires program into a full individual producer responsibility program under the <i>Resource Recovery and Circular Economy Act, 2016</i> .	In effect
	Ministry releases proposed <i>Made-in-Ontario Environment Plan</i> , which commits to several measures to increase waste diversion, including reducing and diverting food and organic waste from households and businesses; reducing plastic waste; and making producers responsible for the waste they generate.	Ministry describes the plan as an evolving document; update provided in 2020
2019	Ministry releases discussion paper <i>Reducing Litter and Waste in Our Communities</i> for consultation, which: <ul style="list-style-type: none"> • reaffirms waste diversion targets set out in the 2017 Strategy: 30% by 2020, 50% by 2030, and 80% by 2050; and • states that IC&I waste regulations are “largely ineffective” and seeks input on new approach to reduce waste and increase diversion from the IC&I sector, as well as ways to better track information about IC&I waste. 	Consultation completed
	David Lindsay, as a Special Advisor to the Ministry, issues his report <i>Renewing the Blue Box: Final Report on the Blue Box Mediation Process</i> , providing advice on transitioning the municipal Blue Box Program to full producer responsibility.	Completed

	Provincial Initiatives and Goals	Status as of June 2021
2020	Ministry implements regulations to transition the Electronic Waste and Batteries programs into full individual producer responsibility programs under the <i>Resource Recovery and Circular Economy Act, 2016</i> .	In effect
	Ministry proposes new regulations to transition the residential Blue Box program and hazardous and special products into full individual producer responsibility programs under the <i>Resource Recovery and Circular Economy Act, 2016</i> .	Finalized in June 2021
	Ministry releases two-year progress update on its <i>Made-in-Ontario Environment Plan</i> , which commits to consult on: <ul style="list-style-type: none"> • reforming the IC&I waste framework; and • a proposal to phase out organic waste from landfill by 2030. 	In effect

Appendix 4: Key Entities Involved in Oversight of Industrial, Commercial and Institutional (IC&I) Waste Management

Prepared by the Office of the Auditor General of Ontario



Environmental Policy Division	Develop policies, programs, regulations and legislation to support environmental protection.
Environmental Assessment and Permissions Division	Issue operating approvals and manage regulatory permissions for waste management industry.
Drinking Water and Environmental Compliance Division	Provide oversight of compliance and enforcement of Ontario’s environmental laws and regulations.
Resource Recovery Policy Branch	Develop policies, regulations and laws related to waste management, reduction and diversion.
Environmental Investigations and Enforcement Branch	Inspect, enforce and promote compliance of IC&I establishments with the IC&I waste regulations (Ontario Regulations 102/94 and 103/94). Inspect waste vehicles through on-road enforcement team.
Central Region Office	Lead provincial compliance program for waste management industry.
District Offices	The 16 district offices located across Ontario inspect waste management facilities and vehicles for operational compliance and environmental impacts, and respond to local incidents.
Resource Productivity and Recovery Authority*	<ul style="list-style-type: none"> Oversee and enforce compliance of regulated producers of products and packaging and waste service providers with the requirements under the <i>Recovery and Circular Economy Act, 2016</i>. Oversee the operations and wind-up of programs under the <i>Waste Diversion Transition Act, 2016</i>. Develop and operate an electronic registry for producers and waste service providers to register and submit waste data. Manage, verify and publicly report on the information provided through the registry.

Appendix 5: Establishments and Materials Subject to Industrial, Commercial and Institutional (IC&I) Waste Regulations

Source of data: Ontario Regulations 102/94 and 103/94 under the *Environmental Protection Act*

Regulated Establishments	Threshold	Materials to Be Collected
Retail shopping complexes or establishments (e.g., malls, plazas or stores)*	Occupy 10,000 m ² or more	<ul style="list-style-type: none"> - Aluminum and steel cans - Glass bottles and jars - Paper and newsprint - Cardboard
Office buildings	Occupy 10,000 m ² or more	
Educational institutions	With more than 350 students enrolled per year	
Public hospitals	General hospitals with 100 or more beds; teaching hospitals; or hospitals for chronic patients with 200 or more beds	
Hotels and motels	With more than 75 units	<ul style="list-style-type: none"> - Aluminum and steel cans - Glass bottles and jars
Restaurants	Gross annual sales of \$3 million or more in at least one of the previous two years (for all locations)	<ul style="list-style-type: none"> - Paper and newsprint - Cardboard - Polyethylene terephthalate (PET) plastic bottles for food and beverages
Manufacturing facilities	Employ staff that collectively work at least 16,000 hours or more for at least one month over the last two-year period	<ul style="list-style-type: none"> - Aluminum and steel - Glass - Paper and newsprint - Cardboard - Various plastics (HDPE plastic containers, LDPE plastic film, and polystyrene foam and trays) - Wood
Construction projects	Total floor area of at least 2,000 m ²	<ul style="list-style-type: none"> - Brick and cement concrete - Cardboard - Steel - Unpainted drywall and wood
Demolition projects	Total floor area of at least 2,000 m ²	<ul style="list-style-type: none"> - Brick and cement concrete - Steel - Unpainted wood
Multi-unit residential (apartment/condo) buildings	With six or more dwelling units	<ul style="list-style-type: none"> - Aluminum and steel cans - Glass bottles and jars - Newsprint - PET plastic bottles - Any other packaging materials collected in the residential Blue Box program.

* The Ministry of the Environment, Conservation and Parks told us that the requirements for retail shopping establishments or complexes may be applied to large movie theatres, event venues, and sports venues, arenas and stadiums.

Appendix 6: Waste Management Service Providers for Industrial, Commercial & Institutional (IC&I) Solid, Non-hazardous Waste in Ontario

Prepared by the Office of the Auditor General of Ontario, with data from the Ontario Waste Management Association (OWMA), Ministry of the Environment, Conservation and Parks, and waste management companies

IC&I Waste Management Service	# of Facilities	Comments
Collection of garbage, mixed recyclables and organics	n/a	15 companies provide collection services that cover the majority of IC&I non-hazardous solid waste. Of these 15 companies, nine collect all three core streams: garbage, recyclables and organics. This excludes companies that collect niche wastes, such as used oil. Additional companies may also collect small amounts of IC&I waste.
Transfer stations	~ 100-150	Approximately 150 waste management facilities in Ontario, which have “transfer” in their environmental compliance approval description, handle some IC&I waste. This excludes facilities that specialize in niche waste types, such as electronics or tires.
Sorting facilities – mixed recyclables	~25	Collectively, 12 companies operate about 25 sorting facilities (commonly called material recovery facilities) in Ontario that manage the majority of IC&I mixed recyclables. This includes facilities that sort and bale one or more types of mixed recyclables, including fibres (paper products and cardboard), plastic, glass, aluminum, steel, and other scrap metal. Most municipally owned material recovery facilities will also accept a small amount of IC&I materials.
Sorting facilities – construction and demolition	6	Collectively, five companies operate six sorting facilities in Ontario that handle construction and demolition waste.
Organics processing facilities	63	These privately owned facilities include compost, commercial anaerobic digestion, and on-farm anaerobic digestion facilities. There are an additional 49 publicly owned facilities, some of which may also accept some IC&I organic materials.
Commercial landfills	33	33 privately owned landfills in Ontario accept IC&I, construction and demolition, and residential waste. There are another 380 municipally owned landfills in Ontario, but most of these landfills accept primarily or exclusively residential waste.
Energy-to-waste facilities	2	—

Note: The OWMA estimates that about 25 to 30 companies handle the majority of all core IC&I waste services, and that the five largest waste companies in Ontario (GFL, Miller, Waste Connections, Waste Management and Wasteco) handle over half of Ontario's total generated waste. Collectively, these five companies operate about 60 transfer stations, about 10 sorting (material recovery) facilities, and two organic processing facilities that manage IC&I waste.

Appendix 7: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

1. Effective systems and processes are in place to drive sufficient industrial, commercial and institutional (IC&I) waste reduction and diversion to make a substantive impact on achieving the province's overall waste reduction and diversion targets.
2. The Ministry of the Environment, Conservation and Parks (Ministry) has timely, accurate and complete information about IC&I waste to inform the design and delivery of programs. Management information systems are effective in maintaining this information for decision-making.
3. The Ministry has effective oversight processes in place to promote and enforce compliance by the regulated IC&I establishments to reduce and divert IC&I waste.
4. Recyclable and compostable IC&I waste intended for diversion is being diverted from landfill.
5. The Ministry assesses whether its IC&I waste reduction and diversion programs can be more effectively and economically delivered by the Resource Productivity and Recovery Authority.
6. Meaningful performance measures and targets are established, monitored, compared against actual results and publicly reported. Corrective actions are taken on a timely basis when issues are identified.

Appendix 8: Additional Work Done to Perform the Audit

Prepared by the Office of the Auditor General of Ontario

During our audit, in addition to activities described in **Section 3.0**, we did the following.

As part of our audit work relating to IC&I establishments:

- We had discussions with three associations that represent segments of the IC&I sector—Retail Council of Canada, Canadian Manufacturers & Exporters, and Ontario Restaurant, Hotel & Motel Association—and obtained direct input from 10 businesses (retailers and manufacturers) to understand their waste management practices and the challenges they face to increase waste diversion.
- We reviewed waste data from a sample of 60 IC&I establishments to analyze the types and amounts of waste that establishments generate, divert and dispose and the range of diversion rates across regulated IC&I subsectors.

As part of our audit work relating to the waste management industry:

- We interviewed staff in the Ministry's Environmental Permissions Branch and Central Region to understand their practices with regard to approving waste management facilities and inspecting compliance with reporting requirements as they relate to waste diversion. We did not audit the Ministry's approval and oversight of waste management facilities, which was included in our Office's 2016 audit on Environmental Approvals.
- To understand the private business arrangements between IC&I establishments and waste service providers, we obtained and reviewed 40 confidential waste service agreements, including from the five largest companies operating across Ontario. We also obtained information from dozens of waste industry sources to determine the range of fees charged by waste management facilities for various waste services.

Other work included the following:

- We interviewed staff in the Ministry's Resource Recovery Policy Branch to understand their roles in developing IC&I waste policies and programs, and the status of work on IC&I policy currently being developed, including guidance to support the *Food and Organic Waste Policy Statement* and a proposal to expand the residential Blue Box program to include multi-residential buildings.
 - We reviewed the Resource Productivity and Recovery Authority's governance structure, operating documents and annual reports, as well as met with members of its executive management team, to understand their programs and processes to collect waste data and oversee waste diversion programs.
 - We reviewed available reports from municipalities regarding waste diversion in multi-residential buildings.
 - We reviewed all relevant policies, procedures and internal documentation and data maintained by the Ministry related to IC&I waste.
 - Lastly, we reviewed and identified best practices used in other jurisdictions in Canada (including British Columbia, Nova Scotia, Quebec and Prince Edward Island) and foreign jurisdictions (the United States, Scotland, Germany, England, the Netherlands and Japan) to improve IC&I waste management, and spoke with policy staff in Nova Scotia and Prince Edward Island.
-

Appendix 9: Factors Affecting the Economics of Recycling and Composting

Prepared by the Office of the Auditor General of Ontario

Factors Affecting Cost/Revenue	Examples
Costs	
Transport costs (vehicles, fuel, wages)	<p>Collection: a fee is charged for each collection trip.</p> <p>Distance: transport costs increase relative to distance.</p> <p>Weight: heavier materials increase transport (fuel) costs.</p>
Processing costs (labour, equipment, energy)	<p>Sorting: multiple materials mixed together must be sorted by type, often manually, before being processed, increasing costs.</p> <p>Contamination: items incorrectly placed in recyclable or organic loads can significantly increase costs (labour and equipment) to remove them.</p> <p>Type of material: the nature of the item determines the difficulty and cost (labour, equipment, energy) to process it into raw materials.</p>
Revenue	
Commodity revenue	<p>Market price: revenue for the end product is based on the material's market price, which fluctuates with the global commodity price and with local supply and demand (domestic buyers) for the material.</p> <p>Contamination and quality of materials: revenue is related to the quality of the end-product, which is affected by the incoming materials.</p>
Tipping (drop-off) fees	<p>Tipping fee: most facilities charge a fee to receive materials to cover their waste management costs (less revenue, plus some profit).</p>



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