



The impact of COVID-19 on curbside recycling systems in Quebec, Canada, the United States and Europe

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Background



The multiple impacts of the Covid-19 pandemic are unprecedented. The recycling industry has not been spared. This document is intended to provide an overview of the impacts, more particularly with regard to curbside recycling systems for recyclable materials. This overview was largely guided by the media watch that Éco Entreprises Québec (ÉEQ) carried out on the topic, in addition to consulting the websites of provincial governments and various organizations working in residual waste management. As the situation changes rapidly, this portrait will have to be updated over time.

Summary

Overall situation of the impact of COVID-19

A first: In most countries, curbside recycling is recognized as an essential service.

Contingency Plan

Municipalities and contractors who oversee collections and sorting have set up contingency plans to ensure the health and safety of employees and residents first and foremost. Waste and organic matter collection therefore tend to be prioritized, as recycling is less challenging in terms of sanitation.

Health and safety

Implementation of social distancing measures and hygiene guidelines in municipalities.

Difficulty with finding personal protective equipment (PPE) supplies.

Communications

Publication of messages indicating the correct way to dispose of contaminated materials (gloves, masks, wipes...).

Impacts on collected materials

Reduction in the volume of recyclables in the ICI sector (industries, businesses and institutions).

Volume increase in the residential sector:

- Various sources indicate an increase between 12% and 20% for recyclables.
- For waste, the increase is around 30%.

Workforce

In terms of human resource issues, MRF operators seem to be more severely affected than collectors:

- Fear of infection due to the virus' lifespan on various materials, and airborne contamination.
- Organizing operations is not always compatible with social distancing guidelines and insufficiently ventilated enclosed spaces.
- Employees with various limitations (physical and psychological).

This health crisis comes on the heels of an already challenging context created by the closure of the Chinese and Indian markets:

Prior to COVID-19, Quebec's materials recovery facilities (MRFs) were already dealing with the following issues:

- **Search for outlets** for materials that were previously exported, including paper, plastic bags and multi-layer containers.
- **Large volumes of bales stored**
- **Difficult financial situation** due to the decrease in the sale prices of materials and increase in sorting costs (e.g. extra equipment and sorters, slower sorting lines, increased hours dedicated to sorting).

The recycling industry - An important link in the supply chain

Several voices are rising to underscore the importance of the recycling industry in the supply chain. In light of the significant impact of the pandemic on supply sources for recyclables of commercial origin and deposit programs, **manufacturers are adapting and turning more towards materials from curbside collections materials from the residential sector.**ⁱ

Recycled materials represent 40% of the total demand for raw materials needed to manufacture consumer goods, according to the Bureau of International Recycling (BIR).¹



For example, Tori Beckett of Great Lakes Tissue stresses the importance of recycling programs for the company's operations. Their products are made from 100% recycled materials. According to Ms. Beckett, an interruption of recyclables collections would seriously compromise their production.ⁱⁱ

Overview of the Situation

1.0 In Quebec	2.0 In the rest of Canada	3.0 In the United States	4.0 In Europe
<p>Collection service is generally maintained</p> <p>Ad hoc service interruption in three MRFs operated by a NPO</p> <p>Partial operations in some MRFs</p>	<p>Collections maintained overall</p> <p>Major service interruptions for territories and maritime provinces.</p>	<p>Generally speaking, there is a desire to maintain the collection service</p> <p>Closure of certain MRFs and interruption of collection services</p>	<p>Different impacts in different countries</p> <p>Collections maintained overall</p> <p>Closure of MRFs</p> <p>Interruption of collection services</p>

Portrait by Region

In Quebec

Reminder – Chronology of events



Non-priority services and activities are brought to a minimum

In its Decree No. 223-2020 of March 24, 2020, the government orders the suspension, as of Wednesday, March 25 at 00:01, of non-priority services and activities.

- All companies producing inputs or raw materials necessary for priority services and activities must maintain their activities accordingly, while taking into account public health directives.

Residual materials management is an essential service

The [list of priority services and activities maintained](#) specifies that waste collection, as well as the management of recyclable materials and the deposit program, are among the essential services.



In order to respond to concerns on the part of municipalities and MRFs, RECYC-QUÉBEC, in collaboration with the MELCC (Ministry of the Environment and the Fight Against Climate Change), the MAMH (Ministry of Municipal Affairs and Housing) and other government contributors, worked with public health and workplace health and safety authorities to assess risks tied to residual materials management activities and put forward clear guidelines to the various clienteleⁱⁱⁱ. The INSPQ (Public health expertise and reference centre) also announced specific recommendations for that sector^{iv}.

Collection service is generally maintained

As part of its approach, the Quebec government declared the collection of recyclables and operation of MRFs as priority services, specifically, to uphold the Quebec supply chain for processors and recyclers.

Ad hoc interruption of services and partial operations in some MRFs

Municipalities want to avoid service interruptions and shipment of recyclables to landfill for the following considerations:

- **Environmental:** Desire to maintain public trust
- **Financial:** Eliminating materials is more expensive than recycling them
- **Hygiene:** Want to avoid recycling bins overflowing and having materials pile up in public areas
- **Operational:** Increase pressure on only one of the 3 channels, i.e. garbage collection

Various measures taken by MRFs

When MRFs were declared "essential services" by the Quebec government, they had to act swiftly and deploy considerable efforts to adapt and continue operations in order to respond to public health and workplace health and safety recommendations. Adequate protection measures had to be taken by MRF administrators:

- Employees must wear gloves, a protective respirator or face mask (e.g. a disposable half-mask with N95 filter), protective goggles and a protective coverall.
- Employers must inform their employees regarding hygiene measures to be taken and ensure that adequate protective equipment is used correctly by employees.
- Here are other examples of measures implemented by some MRFs^{vi}:
- Plexiglas shield between adjacent sorting stations located less than two meters apart.
- Replacement of open lockers with closed lockers for employees.
- Work stations disinfected at the end of each day.
- Systematic hand washing, installation of additional sinks, and length of each break increased.
- Designated places in dining and break rooms.
- Plexiglas shield between adjacent sorting stations located less than two meters apart.
- Meal and break rooms disinfected several times each day.
- Rental of trailers and tents to increase space dedicated to workers.
- Personnel divided into teams or shifts to reduce the number of people on site at a given time.
- Continual verbal interventions to foster distancing between workers and wearing of personal protection equipment.



Necessary adaptation of operations within MRFs

MRFs have adapted their operations to meet changes regarding materials, the decrease in the number of sorters and at sales markets, in particular by reducing sorting speeds, by adapting equipment, reducing quality control and increasing hours of operation.

Impacts on collected materials	↑ in quantities of refundable containers
	↑ in volume of materials from residential sector
	↑ in rate of contaminants
	↑ in volume of corrugated cardboard
	↓ in volume of paper
	↓ in volume of materials from businesses and institutions
Materials sale markets	↑ in sales prices for fibers
	↓ in sales prices for plastics and metals

Figure 1: Changes brought on by COVID-19

Conclusions regarding market outlets and market prices

The demand for fibre bundles has increased significantly, which had not happened since the Chinese markets closed. Between January and April 2020, fiber bale prices saw a sharp increase, as illustrated in the grid below:

	Before the market crisis- (\$/t)	January 2020 (\$/t)	Difference pre-covid	April 2020 (\$/t)	Difference post-covid
Mixed paper	96	-47	-155%	-5	+89%
Cardboards (OCC)	262	69	-74%	163	+136%
Newspaper	129	11	-91%	39	+255%

In order to respond to a strong demand for hygiene products, some plants who had difficulties getting a supply of recycled fibers, due in particular to the decrease in the volume of office paper, turned to local sources. The Sustana plant in Lévis started accepting multilayer containers from Quebec MRFs and plans to maintain that practice going forward^{vi}.

Other materials, such as plastics and metals, dropped sharply, but as tonnages are smaller, this will be largely offset by the increase in selling prices for fibers.

COVID-19 has shed light on how hard processing plastic bags and films is for MRFs. Indeed, bags and films do not have a well-established sales market and require a tremendous sorting effort. MRFs had to continue their operations with a reduced number of sorters and greatly reduced selling prices for plastics, which worsened the already difficult situation of sorting and

selling bags and films. While some MRFs continue to sort, others question whether some collection methods may be more appropriate to handle the characteristics of flexible plastics.

Status report by materials recovery facility

MRF managers were very visible in the media to inform citizens about protective measures implemented and to remind them that good sorting at the source is very important. By speaking out, they have helped maintain and strengthen citizens' faith in curbside recycling.

Materials Recovery Facility		Operations Status Report	DETAILS
Montréal area			
1	TIRU – Saint-Michel	Active – COVID-19 impact unknown	The operator, Rebutts solides canadiens (TIRU), has sought protection under the Companies' Creditors Arrangement Act (CCAA).
2	Lachine MRF (Operator: TIRU)	Ongoing commissioning period	This MRF is still going through a commissioning period. Its operator, TIRU, has sought protection under the CCAA. It is operating with reduced staff.
Montréal area			
3	Saint-Hubert MRF	Reopening	MRF operations now relaunched by Matrec/GLF. The contract for the Longueuil area took effect officially on April 20, 2020 ^{vii} .
4	TIRU – Châteauguay	Active – COVID-19 impact unknown	Before the COVID-19 crisis, this MRF had to absorb more materials following the closure of the Saint-Hubert MRF. Staff retention issues in a context where the owner and operator, Recyclage Papiers MD (TIRU), placed himself under the protection of the CCAA and had a hard time liquidating his bundles.
North Shore of Montreal and the Outaouais			
5	Tricentris – Lachute	Active –	Worker protection measures have been put in place, including daily disinfection by a specialized firm and management of incoming materials to create a delay between reception and sorting ^{viii} . Tricentris hired 20% more staff and was very present in the media coverage.
6	Tricentris – Terrebonne	Active –	
7	Tricentris – Gatineau	Active –	
8	EBI Environnement	Active –	EBI closed its ecocentres and took protective measures for workers ^{ix} .

Estrie			
9	Régie de récupération de l'Estrie	Active –	Protective measures have been implemented for workers. Modernization is happening currently to improve paper sorting, as the MRF had a very hard time liquidating its bales.
10	Sani-Éco	Active –	Protective measures have been implemented for workers. Apparently, the MRF is receiving 10 to 15% more materials due to COVID-19 ^x .
Centre-du-Québec			
11	Récupération Centre-du-Québec	Active –	Protective measures have been implemented for workers. ^{xi}
12	Gaudreau Environnement	Operations modified	The MRF doesn't have access to protective equipment for all of its personnel. Personnel has been reduced from 30 to 10 sorters. Before the COVID-19 crisis, there was a large accumulation of non-sorted bales outside the MRF ^{xii} .
Mauricie			
13	Récupération Mauricie	Operations modified	Adapted work sorting center that was closed at the start of containment due to structural repairs in its building. Operations resumed on April 14 at 33% of its usual capacity, with 25 employees working out of the usual 70; the MRF is now operating at 80% of its usual capacity due to COVID-19 ^{xiii} .
Chaudière-Appalaches			
14	Récupération Frontenac	Operations modified	After a period during which the MRF operated with a reduced workforce, all employees are now back to work. An evening shift has been set up. Several protection measures have been implemented for workers ^{xiv} .
Capitale Nationale			
15	Society VIA - Lévis	Operations resumed following shutdown	After a 3-day shutdown, Société VIA restarted operations to provide emergency service for its partners. A few days later, administrators deployed a temporary slower-paced night shift to process all materials as per contract terms. The team on site continues to maintain security measures to protect workers from COVID-19 risks, including through social distancing and rearrangement of common spaces.

16	Centre de tri de la Ville de Québec (Operator: Société VIA)	Operations modified following shut-down	After a two-day shutdown, Société VIA changed its operations by maximizing the use of equipment to reduce the need for labour. Material storage was originally planned, but was found to be unnecessary. Worker protection measures were implemented.
Bas-Saint-Laurent			
17	Société VIA – Rivière-du-Loup	Operations resumed following shutdown	After a one-day break, and following a week during which partially sorted fibre bundles were stored, the MRF was able to adapt its operations to process all of its paper ^{xv} . The MRF now operates two shifts with distancing and protective measures for workers.
18	Groupe Bouffard	Active –	Protective measures have been implemented for workers.
19	Récupération des Basques	Reopened after shutdown	The MRF restarted operations at full capacity after a shutdown of nearly one month. Materials stored during the shutdown of the MRF ^{xvi} are now being sorted during the evening shift.
Gaspésie - Îles-de-la-Madeleine			
20	Régie intermunicipale de traitement des matières résiduelles de la Gaspésie	Active –	No service interruption, no rise in absenteeism. No change in quantities or contaminants present in the materials collected. The slump in tourism could cancel the usual increase in materials collected during the summer.
Côte-Nord			
21	Ressource de Réinsertion Le Phare	Operations modified	The MRF now has two work shifts (70 hrs/wk instead of 40 hrs/wk) to allow for distancing between employees. It must manage an increased level of contamination in recycling bins ^{xvii} .

Saguenay - Lac-Saint-Jean			
22	Centre de tri de la Ville de Saguenay (Operator: Société VIA taking over from TIRU as of May 1)	Active –	Currently, the Centre de tri Saguenay MRF processes all incoming recyclables. Nevertheless, the situation is still under strict surveillance. Administrators continue to maintain the application of security measures to protect workers from COVID-19 risks, including through social distancing and rearrangement of common areas. In some cases, schedules have been adjusted to accommodate needs according to the various work shifts. The Ville de Saguenay has been actively involved in supporting its operators and implementing protective measures for workers.
23	Régie des matières résiduelles du Lac-Saint-Jean	Active –	Protective measures have been implemented for workers.

Collections impacted by intermittent service interruption in MRFs operated by Société VIA

Municipal organization	Collection Current situation	Alternate solution for recyclables management
Montmagny RMC	Intermittent interruption ^{xviii}	Asks citizens to store materials and avoid putting them in the trash. Service resumed April 6 th .
Charlevoix RCM	Maintained ^{xix}	Other MRF
Charlevoix East RCM	Maintained ¹²	Unknown
Les Basques RCM	Maintained ^{xx}	Storage
Bellechasse RCM	Maintained ^{xxi}	Other MRF
Lotbinière RCM	Intermittent interruption ^{xxii}	Citizens are asked to store materials and avoid putting them in the trash.
Nouvelle-Beauce RCM	Intermittent interruption ^{xxiii}	The RCM had announced that materials would be rerouted to its engineered landfill in Frampton, and buried.
Rivière-du-Loup	Maintained ^{xxiv}	Unknown

Tense situation for collectors^{www}

- Waste collection in Quebec has become huge to the point of causing a shortage of garbage collectors.
- So far, there have been no service interruptions, only collection delays.
- Industry leaders have come together to demand an emergency fund for the collection of residual materials be implemented from the Quebec government.
- Exemptions granted regarding the loading weight constraints during the thaw period and those relating to the drivers driving time do not apply to the collection of residual materials.

Potential surcharges to be considered

In general, both for collectors and MRFs, additional operating costs are tied to:

- **Staff** (e.g. additional shifts, evening bonus, etc.)
- **Accommodations on site** (e.g. trailer rental to increase the space in common areas for breaks)
- **Personal protective equipment** (gloves, goggles, masks, lab coat, disinfectant, etc.)
- **Increased cleaning / disinfection costs** for workplaces
- **Equipment maintenance**, more difficult to find parts and labour

Elements specific to the treatment of the material that also has an impact on costs:

- **Slower sorting lines**
- **Material storage** (incoming and outgoing)
- **Elimination of recyclable materials** (closure of MRFs and increase in the rate of rejections).

RECYC-QUÉBEC enhanced the support program for curbside recycling MRFs (Programme de soutien aux centres de tri de la collecte sélective) to help MRFs cover unexpected and necessary additional costs required to meet public health and workplace health and safety recommendations. An additional boost of \$20,000 maximum per MRF is possible for the next deposit date (July 31, 2020) in order to cover, partially or entirely, expenditures excluding taxes for protective equipment and measures to limit COVID-19 propagation risks.



In the rest of Canada

On April 2, 2020, the list of essential services of the Government of Canada included the collection and treatment of residual materials (waste, compost, recycling). While this list provides guidelines, provinces do have jurisdiction to determine their own essential services list, which may differ from that of the federal government. The status report presented in this section repeats some of the information provided by the Canadian Federation of Independent Business on its "COVID-19: Is your business an essential service?"^{xxvi} Web page to identify if curbside recycling can be recognized as such in the province or territory.

Provinces	Essential service declaration ^{xxvii}	Status Report	Details
Territories			
Yukon	Garbage and waste collectors (compost, trash and recycling) ^{xxviii}	Recycling services partially maintained	<p>Yukon declared a public health emergency on March 18, 2020. On April 2, the provincial government announced that it had prepared a non-exhaustive list of essential functions and services, but that the territory was not forcing all non-essential services to close.</p> <ul style="list-style-type: none"> - Closure of Raven Recycling and P&M Recycling, followed by reopening mid-May^{xxix}. - During the shutdown, Blue Bin Recycling continued collecting, but only paper items^{xxx}. - Ministerial order to suspend the application of penalties for loads destined for disposal and that contain cardboard^{xxxi}. - The Raven Recycling organization ran a survey asking how Whitehorse residents are managing their recyclables during the pandemic^{xxxii}.
Northwest Territories	(Residual materials management is considered neither an essential services, nor a category of company that must close)	Complete shutdown of services, followed by restart	<ul style="list-style-type: none"> - The Northwest Territories declared a public health emergency on March 18, 2020. - Financial support measure for collection and recycling centres during the COVID-19 public health emergency^{xxxiii}. - Reopening authorized as of May 15.

Western Canada			
British Columbia	Mgmt of waste/haz. residues materials ^{xxxii}	Collections maintained overall	<ul style="list-style-type: none"> - British Columbia declared a public health emergency on March 17, 2020. On March 26, the government announced that it had drawn up a list of essential services for the province during the COVID-19 pandemic, but the province did not force the closure of all non-essential services. - Some residential collection services suspended or reduced the hours of service^{xxxiv}. Recycle BC takes advantage of the containment period to launch a new awareness campaign so that residents become better “recyclers”^{xxxv}.
Alberta	Management of waste, including landfilling and processing of hazardous residues ^{xxxv}	Collections maintained overall	<ul style="list-style-type: none"> - Alberta declared a public health emergency on March 17, 2020. On Friday, March 27, the province said that all non-essential businesses must close immediately. - On April 28, an outbreak of COVID-19 was declared at Cascades Recovery Recycling Facility in Calgary^{xxxvi}. In spite of COVID-19 protection protocols implemented and PPE provided to workers on sorting lines, 22 out of 125 employees were infected and sorting had to be halted, and the facilities disinfected^{xxxvii}. Activities resumed gradually a few days later. - The city of Edmonton's MRF, operated by the Suez company, had to be closed from June 9 to 24 following an outbreak of COVID-19 that infected at least 13 employees^{xxxviii}.
Saskatchewan	Collection, disposal and recycling		<ul style="list-style-type: none"> - Saskatchewan declared a public health emergency on March 18, 2020. The list of essential public services and authorized private services has been in effect since March 26. Recycling was added afterward.
Manitoba	Waste collection and recycling companies ^{xxxix}		<ul style="list-style-type: none"> - Manitoba declared a public health emergency on March 20, 2020. On March 30, the province ordered the closure of all businesses and non-essential services from at least April 1 to 14.

East			
Ontario	The collection, transport, storage, treatment, disposal or recycling of all types of waste. ^{xi} ^{xli}	Collections maintained overall	<ul style="list-style-type: none"> - Ontario declared a state of emergency on March 17, 2020 and ordered all non-essential businesses to be shut down starting at 11:59 p.m. on March 24. - Due to service outages at their sorting center, municipalities, particularly in northern Ontario, were required to stop collection because they were unable to store the material.^{xlii}. <p>Delay for collections in the Ottawa area due to Covid-19 cases among the employees of the contractor responsible for collection.</p>
Maritime provinces			
New-Brunswick	(Residual materials management is considered neither an essential services, nor a category of company that must close) ^{xliii}	Major service interruptions	<ul style="list-style-type: none"> - New-Brunswick declared a public health emergency on March 19, 2020. Most Regional services commissions do not consider recycling to be an essential service. - Materials sorting has been suspended (materials are sent to landfills), but collection has been maintained in some regions. - Residential recycling to resume at the beginning of August in Restigouche.^{xliv}.
Nova-Scotia	Collection and disposal of solid waste, garbage and litter.		<ul style="list-style-type: none"> - Nova-Scotia declared a public health emergency on March 22, 2020. Companies and workplaces that are not considered essential or are not yet forced to shut down can remain open as long as a social distance of two meters between employees can be ensured. - March 27, 2020, announcement of the closure of the Strathlorne Recycling Facility. The collection of recyclable materials is therefore suspended for the county municipality of Inverness.^{xlv}.
Prince Edward Island	Waste and recyclable products collection ^{xlvi}	Major service interruptions	<ul style="list-style-type: none"> - P.E.I. declared a public health emergency on March 16, 2020, and ordered the close of all non-essentials services starting March 18. - The Island Waste Management Corporation (IWMC) will continue accepting and collecting residual materials, but offices and call centres will be closed to the public.^{xlvii}.

Newfoundl and and Labrador	(Residual materials management is considered neither an essential services, nor a category of company that must close) ^{xlvi}		<p>On March 17, 2020, the City of Saint John's announces that it will suspend its curbside collection service.^{xlix} Curbside recycling will resume on June 1.</p> <p>- Newfoundland and Labrador declared a public health emergency on March 18, 2020. On March 23, the province ordered the immediate closure of all non-essential businesses.</p>
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United States¹

Generally speaking, there is a desire to maintain the collection service

Closure of certain MRFs and interruption of collection services

1.0 Although it is considered essential, recycling is interrupted in several municipalities	2.0 Security is key, but workers are affected nonetheless	3.0 Residential volumes up, commercial volumes down
4.0 Refund programs interrupted virtually everywhere	5.0 Result: Major impact on the supply chain	6.0 China's "National sword" policy and the pandemic hit hard and create financial difficulties

The response to the coronavirus pandemic (COVID-19) has had a significant impact on the US recycling industry. For public health and safety reasons, at least 40 states have issued non-essential business containment and closure orders asking residents to stay at home for several weeks or even months. Many states, however, have recognized recycling as "essential". At least 10 states have specifically included recycling in their essential services lists, while most others have authorized further recycling under the aegis of public works or critical manufacturing services.

Nationally, when the *US Department of Homeland Security* issued its critical infrastructure workers guidelines, the *Institute of Scrap Recycling Industries* (ISRI) stated that the text ("*Workers necessary for the (...) processing and reprocessing of solid waste...*") recognized recyclers as part of the critical manufacturing workforce.

Apart from global orders or "essential" lists, dozens of curbside recycling programs have been temporarily suspended (as compiled by *Resource Recycling*ⁱⁱ, for example). Some MRFs cited the inability to comply with social distancing guidelines or the fear of contracting the virus by touching contaminated recyclables. Residents of many cities and towns, such as Miami, Florida, have been advised to include their recyclables with waste collection, while some programs have suggested keeping the materials at home until they can be accepted again. In some cities (e.g. Clearwater, FL), curbside recycling has continued, but materials have been diverted to landfills or energy recovery plants.

Thus, recycling actors in America and their sectoral associations hope that the next round of the federal stimulus plan tackling the impacts of COVID-19 will include their sector. While the

¹ Note: ÉEQ commissioned PSI (Product Stewardship Institute) to identify the impacts of Covid-19 on the various recycling programs in the United States.

National Waste and Recycling Association (NWRA) put forward a five-point proposal, which includes a call

for incentives to be put in place for the private sector to develop national recycling infrastructure, Recycling Partnership and others suggest that \$ 100 million be included in the next stimulus package to support recycling^{lii}. A letter^{liii} addressed to elected officials of the House of Representatives on April 16, and gathering a coalition of 14 organizations, are also supporting bill HR 5115 - *the Realizing the Economic Opportunities and Value of Expanding Recycling (RECOVER) Act* -, tabled last fall, so that it is included in any infrastructure development plan with a view to a post-COVID-19 revival. Under RECOVER, the Federal government would allocate US \$ 500 million in matching funds to municipalities, tribes and States for infrastructure improvements such as the modernization of MRFs and deposit facilities; the coalition estimates that this amount should be doubled, to US \$ 1 billion^{liv}.

For the time being, the *Federal Emergency Management Agency*, *US Department of Health and Human Services*, as well as other Federal partners, are distributing free masks to essential infrastructure workers in the U.S. and have asked the *Solid Waste Association of North America* (SWANA) to support them in the distribution of those masks in July^{lv}.

The status report presented in this section is taken from the study "Impacts of COVID-19 on U.S. Recycling Programs" commissioned by Éco Entreprises Québec at the Boston-based Product Stewardship Institute.

State/Region	Recycling, essential service	Details
California (CA)	Authorized, not stated	Major impact MRF closures; materials sent to landfills (Los Angeles) ^{liv}
Connecticut (CT)	Yes	Minor impact No closures or reductions announced.
Florida (FL)	Yes	Moderate impact Curbside collection suspended, materials incinerated (Miami).
Hawaii (HI)	Authorized, not stated	Minor impact No closures or reductions announced.
Illinois (IL)	Yes	Minor impact Minor program permanently cancelled. No large cities.
Iowa (IA)	Authorized, not stated	Minor impact Few minor programs; no large cities.
Maine (ME)	Authorized, not stated	Moderate impact Many minor program closures; no large cities. Important policy changes Executive decree 24 ^{lv} allows municipalities to account for recyclable materials sent as residual materials to power plants in the portion of their 50% target recycling rate, as prescribed by the State, until January 1, 2021.
Massachusetts (MA)	Yes	Minor impact Some minor programs; no large cities.

Michigan (MI)	Authorized, not stated	Major impact Many minor programs suspended; materials sent to landfills. No large cities.
New Hampshire (NH)	Authorized, not stated	Minor impact No closures or reductions announced.
New Jersey (NJ)	Authorized, not stated	Minor impact Some minor programs; no large cities.
New York (NY)	Yes	Minor impact Some minor programs; no large cities. <ul style="list-style-type: none"> - However, hundreds of the city of New York's waste collection employees have tested positive in the screening tests, and at least five have died^{lvi}. - Recycling awareness programs have seen a \$ 2.9 M cut in funding^{lvi}.
Oregon (OR)	Authorized, not stated	Minor impact Some minor programs; no large cities.
Pennsylvania (PA)	Yes	Moderate impact Curbside collection suspended / reduced (Philadelphia). Several service interruptions for minor programs.
Rhode Island (RI)	Authorized, not stated	Minor impact No closures or reductions announced.
Vermont (VT)	Yes	Moderate impact Partial closure of the largest program (Burlington). <ul style="list-style-type: none"> - The Department of Environmental Conservation has recommended temporarily lifting the ban on sending recyclables to landfill, and allowing carriers to not collect recyclables during the state of emergency so that carriers, many of whom are understaffed, will not need to have other trucks to pick up residual materials ^{lvii}.
North/West (7 States)	Authorized, not stated, not specified.	Minor impact Some minor programs; no large cities.
North/Midwest (9 States)	Yes in Minnesota (MN) Elsewhere: Authorized, not stated, not specified.	Moderate impact At least 21 programs suspended/interrupted: IN, KS, MN, MO, NB, OH, WI. No large cities. <ul style="list-style-type: none"> - The city of Cleveland, OH, let its curbside recycling contract lapse in April and did not do any collections since, as the only vendor offer received was deemed to be too expensive.

South/East (13 States)	Authorized, not stated	Major impact Many minor programs suspended; materials sent to landfills. - The city of New Orleans offered to suspend its curbside recycling program in order to help mitigate its growing budget deficit ^{lvii} .
South/West (5 States)	In Virginie, yes (WV). Elsewhere: Authorized, not stated, not specified.	Moderate impact At least 44 programs suspended/interrupted: AL, AR, GA, KY, LA, MD, MS, NC, SC, TN, WV. - In Baltimore, MD, an outbreak of COVID-19 that infected 15 employees in a landfill forced a rearrangement of the workforce and the suspension of the city's recycling services for three weeks as of June 9 ^{lviii} . In North Carolina, the Department of Environmental Quality recently launched a grants program to help support residential recycling programs that have been impacted by the COVID-19 pandemic ^{lix} .

Europe

On the basis of the contributions received from Member States, stakeholders and other departments of the European Commission, the Commission's Directorate-General for the Environment published, on 14 April, a document entitled "Waste management during the period coronavirus crisis"^{lx}, stating that

"In view of the importance of proper waste management to human health and the environment and taking into account risk assessments performed by scientific bodies and applicable risk management measures, the overall continuity of proper municipal waste management services, including separate collection and recycling, is to be safeguarded in line with EU law. (...) Separate collection is also essential for safeguarding the trajectory towards a more circular economy and the jobs and businesses that depend on secondary raw materials supply."

Similarly, in a resolution adopted on April 17, the European Parliament asked the Commission to take coordinated EU action to fight the COVID-19 pandemic and its consequences, and to propose a recovery and reconstruction which "is driven by the Green Deal and digital transformation, in order to restart the economy."^{lxi} The European Green Deal, launched in December 2019, included a new action plan for the circular economy, launched shortly before the start of confinement on March 11, and targeted different value chains, including packaging, plastics and food, water and nutrients.

As health is handled by Member States of the European Union, national directives on the management of residual materials vary from country to country.

Thus, a survey conducted from March 24 to April 1 among members of the *Extended Producer Responsibility Alliance*, with the participation of 15 members from 14 countries (including one outside Europe)^{lxii}, demonstrated that national contexts were similar while showing slight differences. Most of the countries were going through confinement (with greater openness in Scandinavian countries). Waste management was seen as an essential service in 10 of the 14 countries, and packaging curbside recycling continued in most cases, although challenges occurred in some countries.

Especially for plastics and paper / cardboard, several producer responsibility organizations (PROs) realized that the demand for recycled materials was likely to fall, while major industries had (almost) closed or sent their workers home (e.g. if they came from abroad).

Challenged for the operational system: among recyclers, inventory volumes continue to increase, while demand from major consumers of recycled materials, such as the automotive sector, has plummeted. Consequently, recyclers cannot accept incoming materials, which leads to an increase in stocks at MRFs and at waste pickers. In some countries, there is

already a shortage of ad hoc storage space, and the same problem may occur elsewhere sooner or later.

Consequently,

- Packaging waste must be incinerated or sent to landfill. Not all countries have the required facilities, especially for incinerating, which may be prohibited by law. Plastics from households, in particular, deteriorate rapidly, which creates dangerous situations.

- A temporary halt of curbside recycling is risky in terms of consumer behaviour. The public may believe that their residual materials will always be processed, whether or not the collections are separate. This risk to reputation is very difficult to shake and requires a lot of time and money.

Financial impact: These operational impacts could increase total costs directly in the system and force PROs to pay all additional costs. This risk of higher costs, along with the risk of declining incomes (due to a reduction in materials or an increase in the insolvency of producers), jeopardizes the recycling system, given the non-profit status of many PROs.

Most PROs who responded and could produce an estimate higher than their recycling yield believe that the national recycling targets of the EU and of individual countries (which are sometimes more ambitious than those of the EU) may not be reached, especially for 2020.

The status report presented in this section was guided by comments collected as part of the EXPRA survey, as well as by compiling done by the Association of Cities and Regions for the Sustainable Management of Resources^{lxiii}.

Country	Status Report	Details
Germany	Curbside recycling continues	On March 27, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety published a press release inviting citizens to avoid residual waste bin overflow and follow hygiene rules, waste prevention and residual materials sorting. For all German households where no one is infected and there are no suspected cases of COVID-19, the obligation to separate residual materials continues, and these will be processed as usual ^{lxii} .
Austria	Curbside recycling partially interrupted	In Upper Austria, curbside recycling (paper bin, bio bin, yellow bag bins) is interrupted. As before, only glass may be collected separately ^{lxiii} . In Vienna, recyclables collection continued normally.

Belgium	Door-to-door collection continues (priority to residual and organic waste collections)	<ul style="list-style-type: none"> - The Federal Ministerial Decree^{lxiv} on emergency measures to limit the spread of COVID-19 of March 23, 2020 specifies that "businesses, companies and private and public services that are necessary to protect the vital needs of the Nation and needs of the population, are as follows: <ul style="list-style-type: none"> - Waste collection and processing services... "Door-to-door waste collection means that citizens do not have to travel to dispose of their waste by other means, which allows less human contact, as prescribed by health authorities. The door-to-door collection method and via voluntary collection points (bubbles, buried containers, etc.) therefore has priority over collections in MRFs and direct contributions in resource centres or second hand shops." - The various residential waste collections (residual, organic, paper-cardboard, glass and organic, if applicable) will be maintained provided that collection staff is sufficient. Otherwise, priority will be given to the collection of residual waste and organic waste (excluding green waste)^{lxv}. - According to the EXPRA, it is difficult to find enough employees to carry out curbside recycling.
Spain	Only automated sorting → curbside recycling continues	<ul style="list-style-type: none"> - Residual materials management is considered an essential service. - Curbside recycling continues, but only facilities with automatic sorting can sort recyclable materials from waste, which will have an impact on quality and costs. As far as the recycling bin is concerned, all the installations are functioning (85% sorted in automatic installations). - Curbside recycling (organic materials, paper and cardboard, glass, light packaging) is reduced by 20% on average in Catalonia, compared to a normal month (72,000 tonnes compared to 89,000 tonnes).
Finland	Curbside recycling continues	<p>On March 20, the Ministry of the Environment and the Ministry of Social Affairs and Health issued recommendations to ensure effective waste management despite the coronavirus:</p> <p>According to current information, the situation will not lead to changes in current household sorting practices. The Ministry of the Environment and the Ministry of Social Affairs and Health have issued recommendations to waste management operators to ensure the smooth and safe management of waste under exceptional circumstances^{lxvi}.</p>

France	Curbside recycling partially interrupted	<p>On March 20, the Ministry for the Ecological and Inclusive Transition sent a letter^{lxvii} to various stakeholders, reminding them that every effort had to be made, in accordance with health guidelines to: (...)</p> <ul style="list-style-type: none"> - maintain, for as long as possible, curbside recycling (packaging, paper, cardboard, glass) in households. - maintain, for as long as possible, MRF activities for household waste collected separately (...). <p>Maintaining curbside recycling and sorting of household waste collected separately will also feed supply chains for other industries.</p> <ul style="list-style-type: none"> - In its weekly report, CITEO, the organization of Extended Producer Responsibility for producers of household packaging and paper, reported that on April 1, 2020, 73 MRFs out of 177 had ceased their activities, in particular for the security of their centre (freeing up stocks to limit the risk of fire), and 101 centres had confirmed the continuity of operations. Nineteen of them, however, had reduced activity compared to the usual, mainly due to a drop in incoming quantities following a halt of curbside recycling, but also to a decrease in the flow of production attributable to employee distancing rules^{lxviii}. As of May 7, 2020, the theoretical available capacity of sorting centers was 90%, the collection of glass had practically returned to normal and the collection of light packaging (plastics, cardboard, metals) and paper had been maintained in 88% of communities^{lxix}. - On April 27, the High Council for Public Health (HCSP) published a notice on the risk of airborne (fine particles suspended in the air) transmission of the coronavirus, a risk considered to be minor, if not negligible, prior to this date. The contents of this notice involve many possible consequences for the management of residual materials, including the fact that sorting cabins in modern centres, where the air is regularly renewed and where air flow is supposed to push dust on conveyors, probably present a lower risk of airborne transmission than some closed rooms^{lxx}.
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Great-Britain	Curbside recycling continues with little disruption	In Great-Britain, management of residual materials is handled by municipalities, and the Association of Directors of Environment, Economy, Planning and Transport (ADEPT) publishes the results of surveys on residual materials carried out by different networks (the Local Authority Recycling Advisory committee (LARAC), Local Government Association (LGA) and National Association of Waste Disposal Officers (NAWDO) to understand the impacts of COVID-19 on waste management services throughout England. As the weeks pass during the ongoing crisis, it appears that about three out of four recycling collection services continue to operate normally (a relatively constant statistic). Minor disruptions have been observed for recycling in roughly 20% of locations where the service is provided, whereas service shut-downs count for a mere 1% of cases ^{lxxi} .
Italy	Curbside recycling continues if possible	<ul style="list-style-type: none"> - Curbside recycling continues if possible. For materials that had to be recycled outside of Italy, an exemption was requested to use other facilities. - Sorting and recycling were designated as essential services by decree? - On April 25, the Istituto per la Finanza e l'Economia Locale (IFEL) published a notice recommending that municipalities "grant a reduction in waste dues to companies that had to stop or reduce their activities during the COVID-19 crisis, as this situation has resulted in a drop in the production of residual materials. Reductions in waste dues can be financed from municipal budget revenues, with a resolution to be adopted no later than June 30, 2020. Finally, the note specified that it would be appropriate to postpone the payment deadline for the categories most affected by compulsory closures or the economic crisis"^{lxxii}.
Luxemburg	Curbside recycling continues	<ul style="list-style-type: none"> - Collection schedules for blue bags/green Valorlux are unchanged so far^{lxxiii}. - Recyclable materials such as paper / cardboard, glass, used clothing and used batteries can be deposited in the containers at one of the 57 public drop-off points ^{lxxiv}.
Norway	Curbside recycling continues	Challenges: Meeting higher recycling targets in spite of the crisis and devaluation of the Norwegian krone.

Netherlands	Curbside recycling continues	The management of residual materials is considered an essential sector, and both curbside recycling and sorting activities continue. There are concerns about recycling, as the market is falling due to a lack of customers (the automotive industry, for example).
Czech Republic	Curbside recycling continues	Curbside recycling and all installations are working. Even the problematic situation with paper has improved due to the increased demand from Germany and Austria for good quality recycled paper.
Sweden	Curbside recycling continues	Sweden has not had a confinement period and the management of residential residual materials continues to comply with public health requirements ^{lxxiii} .

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