



Discussion Paper:

Encouraging the Circular Economy in Nova Scotia

*Developing a Strategic Plan to Reduce Waste
to 300 kg per person per year by 2030*

Purpose of This Discussion Paper

Nova Scotians are naturals when it comes to growing a circular economy, which is the term we use to describe an economy with no energy or materials wasted. It's common sense not to throw away valuable resources and products. Instead, we reuse and repurpose them to get their maximum value, and then, at the end of their service life, recycle them to make new products. A measure of our success in growing a circular economy is how little we throw away in our landfills. But we can do even better!

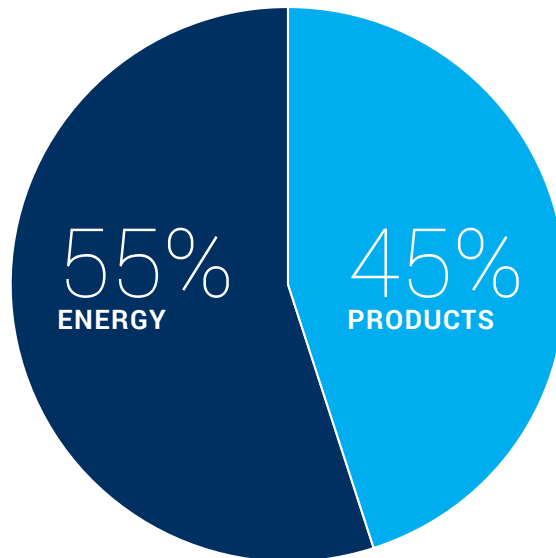
The Government of Nova Scotia is consulting the public on ideas to encourage the province's circular economy and reduce waste. We want your input!

The Province has set a solid waste disposal target of 300 kg per person per year by 2030 in the [Environmental Goals and Climate Change Reduction Act](#) and has committed to developing a strategic plan by the end of 2023 that shows how we will reach this target. We want your input on what should be included in this strategic plan. The purpose of this discussion paper is to support you in providing this input. It provides the background, policy ideas and prompting questions to help you tell us how best to achieve our waste diversion goal.

Introduction

Reducing waste and growing our circular economy supports more than 4,000 existing jobs in the sector, creates new jobs, improves economic efficiencies, preserves valuable resources, lessens economic and environmental impacts associated with disposal, and reduces greenhouse gases to help mitigate climate change. In fact, 45% of greenhouse gases are associated with products (including packaging) as demonstrated by the Ellen MacArthur Foundation below.

Completing the Picture: Tackling the Overlooked Emissions



Total Current Greenhouse Gas Emissions

Adapted from Ellen MacArthur Foundation report, 'How the Circular Economy Tackles Climate Change' 2021 Key Findings.

Nova Scotia has been a leader in solid waste resource management. Currently, the waste disposed in Nova Scotia each year is the equivalent of approximately 400 kg of waste per person. This includes residential and business waste, as well as waste from construction and demolition (C&D). Our disposal rate is approximately 45% lower than the Canadian average. We recognize that reducing waste by growing the circular economy is a key component of combatting climate change, as well as protecting our valuable resources and supporting green jobs. To continue to show leadership and to promote and measure our progress towards a more circular economy, the Province has set a disposal target of 300 kg per person per year by 2030. This is an approximate 25% reduction over our current per-person disposal rate.

Some examples of Nova Scotia's actions to-date that have positioned it as a leader in waste diversion include:

- Over 95% of Nova Scotians receive curbside collection of organic and recyclable materials.
- There are disposal bans on almost thirty items.
- Nova Scotia devotes significant funding to municipal diversion programs and education.
- There is significant diversion of construction and demolition (C&D) materials in some areas of the province.

While Nova Scotia is still seen as a leader in solid waste management, we are lagging in certain areas, for example in the area of extended producer responsibility (EPR). To continue to be a leader, we need a plan.

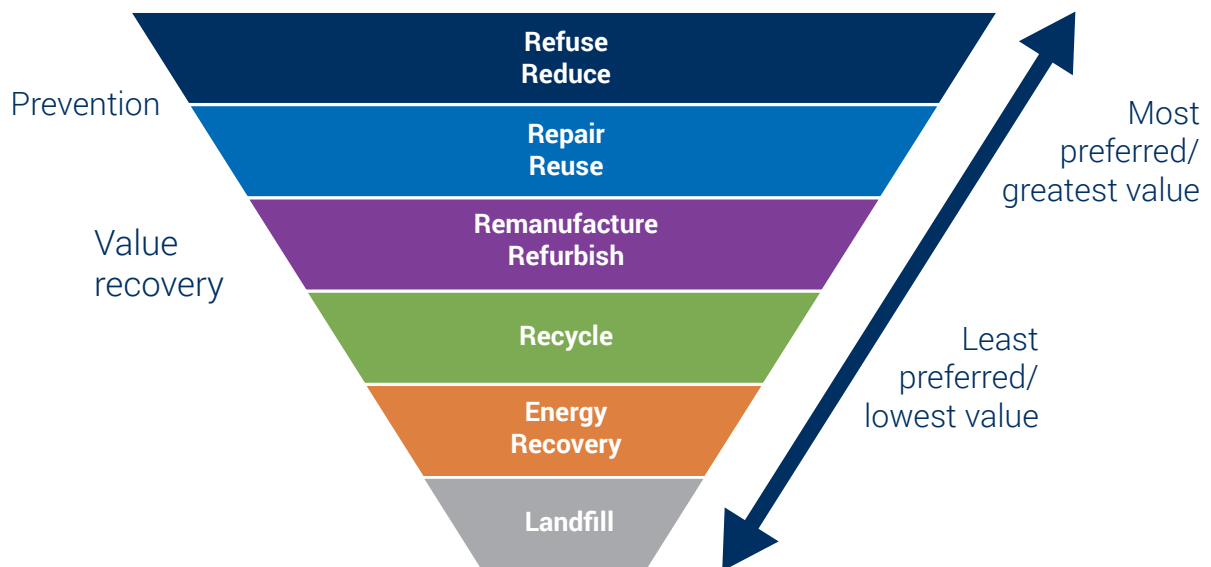
Over the past 25 years, the Province has had an ongoing dialogue with Nova Scotians about reducing waste. We have a strong understanding of the major issues faced by Nova Scotians and continue to learn from our own successes and challenges, and from the successes and challenges of other jurisdictions throughout Canada and around the world. We are now ready to hone-in on specific waste diversion approaches.

We want to hear from you on how Nova Scotia should reduce waste disposed in our landfills to no more than 300 kg per person per year.

Current Waste Disposal in Nova Scotia

The Waste Hierarchy

As you explore the information and ideas presented in this paper, it may be helpful to consider the waste hierarchy. The waste hierarchy is used broadly across North America, including in Nova Scotia, as an approach to maximizing the benefits of reducing waste. It is presented in the graphic below.



Waste Management Hierarchy: Guidance to facilitate consistent extended producer responsibility policies and programs for plastics, Canadian Council of Ministers of Environment, 2022

It is important to note that the waste hierarchy is based on energy efficiency. In other words, approaches to waste reduction higher in the hierarchy represent the most significant opportunities to reduce energy inputs into manufacturing products and packaging and reduce energy used when managing the products and packaging at their end-of-life.

What do we dispose of now?

Approximately 70% of solid waste disposed in Nova Scotia is municipal solid waste (i.e., garbage) and 30% is C&D debris, which is generated from construction and demolition work. Solid waste in Nova Scotia is disposed in one of two places: municipal solid waste (MSW) landfills or C&D debris disposal sites. MSW landfills receive both municipal solid waste (i.e., garbage) and C&D debris. C&D debris disposal sites receive only C&D debris. The information below is presented to reflect these two distinct disposal methods.

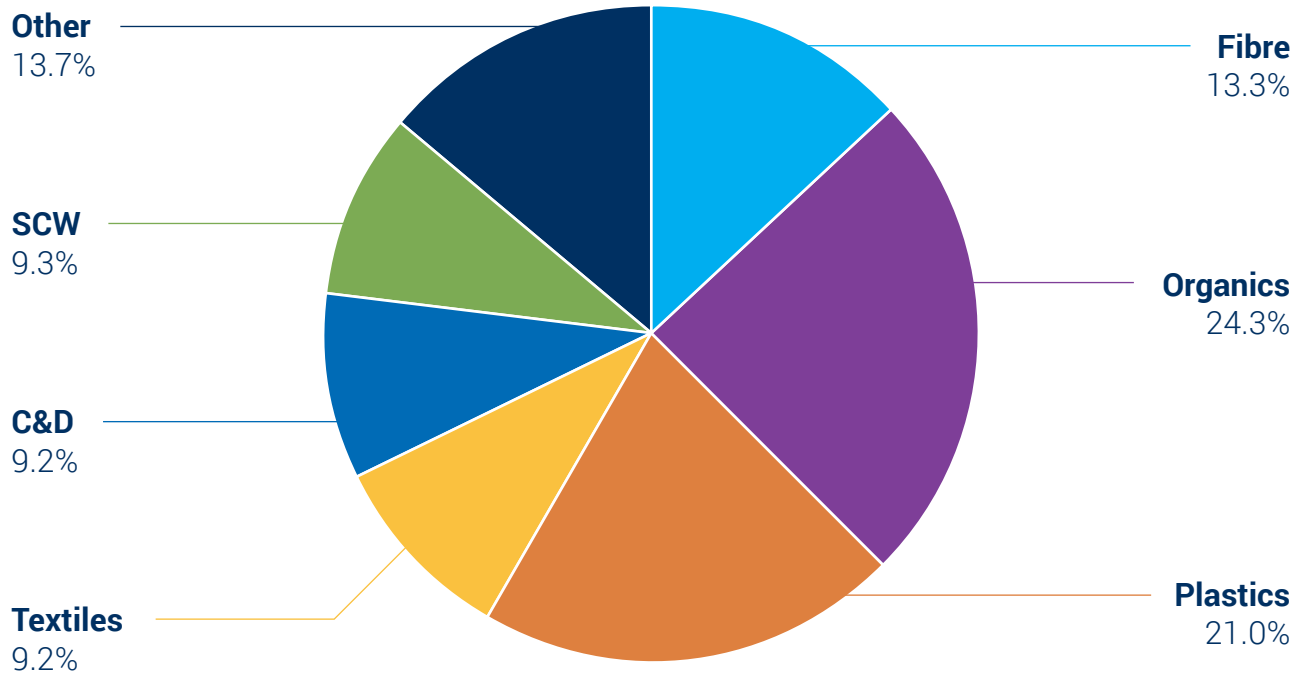
MSW Landfills

The below table and pie chart show the main categories of materials currently disposed in Nova Scotia's MSW landfills, with some examples of materials for each category.

Organic Materials	Plastics
<p>Examples:</p> <ul style="list-style-type: none"> • Food • Leaf and yard waste • Soiled paper products 	<p>Examples:</p> <ul style="list-style-type: none"> • Packaging <ul style="list-style-type: none"> - Film Product wraps, food bags, baggies, etc. • Composites and laminates <ul style="list-style-type: none"> - Rigid Laundry detergent bottles, take out trays, food containers, etc. • Products <ul style="list-style-type: none"> - Laundry baskets, toys, furniture, trinkets, etc.
Textiles	Paper Fibre
<p>Examples:</p> <ul style="list-style-type: none"> • Clothing • Footwear • Linens 	<p>Examples:</p> <ul style="list-style-type: none"> • Cardboard • Newsprint • Books and magazines • Printer paper
Special Care Waste (SCW)	C&D Debris
<p>Examples:</p> <ul style="list-style-type: none"> • Disposable diapers • Other sanitary and health products 	<p>Examples:</p> <ul style="list-style-type: none"> • Wood (excluding treated timber) • Asphalt shingles • Wallboard • Flooring

Province-wide Landfill Disposal Breakdown

Residential+Industrial/Commercial/Institutional Sectors, 2017



Divert NS 2017 Waste Audit

Notes:

The "Plastics" category reflected in the above chart does not include plastics included in the smaller categories of Other, SCW, C&D and Textiles. When these other plastics are included, plastics make up 30% of waste disposed in MSW landfills. C&D makes up 9.2% of the waste disposed in MSW landfills; this is in addition to C&D disposed in C&D debris disposal sites.

C&D Debris Disposal Sites

The following are estimated to be the most significant categories of materials that are disposed in Nova Scotia's C&D debris disposal sites:

- Wood
 - Clean, composite and painted/coated
- Wallboard
- Asphalt shingles

Developing a Strategy to Reduce Waste Disposal in Nova Scotia: Potential Actions and Policy Approaches

Many of the ways to reduce our waste are well understood and could be adopted soon, while others need more investigation before we consider adopting them. The Department of Environment and Climate Change (the Department) has identified the following policy approaches as high-potential options for helping Nova Scotia to achieve its solid waste disposal goal of 300 kg per person per year:

- Extended Producer Responsibility (EPR) programs
- Implementing Targets for Disposal bans
- C&D diversion
- Education and awareness initiatives
- Repurposing municipal diversion credits
- Financial incentive programs
- Procurement strategies
- Energy recovery from waste

Each policy approach is discussed in more detail, below. Feedback related to each policy approach will help us to identify the most effective ways to reduce waste and better use these misplaced resources. You can choose which policy approaches to comment on based on your knowledge or experience in that area.

Feedback can be provided through the online feedback portal or by emailing SWRM@novascotia.ca by September 29th, 2023.

Extended Producer Responsibility Programs

Extended Producer Responsibility (EPR) is a policy approach that requires producers (i.e., brand owners, importers, manufacturers) to manage and pay directly for the recycling or other end-of-life waste management of their post-consumer products. In addition to shifting the costs of recycling from municipalities and taxpayers, EPR programs give industry an incentive to design products that reduce waste and end-of-life management costs and enhance the ability to recover and recycle materials. EPR is a proven and successful approach to the end-of-life management of wasted resources. As an example of an EPR program, Nova Scotia required electronics producers to develop a plan to collect and recycle end-of-life electronics in the province. Producers responded successfully and now divert thousands of tonnes of waste from landfills every year and recover raw materials that are then reintroduced back into the circular economy and used to make new products. There can be other benefits of EPR programs, too. For example, managing hazardous materials such as mercury and other metals through an EPR program keeps them out of Nova Scotia's landfills and avoids any health and safety concerns that can arise if these materials are handled with other mixed waste.

The Government of Nova Scotia has committed, through the [Environmental Goals and Climate Change Reduction Act](#), to encourage the growth of the circular economy by expanding the use of EPR. Nova Scotia already has successful EPR programs for used paint, used oil and glycol (and their containers), and many types of electronics. We have recently regulated EPR programs for packaging, paper products and packaging-like products (PPP), which includes the materials you place in your residential blue bag, as well as batteries, lighting products, and household electronics (e.g. hair dryers, toasters). We need to know what other EPR programs would best assist us in getting to our 300 kg per person per year goal. Because our overall goal for solid waste is based on weight, we may want to focus on heavier, and/or high-volume materials.

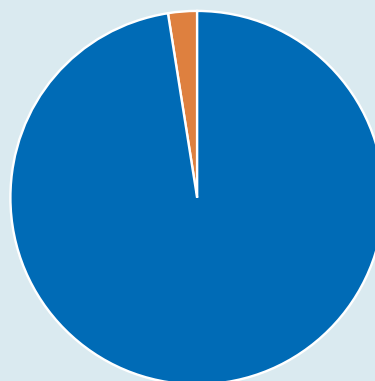
Here are some materials that fall under EPR programs in other jurisdictions:

- Carpeting
- Textiles (clothing, household linens, etc.)
- Mattresses/box springs
- Small propane cylinders
- Medical sharps (mostly residential and veterinarian)
- Flammables
- Additional electronics including toys, tools, etc.
- Agricultural plastics
- Marine flares

What's the difference?

Textiles currently account for approximately 6% of the material disposed of in Nova Scotia.

If we can use EPR to reduce that to 3%, we could reduce our disposal rate to about 390 kg/person/year.



Other items that could be targeted with EPR programs but have not yet been adopted by other jurisdictions include:

- Plastic and metal household products that can be collected with curbside recyclable materials (e.g., laundry baskets, buckets, planters, pots/pans, etc.)
- Furniture
- Cat litter
- General non-electronic toys
- Disposable diapers
- Laminates and other flooring containing plastic
- Certain single-use plastics not covered by packaging regulations or the federal government single-use plastics ban¹

¹ The federal government has prohibited the manufacture, import, sale and eventually export of checkout bags, cutlery, foodservice ware made from or containing problematic plastics that are hard to recycle, ring carriers, stir sticks, and straws (with some exceptions). These regulations apply in Nova Scotia.

Questions to consider:

- Currently, the Province applies EPR to electronics, paint and used oil and used glycol (and their containers), and has recently regulated EPR for more electronics, batteries and lighting as well as curbside recycling. Are there other materials, products, or sectors you think would be well-suited to being part of an EPR program? OR materials or products that should not be managed under an EPR program? Why or why not?
- Would we benefit from developing a strategy or action plan to introduce more EPR programs over time?

Implementing Targets for Banned Materials

Nova Scotia has banned many materials from disposal in landfills including materials that are regulated under an EPR program. While the disposal bans have been effective in increasing diversion of these materials, significant quantities of these materials are still being disposed at landfills. Currently 30 to 45% of the material being disposed in MSW landfills across Nova Scotia is banned materials.

While it would be impractical to insist on no banned materials arriving at a MSW landfill, our previous landfill audits have given us enough information for us to be able to set a reasonable target for how much of these banned materials are disposed of at landfill. As we get better at keeping banned materials out of our landfills, we could continue to lower the target until we reach what everyone might agree is the best we can do.

The Department of Environment and Climate Change issues operating approvals to landfills and can direct them to take steps to meet the banned materials disposal target. There could be audits to ensure we are making progress and that the landfills and transfer stations are held accountable to their plans.

The Canadian Council of Ministers of the Environment released a study that included best management practices to help stakeholders maximize the performance of disposal bans. Some best management practices highlighted by the study are:

- Clear bag programs for residential and commercial waste
- Curbside inspections and rejection
- Contracts signed between large waste generators, haulers, transfer stations and landfills committing them to certain actions

- Disposal ban education and outreach to businesses and residents
- Random inspection of business waste before collection by haulers and at the tipping area (transfer station or landfill)
- Requirements for landfill and transfer stations to have a plan outlining tools they will use to decrease the disposal of banned materials

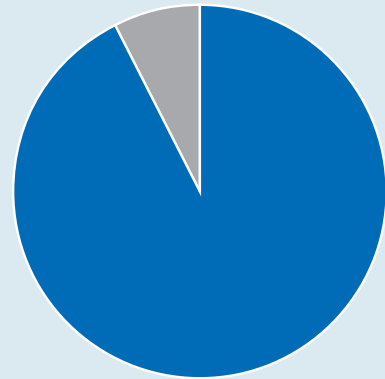
Questions to consider:

- What do you think about the idea to set a target on the proportion of total materials sent to landfill that are banned materials? Do you think this is an effective way to lower our per-person waste disposal rate?
- Nova Scotia already bans several types of materials from being disposed of in landfills (**these are listed in [Schedule B of the Solid Waste-Resource Management Regulations](#)**). Do you have any other ideas for waste materials to ban from landfill disposal? Explain why you think these materials are suitable for a ban.

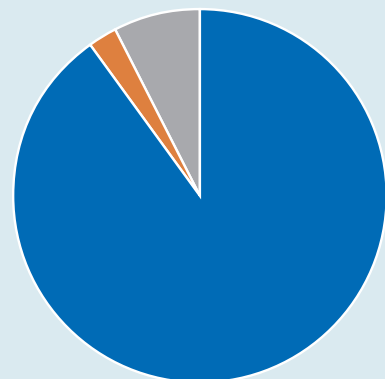
What's the difference?

Currently about 40% of waste disposed at MSW landfills is banned materials.

If we reduce that to 30%, we could reduce our disposal rate to about 370 kg/person/year.



If we reduce the percentage of banned materials in landfill to 30% and also reduce the amount of textiles to 3% by implementing EPR, our waste disposal rate could be reduced to about 360 kg/person/year.



Construction and Demolition (C&D) Diversion

Waste produced from construction and demolition (C&D) activities is generated in large quantities in the province every year. C&D debris includes waste material like wood, wallboard, asphalt shingles and plastic construction products (flooring, cabinets, fixtures, window, and door frames, etc.). C&D debris accounts for approximately 30% of the solid waste disposed each year in Nova Scotia (this includes the C&D debris disposed of in MSW landfills).

C&D diversion approaches currently applied in Nova Scotia and elsewhere include:

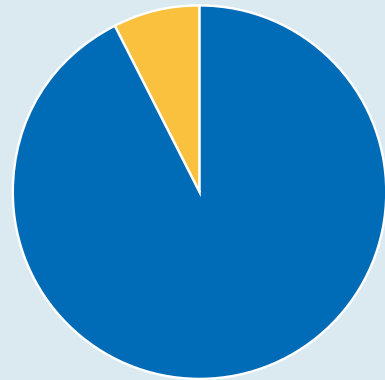
- increasing salvage and reuse in the construction industry
- improving markets for recycling or repurposing (e.g., using C&D materials to make other materials like animal bedding, asphalt pavement, amendment to compost or for energy recovery)
- municipal C&D bylaws
- municipal permitting of renovation, construction, demolition

Another approach for diverting C&D waste used in other jurisdictions is landfill disposal bans.

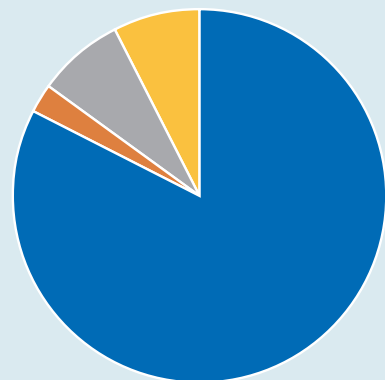
Meaningful progress has been made in some parts of the province to divert large quantities of clean wood, wallboard, and asphalt shingles from disposal. These are valuable materials with options for processing and reuse. Markets for these materials have been developed over many years and Halifax Regional Municipality (HRM) is a leader in this area. They adopted a strict municipal C&D bylaw that requires 70% diversion of C&D debris.

What's the difference?

If we improved C&D management in Nova Scotia to allow 25% more diversion, we could reduce our disposal rate to about 370 kg/person/year.



In concert with improved textile management and disposal ban compliance, we could reduce the disposal rate to 330 kg/person/yr.



Other municipalities and Divert NS have also contributed significantly to increased diversion through applied research and the creation or adoption of new or existing approaches (e.g., adding waste wallboard to compost, using wood waste as a bulking agent in compost, processing asphalt shingles into an additive for asphalt pavement and a fuel). In addition, some C&D sector companies have found innovative ways of reclaiming materials during demolition and renovation projects to be repurposed in new construction.

Questions to consider:

- Are there specific C&D diversion approaches you think Nova Scotia should focus on? For the options that you support, how can we promote the adoption of these options across the province?
- Can brand owners (i.e., producers of construction materials) play a role in diverting C&D waste? If so, how?

Education and Awareness

Education and awareness are critical to the success of any waste diversion program. Currently, municipalities, Divert NS, and stewardship agencies (such as the Electronic Products Recycling Association and Used Oil Management Associations of Canada) do most of the education on waste reduction and diversion in the province.

Education and awareness take many forms and often need to be customized based on the material targeted, who is delivering the messages, and the audience. The focus of education and awareness ranges from the generic environmental benefits of waste diversion to instructions on how to divert a specific item.

For example, Divert NS supports education and awareness on a variety of topics. They create educational supports for the classroom that cover topics ranging from food waste to ocean plastics to the impact of landfills on climate change. They also fund municipal waste educators in each region of Nova Scotia who are dedicated to supporting diversion in their area. On the other hand, a stewardship agency provides very specific education and awareness to support the success and uptake of their program.

There is so much information to provide and it can be challenging to communicate in a simple way. A key objective is using resources wisely to maximize outcomes.

Questions to consider:

- What elements of waste disposal education and awareness in Nova Scotia do you think could be improved?
- Do you have any ideas for effective education and awareness approaches that Nova Scotia is not doing that you think could work in Nova Scotia? Please explain why you think these approaches would be useful in the Nova Scotia context.

Repurposing Municipal Diversion Credits

Divert NS provides municipalities with approximately \$5 million in funding, on average, every year to assist them in paying for the diversion of waste from disposal. This diversion credit system was originally set up to assist municipalities with the adoption of new diversion programs, particularly for materials newly banned from disposal in landfills. This funding for the diversion credit system is generated through the beverage container deposit refund program.

As new EPR programs are adopted, particularly for blue bag materials (packaging, paper products and packaging-like products), some municipal solid waste operations will be paid for by those who produced the packaging and products in the first place (the brand owners), saving municipalities millions of dollars per year.

This presents an opportunity to re-envision how to use the existing diversion credit funds. Diversion credit funding could be used to accomplish elements of the plan to achieve a 300 kg/person/year disposal rate. For example, funding could be provided to:

- assist municipalities in adopting new C&D diversion by-laws
- increase curbside or business education and compliance
- help municipalities undertake work to reach and surpass banned materials targets
- improve composting infrastructure

Questions to consider:

- Above we list examples of ways municipal diversion credits could be used to increase diversion rates. Do you support these ideas? Why or why not? Are there any other areas you think these credits could be applied to that we are missing? Please explain.
- How could a new diversion credit model be structured to be most fair?

Financial incentives and disincentives

Another way to increase waste diversion is to use financial tools. There are several types of financial incentives and disincentives that have been used locally and globally for this purpose. While financial approaches can be highly effective, they come with an increased cost burden and it is important that they are designed appropriately. Here are a few examples of financial tools that could be used for waste diversion:

- Charging higher fees to dispose of waste, which deters the generation of waste in the first place
- Providing incentives for businesses that provide services related to repairing, reducing, reusing, recycling and composting materials
- Developing collective approaches for multi-unit residential housing, like apartments and condominiums. For example, municipalities could pay for the cost to collect organic materials from all apartments. Recyclable (blue bag) materials would be paid for by brand owners under EPR programs. Only waste collection and disposal would be left to the apartment owner to cover, which would provide a direct economic incentive to divert.
- Charging fees for disposable items such as retail bags (paper), disposable cups, etc. Funds collected can be used to support waste diversion programs.

Questions to consider:

- Do you want to see Nova Scotia implement more financial incentive/disincentive programs related to waste management? Why or why not? Please share examples of specific programs you would like to see implemented.

Procurement Strategies

There are opportunities for changing the way organizations procure goods that can result in increased waste diversion. Governments and the private sector, for example, can focus more on purchasing products with recycled content, or products that can be reused or repaired. We already have many products with recycled content available for purchase in Nova Scotia or that could be repaired and reused locally. Currently, the federal government is considering the idea of mandatory recycled content in certain products. This initiative will help create markets for diverted materials. Examples of products available in Nova Scotia that incorporate recycled content include:

- Paper with recycled content

- Soil amendment containing compost, including compost containing wallboard
- Mulch made from waste wood
- Asphalt pavement produced using asphalt shingles
- Aggregate (e.g., construction sand, gravel) made from recycled glass
- Plastic products containing recycled plastics
- Carpet from producers that recycle the old carpet
- Recycled paint

Organizations could prioritize purchasing products from these categories that are made from recycled content.

Questions to consider:

- Are you aware of any other procurement-related strategies that could contribute to a circular economy in Nova Scotia?
- Are you aware of any barriers to adoption of procurement policies by government and the private sector? How can we overcome these barriers?
- Do you have any ideas for materials do you think should be targeted first for addressing through procurement strategies?

Energy Recovery from Waste

Energy recovery is one way to extract value from wasted resources, as shown in the waste hierarchy above. Part of the reason energy recovery is on the waste hierarchy is that some waste materials, by their very nature, would require significant effort to separate or clean to prepare them for the recycling market or composting. As such, if options to reduce or reuse these items are limited, and recycling and composting options are incredibly challenging, the creation of energy from these materials may be the best diversion option.

Energy recovery takes a variety of forms. The most well-known is mass-burning garbage (i.e., incineration) to produce electricity. While this is one option, other more efficient and productive processes exist. For example, Charlottetown has a mass-burn incinerator connected to a district heating system whereby excess heat from the process of creating electricity is used to heat homes and businesses. This significantly increases the efficiency of the overall process and replaces heat that is most often generated from fossil fuels. Another example is the Lafarge cement kiln in Colchester County that uses processed

asphalt shingles and plastics (materials that must meet their fuel specification) to replace coal and other hydrocarbons as an energy source to produce cement. Similarly, some waste wood is used by Nova Scotia Power as a fuel at its operation in Queens County and Sustane Technologies Inc. is working on a system that uses indirect heat (not incineration) to convert garbage directly to liquid and solid fuels.

The creation of any energy from waste results in some level of emissions. For this reason, these facilities require approvals from the Department of Environment and Climate Change in order to operate.

Questions to consider:

- Do you support expanding energy-from-waste in the province? Do you have any concerns generally or with specific technologies?
- How can we better support energy-from-waste projects in Nova Scotia without negatively impacting approaches that rank higher on the waste hierarchy (i.e., reduction, reuse, repair, recycling, and composting)?

Closing questions for consideration:

In this paper, we have explored some potential policy approaches to help Nova Scotia to further divert waste from landfill. These included policies related to:

- Extended Producer Responsibility
- Implementing a target for disposal of banned materials
- Construction and demolition diversion
- Education and awareness
- Repurposing municipal diversion credits
- Financial incentives/disincentives
- Procurement strategies
- Energy recovery from waste

Of the policy approaches presented in this paper,

- Do any approaches stand out to you as being more important than others for focusing on currently? Why?
- Which ones do you think would have the most impact in terms of reducing our per-person waste disposal rate?
- Do you know of any major barriers to implementing any of the listed policy approaches that you think are important to flag at this time?
- Do you see any synergies between different approaches?

Are there any actions or policy approaches we missed that you think are important for Nova Scotia to consider implementing? If so, please explain.

Please provide your feedback to any or all of these ideas through the online feedback portal or by emailing SWRM@novascotia.ca by September 29th, 2023.

We look forward to hearing from you!