



Staff Report

Operations Department

Report To: Special Committee of the Whole
Meeting Date: February 1, 2021
Report Number: CSOPS.21.006
Subject: Polystyrene Foam Packaging Recycling
Prepared by: Jeffery Fletcher, Manager of Sustainability and Solid Waste

A. Recommendations

THAT Council receive Staff Report CSOPS.21.006, entitled “Polystyrene Foam Packaging Recycling” for their information.

B. Overview

This report considers the merits and cost of implementing a depot based Polystyrene foam (PF) recycling pilot at the Town Disposal Site. This report is also a follow up to the deputation from Climate Action Now Network (CANN) at the October 19, 2020 Council meeting, on the topic of PF recycling.

C. Background

Polystyrene foam has a significant environmental footprint. Municipalities in Ontario have been tasked with finding management solutions for millions of different packaging and product waste items with similar negative environmental footprints. Local governments are not in the best position to affect the best management – the producers are in the best position. Producers have the ability to develop supply chains and coordinated recycling programs, but also change the design of toxic and difficult, if not, impossible to recycle materials and packaging.

The Province has recognized the advantage of extended producer responsibility and by 2023 producers will be transitioned to be 100% financially responsible for the residential recycling of blue box material. Polystyrene foam is considered an eligible blue box material and it is anticipated PF will be included in the transitioned program. Once the transition is complete an expanded list of eligible recycling materials is anticipated. The transitioned program will conduct The Town’s curbside collection program and financially support the depot-based program at the Town Disposal Site.

Several PF trials and studies have been conducted in Ontario in association with the Continuous Improvement Fund (CIF). CIF is a funding program linked to the provincial blue box program. Both mobile and stationary systems have been studied for rates of capture, capital costs and cost per tonne to operate. An additional trial project supported by CIF is underway in the

London area. This trial is working with a contractor that provides a mobile PF densifier (see Photo #1 below). The contractor conducting this trial is considering an expansion of the program into the Grey County area and is seeking multi municipal participation to make the expansion viable.



Photo #1 - Second Wind Recycling mobile system

Polystyrene Foam Densification

PF is a plastic product injected with air to expand the material in a mold and to make it bulky and soft to protect items during transport. Densification compresses the foam to reduce the bulk of the material. Increasing the density makes shipping the polystyrene material more practical. Polystyrene foam is light and has a relatively low density. The mobile unit increases the density significantly.

Densification or compression of PF material can be achieved also by stationary baling units. Technology exists that also liquefies PF, which also prepares the material for shipment to a market.

PF Available

Residential waste audits have identified a PF per household generation rate of 4 kg per year. Using a Town household count of 7,500 the potential generation for The Blue Mountains could be 30 tonne per year. Of the 30 tonne available for collection, only certain types of PF (clean and non-food packaging related) is acceptable in the contractor's proposal. Combined with actual capture rates only a small percent is likely to be collected in a depot-based collection program. The table below expresses total tonnes collected under various potential capture rates.

PF Available	2% Capture	10% Capture	20% Capture
30 tonnes	0.6 tonnes	3 tonnes	6 tonnes

Previous studies indicate that a 2% capture rate is typical for municipalities running PF programs. Capture rates of 20% are typical for other types of plastics in the curbside blue box program. However, operation of a depot-based system will not have the same capture rate as a curbside program. Depot programs require residents to deliver materials to the depot. Curbside waste containing PF will not make it into a depot diversion program. PF is not included in the current blue box collection contract.

A proposal from the PF contractor partnered with CIF estimates a Town the size of The Blue Mountains could capture 1.4 tonne to 2 tonne per year in a depot program. This is similar to the capture rate in other municipal programs capturing 2%.

D. Analysis

Depot collection and storage of PF would involve some operator time and storage equipment. The contractor's proposal involves collecting the PF in large plastic bags and storing the bags in an enclosed container until collected by the contractor. These resources are available to the Town. An existing container currently used for storage could be utilized for storage of PF prior to densification and pick-up.

Using a capture rate of 2 tonnes per year and the proposed service cost (submitted to the Town by Second Wind Recycling) of \$5,000 per year, this would equate to a \$2,500 per tonne gross cost. Relative to other Town waste management programs, including landfilling and recycling, this is a very high per tonne cost. There is opportunity for blue box funding of 50% however that funding would not be realized until 2 years from the incurred costs, due to the process of reporting and funding distribution and it will only cover the residential portion of PF. Costs associated with non-residential materials will not be supported by the funding.

By comparison, the identified cost per tonne of landfilling is approximately \$145 per tonne. The cost per tonne of other diversion programs at the Town's Disposal Site is approximately \$245 per tonne.

Under the flat rate proposal of \$5,000 the more material recycled the lower the cost per tonne. However, it would require a 100% capture rate to reach close to a \$160 per tonne mark. As outlined previous, a 2% capture rate is a realistic expectation for a depot-based program.

Although diversion of any material away from landfill is generally an objective of the Town's waste programs, this objective must be balanced with the financial cost of the diversion program and the net benefit of the tonnes diverted. Staff would recommend expressing interest in joining an area PF collection program, however a significant reduction in the proposed cost would be required for the Town to consider participation. The Financial Impact section of this report outlines proposed cost and the resulting net cost per tonne.

E. Strategic Priorities

1. Communications and Engagement

We will enhance communications and engagement between Town Staff, Town residents and stakeholders.

2. Organizational Excellence

We will continually seek out ways to improve the internal organization of Town Staff and the management of Town assets.

3. Community

We will protect and enhance the community feel and the character of the Town, while ensuring the responsible use of resources and restoration of nature.

4. Quality of Life

We will foster a high quality of life for full-time and part-time residents of all ages and stages, while welcoming visitors.

F. Environmental Impacts

Polystyrene foam is a petroleum-based product that is 95% injected air. The material is effective at protecting product during shipping but the end-of-life management options are difficult. Cost effective transportation and contamination are barriers to integrating the material into a circular economy.

Additionally, polystyrene is made from suspected carcinogens and the expansion process is highly polluting. The air injection is often achieved with CFC's which contribute to ozone depletion and global warming.

Alternatives to polystyrene foam packaging are available. One increasingly utilized alternative is mycelium (mushroom roots) foam packaging. Agricultural waste and mushrooms are cultured and grown into a form. The end product is a bio-degradable material that protects products and is even being used to make products like surfboard cores.

EF can take 100's of years to dissolve and even as it breaks down it will leave a legacy of persistent and toxic chemicals in the environment. A bio-degradable package made from natural fibres can be composted and incorporated into a less impactful circular economy. Biodegradable packaging will also help to address the serious problem of plastic pollution.

The Ontario Blue Box transition is anticipating a growing switch to compostable packaging. Producers of compostable packing will be required to register and report. Producers will not be responsible initially for collecting and management compostable packaging, but it is the intention of the Provincial government to determine, through the collection of information, the best management option for compostable packaging.

G. Financial Impact

The table below is an outline of potential costs for one year of PF collection.

Contractor Collection Fee	Use of Existing Container for Storage (\$3,000 annual value)	Operational Cost (13 hours/year)	Blue Box Funding	Net Cost	Cost Per Tonne (2 T)
\$5,000	\$0	\$460	\$2,730	\$2,730	\$1,365

The above figures are not included in the 2021 Draft Budget. If Council would like to see the program implement sooner than 2022 and fee could be calculated to make the program net zero impact on the tax levy.

H. In Consultation With

Ruth Prince, Director of Finance and IT Services/Treasurer

Sam Dinsmore, Deputy Treasurer and Manager of Accounting and Budgets

Shawn Carey, Director of Operations

I. Public Engagement

The topic of this Staff Report has not been subject to a Public Meeting and/or a Public Information Centre as neither a Public Meeting nor a Public Information Centre are required. Comments regarding this report should be submitted to Jeffery Fletcher, ManagerSolidWaste@thebluemountains.ca.

J. Attached

None

Respectfully submitted,

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For more information, please contact:
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