
REPORT TITLE: Organics and Yard Waste Processing Plan

FROM: Kealy Dedman, Commissioner of Public Works

RECOMMENDATION

That the approach to evaluate options to meet the Region of Peel’s short-term and long-term Green Bin Organics and Yard Waste processing needs as described in the report of the Commissioner of Public Works, listed on the April 7, 2022 Waste Management Strategic Advisory Committee agenda titled “Organics and Yard Waste Processing Plan”, be endorsed.

REPORT HIGHLIGHTS

- In July 2021, the Request for Proposal to Design, Build, Operate and Maintain Peel’s proposed Anaerobic Digestion Facility was cancelled (Resolution 2021-902).
 - A new long-term organics diversion plan is required to enable Peel to expand its Green Bin Organics program to include additional materials such as diapers and pet waste, reach Peel’s diversion target of 75 percent by 2034 and meet provincial organics diversion targets.
 - If the long-term organics processing plan utilizes Anaerobic Digestion (AD) technology to process Green Bin material, the Region will need a separate long-term plan for Yard Waste material because Yard Waste cannot be processed using AD technology. Therefore, the approach described in this report deals with both Green Bin Organics and Yard Waste.
 - Staff conducted a market sounding of organics and yard waste processing service providers and identified potential short and long-term options to meet the Region’s Green Bin organics and Yard Waste processing needs.
 - Green Bin Organics processing options include: securing merchant capacity through short-term contracts, securing long-term merchant capacity through a long-term procurement process, retrofitting Peel’s in-house composting system or a combination of these options.
 - Yard Waste processing options include: primary composting at the Peel Integrated Waste Management Facility with secondary composting at the Peel Curing Facility, Composting at the Peel Curing Facility, utilizing merchant capacity or a combination of these options.
 - Since the cancelled AD facility included a significant environmental attribute that would have provided the Region with Renewable Natural Gas (RNG) production for corporate use and for sale, the evaluation criteria will include the potential to reduce green house gas emissions.
 - Subject to the endorsement of the approaches and evaluation considerations outlined in this report, staff will evaluate the options and report back to the Waste Management Strategic Advisory Committee with a recommended approach.
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Organics and Yard Waste Processing Plan

DISCUSSION

1. Background

In July 2021, Regional Council cancelled the Request for Proposal to Design, Build, Operate and Maintain Peel's proposed Anaerobic Digestion Facility, which was intended to provide long-term processing capacity for Peel's Green Bin organic material (Resolution 2021-902).

As a result, a new long-term organics processing plan is required to enable Peel to expand its Green Bin program to include additional materials such as diapers and pet waste, process increased tonnages from population growth, reach Peel's diversion target of 75 percent by 2034 and meet provincial organics diversion targets.

In September 2021, staff provided an update to Regional Council on the status of Peel's organics processing capacity and next steps including reporting back to Regional Council with options to address Peel's organics processing requirements.

Peel's current in-house organics processing system co-composts Yard Waste material with Green Bin material. Due to the limited capacity of Peel's current in-house composting system, the Region has contracted the services of third-party organics and yard waste processors to supplement in-house processing.

Peel's in-house organics processing infrastructure is operating at its designed capacity and currently cannot process materials in an expanded organics program. Further, Peel's current contracted processing services, which expire within the next 12 months, do not provide for the processing of expanded organics.

2. Green Bin Organics Processing

a) Peel's Green Bin Organics Processing Requirements

New short-term and long-term organics processing plans are needed to reliably process a more diverse organics stream and address the following requirements:

- Expansion of Peel's Green Bin program to include diapers, sanitary products, and pet waste and allow the use of non-compostable plastic liners as set out in the Council-approved "Roadmap to a Circular Economy in the Region of Peel" (Resolution 2017-972).
- Regional Council's diversion target of 75 percent 3Rs diversion by 2034 (Resolution 2015-741); and,
- Provincial organics diversion targets of 70 percent waste reduction and resource recovery of food and organic waste generated by curbside households by 2023 and 50 percent waste reduction and resource recovery of food and organic waste generated by multi-residential buildings, including Peel-owned multi-residential buildings by 2025 as set out in the 2018 *Food and Organic Waste Policy Statement*.

b) Anticipated Green Bin Organics Processing Capacity Needs

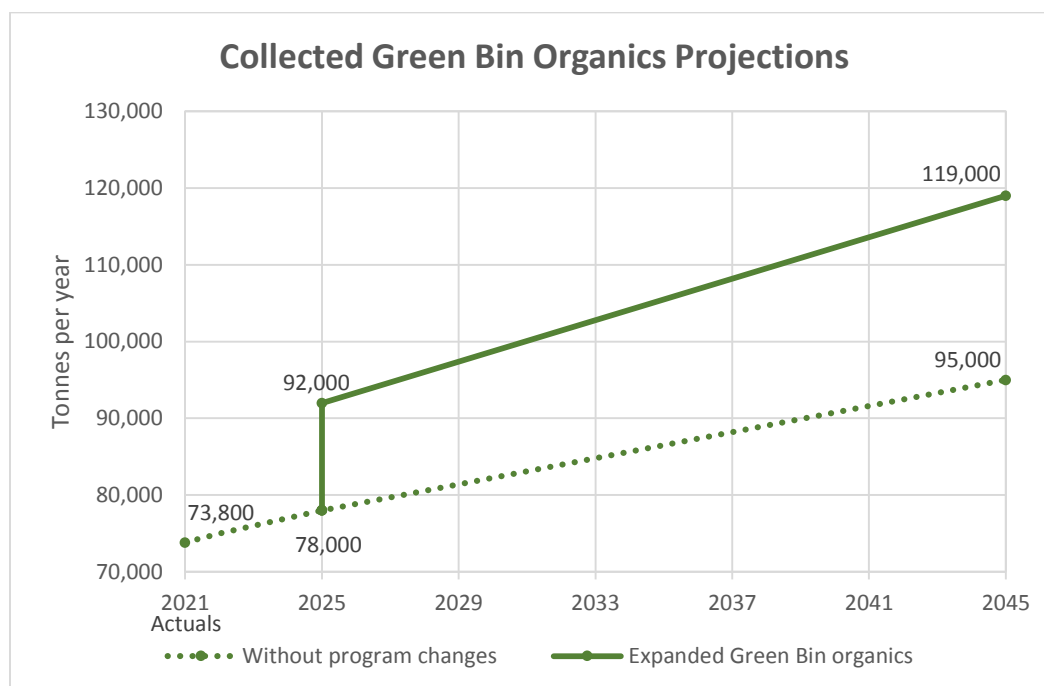
In 2021, the Region collected 73,800 tonnes of curbside Green Bin Organics, of which 35,000 tonnes (48 percent) was shipped to third-party organics processors due to the

Organics and Yard Waste Processing Plan

limited capacity of Peel's current in-house organics processing system. Without program changes, staff project that 78,000 tonnes will be collected in 2025 and up to 95,000 tonnes in 2045.

With the expansion of the Green Bin program to include the expanded list of materials described above, the anticipated tonnage will be approximately 92,000 tonnes in 2025 and up to 119,000 tonnes by 2045. Figure 1.0 below shows the projected annual tonnage of Green Bin organics up to year 2045.

Figure 1.0: Collected Green Bin Organics Actuals & Projections*



*Projections are based on actual tonnages and composition up to 2021 and include increases due to the COVID pandemic.

c) Work Completed to Date and Work in Progress

i) Findings of market sounding with organics processing service providers

In October 2021, staff met with 13 of Ontario's main organic waste processing service providers to discuss organics processing options and support the development of the Region's organics processing plan. Key findings are outlined below:

- Sufficient processing capacity with multiple service providers exists or can be made available in Ontario to process all of Peel's Green Bin material when Peel's existing organics processing contracts expire in mid-2023.
- Majority of service providers use Anaerobic Digestion technology with few using composting to process organic materials.
- Most existing facilities can either currently process diapers and pet waste, or are in the process of adding equipment that will allow them to process diapers and pet waste later this year.

Organics and Yard Waste Processing Plan

- Cost is expected to increase by \$20 per tonne to the market price if Peel adds diapers and pet waste.
- Companies with existing processing capacity are interested in bidding on short-term (five-year) contracts. Regardless of the chosen approach for long-term processing capacity, the Region intend to go to tender in 2022 to secure replacement short-term capacity.
- A number of service providers are also interested in developing new facilities if Peel procures processing capacity for a 20-year term.

ii) Green Bin Organics Processing options

Based on the discussions with the organics processing service providers, the following four options will be considered in a more detailed assessment by staff to meet the Region's Green Bin organics processing needs:

1. Secure short-term merchant capacity: This would include continuing to procure short-term processing contracts (with approximately five-year terms). This approach is quick and easy but comes with the risk that capacity will be in greater demand with each subsequent procurement and Peel may not be able to obtain sufficient processing capacity over the long-term. This option does not allow Peel to specify many requirements beyond regulatory compliance nor the development of a new facility. Since there are no major facilities within Peel's boundaries, using existing facilities will continue to require significant haulage.
2. Secure long-term merchant capacity: This would include issuing a procurement for third party processing capacity for a 20-year term, with a requirement that the facility be available within five years (similar to the York Region Organic Waste Transportation and Processing Services Request for Proposal). With this approach, Peel could specify requirements, however, each requirement would add to the overall cost.
3. Retrofitting Peel's in-house composting system: This would include expanding the composting infrastructure at the Peel Integrated Waste Management Facility and Peel Curing Facility and installing the required equipment to process the materials in an expanded organics program. An initial assessment suggests it is not technically feasible (i.e., odour management, higher investment, interrupting operations) but staff will look at this option in more detail.
4. A combination of options 1 to 3: This would include having a portion of the Region's Green Bin Organics processed in-house and the balance processed using merchant capacity (assuming it is technically feasible to retrofit Peel's in-house composting system).

Staff was asked by Regional Council to consider co-digestion of Green Bin Organics with sewage sludge as an option (Resolution 2021-884). The Clarkson Wastewater Treatment Plant is the only wastewater treatment plant in Peel that has anaerobic digesters. Staff investigated and identified several impacts that would occur as a result of co-digestion at the Clarkson Wastewater Treatment Plant:

Organics and Yard Waste Processing Plan

- Would lead to operational challenges and complexities at the treatment plant;
- Would delay the environmental assessment process for the current plant expansion;
- Would require the purchase of an additional property adjacent to the Clarkson Wastewater Treatment Plant; and
- Would result in a significant increase in truck traffic with associated impacts to surrounding areas.

Due to these impacts, staff concluded that co-digestion is not feasible and therefore will not be considered any further as an option.

3. Yard Waste Processing

a) Peel's Yard Waste Processing Requirements

New short-term and long-term Yard Waste processing plans are needed to reliably process Yard Waste over the long-term and address the following requirements:

- Yard Waste is incompatible with anaerobic digestion processing technology. An independent long-term processing plan will be required for Yard Waste if anaerobic digestion technology is used to process all or some Green Bin organics.
- Regional Council's diversion target of 75 percent 3Rs diversion by 2034 (Resolution 2015-741).
- Provincial organics diversion targets of 70 percent waste reduction and resource recovery of food and organic waste generated by curbside households by 2023.

b) Anticipated Yard Waste Processing Capacity Needs

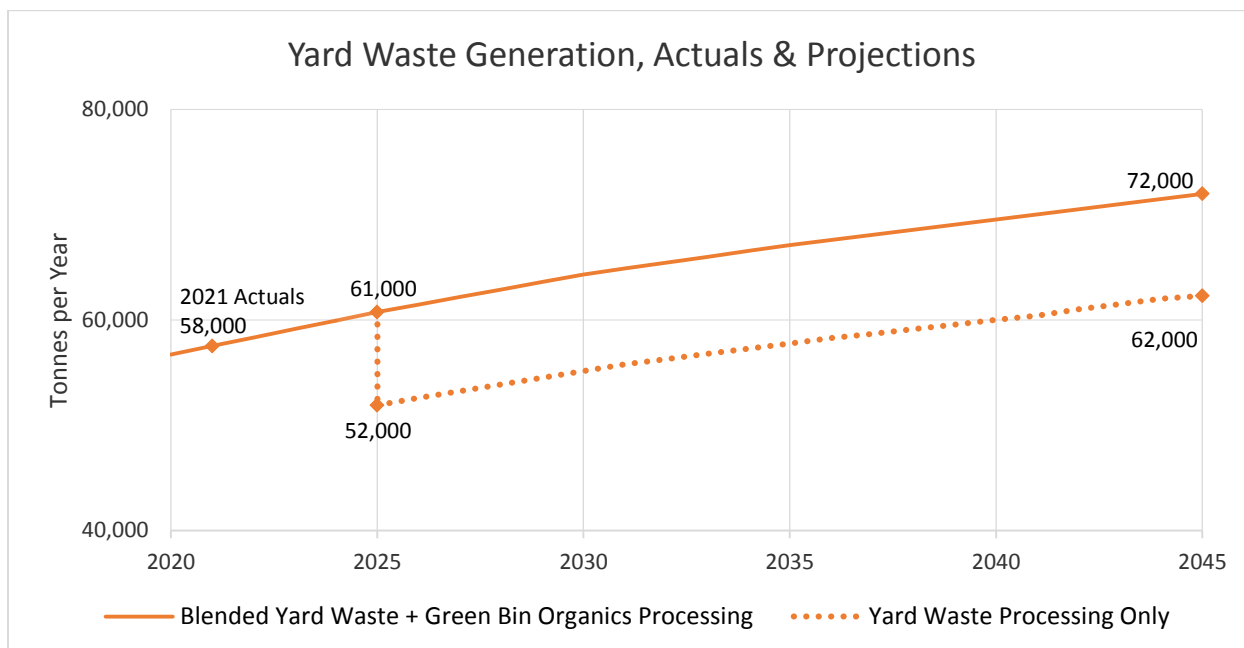
In 2021, the Region managed 58,000 tonnes of Yard Waste:

- 42,000 tonnes of Yard Waste collected by Peel.
- 7,000 tonnes of leaves collected by local municipalities.
- 9,000 tonnes of imported wood chips to assist with processing Green Bin Organics during the winter when Yard Waste is not collected.

Thirty thousand (30,000) tonnes (52 percent) of Yard Waste were shipped to a third-party processor for composting due to the limited capacity of Peel's current in-house composting system. It is projected that the Region may need capacity to process approximately 62,000 tonnes of Yard Waste by 2045. Figure 2.0 below shows the historical and projected annual tonnage of Yard Waste up to year 2045.

Organics and Yard Waste Processing Plan

Figure 2.0: Yard Waste Generation, Actuals & Projections*



*Projections are based on actual tonnages and composition up to 2021. The COVID pandemic did not increase Yard Waste, therefore, projections do not include any COVID impacts.

*The combined Yard Waste and Green Bin Organics Processing scenario is reflective of continuing to use the in-house composting system which requires importing wood chips to process organics when the availability of Yard Waste is limited. The 9,000 tonne per year drop in 2025 will occur if the Region no longer processes organics in-house and therefore does not need to import wood chips to assist with processing Green Bin Organics during the winter months.

c) Work Completed to Date and Work in Progress

i) Market sounding with Yard Waste service providers

Staff conducted a market sounding to identify merchant capacity for yard waste processing within 200 kilometers of the Region of Peel. Viable merchant capacity for yard waste processing in southern Ontario is likely limited to four service providers. Each was engaged and confirmed their ability to process some, if not all, of the Region's projected annual yard waste tonnage. Key findings are outlined below.

- There is enough existing processing capacity in Ontario to process all of Peel's Yard Waste material when the Region's existing processing contracts expire in mid-2023 (the Region intend to go to tender in 2022 to secure replacement capacity).
- Only one vendor has capacity to process all projected yard waste tonnage.
- Most facilities have capacity to process moderate amounts of the projected Yard Waste tonnage (e.g., 15,000 tonnes to 30,000 tonnes per year).
- One vendor indicated they could possibly expand their facility to process all projected yard waste tonnage, if needed.
- Companies with existing processing capacity are interested in bidding on long-term contracts (e.g., 10 to 20 years).

Organics and Yard Waste Processing Plan

ii) Yard Waste processing options

Based on the Region's current Yard Waste processing needs and discussions with Yard Waste processing service providers, the following three options will be considered in a more detailed assessment to meet the Region's Yard Waste processing needs.

1. Primary Processing at the Peel Integrated Waste Management Facility and Secondary Composting at the Peel Curing Facility: If the processing of Green Bin Organics at Peel Integrated Waste Management Facility is discontinued, there may be an opportunity to repurpose existing infrastructure at Peel Integrated Waste Management Facility, including shredders and the in-vessel composting system, to process Yard Waste followed by secondary composting using windrows at the Peel Curing Facility. This option has two sub-options to consider:
 - Shred material at Peel Integrated Waste Management Facility and deliver raw, shredded Yard Waste to Peel Curing Facility; or
 - Shred and compost Yard Waste at Peel Integrated Waste Management Facility and deliver partially composted material to Peel Curing Facility.
2. Merchant Capacity: This option considers a long-term service agreement with a processor in Ontario to compost all of the Region's Yard Waste and market the finished product.
3. A combination of options 1 and 2: This would include having a portion of the Region's Yard Waste processed in-house and the balance processed using merchant capacity. An initial assessment suggests in-house capacity will not be able to accommodate 100 percent of Yard Waste and some third-party processing will be required, but staff will look at this option in more detail.

Staff also considered an option that involved direct delivery of raw, un-shredded Yard Waste to Peel Curing Facility, followed by shredding of the material and composting using windrows. Based on preliminary analysis, staff concluded that this option is not feasible and therefore will not be considered further as an option.

4. Evaluation Considerations

Each of the proposed Green Bin Organics and Yard Waste processing options described in this report will be evaluated against the following considerations:

- Cost
- Region contingency capacity and knowledge
- Ability to increase diversion
- Greenhouse gas emissions and environmental attributes
- Operational reliability
- Timing
- Integration and impact on current and potential future operations

Organics and Yard Waste Processing Plan

5. Next Steps

Subject to the endorsement of the proposed Green Bin organics and Yard Waste processing approaches outlined in this report, staff will evaluate the options in more detail.

Regardless of the chosen approach for long-term processing capacity, staff intend to issue a tender in 2022 to procure up to five years of interim processing capacity.

Staff will report back to the Waste Management Strategic Advisory Committee with a recommended approach to address Peel's long-term Green Bin organics processing and Yard Waste processing requirements.

RISK CONSIDERATIONS

Green Bin Organics processing and Yard Waste processing service providers may approach Regional Council members with unsolicited proposals that could lead to decision-making delays and unfair competition. To mitigate this risk, vendors will be made aware to register as a lobbyist if they would like to directly communicate with Regional Council. Similarly, vendors who approach Regional Council with unsolicited proposals should be advised that unsolicited proposals are to be directed to the Director of Procurement in accordance with the Procurement By-law 30-2018, as amended.

FINANCIAL IMPLICATIONS

There are no immediate financial implications resulting from this report.

CONCLUSION

Staff is currently developing short-term and long-term Green Bin Organics and Yard Waste processing plans to meet Peel's diversion goals and regulatory requirements. Staff will report back to the Waste Management Strategic Advisory Committee with the preferred approach for short and long-term Green Bin organics processing and Yard Waste processing.

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