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Ministry of the Environment and Climate Change
Climate Change and Environmental Policy Division
Resource Recovery Policy Branch
40 St. Clair Avenue West, Floor 8
Toronto, ON
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Attention: Ian Drew, Senior Policy Advisor

RE: Discussion Paper: Addressing Food and Organic Waste in Ontario

On behalf of Ontario's more than 3,000 environment and cleantech firms, the Ontario Environment Industry Association (ONEIA) is pleased to provide our comments on the Ministry of Environment and Climate Change (MOECC) discussion paper on Addressing Food and Organic Waste in Ontario.

By way of background, Ontario is home to Canada's largest group of environment and cleantech companies. The most recent statistics from the Federal Government show that Ontario's environment sector employs more than 65,000 people across a range of sub-sectors. This includes firms working in such diverse areas as materials collection and transfer, resource recovery, organics processing, composting, recycling solutions, alternative energy systems, environmental consulting, brownfield remediation and water treatment – to name just a few. These companies contribute more than \$8-billion to the provincial economy, with approximately \$1-billion of this amount coming from export earnings.

Members of ONEIA are committed to engaging the Province of Ontario and the Federal Government as they develop policies and regulations that are consistent with the principles of sound science, environmental responsibility and economic growth. To that end, we convened a working group of members drawn from across the resource recovery services and climate change sectors to review the MOECC's discussion paper on addressing food and organic waste in Ontario.

ONEIA applauds MOECC for the intent of the program it is developing in this area. Based on our review of the discussion paper, we recommend that MOECC engage appropriate federal government agencies, as well as other relevant provincial ministries that have a stake in this area (i.e. Ministry of Energy, OMAFRA, and MEDG) in defining and ultimately achieving the outcomes of addressing food and organic waste.

Food and Organic Waste

ONEIA is very aware that food and organic wastes make up approximately 1/3 of Ontario's total waste stream, including food and organic waste that is generated in residences as well as the industrial, commercial and institutional (IC&I) sectors. In 2014, for example, of Ontario's 3.6 million tonnes of food and organic waste, two million tonnes came from residential sources and 1.6 million came from IC&I sources. More than 60% of this waste was disposed of in landfills. ONEIA understands that the MOECC wants to ensure that organics are diverted before they become waste while better managing these materials once they enter the waste stream. We feel that such diversion would result in significant economic and environmental benefits in the new jobs throughout the supply chain and greenhouse gas (GHG) reductions.

Ontario is already a leader in North America in food and organic waste recovery and processing. In the residential sector alone, over 1 million tonnes of food and organic materials are diverted including 480,000 tonnes of green bin material and 567,000 tonnes of leaf and yard waste. Ontario Regulation 101/94 was a catalyst for the composting of municipal waste under the Environmental Protection Act (EPA) for municipalities with populations greater than 50,000. It has led to approximately 37 municipalities (representing 70% of Ontario's population) establishing food and organic waste processing services.

In the IC&I sector, approximately 400,000 tonnes per year of industrial organics are currently diverted. These are primarily food processing wastes and a nominal amount of commercial and institutional organics. The processing of these materials allows for the creation of economically valuable activities, including facilities in the areas of composting, anaerobic digestion (AD), biofuel and rendering. Currently, Ontario is home to approximately 76 facilities with a current processing capacity of 2.3 million tonnes. This includes 41 compost facilities and 35 AD systems including 29 on-farm facilities and 6 off-farm facilities. The development of this infrastructure has allowed Ontario to be viewed as a leader throughout North America and has developed expertise that is currently exported to other jurisdictions such as California, British Columbia, Massachusetts, Quebec, etc. Further development of this expertise can help the province solidify its position as a food and organic waste diversion leader and support our efforts to reduce Ontario's carbon footprint.

Goals of the Framework

It is ONEIA's understanding that through the discussion paper, the MOECC seeks to assess:

- The scope of the Food and Organic Waste Framework;
- Actions to reduce food and organic wastes going to disposal; and,
- Actions to support processing capacity and end markets for food and organic wastes.

We also understand that through the Food and Organic Waste Framework, the MOECC is aiming to achieve the following:

- Reduce the amount of food that becomes waste;
- Remove food and organic waste from the disposal stream;
- Reduce GHG emissions that result from food and organic waste;
- Support and stimulate end markets that recover the value from food and organic wastes;
- Increase accountability of responsible parties;
- Modernize the approvals process
- Improve data on food and organic waste; and
- Enhance promotion and education regarding food and organic waste.

The management of food and organic waste streams including Ontario's IC&I, agricultural sector and biosolids from wastewater treatment plants should be considered if the province is to achieve its goals surrounding climate change and GHG reductions. There are a variety of technologies available to process these materials in an environmentally sound and efficient manner, including composting and anaerobic digestion for the production of renewable energy.

ONEIA believes that a policy measure to recover organic material will allow the Province to:

- Effectively divert food and organic waste from landfills;
- Reduce short lived climate pollutants, primarily methane which is 86 times the potency of carbon dioxide on a 20-year time scale ;
- Increase soil carbon/carbon sequestration and organic matter through the use of compost and digestate;
- Provide renewable energy to support Ontario's energy needs in the form of RNG and electricity;
- Reduce the carbon intensity of transportation fuels and;
- Extend landfill capacities.

Scope of Food and Organic Waste Framework

Prior to answering the specific questions that the MOECC has raised in its discussion paper, ONEIA would like to provide additional insight into the various points raised above. We recommend that in the development of the framework, MOECC should consider methods to:

- Enhance existing partnerships with stakeholders and build new relationships;
- Engage municipalities to reevaluate municipal bylaws to ensure food and organic waste processing facilities can be built to meet Provincial diversion goals;
- Increase understanding of the movement of waste through transfer stations;
- Encourage the use of natural gas pipelines to move renewable energy, and;
- Incentivize green procurement of recycled products.

To do so, Ontario must make progress with its modernization of approvals reform and its efforts to streamline siting regulations for the critical infrastructure that will be necessary to achieve provincial goals in GHG reduction and other areas. It should also frame its regulatory reforms to a) address food and organic waste diversion while b) incenting new technologies and approaches that will generate economic benefits (job creation, company growth, startup supports, market creation) while helping the province meet its diversion and GHG goals.

Should you have any questions about the information contained herein, please do not hesitate to contact the co-chairs of our working group, Brandon Moffatt and/or Randy Cluff or feel free to contact the ONEIA office directly at 416-531-7884.

Yours truly,

Alex Gill
Executive Director

Discussion Question One: What food and organic materials should be priority and as such addressed in the framework?

ONEIA understands that the definition of food and organic waste can be quite broad and thus requires focus. ONEIA recommends defining food and organic waste as food waste (solid), food soiled paper, food processing/manufacturing waste, biosolids and fats, oils and grease (FOG). This would include cooked or raw food from generators including single family and multifamily residences as well as IC&I establishments. It should also be stated that a number of these streams have established practices, some which work reasonably well and others that need improvement. A snapshot of the priority is listed below.

Table 1- Organic Action Plan Priority Materials

| Material | Priority |
|-------------------------------------|----------|
| Surplus food | High |
| Food waste | High |
| Food processing | High |
| Fats, Oils, Grease (FOG) | High |
| Biosolids | High |
| Soiled paper | Medium |
| Leaf and yard waste | Medium |
| Compostable products and packaging* | Low |

* ONEIA believes that the Province should address compostable products and packaging through the Blue Box program.

Discussion Questions Two and Three: In addition to the examples given, what actions do you think the MOECC should consider in preventing food from becoming waste? What are the most important actions to take first?

As noted in the discussion paper, consumers are responsible for the largest share of food waste at 47% followed by the retail sector. The Province should encourage reduction and diversion through education and incentives to encourage behavioural change.

ONEIA recommends defining edible food as all food intended for human consumption. ONEIA believes that in order for this edible food to be recovered, it must meet relevant public health and food safety standards and must be able to meet food recovery organization's standards and requirements for acceptance related to nutrition or quality when recovered. An edible food generator could be defined as an entity that generated or sells a specified amount of food per month.

In the case of managing food before it becomes a waste, ONEIA believe that there are a considerable number of actions the Province can take. The key is to set priorities to build momentum. Examples could include:

- Education campaigns
- Packaging adjustments
- Standardized donation regulation
- Donation liability education
- Spoilage prevention packaging
- Smaller plates
- Produce specifications
- Standardized date labeling
- Donation matching
- Value added processing
- Donation storage / handling / transportation
- Trayless dining
- Donation tax incentives

Discussion Question Four: What are the barriers to reducing food waste and why is more not recovered at present?

ONEIA believes that a number of barriers exist in the Province that are impacting the amount of material that is being recovered.

Processing Capacity: As discussed earlier, approximately 3.6 million tonnes of food and organic waste are generated and 60% of this material is currently destined for landfill. If the entire amount generated was to be diverted, it would mean that the Province would need an additional 33 large-scale organics processing facilities each averaging 60,000 tonnes annually, or a combination of smaller and larger facilities depending on the local/regional dynamics. The development, construction and operation of these facilities will require a phase-in period and the government needs to send clear and consistent signals to industry in the form of clear siting regulations, firm timelines for approvals, green procurement measures for products generated from these facilities (e.g. soil amendments / fertilizers) and energy offtake options such as renewable natural gas (RNG) to facilitate the investment into the sector. We recognize the need to increase organics diversion and provide a consistent supply of materials for Ontario's growing number of reuse options for this material, but we strongly recommend that the province not rush into such measures as blanket disposal bans or other policy instruments without sufficient opportunity for the industry to adapt and scale up to take advantage of the opportunities created.

Leakage: Over four million tonnes of waste are exported to Michigan and New York for disposal annually. Many Ontario companies have an incentive to export waste to Michigan and New York at lower tipping fees, which serves to divert material from Ontario's existing recovery system. If a landfill ban or other policy measures are implemented, the Province needs to ensure that material managed outside of the Province is held to the same standards and requirements as the material managed within the Province, lest it put our domestic industry at a competitive disadvantage.

Discussion Questions Five and Six: In addition to the examples given, what tools and actions do you think the MOECC should consider to increase diversion of food and organic wastes? What are the most important tools and actions to take first?

ONEIA believes that a number of actions are necessary to support the development of processing capacity and create end markets for food/organic waste. ONEIA is concerned that the proposed timelines, especially with respect to an organics diversion strategy, do not align with the province's climate change objectives. ONEIA recommends that the Province work internally between departments on the resource recovery efforts and the staging of an incremental food and organic waste diversion mandate as well as the other steps/activities that we have outlined in this letter.

We take this opportunity to reiterate an ONEIA policy recommendation, made during Environment Industry Day 2016, that the province appoint an internal Climate Change Coordinator (modeled on the position of the Brownfields Coordinator) to identify places where government policies are working at cross-purposes with respect to its GHG reduction goals. This position would largely function as an "air traffic controller" to ensure better collaboration between different ministries and align their policies to create quicker and more productive outcomes. <BRANDON – OPTIONAL, BUT IF IT WORKS HERE, LET'S LEAVE IT IN>

ONEIA agrees that Ontario needs to reduce the amount of food and organic waste going to traditional disposal methods and divert and reintegrate these materials into viable end markets to support the Province's circular economy and climate change goals. ONEIA also believes that the diversion of these waste streams could lead to approximately \$1 billion in investment in Ontario while creating a substantial number of direct and indirect jobs during construction and throughout the operational lifetime of the facilities, once constructed.

Increase accountability of responsible parties and provide government support

ONEIA believes that accountability for food and organic waste diversion is needed throughout the entire supply chain, including:

- Manufacturers of compostable products and packaging;
- Generators of large quantities of food and organic waste; and,
- Importation of foods from the United States and other markets that have excessive packaging.

We would also recommend that provincial, municipal and regional governments have a role to play with respect to direct support in the following areas:

- Tracking/Analytics;
- Home and Community Composting;
- Repurposing existing infrastructure – wastewater treatment plants (WWTPs), farms, transfer stations and material recovery facilities;
- Developing new infrastructure – compost, AD and emerging technologies;
- Providing consistency and certainty on feedstock availability and its cost;
- Development of end markets including compost, digestate, and renewable energy;
- Programs for low cost financing including, but not limited to tax credits, accelerated depreciation, grants, low interest subordinated debt, loan guarantees, etc.;
- Programs to support conversion of fleets from diesel to compressed natural gas (CNG);
- Streamlining/modernization of environmental approvals – the timelines for new approvals or amendments to existing environmental approvals to facilitate the conversion of facilities to handle more volume is currently over 1.5 years;
- Clarity on zoning/siting requirements to facilitate necessary infrastructure;
- Certainty on interconnection costs;
- Continued development of natural gas service to rural areas;
- Design programs and approval rules that allow for innovation using demonstration, and research projects that look to maximize the value of all the outputs in organics processing, and;
- Municipal and provincial procurement.

Implement policy tools to promote diversion

A number of different tools and approaches have been implemented in other jurisdictions that the province should consider as it designs and implements a new diversion framework. More information on these concepts is provided in Appendix A of this document (North American Food and Organic Waste Diversion Policies) but the broad areas include the following:

- Disposal Ban – landfills, transfer stations;
- Food and Organic Waste Diversion Requirement from Residential and IC&I sectors;
- Education programs;
- A disposal surcharge/levy for food and organic waste;
- Producer responsibility, and;
- Incentives.

Based on the fact that food service and food wholesale sectors account for 72% of total IC&I food and organic materials sent for disposal in Ontario, it is ONEIA's belief that the existing regulations need to be modified to encourage the diversion of these organics.

ONEIA believes that the Province could mandate that local jurisdictions/municipalities with populations of above 50,000 adopt an ordinance and/or implement program provisions to require source separation of food and organic waste. This could include the provision of model use bylaws, the use of provincial bylaw officials as well as county health inspectors through promotion and education regarding the separation programs. This concept would ensure that the Province focuses on capturing concentrated and more readily available supplies of food and organic waste and does not place undue burden on rural Ontario and Northern Ontario, which may lack sufficient population densities and/or infrastructure to support diversion.

By encouraging municipal bylaw changes as an initial step, the Province can initiate the program while additional efforts are put into data tracking/analytics surrounding waste that is moving through transfer stations. This will allow for increased organics diversion at a municipal level as a start with subsequent measures targeting transfer stations to come at a later date once sufficient data has been gathered.

Focus on greenhouse gas reduction through diversion

ONEIA believes this sector has a considerable potential to deliver measurable GHG emission reductions. As shown in Appendix B (Greenhouse Gas Benefits from Renewable Natural Gas (RNG)) is one technology that has the potential for the food and organic waste sector to support the Province in its GHG goals. It should also be stated that the use of compost and digestate to offset fertilizer use will increase organic matter and further reduce nitrous oxide emissions in the Province. More research is needed in this area to better understand the greenhouse gas reduction potential in this area of food and organic waste recovery. Based on the ReFed Report, the actions that can have the largest impact on reducing GHG emissions that result from food and organic wastes include:

- Centralized AD and composting facilities for source separated food and organic waste as well as the organic fraction of municipal solid waste (MSW) that wasn't separated out through the green bin program;
- Waste Tracking/Analytics;
- Consumer Education Campaigns; and
- Standardized Date Labelling.

The Province's recognition of Global Warming Potentials will have a significant impact on an organics processing facility's ability to generate revenue from carbon-based markets. As methane is the primary gas released when food and organic waste materials are processed under anaerobic conditions, processing such waste aerobically can avoid such methane emissions. When food and organic waste is processed anaerobically, the methane can be captured and used to generate renewable energy. ONEIA asks the Province to update O.Reg. 452/09 to meet new internationally-recognized and scientifically proven standards for the Global Warming Potentials of methane. When developing its cap and trade program, the Government of Ontario has required that facilities use the global warming potential for methane set in the IPCC 2nd Assessment Report (which attributes methane with a factor of 21). The IPCC's 5th Assessment Report, now recognized by the international community, sets the global warming potential for methane at a factor of 28.

Improve data on food and organic waste

ONEIA believes that you cannot manage what you are not currently measuring. As demonstrated in Vermont, the collection of data from the waste industry and analytics around the movement of waste is crucial. The collection, compilation and analysis of Ontario data is necessary to bring uniformity and clarity to large quantities of non-standardized data currently available in the industry. This data can subsequently be reported on a quarterly or annual basis. An effective diversion policy will depend, in part, on the collection, compilation and analysis of specific and standardized performance data. This data management can either be completed through fully funded and staffed arms-length groups that do not have budget-related issues and do not have regulatory responsibilities or through the creation of a new entity with the capacity to request, synthesize and analyze data in a timely manner.

ONEIA recommends that the MOECC consider waste generation numbers and impact on tonnage from source separation. Further, municipalities should complete waste audits to determine the fraction of organics remaining in the residential MSW stream and assist in the determination of the need for mixed waste processing facilities to extract the organic fraction but also capture recyclables as prescribed in for the Waste Free Ontario Act (WFOA). The MOECC could establish a program to perform transfer station audits and review the submitted annual reports with a focus on determining the portion of organics that still remain in the MSW stream.

Enhance promotion and education regarding food and organic waste

ONEIA agrees that the Province needs to enhance its promotion and education measures to consumers regarding food and organic waste. It should initially focus on keeping food from becoming waste while it implements policies for the diversion of organics from the waste stream.

Provide funding for diversion and infrastructure

Funding for new capital projects can come in many forms. This could include tax incentives, accelerated depreciation measures, grants and/or low interest loans in the form of subordinated debt, and loan guarantees for lenders. This funding needs to support the entire supply chain from the initial bins to collect the organics through the processing infrastructure to the conversion of fleets to run on RNG.

Procurement

As highlighted in ONEIA's *Still Ready To Grow Report* (2011), Ontario is already one of Canada's largest public purchasers of goods and services. This purchasing power could be a significant market leader in the development of end markets for byproducts of organics diversion and processing by the province and municipalities.

Other relevant points

In any new program, the likelihood of unforeseen/unintended consequences is high. However, ONEIA believes that this should not hinder the implementation of the program. As an example, unforeseen consequences are likely to occur around a lack of alternative treatment capacity. The Province should determine where the organics are generated and where the shortage of capacity is, geographically. Exemptions for initial compliance could be allowed until such time that sufficient infrastructure is developed. This would assist in moving forward with the policy measure but provide flexibility for various stakeholders and give them sufficient time to adapt to any new measures.

This accommodation of the practical reality of waste handling and diversion in Ontario should consider the following:

- **Lead times:** In general, a long lead time has been seen as key factor in the successful implementation by other jurisdictions of an increase in diversion percentages, restrictions on resource streams or disposal bans. In other jurisdictions, the importance of a long lead-time combined with political certainty that the policy instrument would be enforced is required;
- **Exemptions:** The major type of exemption previously allowed by the province has been in the "transition periods" between introduction of the policy instrument and the restrictions or deadlines for total compliance. During these periods, the municipalities and waste generators must make representations to the MOECC that on the basis that capacity has not yet been developed. In general, exemptions are granted when genuinely needed, but in most cases the trajectory away from landfills is reinforced by steadily increasing restrictions on traditional organic waste disposal measures;
- **Compliance/Enforcement:** Compliance and enforcement are important and in many jurisdictions (contrary to expectations) they have not been opposed by stakeholders or reported to be problematic. The primary factor was that in theory the responsibility for complying with the policy rests with all parties involved in the generation, transfer and disposal of waste. However, in practice, compliance rests largely on the consolidation point/disposal outlet. **UNSURE WHAT THIS MEANS – IS THERE A CLEARER WAY TO SAY IT?**

Discussion Questions Seven and Eight: In addition to the examples given, what actions can the MOECC take to support viable end markets for food and organic materials? What are the most important actions to take first and who is best positioned to lead the action?

The actions that MOECC should take to support viable end markets for food and organic materials include:

- Support and stimulate end markets that recover the value from food and organic waste;
- Products generated through diversion need to be explicitly designated as those contributing to the development of a circular economy;
- Regulate content requirements through the development of RNG offtakes as well as green procurement for compost and digestate;
- Develop clear siting regulations that can be used consistently across the Province, and;
- Maintain high provincial compost standards to ensure that products on the market are not undermined by low quality, waste-like material.

ONEIA also believes that MOECC needs to work with the Ministry of Transportation and municipal/regional governments to further develop green procurement policies for compost and digestate that would stimulate the end market for these products. As previously outlined in our responses to the Provincial government, ONEIA believes that the Province needs to address RNG offtake markets in a clear manner with a focus on reducing the use of diesel/gasoline in the transportation sector.

Summary

ONEIA appreciates and welcomes the opportunity to provide MOECC with comments and suggestions and our members stand ready to work with the province and the MOECC in the development of an organics diversion policy.

MOECC can increase diversion of food and organic waste through various regulatory and education measures, as we have outlined in the previous pages. This has worked for other materials and in other jurisdictions and will work in Ontario. As the province moves in this direction, ONEIA recommends that it adopt an outcome-based approach where it sets targets in consultation with industry and regional/municipal governments and then supports their achievement through enforcement, procurement, and overall policy leadership.

ONEIA believes that policy measures need to be properly designed and implemented to change behavior, reduce waste generation, promote reuse and increase waste diversion in Ontario. As discussed, should the province opt to pursue a landfill ban, in coordination with surcharges/levies at the transfer stations, this will require an adjustment period for industry to the differential gap between disposal and diversion. It will capture wastes destined for export and prevent any possibility to redirect waste from Ontario to other jurisdictions. If properly designed, phased and implemented, the instruments can be effective to support Ontario based processing capacity, economic activity and mitigation of climate change impacts. This approach is also an economic tool used to shift waste management decisions towards diversion.

We cannot stress enough that the generators of the organic waste need to be identified and engaged in the program, as they appreciate more than any regulator the intricacies of what implementing increased diversion targets or an outright ban will entail. The generators should be held responsible for the initial creation of the solid waste, organics and recyclable material. Examples of avenues to create engagement programs include residential/commercial entities, local, provincial and federal agencies (government); special events, etc. Other stakeholders outlined in Appendix A (North American Food and Organic Waste Diversion Policies) also need to be involved.

Appendix A: North American Food and Organic Waste Diversion Policies

Municipal Bylaws

The Province should examine a similar policy measures as used in New York City or in California for SB1383. As examples, of these policies:

California: In California, they are considering “Mandatory Organic Waste Recycling Service” which means a collection service that recycles organic waste and is automatically provided to all generators of organic waste with opt-out provisions for generators that are already recycling. The frequency of service must meet the needs of the generators. As an example, at least weekly pick up for organics for residential and commercial and may be more frequent depending on the volume and type of materials for some commercial entities.

A concept for this service would be:

1. By January 1, 2022, jurisdictions should:
 - a. Provide mandatory organic recycling services to all generators of organic waste. These services should be designed to meet the needs of the generator.

The potential implementation methods could include source separated recycling programs as well as mixed waste recycling programs. Other provisions of the program include:

- Conduct education and outreach to promote organics waste prevention and recycling.
- Building standard requirements for residential and non-residential construction relative to organic waste. This could include providing adequate space for organic recycling and ensuring that organic recycling is available in public locations; and
- Have a jurisdiction-approved program that minimizes contamination. This includes monitoring contamination of collected material and take action to reduce contamination

New York City: The City is focused on food scraps and other organic wastes. The law requires that generators need to comply:

- a. Retail food stores with \geq 10,000 sq. ft. or a chain of \geq 3 stores that are operating under common ownership with a combined \geq 10,000 sq. ft. must comply with their ordinance,
- b. Food service establishments with \geq 7,000 sq. ft. or, a chain of \geq 2 or more establishments with a combined \geq 8,000 sq ft, that operate under common ownership, are individually franchised outlets, or do business under the same corporate name or, a part of a building with other food service establishments with a combined \geq 8,000 sq. ft. must comply with their ordinance,
- c. Catering establishments for \geq 100 people,
- d. Food service for hotels with \geq 100 sleeping rooms,
- e. Sponsors of temporary public events,
- f. Food manufacturers with \geq 25,000 sq. ft.,
- g. Wholesalers with \geq 20,000 sq. ft., and
- h. Food preparation establishments with \geq 6,000 sq. ft.

These generators subsequently are required to arrange for one of the following options:

- Ensure collection of all source-separated organic waste generated for composting, aerobic or anaerobic digestion, or other department approved processing methods;
- Transport of their organic waste to a facility for composting, aerobic or anaerobic digestion, or other department approved processing methods; and,
- Provide organics processing on-site via in-vessel composting, aerobic or anaerobic digestion, or other department approved processing methods.

In conjunction with these options, establishments are required to:

- Provide separate bins for the disposal of organic waste,
- Post instructions on the proper separation of organic waste, and

- Post a prominently displayed sign near the premises' main entrance which clearly states the business name, address, and telephone number (this clause does not apply to sponsors of temporary public events).

The City is subsequently expanding this ordinance to capture food waste from food service establishments that are greater than 7,000 square feet; chain food service establishments with 50 or more locations in the City and retail food stores larger than 10,000 square feet.

Additional thoughts on these approaches

In the context of Ontario, the Province could mandate municipalities with populations larger than 50,000 to implement a similar bylaw to facilitate the initial stages of diversion of organic waste for processing. Through this approach, ONEIA believes that the Province can recover high volumes of the resource stream to increase diversion, assist in cost efficiency and program effectiveness, improve on the effectiveness of current processes to manage the materials, and support Ontario Climate Change Action Plan.

In the case of multi-residential, the Province should likely focus on mixed waste processing as the ability to execute a source separated organics program for these type of materials will be very challenging.

Additional steps that may be taken (and their Impact on stakeholders)

Municipal: Municipal waste streams including organics are typically collected by the municipality or a contracted private waste hauler within the municipal boundaries. The collection of waste occurs on a weekly basis for waste, recyclables and in most major cities, green bin organics. The municipalities will also pick up leaf and yard waste on a seasonal basis that is typically kept separate from the streams that were mentioned previously. In the case of multi-family residential, the collection of green bin organics is less likely to be offered given the constraints of the infrastructure in the multi-family residential complexes.

In a number of cases in Ontario, municipalities have been attempting to increase the tonnage that is diverted to the green bin program via bi-weekly pick up of waste and weekly pick up of organics and recyclables. Given this approach and the use of the regulation for municipalities to offer services above a certain population threshold, the Province could support the diversion of more organics to the green bin program in a relatively efficient manner.

In the case of multi-family residential, the same approach could be taken with residential complexes have the capacity to separate organics (i.e. new buildings). In the case where this is not feasible (i.e. existing buildings), ONEIA would support pilot programs for municipalities to install mixed waste processing to handle the waste fraction from single family residential that still has a significant percentage of organics and multi-family residential complexes that cannot feasibly divert the organics at the source. In these pilot facilities, the organic fraction of the waste stream can be separated out to allow for further organics processing. A threshold for the diversion of organics, would lead to levies/funds flowing back to the municipalities/private processor that is operating the mixed waste facility.

IC&I Sector: The IC&I waste stream includes organics that are typically collected by private haulers in the Province of Ontario in an open market. The collection of waste can occur on a variety of schedules depending on the generation rate from the various sources of IC&I waste. These streams would likely be under contract to the hauler for an indeterminate period of time with some haulers offering organics collection for generators that request the service or generate a significant amount of organics (i.e. food processors). The collection can occur in a number of different ways with large quantities of organics being route collected/consolidated and shipped to an organics processing facilities or directly hauled to the organics processing facilities. However, a significant amount of organics are currently not being separated at the source and thus ending up in the waste stream. The waste stream, subsequently, is collected by the waste hauler and transported to their own or a nearby transfer station for aggregation and transfer into a larger truck that is destined for a landfill in Ontario, Michigan, New York or Ohio, in most cases. The transfer station may be owned by a municipality or a private operator. Very little waste

that is generated and collected in Ontario is sent directly to landfill, therefore, the transfer stations are an excellent location to implement a surcharge or ban. A disposal ban at the landfill or a generator-specific policy measure are more challenging. In the case of landfills in the US, the approach would negate any NAFTA trade issues surrounding waste disposal in the US as it doesn't preclude the waste streams from being sent there but disincentives them for doing this without organics diversion. In the case of a generator-specific level or ban, our approach reduces the potential for non-conformance as the number of enforcement points is dramatically reduced.

This approach would ensure that unintended consequences do not occur. As an example, the use of a surcharge or levy is not considered a ban of organics to landfill. A ban would preclude the generation of any environmental attributes (i.e. carbon credits), as the generator/hauler can still choose to send it to the landfill. It incentivizes them to divert the organic waste streams. In the case of municipalities, the use of the existing regulation to require municipalities above a certain size to offer a green bin program with weekly pick up of organics is also not a ban. However, it offers residents a service and incentivizes them to divert their organics.

Infrastructure: ONEIA understands that a finite processing capacity is available in the Province today and more infrastructure will be required. This infrastructure would include both municipal and private facilities depending on the organics stream that is being considered. The Province could work with ONEIA to inventory the following:

- Location Map of all permitted transfer stations in the province;
- Review of throughput capacities at the transfer stations and permit conditions;
- Population heat map to assess logistics as well as for IC&I generators; and,
- Organics processing capacities and locations such as,
 - AD Facilities,
 - Compost Facilities,
 - Animal Feed Facilities,
 - Grease Processing,
 - Rendering,
 - Other bio refineries (biodiesel, ethanol), and
 - Wastewater treatment plants.

The threshold of the municipality population that is rolled into the program could be assessed on a 2-3 year basis to determine whether the infrastructure is available to handle the organics that would be diverted, the diversion rates that the Province is achieving and the economics around the end markets for the products that would be produced from the infrastructure.

In the case of the IC&I streams, the organic fraction that is found in the waste stream at the various transfer stations could be lowered to facilitate more diversion once the infrastructure is available to handle this material. The surcharge would apply based on loads that exceed allowable levels of organic which can be rejected or subject to a heavy surcharge. As an example, the disposal levy could be collected by the transfer station. It would be collected on loads that contained greater than 25% organics and then be ratcheted down.

The approach that ONEIA has laid out also doesn't require any distance mechanisms as utilized in other jurisdictions as the existing locations throughout the Province would support the early transition and the outcome-based approach would lead to new infrastructure being closer to the areas where the organics are generated.

Impacts on Stakeholders: The waste management Industry – haulers, transfer station, diversion, recyclers, landfill, and EfW operators) may require additional investment for tracking and reporting purposes as well as communication with generators/customers. Larger investments may be required for organics collection vehicles and waste processing facilities including mixed waste organics from municipalities. Historically, the waste management sector has supported this approach and requested that the revenue be dedicated to waste diversion, enforcement and financial assurance.

Municipalities: Similar to private waste companies, municipalities would likely have to invest in staff and technology to enforce this approach. In the past, municipalities have supported this approach as they could be fully reimbursed and dedicate funds to waste diversion.

Generators/Consumers: They have supported this approach in the past through their concern would be related to the impact to the generators. Previous studies have shown that for every \$1 per tonne associated with a levy in Ontario, it would generate roughly over \$9M in annual revenue. This is expected to decrease over time as more waste is diverted from landfill. In any case, the revenue could be used to fund:

- Regulatory oversight,
- Pooled FA <SPELL OUT – WHAT DOES THIS MEAN?>,
- Diversion programs for materials not suitable for Extended Producer Responsibility (EPR),
- Promotion, and
- Education and outreach.

Municipalities with pay-as-you-throw waste management programs such as Toronto would be able to recoup these costs from residents to ensure those who dispose more pay more. Other municipalities that run their waste management programs through property tax revenues may elect to raise the extra revenue through increased property taxes.

In the case of businesses, a levy may increase disposal costs for some businesses; however, the increase is likely to be minimal, especially when considered on a per-business basis. A 2008 study showed that a company with 5 employees could see an increase in disposal costs of under \$15 per year if a \$1 levy per tonne was imposed. A company with 100 employees, they could see an increase in disposal costs of under \$100 per year if a \$1 per tonne levy was introduced. Therefore, as diversion increases, the cost to businesses would go down. Moreover, the benefits to the businesses resulting from the programs designed to increase diversion would outweigh the costs to the levy.

Government – additional resources would be required since the government would need to monitor the transfer stations to ensure that reporting is occurring properly, however, more effort would be required for data analysis of annual reports for material flow and infrequent spot checks. From the climate change perspective, the government could adjust the rollout to support the GHG reductions that it is trying to achieve.

Implementation Considerations

Analysis of marketplace/identify outcomes – the government would need to establish clear outcomes and establish a well-developed material management infrastructure and end markets to manage the materials.

Other Items to Consider

Areas that would be exempted or experience flexibility would include northern Ontario transfer stations and municipalities/regional governments with combined populations above the threshold for collection of organics that cannot occur on a cost-effective manner.

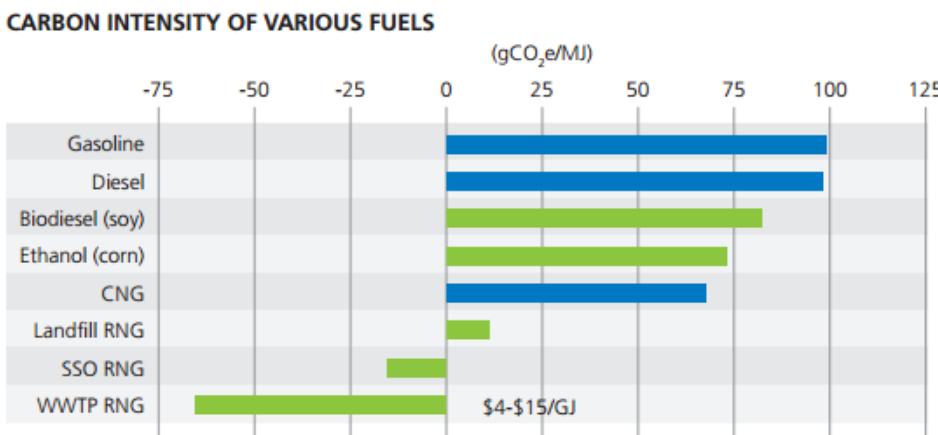
The rationale for not focusing the policy mechanism on the generators is that you were trying to deal with thousands of outlets rather than a few hundred consolidation points. In California, the generator level ban is causing significant challenges and, thus, little to no organics infrastructure is being developed to meet the regulation that they have enacted. They are not required to implement other policy measures to facilitate the diversion of organics; however, the end markets are not developed so they are not making significant progress on this effort.

The measures would be administered by the private transfer stations and municipalities. It would be enforced by the government through spot checks and annual data reviews. The funding of the program would be provided through the collection of the surcharges that occurred at the transfer stations.

Appendix B – Greenhouse Gas Benefits from Renewable Natural Gas

Renewable Natural Gas

The conversion of methane from landfills, biogas and wastewater treatment facilities to electricity or natural gas is a decades old technology. Compared to other fuels, the carbon intensity of these energy sources is considerably less than traditional sources of transportation fuels. As an example, in the use of RNG as a transportation fuel, the chart below shows the carbon intensities of various fuels:



This biogenic source of energy is used extensively in the United States. In Ontario, only a handful of companies and municipalities are converting methane to electricity but there is significant potential is great to expand the use of this technology for the development of alternative low carbon fuels.

In the last decade, landfill companies, primarily in the United States, have been increasingly switching from generating electricity to developing pipeline quality gas, specifically as a direct substitute, or offsetting the use of natural gas or electricity at industrial facilities (e.g. automotive, pulp and paper and cement manufacturers). Today, landfill operators are moving towards supplying competitive markets with RNG via pipelines as large GHG emitters and other obligated parties are seeking to receive as much RNG as possible. ONEIA supports the development of an RNG system that is market driven and allows private entities generating RNG to sell the associated attributes for the highest return available in the marketplace.

As an example, Waste Connections (WC) built and operates a large-scale biogas facility at its Lachenaie Landfill in Quebec. This facility converts landfill gas to pipeline quality gas, which is supplemental to its landfill gas to electricity facility. The company recently closed its landfill gas to electricity operation and redirected all the landfill gas generation to its RNG facility. WC intends to develop a similar facility at its Ridge Landfill near Chatham, ON. Walker Industries is taking a similar approach at its Niagara Landfill.

Renewable Natural Gas as a Transportation Fuel

As example of the advantages of migrating to RNG as a transportation fuel, in 2014, Ontario used approximately 5 billion liters of diesel for road motor vehicles. Based on organics, biosolids and landfill gas production, Ontario could transition 33% of its entire diesel fuel use to compressed RNG and therefore, provide a low carbon fuel source, supporting the mitigation of short-lived climate pollutants. MOECC has discussed a program that would look to achieve 2% usage of RNG by 2020 and 10% by 2030. However, to achieve these objectives, regulatory approvals and the development of the required infrastructure will need to be hastened significantly. These proposed timelines do not align with the federal and provincial climate change goals. Sources and their RNG generation potential are detailed in the table below based on a Canadian Biogas Association study from 2013:

| Source | Generation Potential of Millions m ³ RNG | Generation Potential of Millions of Liters of Diesel Fuel Equiv. |
|--------|-----------------------------------------------------|------------------------------------------------------------------|
|--------|-----------------------------------------------------|------------------------------------------------------------------|

| | | |
|------------------------------------|--------------|--------------|
| Wastewater WWTP | 119 | 123 |
| IC&I Food Waste | 122 | 126 |
| Animal Manure | 637 | 657 |
| Residential Food and Organic Waste | 72 | 74 |
| Landfill Gas | 654 | 675 |
| Subtotal | 1,604 | 1,655 |

The use of natural gas as a transportation fuel has been growing exponentially. It is predominantly used with return to base fleets such as waste collection and municipal transit. The waste services industry began using liquid natural gas (LNG), predominantly in California, over two decades ago. The switch to compressed natural gas (CNG) began in the mid to late 2000s. Today, Waste Management (WM), Republic and WC have the largest CNG powered waste and recycling collection fleets in North America, respectively. In Ontario, WM, PWS and Emterra Environmental have CNG powered collection vehicles operating in Ottawa, Waterloo and the Regions of Peel and Simcoe County. It should be noted that municipal governments are increasingly adding the use of CNG as a prerequisite to outsourcing their residential connection contracts. This has resulted in an effective means to driving the use of CNG.

There are numerous environmental benefits to converting from diesel to CNG. For every vehicle that is converted to natural gas, use of diesel fuel is reduced by an average of 36,400 liters (8,000 gallons) per year. This reduces greenhouse gas emissions by over 22 metric tons per year, per truck. Vehicles powered by CNG result in: nearly zero particulate emissions; a 50% reduction in smog-producing nitrogen oxide emissions compared to the cleanest diesel trucks; cut greenhouse gas emissions by over 20 percent; and are far quieter than diesel trucks.

While the conversion of CNG to compressed C-RNG is not a new phenomenon, its uptake is starting to take root. WM in partnership with Linde, is converting landfill gas into LNG at WM's Livermore Landfill in northern California and transporting the LNG to southern California to fuel its LNG powered fleet. In St. Landry's Parish, LA, WC is fueling its CNG powered vehicles with landfill gas directly from the St. Landry Landfill. In Surrey, BC, the City is completing the development of a bio-digester that will process the organics collected in the city, and generate pipeline quality gas. The generation of RNG from waste-based sources will continue to originate primarily from landfills, due to their large and consistent flow volumes. However, biogas and wastewater treatment plant (WWTP) facilities also show significant potential for RNG generation.