A PRIMER

Developing an Advanced Resource Recovery Framework to Support a Waste-Free Ontario

Prepared for Distribution and Discussion at the

5th annual Resource Recovery Partnership Conference

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Presented for Exclusive Use of Conference Registrants

PURPOSE OF THIS PRIMER

This document has been developed as a Primer for starting and stimulating discussion in the pursuit of an advanced resource recovery framework to support a waste-free Ontario. It is a beginning. The goal is to get items on the table and the **5th annual Resource Recovery Partnership Conference** (now a two day event) represents an ideal time to push this forward for discussion.

This Primer has identified many of the inconsistencies that exist in definitions and terminology, and some of the gaps in the current approach to zero-waste, and, suggests that advanced resource recovery technologies can close these gaps. Resource recovery is essential to managing and reducing the full life cycle cost of material consumption in our society and to achieving not only a circular economy, but most importantly, a sustainable economy.

Current models have relied upon traditional approaches to achieving a waste-free Ontario, which are primarily reduce, reuse and recycle (including composting). Resource recovery should be viewed as a key category as well as its fundamental processes propose to eliminate loss of value laden waste from the current disposal system and do so using a high value approach. Currently, Ontario does not recognize the majority of resource recovery technologies as equivalent, acceptable mechanisms for recovering the intrinsic resource value in non-recycled waste. There is little evidence available to suggest why this is the case. The current evidence, discussion and new evidence needs to be at the forefront.

Resource recovery must be supported with sound public policy in order to promote investment in innovation, commercialization and installations that will meet Ontario's waste recovery needs in the near term and into the future.

This Primer on the development of an advanced resource recovery framework is intended to promote discussion and start the input process. The input received through consultations with Conference participants, partners and all interested stakeholders will be added to this Primer. At the end of this document is the outline of a process for adding to this discussion and joining together the fragmented voices and efforts of many researchers, industry leaders and policy makers into a unified movement towards sound environmental policy. Your voice is critical to this discussion. To become part of this solution we need your commitment to provide input and support to this discussion through your official participation and putting your name behind this policy.

This Primer contains eight sections:

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1.0 Introduction and Background

1.1 Introduction

Jurisdictions locally and globally with businesses, environmental groups and consumers have become aware of the challenges of the world's growing pressures on the environment and economy due to waste caused by increasing living standards and expanding population. With increased living standards and expectations for healthier and better life styles comes increased pressures on resources including economic, environmental and social – the three pillars of sustainability.

Demands on waste management and resource recovery include the protection of human health but must also address sustainability needs of present and future generations. Demands on sustainable systems must include conservation of resources and minimizing or eliminating the pollution of the environment (i.e. land, water, air) through toxins and greenhouse gases that contribute to global climate change.

These concerns have resulted in concepts such as Circular Economy (CE) and Sustainable Materials Management (SMM) to be at the forefront as frameworks to manage waste resources and address Sustainable Waste Resource Management in the economies of the world. These concepts, depending on how they are defined, are both complementary and different, but have the core value of efficiently capturing the highest value from waste resources to create a more sustainable economy and society.

1.2 Background

To eventually create a policy paper and/or an advanced resource recovery framework that all concerned organizations can ultimately support, key principles need to be identified, debated, adjusted and eventually agreed to. The following is a starting point for the conversation with a focus on waste prevention and maximizing the benefits of resources generated in various waste streams as part of a broader advanced resource recovery framework:

1. Reduce waste and emissions generated is the first objective of any system.
2. Manage the waste resources remaining in a sustainable way by minimizing the economic (i.e., affordable systems) and environmental (land, water and air pollution) burdens associated with the waste and resource recovery systems.
3. Recognize that "Life Cycle Considerations" to managing waste resources sustainably are critical to achieving the reductions needed to minimize economic and environmental burdens. The application of treatment options after source reduction should be guided by "Life Cycle Thinking" and a hierarchy of technologies starting with traditional/conventional and then advanced technologies that produce products of value.
4. Have the appropriate target(s) that will define the end goal(s) and how to achieve them.
5. Establish a waste resource recovery system objective to recover and produce the highest value product, as possible, for use in the economy, using the best available technologies that also protect the environment and meet society's choice of strategic targets.
6. Establish principles that recognize local, regional and provincial (and national) jurisdictions' needs and do not be prescriptive or pre-determine resource recovery systems for these jurisdictions.

7. Remain open to new, innovative ideas, encouraging flexibility that permits bridging and transitioning to new technologies and systems as the foundation and commitment to continuous improvement.

References:

1. Maximizing the Benefits of Circular Economy and Sustainable Material Management Models for Product-Packaging, September 19, 2016, Ameripen
2. Circular Economy & Sustainable Materials Management: How they are different and why does it matter? Presentation to NAPRA February 23, 2017, Ameripen.
3. Integrated Solid Waste Management: A Life Cycle Inventory, 2nd Edition, Forbes R. McDougall, Peter R. White, Marina Franke, Peter Hindle.
4. Circular Economy, Ellen McArthur Foundation.

2.0 Some Important Terms/Definitions and the Need for Consistent Terms/Definitions

The field of solid waste management has a plethora of definitions that fall into different categories including:

- Regulatory definitions usually defined by the Province of Ontario although some are defined at the Federal Government.
- By-law definitions usually defined by municipalities (and not always consistent from one municipality to the next).
- Definitions created by waste management, recycling and other related organizations that have no legal foundation; however, they are often used by the members and adopted by others.

Some definitions often have a historical basis and have not been modernized; although the technologies within the definition are different than in the past. The inconsistency in legal definitions can be problematic when different provinces are compared. In addition, different technologies can be lumped together in some definitions with little understanding as to why that is the case. The remainder of this section highlights a number of terms and some different definitions.

2.1 Integrated Solid Waste Management

Integrated Solid Waste Management (ISWM) is a comprehensive waste prevention, recycling, composting, and disposal program which works cohesively to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment. ISWM considers local needs and conditions, and then applies the most appropriate combination of waste management approaches for that situation. The major components of ISWM activities are waste prevention, recycling and composting, resource recovery, and, disposal in properly designed, constructed, and managed landfills.

* source - based on the EPA definition noting that determining a date of this definition is difficult because many current documents are now archived on the USEPA website.

* Environment Canada and the Ministry of the Environment & Climate Change do not have specific definitions; however, many municipalities in Ontario and across Canada have created definitions to meet their needs.

2.2 Sustainable Waste Management

"Sustainable waste management …aims to reduce the quantity of natural resources consumed by ensuring that any resources already taken from nature are reused many times and that the amount of residual waste produced is kept to a minimum and treated in an environmentally safe way. The processing of waste plays a key part in this."

* source - excerpt from "Sustainable Waste Management" published by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Federal Ministry for Economic Cooperation and Development)

2.3 Resource Recovery and Resource Recovery System

Resource recovery means the extraction of useful materials or other resources from things that might otherwise be waste, including through reuse, recycling, reintegration, regeneration or other activities. This includes the collection, handling, and processing of *food and organic waste* for *beneficial uses*. Although energy from waste and alternative fuels are permitted as waste management options, these methods are not considered *resource recovery*. The recovery of nutrients, such as *digestate* from *anaerobic digestion*, is considered *resource recovery*.

Resource recovery system means any part of a *waste management system* that collects, handles, transports, stores or processes waste for *resource recovery* purposes, but does not include disposal.

* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, https://www.ontario.ca/page/food-and-organic-waste-framework

2.4 Zero Waste

"Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."

* source – Zero Waste International Alliance http://zwia.org/standards/zw-definition/

"Zero waste Ontario is a visionary goal that provides the guiding principles needed to work toward the elimination of waste. It is a new approach that focuses on preventing waste in the first place rather than relying on traditional end-of-life waste management solutions."

* source – Ministry of the Environment & Climate Change, Strategy for a Waste-Free Ontario: Building the Circular Economy, February, 2017 https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy#section-4

2.5 Zero Greenhouse Gas (GHG) Emissions

"Climate neutral", "carbon neutral" or zero greenhouse gas emissions refer to achieving net zero GHG emissions by balancing a measured amount of GHGs released with an equivalent amount sequestered or offset or buying enough carbon credits to make up the difference.

The best practices seeking zero GHG emissions is to reduce or avoid GHG emissions first so that only unavoidable emissions are offset.

* source – very few definitions exist with respect to solid waste management

"The visionary goal of eliminating greenhouse gases from the waste sector will guide our priorities for resource recovery and waste reduction. It will help the province meet its climate change commitments and build a low-carbon economy while protecting Ontario's natural environment."

* source – Ministry of the Environment & Climate Change, Strategy for a Waste-Free Ontario: Building the Circular Economy, February, 2017 https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy#section-4

2.6 Sustainable Materials Management

Sustainable Materials Management (SMM) is a systems approach to serving human needs by using/reusing resources in the most productive and sustainable way across their entire life cycle, from the point of resource extraction through material disposal.

This systems approach seeks to:

- conserve resources,
- reduce waste,
- slow climate change,
- minimize all the associated environmental impacts, and
- recognize economic considerations.

* source - US EPA and OECD website sources

2.7 Circular Economy

The circular economy is a framework that embraces the concept of cradle-to-cradle management of resources by the elimination of the concept of waste, maximizing the utility of resources and renewable energy, and, integrating the considerations of social responsibility into decision making. CE promotes the "closed loop" approach to production including the concepts of:

- product life extension,
- long life goods,
- reconditioning activities, and,
- waste prevention.

CE considers natural capital restoration in process design such that the by products of one industrial process become the input for additional processes.

* source - based upon concepts and content published by the Ellen MacArthur Foundation

2.8 Life Cycle Assessment (LCA)

"A life cycle assessment (LCA) is a tool that can be used to evaluate the potential environmental impacts of a product, material, process, or activity. An LCA is a comprehensive method for assessing a range of environmental impacts across the full life cycle of a product system, from materials acquisition to manufacturing, use, and final disposition.

LCA study results help to promote the responsible design and redesign of products and processes, leading to reduced overall environmental impacts and the reduced use and release of more toxic materials. LCA studies identify key materials and processes within the products' life cycles that are likely to pose the greatest impacts, including occupational and public toxicity impacts. These assessments allow businesses to make product improvements through environmentally sound process, material, and design choices."

* source - US EPA website, no date provided https://www.epa.gov/saferchoice/design-environment-life-cycle-assessments

3.0 What are Traditional Waste Diversion and Waste Management Practices?

Generally, in Ontario, waste management systems include variations on the following practices:

- Waste avoidance/prevention/minimization (not created in the first place)
- Reuse/refurbish/repurpose (for use again)
- Source separated recyclables (to be collected, processed, marketed and re-manufactured)
- Source separated leaf and yard waste (to be collected, processed and marketed)
- Source separated organics (food and other organics wastes) (to be collected, processed and marketed). Processing technologies generally include aerobic composting and anaerobic digestion (AD) technologies
- Energy from waste (EFW) through combustion
- Landfill

Similar to the discussion in Section 2, there will be legal definitions for most of these practices. In addition, there are non-legal definitions created and used by many. These seven practices generally have a proven track record in Ontario, other parts of Canada and in other parts of the world.

4.0 What are Advanced Resource Recovery Practices?

4.1 Anaerobic Digestion (AD - Biogas)

AD facilities can be listed under both traditional (as noted above because it is a proven technology in Ontario) and advanced in the case of Ontario as most AD experience has been associated with farm operations. With respect to AD as part of Mechanical-Biological Treatment (MBT) or as part of a mixed waste processing (MWP) system, this would be considered advanced and belongs in this section.

"Anaerobic digestion means the decomposition of organic matter by bacteria in an oxygen-limiting environment (as defined in *Regulation 347* under the *Environmental Protection Act*). The biogas generated through *anaerobic digestion* can be used to fuel electrical generators, or it can be further processed into renewable natural gas. The *digestate* may also be used as a soil amendment that is most commonly used in agricultural operations."

* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, https://www.ontario.ca/page/food-and-organic-waste-framework

"What is Biogas? Biogas is a renewable source of methane, the main ingredient in natural gas. It can be used for heating and cooling, or to generate electricity that can be used on-site or fed into the distribution grid. It can be refined into renewable natural gas that can be injected into gas pipelines or compressed and used as a vehicle fuel. The entire system, including the energy generating components, is typically referred to as a biogas facility or a biogas plant.

Biogas is produced when organic materials — anything from municipal organic wastes or bio-solids, food processing by-products, or agricultural manure and crop residues — break down in an oxygen-free environment. The process is called anaerobic digestion (AD) and usually occurs in a specialized tank or vessel – the anaerobic digester. AD is also the process that generates biogas or landfill gas (LFG) within landfills.

Anaerobic digesters have a number of end products, including digestate, a nutrient-rich slurry that can be applied directly on agricultural land, or material that is composted and then used for a range of purposes. Digester solids are materials from after de-watering that can be composted, and are well suited to be mixed with leaf and yard waste."

*Source - Canadian Biogas Association, Municipal Guide to Biogas, March 2015
https://www.biogasassociation.ca/

4.2 Mixed Waste Processing

"Mixed-waste processing involves no generator separation of waste, with all waste processed at what's been called a "dirty" material recovery facility (MRF).[1] Recyclables are then pulled out at the MRF through a combination of manual and mechanical sorting. The sorted recyclable materials may undergo further processing required to meet technical specifications established by end-markets while the balance of the mixed waste stream is sent to a disposal facility such as a waste-to-energy facility or landfill".[2]
* source(s)
[1] Waste 360 http://www.waste360.com/mrfs/10-points-explain-mixed-waste-processing
[2] Wikipedia https://en.wikipedia.org/wiki/Materials_recovery_facility

Mixed waste processing means *resource recovery* processes that recover *food waste* or *organic waste* from waste streams where *food and organic waste* is co-mingled with other wastes.
* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, https://www.ontario.ca/page/food-and-organic-waste-framework

4.3 Mechanical/Biological Treatment (MBT)

"Mechanical Biological Treatment (MBT) technologies are pre-treatment technologies which contribute to the diversion of MSW from landfill when operated as part of a wider integrated approach involving additional treatment stages. Mechanical Biological Treatment (MBT) is a generic term for an integration of several mechanical processes commonly found in other waste management facilities such as Materials Recovery Facilities (MRFs), composting or Anaerobic Digestion plant. MBT plants can incorporate a number of different processes in a variety of combinations. MBT therefore compliments, but does not replace, other waste management technologies such as recycling and composting as part of an integrated waste management system. MBT plants include the:

- Pre-treatment of waste going to landfill;
- Diversion of non-biodegradable and biodegradable MSW going to landfill through the mechanical sorting of MSW into materials for recycling and/or energy recovery as refuse derived fuel (RDF);
- Diversion of biodegradable MSW going to landfill by:
- Reducing the dry mass of BMW prior to landfill;
- Reducing the biodegradability of BMW prior to landfill;
- Stabilization into a compost-like output (CLO)2 for use on land;
- Conversion into a combustible biogas for energy recovery; and/or
- Drying materials to produce a high calorific organic rich fraction for use as RDF."

* source - Mechanical Biological Treatment of Municipal Solid Waste, February 2013, Dept. of Environment, Food and Rural Affairs, www.defra.gov.uk

4.4 Energy-from-Waste (EFW)

EFW is “A facility that generates steam and/or electricity through the combustion of municipal solid waste.”
* source – Canadian Resource Recovery Council, http://www.resourcerecovery.ca/info/glossary/

For the purposes of these guiding principles, and by way of definition, we have defined:

“Energy-from-Waste is any technology, which recovers energy from the management/processing of waste materials. This includes Anaerobic Digestion, Mass Burn, Gasification, Plasma Gasification, and Landfill Gas Recovery.

Waste Derived Fuel is any technology designed to turn waste materials into a fuel product with the recovery of recyclables materials as part of the fuel development process.”

* source – Ontario Waste Management Association, Guiding Principles Integrated Solid Waste Resource Recovery and Utilization (OWMA EFW/WDF Committee, November 2011) https://www.owma.org/articles/guiding-principles-on-integrated-solid-waste-recovery-and-utilization

Energy can be recovered from waste by various (very different) technologies. It is important that recyclable material is removed first, and that energy is recovered from what remains, i.e. from the residual waste. Energy from waste (EFW) technologies include:

- Combustion in which the residual waste burns at 850°C and the energy is recovered as electricity or heat
- Gasification and pyrolysis, where the fuel is heated with little or no oxygen to produce “syngas” which can be used to generate energy or as a feedstock for producing methane, chemicals, biofuels, or hydrogen (see also landfill gas and sewage gas)
- Anaerobic digestion, which uses microorganisms to convert organic waste into a methane-rich biogas that can be combusted to generate electricity and heat or converted to biomethane. This technology is most suitable for wet organic wastes or food waste. The other output is a biofertilizer.

* source – Renewable Energy Association, United Kingdom https://www.r-e-a.net/renewable-technologies/energy-from-waste

Energy recovery from waste is the conversion of non-recyclable waste materials into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion and landfill gas recovery. This process is often called waste to energy (WTE).

* source - US EPA website, no date provided https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw

4.5 Waste Conversion Technologies (WCT)

Waste Conversion Technologies (WCT) include the broad range of technologies which are applied to recover the inherent stored resource value of targeted waste feedstocks and/or MSW and to make these resources available for use rather than for disposal.

"There are a large number of technologies on the market at the moment and the use of many terms and definitions, with often different meaning. This reduces the possibility of comparing the different options. This chapter lists the most important concepts used in this field alphabetically.

- *Gasification* is the thermal breakdown of waste under oxygen starved conditions (oxygen content in the conversion gas stream is lower than needed for combustion), thus creating a syngas (e.g. the conversion of coal into city gas).
- *Plasma gasification* is the treatment of waste through a very high intensity electron arc, leading to temperatures of > 2,000°C. Within such a plasma, gasifying conditions break the waste down into a vitrified slag and syngas.
- *Pyrolysis* is the thermal breakdown of waste in the absence of air, to produce char, pyrolysis oil and syngas (e.g. the conversion of wood into charcoal)."

* source - International Solid Waste Association (ISWA), Alternative Waste Conversion Technologies, 2013

"New technologies to convert municipal and other waste streams into fuels and chemical commodities, termed conversion technologies, are rapidly developing. Conversion technologies are garnering increasing interest and demand due primarily to alternative energy initiatives. These technologies have the potential to serve multiple functions, such as diverting waste from landfills, reducing dependence on fossil fuels, and lowering the environmental footprint for waste management. Conversion technologies are particularly difficult to define because their market is in development and many of their design and operational features are not openly communicated by vendors. EPA's Office of Research and Development conducted research to evaluate and develop a "State of Practice" report for State and local decision-makers on the suite of emerging waste conversion technologies."
* source - USEPA State of Practice for Emerging Waste Conversion Technologies, 2012
https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=305250

5.0 Why is there a Need for an Advanced Resource Recovery Framework?

The *Waste-Free Ontario Act* (WFOA) includes both the *Waste Diversion Transition Act 2016* (WDTA) and the *Resource Recovery and Circular Economy Act 2016* (RRCEA). The MOECC published the final Strategy for a Waste-Free Ontario: Building the Circular Economy (Strategy) in February 2017, a requirement of the *Waste Free Ontario Act, 2016*, which outlines a road map for resource recovery and waste reduction for Ontario. It also:

- sets a vision and goals including interim waste diversion goals for 2020 (30%), 2030 (50%) and 2050 (80%);
- articulates key government actions to support implementation of the vision and goals; and
- identifies performance measures to be used to assess progress towards achieving the vision and goals.

The Strategy focuses on moving Ontario towards a circular economy described as "a system where nothing is wasted and valuable materials destined for landfill are put back into the economy without negative effects on the environment." This approach – a circular economy – has the potential to reduce greenhouse gas emissions, save and better utilize scarce resources, as well as create jobs and financial opportunities.

Waste diversion has been defined by MOECC along with interim targets as noted above. It does raise very important questions including understanding the magnitude of the amount not diverted; basically, millions of tonnes:

By Year:	Percentage of Waste Diversion (Total Solid Waste)	Amount Still Requiring Management
Today	~25%	75%
2020	30%	70%
2030	50%	50%
2050	80%	20%

The challenge of tackling the percentage that requires management, and potentially help with the amount that must be diverted, highlights the need for the understanding and development of an advanced resource recovery framework. A framework that allows appropriate time to be spent on non-traditional recycling, composting and processing systems (because we still spend most of our time on traditional). Why? Not only will it be a challenge to get to these high levels of waste diversion; but, there may be better opportunities with advanced resource recovery systems that have not yet emerged due to the limited attention being invested.

Below are some questions that appear to be unanswered, or if answered, perhaps without the rigour of appropriate analysis. This list of questions needs to grow, coupled with a commitment to answer them.

5.1 Lack of Information Available

a. How can data be collected and managed to provide industry, academia and entrepreneurs the information required to meet current and future waste diversion opportunities?
b. How do we evaluate the efficacy of resource recovery technologies? Are they all created equal?
c. ??

5.2 Current Direction in Ontario has Limitations

a. How can government empower industry to realize the value of unrecognized waste resources?
b. Are resource recovery technologies engaging in waste management or production?
c. Do we need a paradigm shift to correctly classify waste materials as preprocessed feedstocks?
d. ??

5.3 Medium and Long-term Ontario Goals Cannot be Achieved

a. How large is the gap between mechanical recycling and landfill? And what are the impediments to closing this gap?
b. Should the recovery of end-of-life material resources be mandated during the manufacturing process and design of goods or at the end of life of the goods through flexible and innovative technologies?
c. Can mandating recycling content in new materials production drive progress towards medium and long term goals?
d. Should government require all landfilled waste to be preprocessed for value recovery?
e. ??

5.4 Confidence Challenges in Technologies

a. Does society have the requisite technologies available to meet the challenges of the diversity and complexity of waste as it is generated today and for what will come tomorrow?
b. Can resource recovery technologies meet the challenges of the different jurisdictions, geographies and demographics unique to urban and rural residents?
c. ??

5.5 Investment in Ontario, other parts of Canada, not Supported

a. How should government support the research and development of new and innovative technologies which require access to feedstock, financing and end markets?
b. How can society be made aware of the advantages of a robust resource recovery system that inclusively manages current and yet to be developed packaging and waste materials?
c. Should government mandate domestic resource recovery capacity for diversion programs? Are we exporting our waste problem or are we losing our resource recovery opportunity?
d. ??

5.6 Research and Demonstration Projects

a. How should government support the research and development of new and innovative pilot projects which require permitting for operations not previously considered?
b. How should regulations empower stewardship organizations to incorporate new technologies to meet their mandates – how can innovation be de-risked?
c. ??

5.7 Increase Conversations on Opportunities

a. How can government leverage the advantages of recovery technologies to protect the environment in the near term, rather than in the maybe distant future?
b. Should the government legislate standards and outcomes instead of processes and market access?
c. How can resource recovery reduce our carbon footprint? Reduce greenhouse gasses?
d. What wastes are the greatest contributors to landfill volumes? To greenhouse gas production?
e. ??

6.0 Components of a Framework

The transition to a circular economy, the transition to a sustainable materials management economy, the transition to some hybrid system, etc. will need to be supported by policies and operational decision-making practices based on evidence. It will become more challenging, not less challenging as we try to address values that span the social, environmental, economic and technical domains.

With respect to advancing resource recovery in Ontario (and other jurisdictions) a framework is required that has been designed from many different viewpoints. Over the years, Ontario has had a number of different waste management frameworks (or framework-like approaches).

Some of the key areas of an Advanced Resource Recovery Framework would include but not be limited to:

- Government Polices, Incentives, Practices, Backstop Legislation
- Industry Policies, Practices
- Feedstock Supply, Management
- Consolidation, Transportation
- Pre-processing Technologies
- Processing Technologies
- Markets, Products
- ??

7.0 Potential Steps to Build the Framework

Frameworks are best developed by the people involved provided that a broad cross section of people are participating. That means there needs to be a role for different opinions, different ideas, etc. A framework should be viewed as the beginning and not necessarily the end, as we have proven that in Ontario, with many different changes that have not always produced the results envisioned.

Framework steps may include these areas (and others):

- Determine who should be involved
- Establish and agree to code of conduct for participation
- Determine and agree on where we are
- Identify and understand the need(s) and gaps
- Develop a Policy Working Group(s)
- Engage others, seek broader input
- Assimilate information
- Draft policies, directions, provide insight

8.0 How to Get Involved – Policy Development Timeline

The successful development of a framework and sound public policy requires the engagement and commitment of all affected stakeholders. The success of resource recovery will impact the lives and environment of Ontarians and Canadians for generations to follow. Every stakeholder group that is engaged in the production, consumption and end of life management of goods needs to have their voices heard as we take the next step in environmental protection and resource recovery.

The following tentative timeline presents how you can become involved and join with the Resource Recovery Partnership.

Step 1 - June 18, 2018 – issuance to interested stakeholders of ***A Primer - Developing an Advanced Resource Recovery Framework to Support a Waste-Free Ontario***

Step 2 - June 21-22, 2018 – Resource Recovery Partnership Conference 2018 – topical presentations, discussions, debate and consultation with academic, industry and policy makers to work towards consensus and the foundations to start the work on an advanced resource recovery framework

Step 3 - June – September 2018

- Engage and build commitment amongst stakeholders
- Grow the Resource Recovery Partnership membership across all sectors, building upon science based members, industry and policy makers.

Step 4 - September/October 2018 – Hold the first session in the process

For further information and to join the Resource Recovery Partnership, please contact Fergal McDonough at fergal@envise.ca or 905-941-2174.