



Optimization of Waste-Resources Management in the Restaurant Sector in Nova Scotia

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March 2017

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ACKNOWLEDGEMENTS

This document has been prepared by PHA Consulting Associates, Canning, Nova Scotia. This document has been prepared with the assistance of the following, whose contributions and assistance is gratefully acknowledged:

Restaurant Association of Nova Scotia, who provided leadership and coordination in support of all project activities

DivertNS, who coordinated the participation of municipal waste reduction coordinators in the project

Waste-Resource Region 5: Annapolis-Kings, who provided space for the analysis of materials collected from restaurants

Connie Hickman and Jennifer Hickman, who assisted with the audits of restaurants and undertook research

The following restaurants and restaurateurs/managers, who participated in the audits that are reported in this document:

Durty Nelly's: Halifax (Richard Sanford)

Kate's Sweet Indulgence: Lunenburg (Kate Cocks)

Le Caveau: Grand Pré (Beatrice Stutz)

Le Bistro by Liz: Halifax (Liz Ingram-Chambers)

The Port Pub: Port Williams (Lois Bowden)

1.0 INTRODUCTION

1.1 Project Rationale and Objectives

The Province of Nova Scotia is widely recognized for its leadership in the waste-resource management sector. Beginning with the release of the “Solid Waste Resource Management Strategy” report in 1995, a policy, regulatory and institutional framework has been developed in support of waste diversion away from disposal that continues to be a model that informs similar actions across Canada and internationally.

The restaurant sector has contributed to the success of the provincial waste-resource management program in Nova Scotia. Efforts in this regard are supported by waste reduction coordinators in each of the waste-resource management regions of the province who work with all sectors (including the restaurant sector) and residents to reduce waste disposal. Information and awareness materials in support of the diversion of waste from disposal are disseminated at provincial and local levels.

Notwithstanding the contributions of the restaurant sector to waste diversion in the province, the opportunity to recover increased quantities of materials from the sector has been noted in research on materials sent to landfills¹. The objectives of this project are therefore to:

- Assess the current generation and management of waste-resources in the restaurant sector in Nova Scotia and relevant jurisdictions elsewhere
- Identify barriers to enhanced recovery of materials in the sector
- Identify opportunities for addressing identified barriers
- Recommend measures to enhance the recovery of waste-resources from the sector.

1.2 Project Partners and Scope

1.2.1 Project Partners

The project is undertaken by the Restaurant Association of Nova Scotia with financing from Divert Nova Scotia:

The Restaurant Association of Nova Scotia (RANS). RANS has almost 400 restaurant members who work with over 1560 businesses in all aspects of the “restaurant eco-system”, and including the suppliers of the food, beverage, cleaning and other products and services that are necessary to the vitality of the sector. The membership of RANS is distributed across Nova Scotia; quick serve restaurants and the food services operations of institutions (e.g. Department of National Defence canteens, school canteens etc.) are not members of RANS. RANS represents over 60 percent of the commercial restaurants in the province, excluding the quick-serve sector. The Mandate of RANS is:

To positively affect change by providing leadership to the hospitality industry through advocacy, partnerships and promotion.

¹ Waste Audit Report 2012, Resource Recovery Fund Board Nova Scotia, Truro, p.27

Divert Nova Scotia is a not-for-profit corporation championing recycling in Nova Scotia. The organization delivers education and awareness programs, works collaboratively to develop and implement stewardship agreements, funds research and development initiatives, and promotes innovation through the development of value-added manufacturing.

1.2.2 Scope

The scope of the project includes materials generated and managed by the membership of RANS. In addition, reference is made to other sectors of the food services industry where these are appropriate to: (i) product or service providers to the members of RANS; (ii) Divert NS.

1.3 Structure of Document

This document is structured as follows:

- Section 2 provides a current status analysis, including the generation and management of materials in both Nova Scotia and in other jurisdictions relevant to Nova Scotia.
- Section 3 documents “barriers’ to enhanced recovery of materials from the sector
- Section 4 identifies opportunities for enhanced materials recovery from the sector
- Recommendations are presented in Section 5.

2.0 CURRENT STATUS ANALYSIS

2.1 Regulatory and Institutional Framework

2.1.1 Regulatory Framework

The regulatory framework for waste-resource management is defined at provincial and at municipal levels.

Provincial Level Part IX of the *Environment Act* (Chapter 1 of the Acts of 1994-1995, as amended) establishes that the province will maintain a goal of 50 percent waste diversion from disposal, and a target for waste disposal of 300 kgs/person/year by 2015. The Act provides that a variety of tools will be adopted to achieve these objectives, including research, collaboration with stakeholders, financing, compliance and other measures.

The provincial regulatory framework for solid waste-resource management is set out in *Solid Waste-Resource Management Regulations* (NS Reg. 25/96), and as subsequently amended, made in accordance with Section 102 of the *Environment Act*. The Regulations ban the items in Box 1 from disposal.

Municipal Level The *Solid Waste-Resource Management Regulations* establish that waste-resource management will be planned and coordinated across the province within seven regions. Municipal by-laws have been adopted in each region that reflect the bans on the disposal of materials enacted by the province. Regions, or individual municipalities within regions, may specify additional requirements including:

- Additional materials that are banned from disposal,
- Requirements for the separation of waste-resources
- Tipping fees for the management (i.e. recycling, composting or disposal) of materials.

2.1.2 Institutional Framework

The institutional framework for waste-resource management includes the provincial and municipal levels, and the private sector.

Box1: Materials Banned From Disposal By The Province

Audio and video playback and recording systems
Beverage containers
Cell phones and other wireless devices
Computer monitors
Computer printers
Computer scanners
Corrugated cardboard
Compostable organic material
Desktop, laptop and notebook computers
Ethylene glycol (automotive antifreeze)
Glass food containers
High-density polyethylene bags and packaging
Leaf and yard waste
Lead-acid (automotive) batteries
Low-density polyethylene bags and packaging
Newsprint
Post-consumer paint products, formerly known as waste paint
Steel or tin food containers
Telephones and fax machines
Televisions
Used tires

Provincial Level The Department of the Environment implements the materials disposal bans that are specified in the *Solid Waste-Resource Management Regulations*. This is done through a provision in the approvals documents for waste disposal facilities that requires the facilities to ensure that they do not receive materials that are banned from disposal.

The *Solid Waste-Resource Management Regulations* establish an independent provincial entity (Resource Recovery Fund Board) to:

- Develop and implement industry stewardship programs;
- Fund municipal or regional diversion programs;
- Develop and operate a deposit-refund system for beverage containers;
- Develop education and awareness of source reduction, reuse, recycling and composting; and
- Promote the development of value-added manufacturing in the Province.

The Resource Recovery Fund Board has operated as Divert Nova Scotia since May 2016.

Municipal Level Municipalities are responsible for the delivery of waste-resource management services to residents. Municipal services in this regard are typically extended to small businesses that generate waste-resources in generally similar quantities and similar composition to waste-resources generated by residents. Other businesses, however, must contract for the collection of waste-resources by private sector service providers. Waste-resources that are collected by the private sector may be subsequently managed at either public or private facilities, on a fee basis in either case.

The management of waste-resources across the province is coordinated within seven regions, each of which is served by at least one waste disposal site. In some regions, all waste-resources management services are undertaken by a single municipal-level decision-making entity on behalf of, and financed by, the individual municipalities that it represents. In other regions, individual municipalities have varying arrangements among themselves for the provision of waste-resources collection and waste disposal.

Divert Nova Scotia finances staff and related materials in each region in support of compliance by residents and industrial, commercial and institutional (IC&) entities - including restaurants - with materials disposal bans. The activities of these staff focus on:

- Education regarding materials banned from disposal
- Actions that waste-resource generators should take to comply with the bans
- The recycling, composting and other measures that are in place to provide an alternative to the disposal of a banned material.

2.2 Waste-Resources Management in the Restaurant Sector in Nova Scotia

2.2.1 Audit of Materials Generation

An audit has been undertaken of 5 restaurants for the purpose of developing indicative waste-resource generation data in the sector. The selection of restaurants to participate in the audit considered the following in order to ensure, as far as feasible, data that broadly represents the RANS membership:

- Licensed and unlicensed venues;
- Types of menu;
- Logistical constraints related to storage of materials both within the restaurant and outside the restaurant prior to collection.

The selection of specific restaurants has also taken account that participation in the audit was voluntary.

This methodology was implemented through:

- The development of a “long-list” of potential participants in the audit by RANS;
- Agreement with the consultant on specific restaurants from the long-list that would be invited to participate in the audit;
- An invitation from RANS to the identified restaurants to participate in the audit.

The following restaurants were selected and agreed to participate in the audit:

- Durty Nelly’s, Halifax, an Irish pub style of restaurant
- Le Bistro by Liz, Halifax, a fine dining restaurant
- Le Caveau, Grand Pré, a fine dining restaurant
- The Port Pub and Restaurant, Port Williams, a gastropub restaurant
- Kate’s Sweet Indulgence, Lunenburg, a café-style restaurant.

Arrangements for the audit were made between the restaurant and the consultant, as follows:

- Each restaurant was asked to identify a day within the 22-29 September 2016 period that represented, in their judgement, a “typical” day in terms of the number of patrons and types of meal/drinks service they provide. In two cases (Durty Nellys and Le Caveau) it was concluded that the audit should cover 2 days in order to represent the range of typical operations.
- Restaurants were asked to conduct their waste-resource management activities on the day(s) of the audit in exactly the way they normally would and using the receptacles and storage containers that they normally use. However, the restaurants were asked to ensure that all materials generated during the audit would be separately stored away from other materials until they were collected for analysis. No equipment was provided by the consultant, except for the provision of bags to facilitate the storage of some materials by some restaurants.
- Each restaurant was requested - and agreed - to provide the number of patrons that corresponded with the day(s) on which the audit took place. In one case, the restaurant did not

keep a record of patrons, but agreed to provide the number of cash register transactions as a surrogate for the number of patrons.

- All materials were collected by the consultant either on the day they were generated, or the following day.

Each restaurant generated the following streams of materials:

- Source-separated organics, destined for composting
- Source-separated mixed recyclable materials (excluding cardboard and beverage containers eligible for a refund)
- Refundables (i.e. beverage containers eligible for a refund under the provincial deposit/refund program and destined for recycling)
- Cardboard, destined for recycling
- Residual materials, destined for disposal.

Following collection from the restaurant, the materials were taken to facilities made available to the project by Valley Waste-Resource Management². The materials within each of the above streams were separated into the categories shown in Table 1; these categories correspond to the categories used in earlier work by Resource Recovery Fund Board to audit materials arriving at disposal facilities.

Each restaurant confirmed that it had performed the audit as requested and no restaurant reported difficulties with the audit or its procedures.

Table 1 summarizes the data from the audit, as follows together with additional observations from the audit:

Generation of Waste-Resources

- A total of 694 kg of materials were generated by the restaurants to meet the service demands of 2544 patrons.
- The restaurants generated an average of 0.28 kg of waste-resources per patron. However, there was wide variation in the quantity of waste-resources generated per restaurant, with the lowest quantity per patron at less than 0.07 kg and the highest at 0.71 kg.

Separation of Waste-Resources

- An average of 79.30 percent of materials was separated for recycling or composting. The range among restaurants varied from 63.73 percent to 98.89 percent.
- In all restaurants, the quality of separated materials was generally very high: contamination in materials separated for either recycling or composting ranged from less than 0.1 percent to 9.51 percent.

² Analysis of refundables took place at each restaurant so that the refundable items remained with the restaurant for their financial value.

Table 1: Materials Composition and Quantity

Category	Sub-Category	Waste Type	Separated Materials Weight (kg)	Unseparated Materials Weight (kg)	Total Weight (kg)	Percent of Total	
Organics		Food preparation waste	311.10	100.58	411.68	53.26	
		Plated food waste					
		Wet paper/ cardboard					
		Other organic waste					
Dairy	Milk Packaging	Polycoat (gable top)	3.72	0.28	4.00	0.58	
		Plastic Jug (HDPE - #2)					
		Plastic Bag (LDPE - #4)					
		Tetra-pak					
	Ice Cream Packaging	Plastic Container (HDPE-#2)	0.00	0.00	0.00	0.00	
		Boxboard Container					
	Other Dairy	Plastic Container (HDPE-#2, PP-#5, PS-#6), Tetra-pak, Other	0.00	0.00	0.00	0.00	
Dairy Substitute		Polycoat (gable top)	0.00	0.00	0.00	0.00	
		Plastic container					
		Tetra-pak					
Food Packaging	Plastic	Plastic - PETE #1	6.88	26.26	33.14	4.77	
		Plastic - HDPE #2					
		Plastic - PVC #3					
		Plastic - LDPE #4					
		Plastic - PP #5					
		Plastic - PS #6					
		Plastic - Other #7					
	Fibre	Boxboard - single layer	60.32	0.40	60.72	8.74	
		Dry Corrugated cardboard					
		Waxed corrugated cardboard - multi-layer					
		Fast-food boxboard					
		Fast food wrap					
		Molded pulp					
		Kraft paper bags/wrap					
	Laminated paper bags/boxboard						
	Glass	Clear food container	4.26	0.94	5.20	0.75	
		Coloured food container					
		Miscellaneous					
	Metal	Aluminum food container	5.79	0.70	6.49	0.93	
		Aluminum foil					
		Steel food container					
	Beverage Packaging	Metal	Aluminum cans	151.81	1.00	152.81	22.00
			Steel cans				
Glass		Glass bottles - clear					
		Glass bottles - coloured					
Plastic		Plastic (PET-#1) - clear					
		Plastic (PET-#1) - green					
		Plastic (PET-#1) - blue					
		Plastic (HDPE - #2)					
Other Plastic beverage container							
Other	Polycoat (gable top), Tetra-Pak, Other						
Miscellaneous		Spoons, candle holders, batteries, food in containers	3.15	17.52	20.67	2.98	
TOTAL			547.03	147.68	694.71	100.00	

Number of patrons 2544
 Average materials (separated plus unseparated) per patron 0.28
 Percent sorted 79.30
 Percent unsorted 20.70

- At the restaurant with the highest level of contamination in the separated materials, almost 20 percent of the contamination occurred as a result of boxboard being sorted into the cardboard stream. This also occurred at other restaurants, but to a lesser degree. Other contaminants included:
 - Non-recyclable plastics separated into the recycling stream. These plastics are recyclable when clean. However, these plastics were used for packaging of meat, fish or other items and contained residual levels of fluids, fat or powder.
 - Plastic straws and plastic dairy product (i.e. milk, cream) containers that were separated into the organics stream destined for composting.

Residual Materials

- All materials that were not separated for recycling or composting were placed into the disposal stream by restaurants. An average of 20.70 percent of materials was placed in the disposal stream. The percentage of materials placed into the disposal stream ranged from 1.11 percent to 36.27 percent.
- An average of 70.35 percent of materials in the residual waste stream was compostable or recyclable.
 - Approximately 97 percent of the compostable or recyclable materials in residual waste were organics that could have been streamed for composting. These materials were comprised of paper towels from washrooms, garnishes from drinks, coffee grounds and scraps from plates. Although these materials appeared in the residual waste streams of multiple restaurants (and paper towels occurred in the residual wastes stream from all restaurants) approximately half of the compostable materials in residual waste were from a single restaurant.
 - Approximately 3 percent of compostable or recyclable materials in residual waste were materials that could have been streamed for recycling. These materials included a variety of beverage and food packaging. In practice, this amounted to a few containers in each restaurant.

Limitations of Audit Data

The data developed through the audit may be considered indicative of waste-resources generation in restaurants in Nova Scotia, but should not be considered “representative” for the following reasons:

- The sample size is small. RANS has a diverse membership, and within the membership there are a variety of styles and size of restaurant. A sample that is representative of the RANS membership - or of restaurants generally in Nova Scotia - would need to be considerably larger.
- The restaurants volunteered to participate in the audit. The waste-resources sector in Nova Scotia is regulated. Accordingly, it may be supposed that restaurants that participated in the audit consider themselves to be substantially in compliance with the waste-resource management regulations; conversely, it can be expected that restaurants that are not in compliance would not wish to participate in the audit. In particular, this means that the generally high levels of separation of materials by the restaurants that participated in the audit may not reflect levels of separation at all restaurants. At the same time, this uncertainty does not imply necessarily poor materials separation performance at other restaurants.

Perspectives of Restaurant Owners and Managers

Discussions have been held with the owners and managers of the restaurants that participated in the audit regarding their experiences in materials separation. The following summarizes their perspectives:

- Restaurants may or may not reference materials separation in their management policies, manuals and job descriptions.
- Active management support is essential to ensuring that materials separation practices are properly implemented and adhered to.
- High staff turnover means that training is a continuing challenge for most restaurants.
- The behaviour of people to separate materials at home does not necessarily transfer to the workplace. Restaurants are too busy for activities to be undertaken that are not directly requested by management.
- Materials separation practices can be quickly learned, but may take time to become fully integrated into the way that staff performs their duties.
- Separation at a fine level becomes a significant operational challenge. The separation of plastic straws from garnishes, and single portion plastic creamers and butter servings from organic plate wastes present particular challenges.
- Visually attractive signage for use in kitchens is not available (to the knowledge of the restaurants). Appropriate signage should be colour coded, easily understood and with a key focus on visual (not written) images; this last point is particularly important because many restaurant staff do not have English or French as a first language.
- Appropriate training materials are not readily available; in-kitchen materials such as laminated poster and brochures would help reinforce messages.
- Some restaurants have residual materials and recyclable materials collected by a municipal service and organics collected by a private contractor. Soiled paper is discarded to the residual waste stream because the collection of this stream does not incur a cost to the restaurant; if soiled papers were discarded to the organics stream (as stipulated by regulation) this would add to the weight/volume of materials collected by the private contractor, and would incur cost to the restaurant.
- Smaller restaurants whose materials are collected by a municipal collection service at no cost do not have a financial incentive (associated with materials management) to either reduce waste or to separate materials. Restaurants that use private a private contractor will benefit financially to the extent that they reduce materials generation and separate materials into streams that incur lower costs (e.g. in municipalities where management fees for recycling or composting are lower than for disposal).
- A credible recognition program that provides positive profile to restaurants that meet high materials separation (and other environmental) standards would be welcomed by the industry, and would provide positive reinforcement that would provide an incentive to all restaurants to meet minimum materials separation requirements.
- Kitchen designs may identify locations for materials receptacles, but these may not be implemented after plans are approved by health or other regulatory entities.

Restaurant owners and managers also provided examples of how generation of materials can be reduced, or preferred product alternatives may be selected:

- Some items (e.g. lemons, other fruit, some meat products) may be individually wrapped in plastic, when there is no evident need for the plastic wrapping.
- Restaurants may choose reusable items over disposable items (e.g. reusable ramekins for dressings instead of disposable ramekins)
- Biodegradable/certified compostable containers for take-out food can be selected over non-biodegradable/compostable and non-recyclable containers
- Some items could be delivered in reusable containers instead of disposable/recyclable containers (e.g. cheese could be delivered in reusable coolers instead of polystyrene in the case of one restaurant.
- Wines and other drinks could be delivered in bulk formats rather than always in individual bottles

2.2.2 Goods and Services Suppliers to the Restaurant Sector

Discussions have been held with goods and services suppliers to the restaurant sector in order to understand waste-resource management issues and solutions from their perspectives. Accordingly,, discussions have been held with kitchen designers and equipment suppliers, food product distributors and private sector providers of waste-resource management services. The purpose of these discussions has been to understand the role and influence that each has in the generation and management of waste-resources by restaurants.

Kitchen Designers/Equipment Suppliers Discussions with kitchen designers have highlighted that the design of restaurant kitchens is highly site specific in terms of the space and budget available for a kitchen, and the equipment that is appropriate to the needs of the kitchen. Purchasers of kitchen design services do not generally prioritize the design of waste-resources management into an overall kitchen layout. Instead, waste-resources management is seen as an operational requirement that is addressed in the workplace.

Restaurant equipment suppliers in Nova Scotia carry a range of receptacles for waste-resources materials. These are available in a variety of sizes and colours. Sales data have not been available as a measure of the extent of use of purpose-built waste-resources receptacles. However, based on discussions with the restaurants that have participated in the materials audit (see above), a prevailing perspective in the industry is that the re-purposing of existing used containers is cost-effective and preferred to the alternative of purchasing purpose-built containers.

Food and Beverage Product Distributors Restaurants are supplied by distributors of food and beverage products³. Food and beverage products are received by distributors in packages that have been prepared by the manufacturer, and are assembled for distribution to individual restaurants. Distributors may assemble food and beverage products on pallets and may use shrink-wrap plastic film to stabilize loaded pallets, but they do not package food and beverage products themselves. Packaging that is used

³ Alcoholic beverages are distributed and retailed through the Nova Scotia Liquor Corporation.

by a food or beverage product manufacturer therefore passes through the distribution network and becomes the responsibility of the restaurant to manage.

Waste-Resource Management Collection Companies Private sector companies are contracted by restaurants (and other IC&I entities) that generate waste-resource quantities beyond the levels that can be accommodated by municipalities (or their contractors) in the residential waste-resource collection system. The services of a private sector collection company must be paid for, generally on the basis of the frequency of collection, the quantity of materials that are collected and the way that materials will be managed (i.e. composted, recycled or disposed of). Precise arrangements are negotiated between the contractor and the restaurant.

The collection service by the private contractor reflects municipal requirements for the separation of materials. Municipalities may inspect the quality of materials separation that has been achieved when a collection contractor delivers materials to a management facility (e.g. transfer station, composting facility etc.). A failure by the collection company to deliver properly sorted materials can result in the rejection of the load of materials and a requirement that the materials be properly sorted before delivery. This often results in collection companies taking an active role in working with their clients (including restaurants) to properly separate their wastes.

Many restaurants also have waste-resources collected by the municipality (or its contractor) as part of the residential collection program. This is advantageous to the restaurant since this service is provided at no cost. Generally across the province, however, waste collectors check that materials have been properly sorted at the time they are collect. A failure to properly sort materials may result in the materials not being collected.

Waste collection contractors contacted in support of the preparation of this document report good levels of cooperation from restaurants when the contractor brings issues of waste separation to their attention.

2.2.3 Provincial Perspectives

Waste reduction staff in each of the waste-resource management regions of the province have been contacted to determine their perspectives concerning the management of materials generated y the restaurant sector.

Box 1: Waste Resource Sorting at Mic Mac Mall

Mic-Mac Mall is a major shopping centre in Halifax Regional Municipality. Patrons at the Food Court of the mall were asked to separate waste-resource materials when they finished their meals and to place sorted materials into labelled and colour-coded bins. Compliance, however, was low and 78 percent of materials sorted as “waste” should have sorted as recyclable or compostable.

In 2014 the mall implemented a service in which staff clear tables and sort materials. The result has been that over 90 percent of materials are managed through either composting or recycling.

Each waste-resource management region makes its own determination of the activities it will undertake to support compliance with provincial materials disposal bans by all materials generators. The priority of the restaurant sector varies by region: in some cases, waste reduction staff report that restaurants are a priority focus for education/compliance actions, while in other regions the restaurant sector is not

a higher priority than other sectors. In some cases, waste reduction staff visit restaurants every 2-3 months, in other cases annual visits may be made, and in some cases visits are less frequent.

Generally, waste reduction coordinators report that the separation of materials is good where it is

Box 2: Waste-Resources Sorting in Quick-Serve Restaurants in Pictou County

High levels of materials separation were being achieved in the kitchens of quick-serve restaurants in Pictou County. However, efforts to educate customers on the sorting of their restaurant waste-resources were not effective: poor levels of separation resulted in high levels of contamination of recyclable and compostable materials streams. All materials generated by customers required management as waste.

In 2013, Tim Hortons agreed to have staff clear tables. Staff have been able to properly sort materials, with the result that materials recovery levels for recyclables and compostables has greatly increased, and materials requiring disposal have decreased. Currently, Dairy Queen, A&W and McDonald's also have staff clear tables and sort customer waste-resources.

Source: Susan MacDonald, Pictou County Waste Management

undertaken, and also note that education/inspection/compliance visits by them often stimulates the separation of materials where no or poor separation had taken place previously. Box 1 and Box 2 highlight innovative actions in the quick-serve sector of the industry.

The following issues are noted by waste reduction staff:

- Awareness of regulatory requirements for waste sorting may not always be high
- The support of management for source separation of materials is key;
- The high rate of staff turnover at

many restaurants means that training is an on-going requirement which may not, however, be adequately addressed by a restaurant

- The organization of waste-resources materials management in the kitchen is often poor and not well integrated with overall kitchen operations
- In some cases, materials collection contractors do not provide proper dumpsters/containers, so that materials that are sorted by a restaurant may not be kept separate by the collection company.
- In some cases, restaurants use municipal materials collection services (at no cost) when they should use a private contractor.
- Restaurant staff may understand the separation and recycling/composting of materials as a “home” activity, and may not understand it as a workplace activity as well.
- Contaminants in separated organics commonly include single portion creamers, straws and single portion butter containers.
- In some cases, lack of adequate signage is reported regarding what materials should be sorted into which receptacles.

Box 3: Pachamama Restaurant, Antigonish

Pachamama serves breakfast and lunch. Products are sourced locally through the FarmWorks program, and are delivered in reusable containers. The restaurant uses single-serve plates, cups and other items. Patrons place and pick-up their own orders and clear their tables. All residual materials are either compostable or recyclable, and there are no residual waste materials. Accordingly, receptacles are provided for compostable and recyclable materials, but not for “waste” Items “to go” are packaged in 100% compostable packaging. Compostable packaging is sourced from across Canada. While this incurs additional cost as compared to locally-available disposable packaging alternatives, a savings of approximately \$150/month is achieved by avoiding the need for residual materials collection and disposal.

- Recyclable materials may not be properly cleaned; in particular, jars and bottles sorted for recycling may contain quantities of product that should be rinsed out of the container before the container is placed for recycling.

Plastics present a widely reported problem:

- Soiled plastics cannot be recycled, but the point at which a plastic becomes “soiled” is not readily definable leading to uncertainty regarding which plastics are recyclable and which are not.
- Compostable plastics are used in an increasing number of applications. Technical standards have been established in North America for what constitutes a “compostable” plastic (ASTM 6400-12), and plastics that meet this standard are deemed to be compostable in municipal and industrial aerobic composting facilities. However, waste reduction staff report that:
 - Compostable film plastics may become ensnared in processing equipment and may require several cycles in the composting process (where other organics require only a single cycle) to fully break down
 - Compostable plastics may be separated into a “recyclable” plastic stream, and this may jeopardize the recyclability of “regular”, non-recyclable plastics.

2.3 Waste-Resources Management in the Restaurant Sector in Other Jurisdictions

Other jurisdictions have prioritized waste generated by restaurants. In particular, The European Union, some US jurisdictions and other Canadian jurisdictions are taking actions to address waste generated by restaurants, and restaurants and equipment suppliers are developing innovative approaches to minimizing waste. In many of these cases, particular focus is placed on food waste and/or organic wastes.

2.3.1 Canadian Jurisdictions

Metropolitan Vancouver

On July 1, 2015, Metropolitan Vancouver and the City of Vancouver introduced a ban on the disposal of organic material applicable to all homes and apartments, businesses, schools, grocery stores, and restaurants. All food scraps, including raw food, plate scrapings, leftovers, depackaged food, and meat must be separated from regular garbage. A surcharge of 50 percent of the disposal tipping fee is charged on loads of waste containing in excess of 25 percent organics. It is expected that the surcharge will be applied to loads of waste containing 10 percent organics in 2017.

Metro Vancouver has developed a number of free materials specifically aimed at helping restaurants adapt to the ban on disposal of organic materials. These include a step-by-step guide to help restaurants design, implement, and maintain a food waste recycling program, a guide for estimating the number of green bins needed for storing organic waste, a recycling hotline to gain information about the organics disposal ban, tips for safely donating food, and information for on-site organics management options.

In consultation with Vancouver-based restaurants, Metro Vancouver has compiled a guide outlining steps for the successful implementation of a food scraps recycling program based on the experiences of other restaurants. Most restaurants report that recycling food scraps becomes a normal part of business operations over time. Steps include:

1. Engaging restaurant staff, including the owner(s), manager, chef, purchaser, serving staff, kitchen staff, and custodial staff members.
2. Review current waste generation and record the waste generated on a variety of business days
3. Consider sharing a waste hauling contract with neighbouring businesses to save money and space
4. Assess work flow and recycling areas by allowing staff to choose receptacles for materials that best suit their work station needs. In addition, positioning green bins next to recycling bins and waste bins allows staff to sort organic and recyclable materials conveniently.
5. Start the food scraps recycling program in the kitchen where food waste is concentrated and staff is limited. Expand to other work areas once the recycling program is successful in the kitchen.
6. Create clear signage
7. Train, monitor and provide feedback to staff by arranging staff meetings, allowing staff time to adjust to the program, and identifying ongoing problem areas.

Metro Vancouver also encourages food donation through British Columbia's Food Donor Encouragement Act (SBC 1997, Chapter 8). This Act absolves individuals from liability associated with the donation of food that is fit for human consumption.

LeftOvers Food Rescue, Calgary

LeftOvers Food Rescue Calgary works with 25 vendors (including restaurants) and 130 volunteers to divert food destined for the landfill to service agencies that include the

Calgary Drop-In Centre, Calgary Interfaith Food Bank, Alpha House, Making Changes Association, and Inn from the Cold. These agencies provide the food to people in need. Volunteers with Leftovers Food Rescue pick up food. The organization uses guidelines set by Alberta Health Services to ensure the health of the donated food, and delivers it to the agencies it works with.

The majority of the food donated is considered low risk. These items include commercially canned food, whole fruits and vegetables, and dry goods. High risk foods transported by LeftOvers include dairy products and ready-to-eat cooked foods that are not left over from customer plates.

2.3.2 US Jurisdictions

State of Massachusetts

Massachusetts has implemented a number of waste disposal bans on specified materials, including materials commonly generated by restaurants such as glass/metal/plastic containers and cardboard. On

Box 4: Restaurant Waste Prevention

LeanPath has developed a waste tracking technology that provides real-time and summary feedback to restaurant managers regarding the waste they generate. Each kitchen staff member weighs the materials they discard, and records the type of material that is discarded, reason for the discard and other information that can be programmed into the application. Information from across the kitchen is collated and summarized for managers in real-time and weekly reports. Managers are able to use this information to increase awareness in the kitchen on the priority of minimizing waste, and identifying measures to reduce waste. Waste reductions in the amount of 50 percent of waste are reported by users of the technology, resulting in reduced waste-resource materials costs and food savings costs in the 2-6 percent range.

Source: www.leanpath.com

October 1, 2014, commercial organic materials were added to the list of materials banned from disposal when they are generated in quantities of 1 ton/week or greater.

The state (Massachusetts Department of Environmental Protection) has recommended that restaurants consider three types of action to comply with the ban on disposal of organic materials:

1. Reduce the volume of generated food waste, including:
 - Customize food purchasing quantities and shipment timing with fluctuations in weekly and seasonal needs
 - Utilize proper food storage techniques
 - Implement just-in-time preparation methods by decreasing batch sizes to reduce leftovers and food waste at the end of the day
 - Create new dishes by repurposing ingredients and leftovers
 - Implement stem-to-root and nose-to-tail techniques where the entire plant or animal is used
 - Invite a creative and participatory culture shift around food waste reduction
 - Offer flexible portion options
 - Track food waste to pinpoint waste sources and specific areas of overproduction in the kitchen
2. Donate good quality surplus food, including
 - Identify the types and amounts of food to be donated
 - Identify local organizations to partner with
 - Ensure food safety by determining packaging, storage, and labeling requirements
 - Arrange food transportation including the pick-up frequency and food quantities
3. Process organic food waste by utilizing on-site or off-site options, including:
 - Save money in hauling fees by reducing waste pickup frequency or negating the need for an organic waste hauler through the utilization of on-site waste processing
 - Composting units
 - Dehydrators
 - Pulpers
 - Waste-water based systems
 - Anaerobic digesters
 - Contract a hauler for the transport of food materials to an off-site facility
 - Farms for animal feed
 - Composting sites
 - Anaerobic digesters
 - Rendering/biodiesel facilities for fats, oils, and grease

Food and Waste Reduction Alliance

The Food and Waste Reduction Alliance (FWRA) was formed in 2011 in the United States under the auspices of the Grocery Manufacturers Association (GMA), the Food Marketing Institute (FMI), and the National Restaurant Association (NRA). This cross-industry initiative includes in excess of 30 manufacturing, retailing and foodservice companies, in addition to expert partners from anti-hunger organizations and the waste management sector. The FWRA is co-chaired by ConAgra Foods, one of the

largest food processors in the world, Wegman's Supermarkets, a prominent American grocery store chain, and Wendy's QSCC, the exclusive supply chain manager for all Wendy's restaurants in North America.

The FWRA has three main goals. These are i) to reduce the amount of food waste generated, ii) to increase the amount of safe, nutritious food donated to those in need, and iii) to recycle unavoidable food waste, thus diverting it from landfills. To achieve these goals, the FWRA has identified four pillars to success:

- Assessing and measuring food waste – the FWRA conducts original research and provides quantitative analysis to enable better understanding and identification of the sources and underlying causes of food waste in the U.S. so they may be addressed.
- Identify emerging solutions – the FWRA engages with expert partners to identify innovative technologies and emerging solutions that will allow companies to increase waste diversion from landfills and donate more food to anti-hunger organizations.
- Assess existing policy – the FWRA surveys existing government, company and other policies to understand that regulations that help and hinder progress in food waste management. They identify and advocate for public policies that encourage more private sector food donation and expand options for landfill alternatives such as anaerobic digestion and composting.
- Communication and stakeholder outreach – the FWRA engages with stakeholders, including government, supplier and non-governmental organizations to better inform its efforts and advise on the progress of the FWRA.

Since 2012, the FWRA has published multiple food waste assessments and analyses relating to wastage in the U.S. among food manufacturers, retailers, and restaurants. In addition, the FWRA has published Best Practices and Emerging Solutions Guide, detailing the current food wastage problem in the U.S., and providing a number of best practices to keep food out of landfills including solutions to food donation barriers, alternative solutions to food wastage beyond donation, and strategies for the reduction of food waste generation. These solutions are based upon the hierarchy of food waste solutions, beginning in hierarchical order with food waste reduction at the source, feeding the hungry, feeding animals, using food in industry, composting, and lastly, landfills and incineration. Many of these recommendations are relevant to the restaurant sector

The City of Seattle

The City of Seattle has implemented a series of materials disposal bans since 2009. These have the effect of banning food scraps, compostable paper, yard waste, and recyclables from disposal. Food service businesses are required to find recyclable or compostable packaging alternatives to all disposable food service items such as containers, cups, cutlery and other products. Compostable plastic products (consistent with standards established by ASTM 6400) are specifically identified, and their use is encouraged.

Seattle provides guidance documents through its Green Business Program to enable businesses to ensure compliance with these bans, obtain rebates, and receive public recognition. These include free of

charge posters and bin labels, customized posters for individual establishments, information on collection service providers, contact information for suppliers and manufacturers of accepted compostable and recyclable packaging, contact information for suppliers and manufacturers of interior compost and recycling collection bins, and contact information for service providers for the collection of compostable and recyclable materials.

Restaurants are encouraged to donate surplus food believed to be safe and edible to charities for distribution to those in need.

Protection against liability is provided under the Washington “Good Samaritan” law and the Federal Good Samaritan Food Donation Act. The Washington State Department of Health’s food donation policies are outlined in Guidelines for Charity Food Donations.

2.3.3 European Union and Member States

European Union

Waste management is regulated in the European Union (EU) by Directives and related legal instruments that are adopted at the level of the EU and which must be implemented in each EU member state. The EU has adopted aggressive goals for reducing and recycling materials generally, including those generated by the restaurant sector.

The current priority focus in the EU with respect to materials generated by restaurants is food waste. The European Union (EU) has identified food waste as a significant “sustainability” issue and is committed to meeting the United Nations Sustainable Development Goals (SDGs) adopted in 2015. These include reduction per capita of food waste at the retail and consumer level by half by 2030 (SDG 12.3), in addition to reducing food losses along the food production and supply chains.

In an effort to meet this goal, the EU has produced the Circular Economy Package consisting of a EU Action Plan for the Circular Economy. This plan is designed to help European businesses and consumers transition into a stronger economy whereby resources are used in a more sustainable way. As an integral component of this plan, food waste is addressed as having enormous potential to reduce the resources used to produce food, saving money and lowering the environmental impact of food production and consumption. Examples of food waste reduction efforts included in the Plan are:

- The development of a common methodology and indicators to measure food waste.
- A stakeholder platform to examine how to achieve the Sustainable Development Goals on food waste, share best practices and evaluate progress.

Box 5: Use of Compostable Plastics by Taco Time Restaurants

Taco Time Northwest Restaurants found that educating customers to separate their front-of-house wastes in accordance with City of Seattle requirements failed to yield high quality streams of recyclable and compostable materials. The solution for the company was to replace all its disposable plastics with plastics that meet the ASTM 6400 standard for compostability. As a consequence, the restaurants have a single bin for all paper, food waste and plastic front-of-house materials, which results in a high quality stream of compostable materials. Higher store operating costs resulted in a 6.7% retail price increase that was absorbed by growing customer base, while reduced disposal costs resulted in a net cost increase of only 0.2% after full implementation of program.

Source:

http://www.natureworkslc.com/~media/The_Ingeo_Journey/EndofLife_Options/case_studies/taco-time/Taco-Time-Northwest_ecotainer_Cedar-Grove-Composting_Case-Study_pdf.pdf?la=en

- Clarify relevant EU legislation related to waste, food and feed in order to facilitate food donation and utilization of former food stuffs for animal feed.
- Explore options for more effective use and understanding of date marking on food, in particular “best before” labelling.

In addition to the EU Action Plan for the Circular Economy, the EU Platform on Food Losses and Food Waste has been developed, involving Member States and those involved in the food chain to aid in defining measures that are needed in order to achieve the food waste SDG, facilitate inter-sector cooperation, and share best practices and results achieved. The Platform is dedicated to food waste prevention, and brings together actors in the food value chain including consumers and non-governmental organizations, as well as public entities (Member States/EFTA countries, EU bodies and international organizations). Specific invited organizations include EU Member States, the EU Committee

Box 6: On-Site Treatment Technology

Technologies are available in Europe and Asia to treat organic restaurant wastes on-site. These technologies either de-water organic waste by approx. 80 percent to leave a dry residue, or process organic wastes into a raw compost product. The capacity of the technologies varies by model, but ranges between 20 kg/day and 1 tonne/day. Processing is completed in 24 hours, and require little or no labour other than filling the processing unit and removing the processed materials. The costs of collection and disposal of organic wastes are dramatically reduced.

Sources:

<http://eco-smart.co.kr/eng>

<http://imco.co.uk/product/waste-station/>

<https://www.ecoionics.com.sg/smart-cara-food-waste-recycling-manager/>

of Regions, the European Economic and Social Committee, the Food and Agriculture Organization, the Organization for Economic Co-Operation and Development, and the United Nations Environment Programme.

United Kingdom

Actions to enhance management of wastes in the United Kingdom are coordinated through the Waste and Resources Action Programme (WRAP). WRAP is not-for-profit organization that works with governments, businesses, and communities to improve resource efficiency. In the food services and hospitality sector WRAP has developed the Hospitality and Food Service Agreement (HaFSA) and the Courtauld Commitment 2025, both of which aim to work alongside stakeholders to reduce food

waste in the restaurant industry.

Implemented in 2013, the goal of the HaFSA is to reduce food and associated packaging waste in the sector, and increase recycling rates. With 230 signatories gained, the Agreement is supported by governments across England, Scotland, Wales, and Northern Ireland. By 2015, the HaFSA has reduced food and packaging waste in the hospitality and restaurant sectors by 3.6% and has increased recycling rates by 57%. Additionally, the HaFSA has achieved a 47% increase in surplus food donations to food banks and other charitable organizations, and has saved businesses £3.6 million (approx \$6 million) by reducing food waste.

The Courtauld Commitment 2025 is a voluntary agreement produced by WRAP in 2015. The overall goal of the Commitment is to make food and drink production and consumption more sustainable by bringing together organizations across the food system – from producer to consumer – including organizations within the restaurant sector. Through a targeted and collaborative approach, hotspots of resource use are challenged to provide lower impact products, use products more efficiently, help

people gain increased value from purchased food and drink, and use remaining waste and surplus food efficiently. The achievement of these targets is projected to result in cumulative savings of up to £20 billion (approx \$34 billion) in 10 years.

3.0 BARRIERS TO ENHANCED WASTE-RESOURCE MANAGEMENT IN THE RESTAURANT SECTOR

As described in Section 2, discussions have been held with a wide range of restaurants and industry stakeholders to gather information on current materials management in the restaurant sector. Table 2 identifies barriers to enhanced management of materials generated in the restaurant sector that have been identified through these discussions.

The “barriers” identified in Table 2 have been categorized according to type of barrier, and are detailed below.

3.1 Materials Supply

These barriers relate to the materials that are supplied to restaurants and the control of restaurants over these materials, and particularly packaging. Restaurants have little or no control over the packaging that is used in product supply chain; decisions in this regard are made by food and beverage processors. The consequence is that restaurants must manage materials over which they have no control. Where restaurants use private materials collection services, this means that restaurants must also pay the costs of managing materials they are supplied with. All restaurants that participated in the audit (see Section 2.2.1) identified “over-packaging” as a problem for them. For example:

- Produce wrapped individually in plastic film, which does not “breathe” and which causes the produce to deteriorate more quickly than would otherwise occur.
- Frozen ribs that are individually packaged.

3.2 Application of Technology

Waste may not be prioritized in kitchen design. Professional kitchen design firms believe that they properly address materials management, and that they give due consideration to the integration of materials management systems into kitchen designs. However: (i) not all kitchens are professionally designed; and (ii) in some cases, materials management may be considered an “operational” issue, not a “design” issue. In both cases, this results in materials management being added onto a kitchen design at a later date, which may be difficult where space is limited to accommodate waste receptacles and storage containers.

Cost-effective technology is not available to address some materials management challenges faced by restaurants. Common materials management problems include, for example:

- Plastic straws and garnishes are commonly mixed together. Staff could spend time to separate the straws from the garnishes, and this would allow the garnishes to be composted and may allow the recycling of the straws.
- Plastic film used to package meats, fish, sauces and other ingredients can be recycled, but should be clean and dry before it is collected.

Table 2: Barriers to Enhanced Materials Management in the Restaurant Sector

Materials Supply	Application of Technology	Limitations in Knowledge or Awareness	Regulatory Issues	Financial Issues	Sector Organization
Restaurants have little control over packaging materials they receive Many items are individually packaged, although this is not required by the restaurant	Waste may not be prioritized in kitchen designs Separation of some materials is difficult to achieve in a timely manner Some materials (e.g. plastics) cannot easily be cleaned to allow them to be recycled	Lack of readily available training materials and in-kitchen tools High staff turnover may place a high demand on training and supervision Restaurant staff may not speak English or French as a first language Varying levels of education provided by municipal materials management “education and awareness” staff Restaurants do not receive recognition for results achieved Lack of awareness regarding available technologies	Restaurants may not implement all aspects of the waste designs that have been approved by the relevant authorities. Regulatory requirements for materials management may be unevenly implemented Different materials can be recovered for recycling in different communities	Restaurants whose materials are collected by a municipal collection service at no cost do not have a financial incentive to either reduce waste or to separate materials.	Restaurant policies may not reference materials separation, recycling, composting or residual materials management Management support and supervision for materials separation varies. Lack of integration between restaurants and their supply chain, including distributors and food processors/ packagers

Cost-effective technologies to solve these issues (i.e. to separate plastic straws from organics, or to wash/dry plastics) are not available at the scale required by Nova Scotia restaurants.

3.3 Limitations in Knowledge or Awareness

Several stakeholders commented on the general lack of training materials and in-kitchen tools to facilitate proper management of materials. In fact, training materials are available via the internet, but these are not specific to Nova Scotia or the requirements of specific municipalities in Nova Scotia. A need for two types of training materials was identified by stakeholders:

- Materials for management that address provincial and municipal waste-resource policy and programs, and options for addressing policy and program requirements
- Materials that can be used to train staff in day-to-day materials handling and separation.

Many restaurants experience a high staff turnover. This places a heavy demand on training, and it may be that not all staff are adequately or reliably trained. In addition, staff may need to be closely supervised to ensure that high quality materials separation is undertaken. The time available for these

activities (particularly supervision) is limited in a restaurant environment. Training issues become more complex in cases where restaurant staff do not speak English or French as a first language. This makes it difficult to properly train staff in materials management requirements.

Municipal waste reduction staff financed by Divert NS play an important role in raising awareness in restaurants about local materials management requirements, and in educating restaurants how to comply with local requirements. Visits by these staff to restaurants to verify materials separation are effective in raising awareness of materials separation requirements. The frequency of visits by these staff to a restaurant varies from approximately one time per year to one time every several years. The impact of a visit may be high initially, but may be less so over time. Municipalities may refuse to collect materials that have not been properly sorted, or may send materials back to the generator if they are delivered to a disposal facility without being properly sorted.

Several restaurants stated that while compliance with provincial and municipal materials management requirements is necessary, they feel that higher levels of compliance may be achieved if restaurants are recognized for compliance. This approach would provide a “business-based” motivation to restaurants to ensure proper materials separation and management.

There is a lack of awareness concerning some new technologies that may assist materials management in restaurants. In particular:

- Web and app-based tools are available to facilitate waste reduction on a station-by-station basis within a kitchen. These tools can be used by managers to identify sources of wastes and to take action to minimize waste generation. This leads to improved efficiency in the kitchen, and reduced waste.
- Technologies are available for processing organic materials on-site at restaurants. Processed materials may be either dehydrated or fermented within 24 hours, at which point their weight and volume may have been reduced by 80 percent. This can significantly reduce the cost of managing materials, and can allow restaurants the opportunity to manufacture their own compost in very short time frames.

Neither of these technologies is known to be applied in Nova Scotia, and stakeholders do not appear to be aware of the technologies.

3.4 Regulatory Issues

As mentioned above, materials management may at times be considered an “operational” activity by designers of kitchens and restaurants, and may not be included in kitchen design. However, kitchen designers and suppliers also report cases where materials management has been included in kitchen and restaurant design as part of the documentation to meet public health requirements, but modifications have occurred during construction that result in changes or elimination of materials management design or equipment. This may impact the effectiveness of materials separation in the restaurant.

Implementation of the bans on material disposal varies across the province in terms of both the measures that are taken by municipalities to achieve compliance, and the extent to which measures are applied. Notwithstanding other factors, it may be expected that compliance with requirements to separate materials is likely to be lower where regulatory compliance actions are a lower priority, or where the visibility of a compliance program is lower (e.g. fewer visits by municipal “education and awareness” staff to restaurants and other businesses).

Some materials may be recycled in some communities but not others. Polystyrene, for example, is not banned from disposal at the provincial level, but is nevertheless collected for recycling by some communities who wish to remove this material from the disposal stream. The availability of recycling options in some communities as compared to others will clearly influence what is feasible for restaurants to separate from residual materials.

3.5 Financial Issues

Materials generated by some restaurants are collected by the local municipal materials collection service. In other cases, restaurants must contract with the private sector for collection of their materials. Some restaurants have some materials collected by the municipal service and others collected by the private sector. Municipalities decide whether they will include a restaurant in their materials collection service; in many cases, materials will be collected by the municipality from a restaurant if the quantity of materials that is collected does not exceed the quantity that is set out in the local by-law.

Restaurants that pay a contractor to remove materials for recycling, composting or disposal have a financial incentive to minimize the quantity of material that must be managed by the contractor. As mentioned above, technologies are available to: (i) facilitate the reduction of waste/improvement in efficiency and (ii) process organic materials, ultimately to the point that costs for off-site management may be eliminated. However, these technologies are not known to be used in Nova Scotia. It may be considered that the absence of these technologies from Nova Scotia indicates that the financial benefit of the technologies is insufficient and therefore they are not adopted. Discussions with stakeholders, however, suggest that the industry is not aware of the technologies, nor of the financial (and other) benefits that they may bring.

Restaurant managers are inclined to use the lowest cost materials management option that is available to them, and this may influence the materials that are separated for recycling or composting. In one reported case, residual materials generated by a restaurant are collected by the municipal materials collection service and recyclable and compostable materials are collected by a private contractor. The restaurant minimizes its materials management costs by placing various compostable organic materials in the disposal stream. The restaurant saves money because these materials are collected (and subsequently managed) by the municipality, at no cost to the restaurant; if the same materials were correctly placed in the composting stream the restaurant would pay to have the materials removed, and would pay to have them processed.

3.6 Sector Organization

Organizational issues relate to restaurants themselves and to the sector as a whole, including supply chains.

At the level of individual restaurants, not all restaurants reference materials management in their policies, or in the job descriptions of the employees. In some cases, it is assumed that employees will separate materials because they have (presumably) been widely exposed to materials separation over many years in the province. However, several restaurants have reported that materials separation practices in the home do not necessarily translate into separation of materials in the workplace, particularly when employees are working under the time constraints of a busy kitchen. It is therefore important for a restaurant to include a reference to proper materials separation and management in its policies, and to include the duty to perform proper materials separation and management in the job descriptions of employees. Training is required to ensure that employees perform accordingly.

Management support and supervision for materials separation is important within the restaurant. Although only a small number of audits have been undertaken in support of this document (see Section 2), the highest levels of materials separation are correlated with the highest levels of management support and supervision for materials separation that was displayed in meetings with restaurant managers. Where management support and supervision is low or absent, it is likely that materials separation performance will also be low.

There has been little focus on materials management at the level of the sector as a whole, including supply chains, in Nova Scotia. This contrasts with actions in, particularly, Europe where enhanced materials management is integral to the creation of a “circular economy” in which materials are fully utilized and waste is ultimately eliminated. This has resulted in private sector partnerships throughout the supply chain to identify and address technical, cost and other materials management issues. This approach allows solutions to be developed from the perspective of benefit to the sector as a whole (including the materials management component of the sector), rather than the development of solutions that may benefit some components of the sector at the cost of other components. This approach is expected to yield very substantial economic benefits, as identified in Section 2.3.3.

3.7 Linkages Between Barriers

There are linkages between many of the barriers to enhanced materials management that are identified above. “Awareness” is a necessary precursor to any action to address a barrier. On the other hand, “awareness” of actions to address barriers is not sufficient by itself to lead to action. For example, the adoption of a technology solution to enhance materials management requires an awareness of the possible technology options, but application may then depend on addressing financial, regulatory or other “barriers”. Accordingly, actions may be required to address linkages between barriers in order to achieve desired change.

4.0 OPPORTUNITIES FOR ENHANCED WASTE-RESOURCE MANAGEMENT IN THE RESTAURANT SECTOR

4.1 Options to Address Barriers

Table 3 identifies options for addressing the barriers that have been identified in Section 3, above. As indicated in the Table, all options will have high impact on enhancing waste-resource management in the restaurant sector. However:

- The benefits that accrues from addressing the supply chain will take longer to materialize because actions are required from a wider range of stakeholders.
- Options that address supply chains will address the recyclability /compostability of materials and the format of materials (e.g. reusable packaging to replace recyclable/compostable packaging), while options that address the restaurant sector more directly will have the effect of increasing the separation of existing materials for recycling and composting.

These issues are also reflected in “synergies”, “complexity” and “cost” of implementation of options, as shown in Table 3:

- Higher synergistic benefits will be achieved by actions that address the supply chain than by actions that address restaurants specifically. The highest synergies will be achieved through the application of extended producer responsibility in which “producers” (i.e. manufacturers, importers and distributors) become responsible for the costs of managing their products; this will provide a powerful tool for change throughout the supply chain and may have the effect of reducing materials management costs for restaurants.
- The complexity of implementing the identified options increases as the number of stakeholder participants increases. This occurs because different stakeholders have different priorities, which must be addressed in designing specific actions.
- The costs of implementing the identified options will vary widely. However, options that involve supply chains and which are more complex will carry higher cost. On the other hand, low cost/no cost actions may be taken at the restaurant level to improve separation of materials.

4.2 Strategic Framework for Action

Figure 1 presents a strategic framework that identifies the main stakeholders in the restaurant sector in Nova Scotia, and the linkages between these stakeholders. In addition, the framework identifies the linkage of waste-resource management in the restaurant sector to the creation of a “circular economy” in which waste-resources generated by one sector become the input resources of another sector.

Specific opportunities for enhanced management of waste-resources in the restaurant sector are presented in this section with reference to the stakeholders that are identified in Figure 1, the linkages between them and the contributions of actions to building a circular economy.

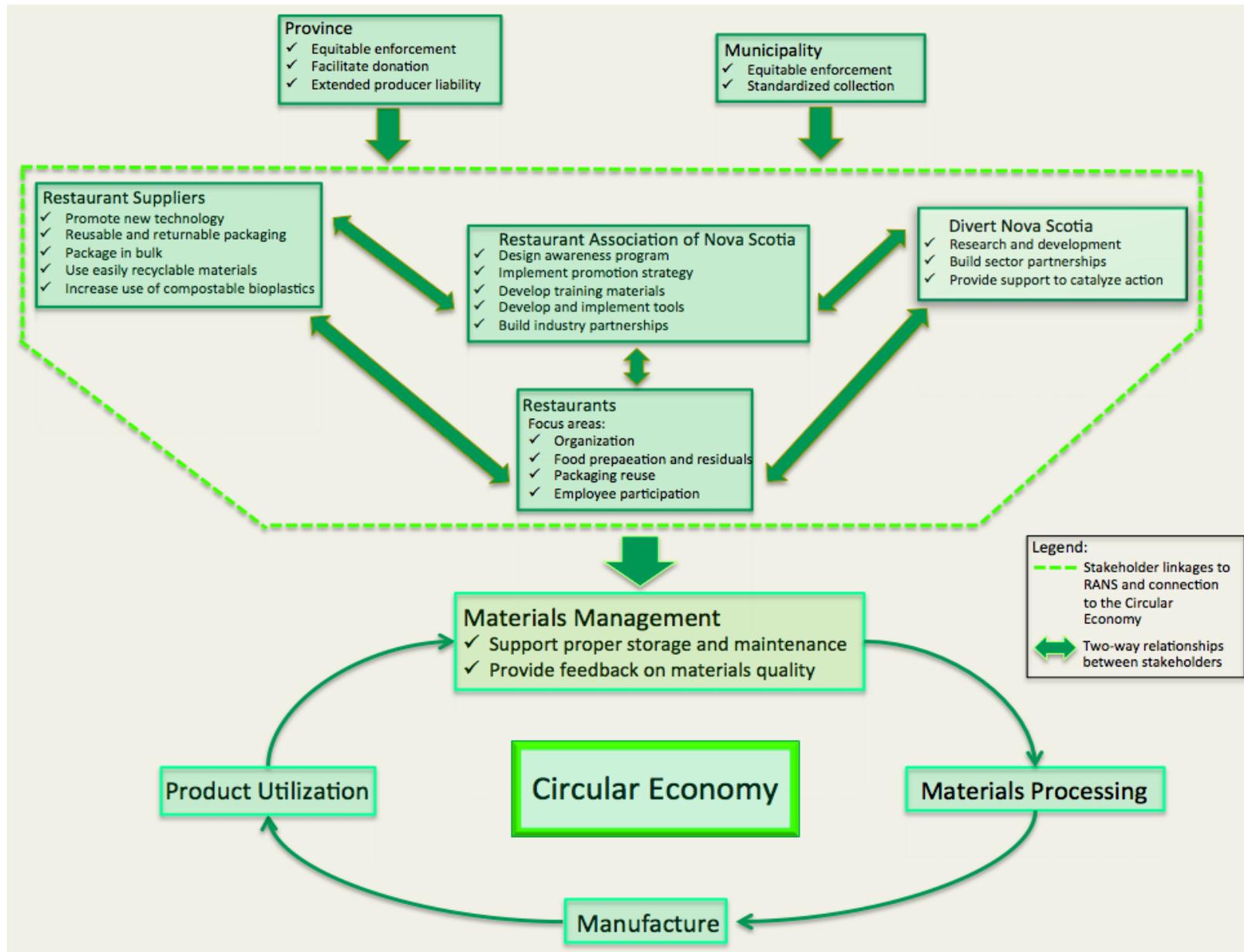
4.2.1 Regulators

Regulators include provincial entities and municipalities.

Table 3: Options for Addressing Barriers to Enhanced Waste-Resource Management

Barrier	Options to Address Barrier	Impact		Complexity of Option	Cost
		Direct	Synergistic		
Materials Supply	Improve reusability, recyclability and compostability of materials Encourage supply of materials in bulk	High impact over time	High synergies within the supply chain	Complex: multiple stakeholders with varying priorities	Changes in supply chain: \$\$\$\$\$
Application of Technology	Raise the profile of materials management in kitchen design Use bioplastics in place of conventional plastics Use on-site treatment technology to process organics Use real-time and analytic tools to monitor waste-resource generation	Application of bioplastics would have high impact on difficult-to-recycle materials High impact of analytic and treatment technologies in large restaurants	High synergies with priorities to reduce reliance of waste disposal	Application of bioplastics may be complex. Application of analytic and treatment technologies not complex	Analytic tools, some bioplastic applications: \$ On-site treatment: \$\$\$ Maximum application of bioplastics: \$\$\$\$\$
Limitations in Knowledge/Awareness	Promote awareness of waste-resource management across the industry Ensure on-going training of restaurant staff Design/implement a recognition program for good waste-resource management Promote materials management technologies	High impact for all options over short time periods	Generally limited because actions are specific to individual restaurants	Not complex	\$ - \$\$
Regulatory Issues	Ensure consistent enforcement of waste-resource management requirements Remove regulatory obstacles to food donation, consistent with health standards Introduce "extended producer responsibility (EPR)"	High impact for all options over short time periods	High synergies throughout the supply chain and with materials processors	Not complex, except EPR	\$, except EPR \$\$\$\$\$
Financial Issues	Ensure costs to restaurants of materials collection and processing are linked to type and quantity of materials generated	High impact	High synergies throughout the supply chain and with materials processors	Not complex	\$ - \$\$
Sector Organization	Ensure policies include separation of materials Ensure supervision of materials separation Integrate restaurants and their supply chain to maximize recycling/composting opportunities	High impact	Low synergies, except high synergies for integration of restaurants and supply chains	Low, except medium for integration of restaurants and supply chains	Policies and supervision: \$ Integration of restaurants and supply chain: \$\$ - \$\$\$

Figure 1: Stakeholder Linkages in the Restaurant Sector and Linkage to the Circular Economy



Provincial Regulators

Regulatory actions taken by the province play a defining role in the management of waste-resources in the restaurant sector. Waste-resource management in Nova Scotia is regulated by the Department of the Environment through the *Environment Act* and the Solid Waste-Resource Management Regulations that are issued under the Act. The primary impact of the waste-resource regulatory framework on the restaurant sector has been the obligation of restaurants to separate materials to comply with the material disposal bans that are set out in the regulations.

The Department of the Environment is responsible for ensuring that material disposal bans are implemented by the holders of waste disposal site permits. However, enforcement in this regard has not been prioritized with the result that implementation of the material disposal bans is uneven across the province. This means that restaurants (and others in the food services sector) that act in accordance with the materials disposal bans may incur costs that others who do not act in accordance with the bans do not incur. The Department of the Environment therefore has the opportunity to contribute further to waste-resource management in the restaurant sector by ensuring equitable and effective enforcement actions so that those who choose to comply with the regulatory framework do not become “victims” of their own diligence by incurring costs that their competitors may not incur.

The province has important additional opportunities to enhance waste-resource management in the sector:

- Review the regulatory framework that impacts whether and how food may be donated by restaurants to food banks and other charitable/non-profit entities. The goal in this regard should be to align, as necessary, regulatory frameworks to ensure that public health is protected while at the same time facilitating access by food banks and charitable/non-profit entities to food that has been produced by restaurants but which cannot be used by them. Regulatory frameworks and standards that have been adopted in various provinces to support food donation and related documents (e.g. *Industry Food Donation Guidelines* in British Columbia) can serve as benchmarks for Nova Scotian policy in support of food donation
- Create the basis for sector-wide networks to address waste-resource management in the restaurant sector by introducing “extended producer responsibility” (EPR) requirements. EPR has been introduced in several provinces. When properly designed, this approach makes “producers” responsible for the costs of managing discarded materials. In turn, this incentivizes the development and application of materials that facilitate reuse and recycling. Significant quantities of plastic packaging are among the materials that are difficult and costly to recycle under existing management frameworks. EPR may provide the basis for initiatives by the packaging and food products sectors to address this problem. EPR can result in greater levels of material recovery from the restaurant sector over time while reducing costs.

Municipalities

The holders of permits for disposal facilities (generally municipalities) must not allow the entry to these facilities of materials that are banned by the Province from disposal. In practice, this requires municipalities to take the steps necessary to ensure that materials that are banned from disposal are separated and are separately managed. Divert Nova Scotia provides financing to facilitate these activities. However, the extent to which municipalities undertake actions and the effectiveness of actions varies, and separation by restaurants of materials that are banned from disposal also varies.

Restaurants that undertake the separation of materials may therefore incur costs that others do not incur; the result is that those who undertake actions in accordance with regulatory requirements may be financially penalized for compliance relative to their competitors who do not comply with materials separation requirements. Municipalities therefore have the opportunity to ensure a “level competitive playing field” by effective and consistent enforcement of provincial materials separation requirements.

Municipalities can also ensure a “level competitive playing field” by standardizing materials collection services that are provided to restaurants. Private contractors that serve the restaurant sector may be obligated by a municipality to ensure that materials separation services are provided, and the costs of these services are charged to restaurants. However, municipalities that collect residual materials from a restaurant at no cost to the restaurant create an incentive for the restaurant to maximize the quantities of materials that it sets out for municipal collection at no cost - whether or not the materials are banned from disposal. The organization of materials collection by the municipality is therefore key to ensuring financial frameworks that support materials separation by the sector.

Implementation of these actions will result in reduced reliance on existing materials disposal sites and the creation of increased local employment in the materials recovery and processing sector. For restaurants, benefits include an equitable competitive environment, reduced materials disposal and creation of a public image that includes sensitivity to the impact of their activities on the local environment.

4.2.2 Sector Stakeholders

Industry Suppliers

There is a wide range of suppliers to the industry, all of whom have opportunities to contribute to enhanced management of waste-resources in the restaurant sector:

Kitchen and Equipment Suppliers

Kitchen designers respond to the demands of restaurants with respect to the items that are integrated into a kitchen design. Feedback from designers in Nova Scotia indicates that cost pressures frequently result in de-emphasizing the integration of waste-resource management into kitchen design. The consequence is that items that might be included in designs (e.g. dedicated receptacle storage areas, integration of receptacles into food preparation stations etc.) may be omitted. As a result, waste-resource management is not included in the “core functions” of the kitchen, and kitchen operators rely on a improvised solutions for waste-resource management: receptacles are re-purposed from other uses and are placed wherever space can be found, and locations for receptacles may be inconvenient. This may have the effect of de-emphasizing materials separation: if the equipment that is used for waste-resource management is ad hoc, the attitude of those who work in the kitchen may be ad hoc.

The opportunity for kitchen designers to contribute to enhanced waste-resource management therefore depends on the added value that restaurant owners perceive in integration of waste-resource management into design.

Whether or not waste-resource management is included into kitchen design, there may be high value in the use of attractive and high profile signage within a kitchen to support a high level of material separation. Beyond the functionality of signage to identify “what goes where” within a kitchen, attractive signage can raise the profile of waste-resource management within a restaurant and conveys

a sense of waste-resource management priority. This is particularly the case where waste-resource management has not been specifically included in kitchen design, and other measures are required to raise the profile of waste-resource management activity.

A range of “non-traditional” equipment has become available in recent years to facilitate reduced waste in restaurants, and to treat materials on-site:

- Real-time monitoring technology is available to track waste generation and to provide feedback to restaurant managers on a “station-specific” basis. This not only provides information to reduce waste-resources that require management, but can help to maximize the productive use of products in the restaurant by identifying areas where wastage is high.
- Technologies are available to treat organic materials and reduce their volume/weight by up to 80 percent, and to produce a product that may be used as a soil amendment. These technologies are not currently used in Nova Scotia, and their capital and operating effectiveness as well as their technical performance will require evaluation according to Nova Scotian conditions. Nevertheless, the technologies are applied in Europe, Australia and Asia and have the potential to substantially reduce the costs that restaurants incur to manage organic materials.

Kitchen designers have the opportunity to consider the integration of these technologies into their consulting and design activities.

Food and Beverage Suppliers

Food and beverage suppliers to the restaurant sector may play an important role in sectoral waste-resource management. The food and beverage supply network is complex, and involves - in particular - the packagers of food and beverage products and the wholesalers who distribute food and beverage products to the sector. Key issues include contamination of plastics that would otherwise be recyclable, the potential for application of bioplastics⁴ and formats of the delivery of beverages. There are opportunities in each of these areas to change the way food and beverage products are delivered to restaurants, and in doing so to reduce and improve waste-resource management requirements by restaurants:

- Many products that are supplied to restaurants are packaged in single serve or other single units. Film plastics are typically used for this purpose. Residues (e.g. fats, fluids) that remain on the plastic packaging require that the plastic packaging must be cleaned and dried before it can be recycled - something that is difficult (but not impossible) to achieve in a restaurant setting. An alternative approach is to develop bioplastic applications that can be used in place of the plastics that are currently applied (typically low density polyethylene - LDPE - or a composite film plastic). This would allow the plastics to be managed as organic materials destined for composting.

Research and development may be required to develop bioplastics for this type of application. However, an increasing number of jurisdictions in North America and elsewhere are placing disposal bans and other controls on plastics, and at the same time are prohibiting the disposal of organics. The attractiveness of solving a plastics management problem through linkage with an

⁴ “Bioplastics” refers specifically to plastics that meet Canadian standards for compostability.

organics management solution is therefore evident: bioplastics may simply be separated in a kitchen into the organics stream and sent for composting.

Concerns have been expressed by municipalities and others that the use of bioplastics may result in confusion by processors regarding what is a bioplastic (and therefore suitable for composting) and what is a conventional plastic (and therefore not suitable for composting). This may be readily addressed by industry standardization around a suitable and obvious identification of bioplastics used in commercial food packaging (e.g. colour coding) in the same way that there is industry standardization around plastics recycling symbols and labelling.

There are immediate opportunities for the application of bioplastics in a range of existing plastics applications:

- Straws
- Disposable plates and cups/mugs
- Disposable cutlery.

Some restaurants use some of these bioplastic products already, but significant growth is possible. Costs for bioplastic products are typically higher than for comparable products manufactured from conventional plastics. However, restaurants report that: (i) the additional costs are small as a percentage of operational expenses; (ii) the image of a restaurant is enhanced; and (iii) in some cases, a new clientele is attracted to the restaurant that values environmental performance. In some cases, the use of bioplastics has allowed restaurants to virtually eliminate residual waste - together with the costs that are associated with residual waste collection and management⁵.

An immediate benefit from the use of bioplastic straws in restaurants is that it would allow the large majority of wastes from a bar/beverage service to be composted, as compared to the current situation where non compostable/non-recyclable straws are co-generated with (compostable) fruit garnishes. The non-compatibility of the materials in the current situation requires that they must all be managed as residual waste.

- Opportunities are also available to reduce materials generated from the supply of beverages, and particularly wine. The supply of beverages on a bulk basis to restaurants is already common in some contexts - e.g. beer supplied in kegs, soft drink syrups supplied in bulk. Adjustments to the supply chain can result in supply of wine to restaurants on a bulk basis which can be suitable for the sale of "house wine", although not necessarily for wines that may be purchased by the bottle by patrons. Similar approaches may be also possible for other beverages.
- Products may be supplied to restaurants in reusable containers. This may already be undertaken by some suppliers (e.g. farms that supply local restaurants) but wider opportunities exist that can be developed with stakeholder inputs.

⁵ As mentioned above, some municipalities have expressed reservations regarding the use of bioplastics because of potential contamination issues, but experience in other jurisdictions demonstrates that potential problems can be averted.

Materials Management Sector

The materials management sector includes waste-resource collectors as well as those who receive materials either for processing or for disposal. Opportunities for the materials management sector to support enhanced management of waste-resources by restaurants include the following:

- Provide information to restaurants to assist in the proper storage of materials between pick-ups
- Ensure the provision of storage containers that are clean and properly maintained
- Provide feedback to restaurants where instances of materials contamination (e.g. non-compostables placed with organics) are noted.
- Report any banned materials discarded as waste
- Ensure that costs charged to restaurants for materials management services are higher for materials collection/disposal and lower for materials collection/reutilization.

Divert Nova Scotia (NS)

Divert NS is a not-for-profit corporation that works to improve the environment, economy and quality of life by reducing, reusing and recovering resources. The mandates of Divert NS include:

- The operation of a deposit-refund system for beverage containers
- Support of municipal diversion programs
- Development and implementation of voluntary industry stewardship agreements
- Development of education and awareness programs
- Promote the development of value-added manufacturing.

DivertNS delivers its mandates through a series of programs that are delivered in partnership with stakeholders across the province. Opportunities for DivertNS with respect to the restaurant sector include:

- The creation of strategic partnerships between stakeholders that targets continual improvement in the waste-resource management activities of the restaurant sector. The impact that may be achieved through a strategic partnership of this kind is illustrated by the *Hospitality and Food Service Agreement* and the subsequent *Courtauld Commitment 2025* in the UK, initiatives that include the restaurant sector and its suppliers and which targets a 20 percent reduction in food and drink-related waste by 2025.
- Develop and agree an Action Plan with RANS and other sector stakeholders to maximize the contribution of the restaurant sector to the circular economy.
- Support for specific actions that may be proposed by RANS or other stakeholders to build cost-effective waste-resource management in the sector. Support may include some or all of research and development, development of communications and promotion materials, development of training materials, and new technology applications.

Restaurant Association of Nova Scotia (RANS)

RANS is a non-profit association that promotes the food and beverage sector and impacts the operating environment of the industry in a positive way. RANS achieves this through government advocacy, marketing, promotion, partnerships, education and outreach.

RANS has the opportunity to play a pivotal role in the achievement of cost-effective enhanced management of waste-resources in the restaurant sector. RANS may:

- Develop and deliver training and awareness materials to its member restaurants, and may develop/deliver tools.
- Create partnerships with other industry stakeholders to support enhanced waste-resource management within the industry, and coordinate stakeholder actions that target enhanced waste-resource management
- Promote waste-resource management achievements to external stakeholders, including regulators.

Table 4 identifies specific opportunities for action by RANS.

Table 4: Opportunities for RANS to Facilitate Enhanced Waste-Resource Management in the Restaurant Sector

Function	Action
Training and Awareness	Create a model policy in support of environmentally-preferred materials management that may be used by restaurants Develop educational materials for restaurant managers and staff Develop signage and instructional materials for kitchen staff that may be used by restaurants Develop a section on materials management to be included in 'A Guide To Starting and Running a Restaurant in Nova Scotia' Prepare a 'Materials Management Standard for Restaurants in Nova Scotia' Share good practices from other parts of Canada and internationally (e.g. use of equipment in Europe and Asian that dramatically cuts requirements – and costs – for managing organics)
Stakeholder Partnerships and Coordination	Encourage materials management to become part of professional kitchen design Work with DivertNS and industry stakeholders to create a "coalition of action" to reduce waste and facilitate enhanced waste-resource management in the restaurant sector (e.g. informed by the <i>Courtauld Commitment 2025</i> initiative in the UK)
Promotion to External Stakeholders	Publicize good performance Develop and promote a "good performance" recognition program to benefit restaurants Develop a regular Report Card to provide information to regulators and stakeholders to identify priority issues/actions relevant to them to facilitate enhanced waste-resource management by restaurants

Restaurants

Restaurants have direct operational responsibility for the separation of materials in compliance with provincial material disposal bans and municipal actions to implement the bans. There is a wide variety of opportunities for restaurants to maximize cost-effective materials separation and management.

Actions may be grouped as:

- **Organization.** This category of actions provides the policy and planning framework to properly manage a materials separation program.
- **Food preparation and residuals management.** These actions relate to activities in the kitchen and bar areas to properly manage waste-resources, and include procurement of inputs and materials, food preparation and management of discards (either from kitchen activities or materials generated by patrons).
- **Product reuse.** Many products are available in either a reusable (i.e. washable) or disposable format. Reusable items should be used wherever possible.

- Employee participation. There should be a clear expectation that all employees separate materials properly, training should be provided and performance should be monitored.

Specific actions that may be taken by restaurants to ensure a high level of waste-resource management are set out in Table 5. The extent to which the application of these measures can achieve high levels of waste resource management will vary according to the specific menu that is offered by a restaurant. However, based on the audits of restaurants that is reported in Section 2, above, the separation for either recycling or composting of at least 90 percent of materials may be feasible and cost-effective for most restaurants.

Table 5: Opportunities for Restaurants to Enhance Waste-Resource Management

Function	Action
Organization	<p>Organize storage shelves with newer items at the back, so older items are used first.</p> <p>Organize fridge with 'use-by' labels and designated shelves for leftovers.</p> <p>Clearly label waste bins in the kitchen for composting, recycling, and waste.</p> <p>Place bins for recyclable materials in convenient locations.</p> <p>Offer customers clearly labeled bins for composting, recycling, and waste. Place bins in convenient locations.</p> <p>Keep cooking oil waste separate from other waste so it may be collected.</p> <p>Bulk buy only non-perishable items.</p>
Food Preparation and Residuals Management	<p>Prepare food to order rather than in advance.</p> <p>Ensure correct portion sizing to avoid plate waste.</p> <p>Offer different portion sizes to suit customer needs – half sizes, children’s and senior’s portions.</p> <p>Consider offering alternative side dishes if certain items are regularly left on plates.</p> <p>Measure and monitor food waste in the storage, preparation, and plate waste stages.</p> <p>Use core items across the menu that can be used in a variety of dishes.</p> <p>Have a daily special to use up leftovers and food approaching its use-by date.</p> <p>Avoid excess trimming of food and use unavoidable trimmings to make things like soup and soup stock.</p> <p>Be creative with excess food – make smoothies from extra berries or croutons from extra bread.</p> <p>Use seasonal ingredients.</p> <p>Handle food stock carefully to avoid damage and unnecessary waste.</p> <p>Partner with a food donation organization to have excess food picked up and donated.</p> <p>Transition from self-serve buffets to “served” food stations.</p> <p>Use compostable or recyclable “to-go” containers</p> <p>Use compostable straws in bar and beverage applications; replace plastic cutlery and cups with compostable plastic cutlery and cups</p> <p>Use the “nose-to-tail” cooking approach and incorporate bones, stems, leaves, etc. into other dishes.</p> <p>Partner with a local charity to donate excess or leftover food.</p> <p>Manage discarded paper towels in washrooms as organics (not residual waste) and provide a separate container for non-recyclable, non-compostable washroom wastes</p>
Product Reuse	<p>Consider use refillable jugs and containers for sugar, cream/milk, condiments, etc.</p> <p>Consider use washable napkins, tablecloths, and towels.</p> <p>Buy cleaning products in bulk and use refillable containers.</p> <p>Reduce packaging waste by using reusable and returnable packaging from suppliers, serving drinks on tap or in a carafe, and using lighter weight glass bottles.</p> <p>Reduce the individual packaging of goods and request suppliers to provide goods in reusable, bulk containers.</p> <p>Use reusable (i.e. washable) culinary equipment, flatware and tableware and not disposables.</p>
Employee Participation	<p>Involve staff in waste reduction planning and setting waste reduction goals.</p> <p>Ensure proper training of staff in waste separation into recyclables, compostables, and waste.</p> <p>Create reward system for staff meeting waste reduction goals.</p> <p>Reward waste reduction successes.</p> <p>Make waste reduction a priority in the kitchen.</p> <p>Use visual aids, such as illustrative signs, to help staff remember which items belong in which bins</p>

5.0 RECOMMENDATIONS

A stakeholder workshop was held on 21 February 2017 to achieve the following:

1. To present the work that has been undertaken to develop this document
2. To determine whether there are gaps in the work that has been undertaken that need to be addressed to ensure a suitable basis for the development of recommendations.
3. To develop recommendations that are agreed by the stakeholders.

A list of the stakeholders that participated at the workshop is provided in Annex A.

5.1 Stakeholder Conclusion

Stakeholders agreed that the project has addressed the range of issues necessary to develop recommendations for the optimization of waste-resources management in the restaurant sector.

5.2 Recommendations

The “opportunities” presented in Section 4, above, were discussed at the project workshop. Stakeholders agreed that the opportunities that have been identified can result in enhanced management of waste-resources in the restaurant sector, and recommended that:

- Actions to implement opportunities should be specified according to whether the actions should be implemented in the short term, or have a more strategic value and which require implementation over a longer timeframe.
- Focus should be placed on specifying actions to be undertaken in the short-term while also addressing strategic actions. Stakeholders identified a series of actions that should be prioritized in the short term, and other actions that should be viewed as longer-term, strategic actions.

Accordingly, Table 6 identifies a recommended time-based action plan to achieve optimized waste-resources management in the restaurant sector in Nova Scotia. As shown in the Table:

- Stakeholders are identified for each of the identified actions. Many actions will require collaboration between stakeholders.
- “Short-term actions” are defined as actions that can be designed and implemented within 12 months (i.e. by 31 March 2018). Strategic actions will require up to 12 months to design, and a phase-in implementation period may be needed before full implementation is achieved.

Table 6: Action Plan for Enhance Waste-Resource Management in the Restaurant Sector in Nova Scotia

Stakeholder	Short Term Actions	Strategic Actions
	Action Schedule: Design and implement within 12 months	Action schedule: Design within 12 months, then implement
Restaurants	<p>Include a policy on waste-resource management in operations documentation</p> <p>Ensure proper: (i) staff training in materials management; (ii) staff supervision of materials separation and management; (iii) adequate and convenient receptacles for storage of separated materials; (iv) proper signage of materials to be placed in different receptacles</p> <p>Adopt operating measures set out in Table 5, above.</p>	<p>Consider adoption of technology to monitor generation of waste-resources in real time</p> <p>Consider adoption of technology to process organics on-site</p>
Restaurant Association of Nova Scotia (RANS)	<p>Develop education and awareness tools that can be adopted by restaurants to achieve enhanced waste-resources management:</p> <ul style="list-style-type: none"> With DivertNS to develop visual signage for materials sorting in recognition that restaurant staff may not speak English or French With DivertNS, develop awareness materials (e.g. materials to be separated in different regions) for restaurant managers and checklists to ensure staff are properly trained With waste-resource haulers, develop (i) pro-forma examples of how separation of materials can reduce waste-resource management costs; (ii) list of “Questions for waste-resource materials haulers” regarding pricing for materials collection and separation of materials <p>Develop model waste-resource management policy that can be adopted by restaurants</p> <p>Include waste-resource management in <i>Guide to Starting and Running a Restaurant in Nova Scotia</i></p> <p>Document “good practice” in at least 3 restaurants and publicise “good practice” activities</p> <p>Include waste-resource management tips in newsletter</p> <p>Work with designers to ensure waste-resource management is included in kitchen designs</p> <p>Develop checklist of “good waste-resource management practice” that restaurants can use</p> <p>Incorporate waste-resource management into the RANS Code of Good Practice.</p>	<p>With DivertNS and municipal waste-reduction coordinators, determine feasibility of a consumer recognition program for restaurants that demonstrate “good practice” in waste-resource management.</p> <p>Develop an annual forum (e.g. workshop) that brings stakeholders together to discuss waste-resource management, identify priority issues and develop solutions.</p>
DivertNS	<p>Update the “Sorting it Out” guide for restaurants</p> <p>With RANS, develop visual signage for materials sorting in recognition that restaurant staff may not speak English or French</p> <p>With NSLC, work to increase the bulk distribution of wine to restaurants</p> <p>Develop Guidelines for use of compostable plastics in Nova Scotia, and strategy for their application having consideration for their identification and processing challenges</p>	<p>Create multi-stakeholder group to map and monitor measures to minimize packaging associated with restaurant supplies and to maximize recyclability and compostability of materials.</p> <p>Support new technology applications in the waste-resource management sector (e.g. real-time monitoring technology, on-site organics processing technology) on a demonstration basis</p>
Municipalities	<p>Prioritize restaurants for education and awareness activities</p> <p>Review collection arrangements to ensure municipal collection arrangements provide a financial incentive for materials separation by restaurants (e.g. collection of materials by private sector)</p> <p>Ensure equitable enforcement of material disposal bans</p>	
Province	<p>Department of Health and Wellness Ensure regulatory framework for food donation in Nova Scotia reflects standards elsewhere (e.g. <i>Industry Food Donation Guidelines</i> in BC)</p>	<p>Department of Environment Develop/implement an appropriate extended producer responsibility program for packaging</p>
Materials Managers	<p>Ensure proper management of separated materials</p> <p>Educate restaurants on how separated materials can reduce materials management costs</p>	

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Contacts

The following have been contacted in support of the preparation of this document and have provided information/data:

Restaurants that participated in the audit

Durty Nelly's: Richard Sanford
Kate's Sweet Indulgence: Kate Cocks
Le Caveau: Beatrice Stutz
Le Bistro by Liz: Liz Ingram-Chambers
The Port Pub: Lois Bowden

Waste Resource Management Regions

Region 1: Roschell Clark
Region 2A: Nicole Haverkort
Region 2B: Susan MacDonald
Region 3: Brenda Rioux
Region 4: Laurie Lewis
Region 5: Andrew Garrett, Dale Roberts
Region 6: Valda Walsh
Region 7: Amy Hillyard

Other Companies

Representatives of the following companies have been contacted:

Pachamama Restaurant, Antigonish
EFR Waste Disposal
Royal Environmental Group
Sysco Canada
Gordon Food Service
Big Eric's
Russell Food Equipment Ltd.

ANNEX A PHOTO GALLERY

All photographs in this Annex were taken either: (i) at restaurants that participated in the audit; or (ii) of materials collected from restaurants that participated in the audit. All photo credits: Connie Hickman.



Example of paper towel in washroom managed as "disposable". Patrons can easily use a "compostables" bag if one is supplied in the washroom



Compostable plastic cup that meets ASTM 6400 standard for compostability and which is BPI-certified



Example of signage that identifies sorting requirements



Ad-hoc materials storage as result of lack of planning



Clearly labelled container filled with soiled plastics that are recyclable if clean and compostable if manufactured to meet standard ASTM 6400



Example of waste reduction opportunity: these disposable ramekins could be replaced by reusable (washable) ramekins



Compostable film plastic that meets standard ASTM 6400



Space for materials storage is at a premium in a kitchen



Waste-resources from a bar. Materials on right are compostable, materials on left (mostly straws) must be disposed of. Use ASTM 6400-compliant plastic would allow straws to be composted



Plastic window on paper vegetable bag limits recyclability and compostability of the paper bag



Soiled plastic film that cannot be recycled is generated in large volumes by many restaurants.



Absence of planning results in ad-hoc placement of waste-resource receptacles and absence of signage

ANNEX B

PROJECT WORKSHOP

List of Participants

Randy Burgess, RE Group

Liz Chambers, Le Bistro by Liz, Halifax

Natasha Chestnut, Restaurant Association of Nova Scotia

Kate Cocks, Kate's Sweet Indulgence, Lunenburg

Ashley David, Department of the Environment

Dave Deveau, Gordon Foodservice

Rufus Ells, B.D. Rae Waste Management

Nicole Haverkort, Waste-Resources Management Region 2: Antigonish-Guysborough-Pictou County

Doug Hickman, PHA Consulting Associates

Jennifer Hickman, PHA Consulting Associates

Connie Hickman, PHA Consulting Associates

Kurt Laskow-Pooley, DivertNS

Hannah MacDonald, Restaurant Association of Nova Scotia

Alanna McPhee, Divert NS

Darlyne Proctor, Municipality of Colchester

Dale Roberts, Waste-Resources Management Region 5: Annapolis-Kings

Gordon Stewart, Restaurant Association of Nova Scotia

Kirk Symonds, Waste-Resources Management Region 6: South Shore/West Hants

Workshop Organization

The workshop logistics were organized by PHA Consulting Associates

RANS issued invitations to attend the workshop. Invitees were drawn from recommendations by Divert NS and PHA Consulting Associates, as well as from the RANS database.



OPTIMIZATION OF WASTE-RESOURCES MANAGEMENT IN THE RESTAURANT SECTOR IN NOVA SCOTIA

AGENDA

Best Western Inn
Room Lakeview A
Halifax

21 February 2017

- 8:30 Registration
- 9:00 Welcoming Remarks: RANS
- 9:10 Welcoming Remarks: Divert NS
- 9:20 Project Presentation: PHA Consulting Associates
- 10:05 Coffee Break
- 10:15 Presentation of Recommendations and Development of Action Plan
- 12:00 Closure of Workshop

“Optimization of Waste Resources Management in the Restaurant Sector in Nova Scotia” is an initiative of the Restaurant Association of Nova Scotia that is implemented with the financial support of Divert NS and with the assistance of PHA Consulting Associates