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Information item No.2
Environment & Sustainability Standing Committee
October 1, 2015

TO: Chair and Members of Environment & Sustainability Standing Committee

ORIGINAL SIGNED

SUBMITTED BY:

Bruce Zvaniga, Director, Transportation & Public Works

DATE: August 10, 2015

SUBJECT: **Extended Producer Responsibility (EPR) Update**

INFORMATION REPORT

ORIGIN

At the July 2, 2015 session of Environment and Sustainability Standing Committee (ESSC), there was a motion approved to direct staff report on the process and current status of Extended Producer Responsibility (EPR).

LEGISLATIVE AUTHORITY

Solid waste regulations fall under provincial legislation. Changes to the legislation and regulations have a direct impact to municipal services costs in terms of administration, education, disposal, materials management, processing and enforcement. HRM Charter, Part XIII Solid Waste Management, Section 336 (a - j) refers to the authority to make by-laws respecting Solid Waste Management.

BACKGROUND

EPR is a policy tool, enabled by provincial legislation, to extend producers and manufactures responsibility to include end of life management of waste products and packaging. This includes responsibility for the collection, processing and recycling or recovery of materials. This is a shift of responsibility away from the 100% municipal tax base funding model to include funding provided by product manufacturers sharing in the costs of waste management. EPR legislation is also intended to encourage manufacturers to design environmentally friendly products thereby reducing potential waste at its source. This minimizes the material sent to landfills and processing facilities.

In 2014 Nova Scotia Environment (NSE) initiated a regulation review process to enable EPR. NSE had solicited input and hosted consultations with municipalities.

In September 2014 Halifax Regional Council provided 5 areas of input with respect to EPR:

1. Funding Models

I. Fees and levies must support full cost of the product regardless of the stream
II. Funding and levies must cover the handling costs not just the processing costs of material
III. Distribution of funding must recognize Halifax's capital investments
IV. Funding should be delivered directly to municipalities to support collection, processing, administration and education.

2. Role in Collection and Processing

I. Materials easily included in the recycling stream should be dealt with in the existing system with the provision that integration into existing models needs to be negotiated in terms of operational, processing and collection cost implications.
II. Recognition that existing municipal service models exist for the capture and processing of stewarded waste products which can be used.

3. Residential Accessibility to Recycling/Diversion Programs

I. Endorse that curbside programs are the preferred option for collections due to increased accessibility and the higher potential for diversion.

4. Life Cycle Management and Design for Environment

I. Waste prevention hierarchy must be a priority principle/standard for the approval of stewardship plans.
II. Stewardship plans should call for incentives for product and packaging manufacturers to focus on waste prevention, re-use and waste minimization.
III. Manufacturers need to focus on waste reduction and re-design to support a zero waste philosophy.
IV. Reduction/re-use needs to be a higher priority rather than creating financial mechanisms for consumers to pay for consumption.
V. Provincial regulations should guide industry stewardship plans to include design for environment targets.

5. Product List and Priority Ranking

I. First priority items must be for materials considered a hazardous/special waste already captured in the special handling waste category, currently regulated and are already identified to pose handling and risk issues at waste handling facilities.

II. First priority items must be for materials where well established recovery programs exist in other jurisdictions.
III. All products on the material list for EPR should include validation of material recovery and recycling markets including downstream monitoring oversight of processing and materials end marketing.
IV. All materials on the material list should include the role of manufacturers to reduce waste at source in the re-design of products and packaging.

In addition to these areas of input, the Union of Nova Scotia Municipalities (UNSM) resolution 8A (Provincial-Municipal Solid Waste Working Group), was put forward by Halifax Regional Council and passed at the November 2014 UNSM conference. This resolution highlighted the fact that Solid Waste Regulations have a financial impact on municipalities and municipalities were seeking to form a multi-stakeholder working group to be consulted with on the Regulation changes.

A working group has been formed, known as the "Priorities Group", and is comprised of representatives of Regional Chairs (2), NS Solid Waste Resource Regional Coordinators (2), NS Solid Waste Managers & Directors Committee (2), NSE (2), RRFB (2), UNSM (1) and Municipal Affairs (1). The priorities group is a sub-committee of Regional Chairs (a committee comprised of elected Chairs from each of the seven Solid Waste-Management Regions). The first meeting of the Group was in January 2015.

The role of the Priorities Group is to:

- Focus on proposed changes to the Solid Waste-Resource Management Regulations;
- Provide a platform for dialogue/discussion between representatives of the group and with producer representatives (e.g. CSSA);
- Prioritize dialogue/discussion items respecting proposed changes with a first priority of EPR for Printed Paper and Packaging (PPP);
- Facilitate information sharing/gathering opportunities for the group via extending invitations to guest presenters/participants; and
- Collaboratively develop and bring forward recommendations respecting regulatory and stewardship program initiatives and/or changes for the benefit of all Nova Scotians.

The goals of the Priorities Group are:

- To generate improved understanding between municipal governments, provincial government and other stakeholders on the challenges and opportunities to potential regulation and stewardship program scenarios.
- Proposed provincial regulations and stewardship programs are reflective and responsive to both municipal and provincial government needs and interests.
- The proposed regulations reflect what is in the best interests of all Nova Scotians over the needs/interests of any one committee/organization.

In March 24, 2015, NSE released a final report entitled "What We Heard" - feedback from stakeholders intended to shape new regulations (http://novascotia.ca/nse/waste/docs/Solid-Waste-What-We-Heard-Report-March-2015.pdf). NSE identified the first priority for EPR would be PPP . In addition the province committed to study the financial implications of proposed EPR. NSE cites a 2-3 year timeframe for EPR to be implemented after the new regulation is passed.

DISCUSSION

The Priorities Group has focussed on the examination of other jurisdiction models for EPR, the role of municipal and industry stewards in service delivery and high level financial implications of the models.

The two primary EPR models are:

1) Shared Responsibility - Legislation prescribes cost sharing parameters (50% - 100%) whereby producers support municipal recycling programs through direct financial payments to municipalities.

2) Full Responsibility - Legislation requires producers to be responsible for designing and operating residential recycling programs and reaching recycling targets.

The table below provides an outline of the current and proposed legislative landscape across Canada.

Current Programs				Planned Programs
MB	ON	QC	BC	SK
80%	50%	100%	100%	75%
Municipality-Operated	Municipality-Operated	Municipality-Operated	Industry-Operated	Municipality-Operated (TBD 2015)

Where municipal programs operate under a shared model the industry is obligated to fund a percentage of net eligible program costs. This cost sharing ranges from 50% in ON to 100% in QC. The municipality continues to deliver the residential recycling programs, maintains the role of decision making for service levels (curbside vs. depot collection), defines collection frequency, defines material types collected, and is responsible for the processing and marketing of recyclables.

BC is the first Canadian jurisdiction to introduce full EPR. This has transformed the traditional role of municipalities in service delivery. Where residential recycling programs were managed and controlled by municipal government, legislation now mandates industry control. Industry becomes accountable to fund and operate a provincial program for residential recycling. The province mandates that industry develops a recycling program plan to define collection methodology, to designate a provincial material list, and that the responsibility for all materials processing and marketing for PPP materials is under their control. Under a full model residential recycling program services traditionally delivered and paid by the municipal tax base shift to industry.

The full EPR model has resulted in significant change management issues for BC municipalities. For example there were changes in service standards whereby materials previously collected in the curbside blue box shifted to depot drop off only. This was of concern for municipalities and residents as it was considered a reduction in the service level and perceived impact on program participation. The majority of BC municipalities have in any case signed on as a contracted collection service provider working for the stewardship agency, Multi-Material BC(MMBC) and may eventually transition to cede service provider contracts over to MMBC at the end of contract term, which is their option. This model is still in its infancy stage in BC, with implementation just having occurred in May 2014 with impacts still being measured.

In Europe, both Germany and Sweden are making moves to shift away from the full to a shared model. The primary reason for the switch is to provide for local municipal decision making. They have found that residents continue to contact the local level of government to deal with service issues related to industry programs and secondly municipalities seeking to add new materials to its recycling stream cannot be advanced without operational controls or management involvement in recycling operations. The shared model is the most common approach used in Europe and Canada.

The following is a snapshot of the characteristics of a full vs shared model:

Full EPR	Shared EPR
• Producers fund and deliver services for residential collection of PPP and materials processing and marketing	• Municipality receives some level of funding (50%-100%) to maintain 100% responsibility for blue bag and paper recycling collection, processing and end markets.
• Producers determine service levels (curbside or depot) for materials	• Municipalities determine service levels (curbside) for blue bag & paper items
• Designated materials defined by industry and only includes residential PPP	• Material list determined by municipalities and includes residential and ICI sector materials
• Industry may contract for municipal service delivery	• Model is more prescriptive for industry with municipalities take the lead much like status quo

In 2014, the provinces of NB, NS, PEI and Newfoundland and Labrador commissioned Giroux Environmental Consulting to conduct a literature and jurisdictional review of waste packaging and paper stewardship programs. A copy of this report entitled, “Framework and Implementation Plan for a Waste Packaging and Paper Stewardship Program across Atlantic Canada” is included in the attachment to this report.

The findings from this report recommend a Shared Responsibility EPR Model. The rationale for this recommended model is contained in section 1.3.1 of their report and is outlined below:

> ***1.3.1 Rationale for this Model***
> The rationale for the recommended Shared Responsibility EPR model for Atlantic Canada is as follows:
> - Municipalities / regional authorities would continue to be a primary player with decision-making responsibilities over program design, operation and practices. This is desirable for most municipalities / regional authorities who have invested considerable effort and resources to establish recycling programs and infrastructure.
>
> - For provinces with small or remote communities with modest existing depot service operated by regional authorities possible improvements to levels of service could be made as all provinces make efforts to provide a consistent level of service in a harmonized program (see Section 1.10 Implementation Aspects).
>
> - The shared responsibility EPR model would also allow for continuation of existing contracts with collectors and processors currently operating recycling services.
>
> - A shared responsibility model is the most common type of model used for waste packaging and paper in Canada and Europe. In Europe, two of the three countries using a full EPR model (Germany and Sweden) are both reviewing options to transition back to shared responsibility model from a full EPR model.
>
> - Operating under a shared responsibility approach would also allow time for municipalities and producers to learn to work together and to cooperate and would give time for programs to be expanded where warranted to meet new harmonized program standards and for performance measures to be established.

To date no decision has been made with regards to what model of EPR will be implemented in Nova Scotia. A financial impact study was commissioned by NSE and RRFB to review the financial implications of implementing the full responsibility model of EPR. The study entitled “Municipal Financial Impact Review” was completed by Dillon Consulting in May 2015 and is included as an attachment to this report.

This report reviewed 5 municipalities, including the Town of Antigonish, CBRM, Municipality District of Chester, County of Colchester and Pictou County Solid Waste Management. The Municipality of Colchester and CBRM were the only areas to operate a materials recycling facility in the study. All of the municipalities provide curbside collection services of blue bag and paper materials. EPR for PPP defines materials acceptable for curbside collection. This includes all materials in the existing curbside blue bag and paper streams. Current and potential future cost to collect, process and market recyclables were included in the financial cost model. Investment in infrastructure was contemplated, with cost options for the Municipality of Colchester to continue to operate existing facility and an option to have a buy-out where industry has full responsibility for processing and marketing operations. With many assumptions and not all model options explored, the report findings are not conclusive. The author indicates that the report is “appropriate for comparative planning purposes only”.

The Financial Impact Study reviewed only the full responsibility model of EPR. The Study did not compare or contrast the full responsibility model to the shared responsibility model for the selected communities. Without this analysis it is difficult to determine which model is the most financially beneficial for each community studied.

A future educational opportunity is planned through UNSM slated for October 23 to host a discussion, information sharing and gathering input with Priorities Group.

On September 2, 2015 Nova Scotia Environment Minister, the Honourable Andrew Younger, has decided to "pause" implementation of Extended Producer Responsibility (EPR) in Nova Scotia. Staff are seeking out additional information from NSE.

FINANCIAL IMPLICATIONS

There are no financial implications with this report.

The financial implications of full vs shared for Halifax have not been studied.

COMMUNITY ENGAGEMENT

ATTACHMENTS

1. Municipal Financial Impact Review – Final Report May 2015 – Dillon Consulting
2. Framework and Implementation Plan for a Waste Packaging and Paper Stewardship Program across Atlantic Canada – May 29, 2014 – Giroux Environmental Consulting

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A copy of this report can be obtained online at http://www.halifax.ca/commcoun/index.php then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

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DILLON CONSULTING

Municipal Financial Impact Review

Final Report

May 2015 – 15-1479

May 12, 2015

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ATTENTION: Alanna McPhee
Director of Programs and Development

Municipal Financial Impact Review (Final)

With reference to our proposal of January 12, 2015, we are pleased to submit the final version of the Municipal Financial Impact Review.

If you have any comments or questions regarding this report, please contact the undersigned at your convenience.

Yours truly,

DILLON CONSULTING LIMITED

ORIGINAL SIGNED

Scott D. Kyle, P.Eng.
Project Manager

SDK:jes
Attachment
Our File: 15-1479-6000

Table of Contents

Figures

Tables

Appendices

Contacts and References

Acronyms and Abbreviations

C&D	Construction and Demolition
CBRM	Cape Breton Regional Municipality
DMA	Department of Municipal Affairs
EAC	Equivalent Annual Cost
EMC	Environmental Management Centre
EPR	Extended Producer Responsibility
ESL	Eastern Sanitation Limited
FN	First Nation
FY	Fiscal Year
HDPE	High Density Polyethylene
HHW	Household Hazardous Waste
HRM	Halifax Regional Municipality
ICI	Industrial, Commercial and Institutional
K	thousand
LDPE	Low Density Polyethylene
LF	Landfill
LYW	Leaf and Yard Waste
MODC	Municipality of the District of Chester
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
NA	Not applicable
NPV	Net Present Value
NSCC	Nova Scotia Community College
NSE	Nova Scotia Environment
O&M	Operation and Maintenance
OCC	Old Corrugated Cardboard
OTR	Off the road
PCSWM	Pictou County Solid Waste Management
PET	Polyethylene Terephthalate
PP	Polypropylene
PPP	Printer Paper and Packaging
PVC	Polyvinyl Chloride
Res	Residential
RRFB NS	Resource Recovery Fund Board (Nova Scotia)
SSO	Source Separated Organics
SWM	Solid Waste Management
UNSM	Union of Nova Scotia Municipalities
VWRM	Valley Waste Resource Management
WMF	Waste Management Facility

Definitions

Compostables - Materials that can undergo microbiological decomposition, resulting in a humus-like end product that is primarily used for soil conditioning.

Construction & Demolition (C&D) Debris - Waste materials from the construction, renovation and/or demolition of buildings, usually including wood and metal scrap, brick, block and concrete rubble, wire and packaging. In Nova Scotia, the Solid Waste-Resource Management Regulations define C&D debris as *"materials which are normally used in the construction of buildings, structures, roadways, walls and other landscaping material, and includes, but is not limited to, soil, asphalt, brick, mortar, drywall, plaster, cellulose, fibreglass fibres, gyproc, lumber, wood, asphalt shingles, and metals."*

Diversion - Any environmentally-sustainable initiative that decreases the quantity of waste that must be landfilled or otherwise disposed.

Enforcement - Administrative or legal procedures and actions to require compliance with legislation, regulations or limitations.

Extended Producer Responsibility - A waste management policy approach that identifies end-of-life management of products as the responsibility of producers.

HDPE - HDPE (High Density Polyethylene) refers to a plastic used to make bottles for milk, juice, water and laundry products. Unpigmented HDPE bottles are translucent and have good barrier properties and stiffness.

Household Hazardous Waste (HHW) - Materials commonly found in the home that may cause harm to human health or the environment.

Industrial Waste - Generally liquid, solid or gaseous wastes originating from the manufacture of specific products. Wastes are usually concentrated, variable in content and rate, and require more extensive or different treatment than municipal waste.

Industrial, Commercial and Institutional (ICI) Sector - Includes industries (e.g., manufacturing), businesses and institutions such as schools, universities and hospitals. Municipal waste is often categorized according to whether it is generated by the ICI sector or the residential sector.

Landfill - The disposal of solid wastes or sludges by placing on land, compacting and covering as appropriate with a thin layer of soil. These facilities often rely on bulldozers and compactors as their main piece of equipment for spreading, grading, and covering refuse.

LDPE - LDPE (Low Density Polyethylene) is a plastic used predominantly in film applications due to its toughness, flexibility and relative transparency. LDPE has a low melting point, making it popular for use in applications where heat sealing is necessary. Typically, LDPE is used to manufacture flexible films such as those used for plastic retail bags, garment dry cleaning and grocery bags.

Materials Recovery Facility (MRF) - A facility where materials are processed to separate and recover recyclable materials from the waste stream.

Mixed Waste (or) Mixed Residue - Discarded materials and products which have not been source-separated and therefore may contain compostable or recyclable materials which can be recovered for beneficial use.

Municipal Solid Waste (MSW) - Commonly referred to as garbage, this material is handled by municipal collection and/or disposal services. It includes two main types of solid waste: residential or domestic waste, and industrial, commercial and institutional waste. In Nova Scotia, the Solid Waste-Resource Management Regulations define municipal solid waste as *"…garbage, refuse, sludge, rubbish, tailings, debris, litter and other discarded materials resulting from residential, commercial, institutional and industrial activities which are commonly accepted at a municipal solid waste management facility, but excludes wastes from industrial activities regulated by an approval issued under the Act."*

Net Present Value (NPV) - The difference between the present value of cash inflows and the present value of cash outflows. NPV compares the value of a dollar today to the value of that same dollar in the future, taking inflation and returns into account and is a standard method for using the time value of money to appraise long-term projects.

Organics - Carbon and hydrogen-based materials that can be transformed into humus-like materials through microbiological processes (e.g., composting).

PET - PET or PETE (Polyethylene Terephthalate) is a clear, tough plastic with good gas and moisture barrier properties. Some is used in PET soft drink bottles and other blow molded containers, although sheet applications are increasing. Cleaned, recycled PET flakes and pellets are utilized for spinning fibre for carpet yarns and producing fibrefill and geotextiles.

Product Stewardship - Action undertaken by industry, either voluntarily or as a result of a legislative/regulatory requirement, to provide the appropriate management of a product when it becomes a waste.

Recovery - Typically refers to the recovery of heat for electrical generation through the incineration of solid waste or select waste stream components.

Recyclables - Materials that can be separated from municipal solid waste and reprocessed into new products.

Recycle - When used as a noun, means reutilization of a secondary resource as a result of its inclusion in a manufacturing process. When used as a verb, means the act of recycling.

Residential Sector - Householders, including those who live in detached dwellings, row housing, condominiums and apartments.

Reuse - When used as a noun, means reutilization of a secondary resource without need of a manufacturing process. The term “reuse”, when used as a verb, will be defined to mean the act of reuse.

Source Separation - Classifying and segregating waste/resource materials by category, usually separating various classes of recyclable vs. non-recyclable items, usually done by the generator at the collection or pick-up point (e.g., residences, offices or commercial facilities).

Sustainability - Sustainability can be defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their needs. Sustainability is typically based upon three components: economic growth, social progress, and environmental protection.

Transfer Stations - Temporary storage facility for waste, used in circumstances where the landfill site is located far from the areas where waste is generated. Typically, waste is collected and loaded into large capacity trailers at the station for subsequent bulk transfer to vehicles at the landfill.

Yard Waste - Discarded materials from residential yards and gardens, such as lawn clippings, leaves and prunings. These materials are generally compostable.

Executive Summary

In 2008, acknowledging success to date as well as the need to review and refresh the objectives originally defined in the 1995 Strategy, Nova Scotia Environment (NSE) formed a Strategy Renewal Advisory Committee. The Committee's findings were issued in 2009 in a document entitled *Renewal of Nova Scotia's Waste Resource Management Strategy Consultation Summary Report*. The top two actions that were highlighted in the Consultation Summary Report were; 1) increase product stewardship, and 2) stimulate opportunities to divert the amount of construction and demolition waste sent to landfills.

In 2014, with a noted connection to the Consultation Summary Report, NSE released a document entitled *Revising Our Path Forward: A public discussion paper about solid waste regulation in Nova Scotia*. Founded on consultations with solid waste stakeholders throughout the province, the objective of the Revising Our Path Forward (ROPF) document was to identify potential revisions to the existing Solid Waste-Resource Management Regulations. With reference to that document, the following seven key areas of the regulations were identified for potential amendment:

1. Product Stewardship/Extended Producer Responsibility (EPR).
2. Disposal Bans and Approval Requirements.
3. Used Tire Management Program.
4. Regional Solid Waste Management Plans, Regional Requirements.
5. Regulatory Clarity on Energy from Waste.
6. Improvements to the Enforcement of the Solid Waste Regulations.
7. Beverage Container Deposit Refund Program Efficiency.

In February 2014, Dillon Consulting Limited (Dillon) was contacted by representatives of Pictou County Solid Waste Management (PCSWM), NSE and RRFB Nova Scotia to discuss the requirements to conduct an analysis of the potential public sector cost impacts of implementing the first two potential action items (the third action, Used Tire Management Program, was subsequently added) as described in the ROPF document. In September 2014, PCSWM formally engaged Dillon to conduct the analysis. Dillon's final report, entitled *Diversion Costs Review*, was issued in December 2014.

In December 2014, and with a connection to the PCSWM analysis, RRFB Nova Scotia invited three firms to submit a proposal to conduct a review of the financial impact of implementing ROPF actions 1, 2, 3 and 6 on three additional municipalities (Municipal Financial Impact Review – Proposed Solid Waste Regulations). In January 2015, following the evaluation of the proposals, Dillon was selected to complete the study. During project initiation, a fourth municipality was added to the project scope. Following consultation between RRFB Nova Scotia, Nova Scotia Department of Municipal Affairs (DMA), Union of Nova Scotia Municipalities (UNSM) and NSE, the list of five municipalities/authorities selected to participate in the Municipal Financial Impact Review was confirmed. The participating municipalities/ authorities list was developed with the objective of considering a range of existing municipal waste management situations, including municipal/public sector ownership and operation of all, some or no required processing/disposal facilities. The finalized list of participating municipalities/authorities for the Municipal Financial Impact Review assignment was as follows;

1. Town of Antigonish (project budgetary requirements covered by DMA).
2. Cape Breton Regional Municipality.
3. Municipality of the District of Chester.
4. Municipality of the County of Colchester.
5. Pictou County Solid Waste Management (December 2014 report findings to be updated as necessary).

The analysis focused on the potential waste management system cost implications of implementing actions identified within actions 1, 2, 3 and 6 of the *Revising Our Path Forward* document. With reference to those actions, the specific materials and associated generation sources to be incorporated in the analysis are presented in Table ES-1. Additional effort for municipal enforcement of current provincial littering and open burning regulations will also be included.

TABLE ES-1: WASTE STREAM MATERIALS TO BE ANALYZED

Material	Generation Source	Management/Diversion Program Responsibility	
		Current	Proposed
1) Asphalt Shingles	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
2) Carpet	Res and ICI C&D activities	Municipality/Authority	EPR Program
3) Clean Wood[1]	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
4) Wallboard[2]	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
5) Household Hazardous Waste (HHW)	Res only	Municipality/Authority	EPR Program
6) Mattresses and Box Springs	Res and ICI	Municipality/Authority	EPR Program
7) Packaging and Printer Paper (PPP)	Res only[3]	Municipality/Authority	EPR Program
8) Textiles	Res and ICI	Municipality/Authority	Private Sector/Association for Textile Recycling (AFTeR)
9) Tires[4]	Res and ICI	Municipality/Authority	RRFB Nova Scotia

Notes:
1. Clean wood is typically defined as milled wood that is free of adhesives, coatings and preservatives. In the future, it is anticipated that limited amounts of engineered and coated wood items will be acceptable for incorporation in the overall mass of material that is managed as "clean wood".
2. Wallboard from new construction and renovation activities as well as dismantling ("gutting") of the interiors of concrete and brick structures.
3. Depending on municipality can include multi-residential and condominium units and select ICI sources.
4. Additional "OTR" (off the road) tire sizes from those currently accepted under the provincial program.
Res = Residential, ICI = Industrial, Commercial and Institutional

The following key assumptions were used as a basis for the completion of this assignment:

- The analysis was to develop estimates on costs currently borne specifically by the public sector system, including collection, storage, transfer, processing and disposal.
- The analysis was to utilize information provided by NSE and the subject municipality/authority to support the estimate of current/future tonnage data and associated management costs for the identified waste streams.
- For the purposes of the cost estimate/comparison, a 10 year period (2016-2025) was used for the assessment, with findings being presented as a 2015 Net Present Value (or Cost).

The level of financial analysis provided by the study was to be appropriate for comparative planning purposes only. As presented in Table ES-2, in comparison to current procedures and with a focus

on the period of 2016 to 2025, the implementation of the new waste diversion activities under the Proposed Conditions scenario is forecasted to result in savings (i.e. a reduction of costs) over current expenditure for all five municipalities/authorities that participated in this study. It is acknowledged that a key assumption supporting this finding is that costs associated with the full operation of the curbside blue bag program within the each of the five evaluated municipalities/authorities will be addressed through a proposed Printed Paper and Packaging (PPP) Extended Producer Responsibility (EPR) program.

The completion of this assessment, with regards to the Municipality of Colchester, included the consideration of a variation on the PPP EPR option. Unlike the assumed "default" PPP alternative (with the EPR stewards assuming responsibility for all aspects of a municipality's curbside bluebag program), Colchester County requested that a second option be considered that assumed that they continued to own and operate its Kemptown MRF, serving its existing clientele consistent with current tip fee and tonnage forecasts.

TABLE ES-2: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO PER MUNICIPALITY

Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)	Annual Savings under Proposed Conditions
		Waste Managed	Net Benefit/tonne		
TOWN OF ANTIGONISH					
Current Conditions	-$1,551,000	5,786	-$268	-$200,860	$142,460
Proposed Conditions	-$451,000	5,832	-$77	-$58,400	
CBRM					
Current Conditions	-$18,668,000	251,848	-$74	-$2,418,000	$1,363,000
Proposed Conditions	-$8,146,000	248,946	-$33	-$1,055,000	
MUNICIPALITY OF THE DISTRICT OF CHESTER					
Current Conditions	-$2,316,000	97,600	-$24	-$299,600	$126,120
Proposed Conditions	-$1,340,000	90,564	-$15	-$173,480	
MUNICIPALITY OF THE COUNTY OF COLCHESTER					
Current Conditions	-$6,987,000	161,250	-$43	-$909,520	$533,800
Proposed Conditions (OPTION 1)	-$2,895,000	86,003	-$34	-$375,720	
Proposed Conditions (OPTION 2)	-$2,972,000	161,586	-$18	-$384,720	$524,800
PICTOU COUNTY SOLID WASTE MANAGEMENT					
Current Conditions	-$5,420,000	65,766	-$82	-$702,520	$234,520
Proposed Conditions	-$3,605,000	64,312	-$56	-$468,000	

Note:
1. Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).

With reference to the project assumptions identified above, it is reiterated that the findings presented in this document are “appropriate for comparative planning purposes only”. A significant number of assumptions and approximations (including those associated with future EPR programs and the sale of existing MRF assets in CBRM and Colchester County) were required to conduct the comparative analysis between the “Current Conditions” and “Proposed Conditions” scenarios. A more formalized and robust analysis of both individual material tonnages and current/future management costs could potentially provide a different NPV outcome from that presented in this report.

1.0 Introduction

1.1 Background

Beginning with efforts to formalize engineering and operational activities at disposal sites in the late 1970s, the Province of Nova Scotia has demonstrated an ongoing commitment to improve municipal solid waste management practices within our province. A key milestone occurred in 1995 with the issuing of the Province's Solid Waste Resource Management Strategy – this document served as the basis for the establishment of the foundation elements of Nova Scotia's regional management program. Most notably, the Strategy and subsequent Solid Waste-Resource Management Regulations took the uniquely progressive approach of considering society's residual materials as potentially valuable resources instead of wastes that simply required efficient collection and expedited disposal.

In 2008, acknowledging success to date as well as the need to review and refresh the objectives originally defined in the 1995 Strategy, Nova Scotia Environment (NSE) formed a Strategy Renewal Advisory Committee. The Committee's findings were issued in 2009 in a document entitled *Renewal of Nova Scotia's Waste Resource Management Strategy Consultation Summary Report*. The top two actions that were highlighted in the Consultation Summary Report were 1) increase product stewardship, and 2) stimulate opportunities to divert the amount of construction and demolition waste sent to landfills.

In 2014, with a noted connection to the Consultation Summary Report, NSE released a document entitled *Revising Our Path Forward: A public discussion paper about solid waste regulation in Nova Scotia*. Founded on consultations with solid waste stakeholders throughout the province, the objective of the Revising Our Path Forward (ROPF) document was to identify potential revisions to the existing Solid Waste-Resource Management Regulations. With reference to that document, the following seven key areas of the regulations were identified for potential amendment:

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6. Improvements to the Enforcement of the Solid Waste Regulations.
7. Beverage Container Deposit Refund Program Efficiency.

In February 2014, Dillon Consulting Limited (Dillon) was contacted by representatives of Pictou County Solid Waste Management (PCSWM), NSE and RRFB Nova Scotia to discuss the requirements to conduct an analysis of the potential public sector cost impacts of implementing the first two potential action items (the third action, Used Tire Management Program, was subsequently added) as described in the ROPF document. In September 2014, PCSWM formally engaged Dillon to conduct the analysis. Dillon's final report, entitled Diversion Costs Review, was issued in December 2014.

In December 2014, and with a connection to the PCSWM analysis, RRFB Nova Scotia invited three firms to submit a proposal to conduct a review of the financial impact of implementing ROPF actions 1, 2, 3 and 6 on three additional municipalities (Municipal Financial Impact Review – Proposed Solid Waste Regulations). In January 2015, following the evaluation of the proposals, Dillon was selected to complete the study. During project initiation, a fourth municipality was added to the project scope with Nova Scotia Department of Municipal Affairs (DMA) serving to address additional budgetary requirements. Following consultation between RRFB Nova Scotia, DMA, Union of Nova Scotia Municipalities (UNSM) and NSE, the list of five municipalities/authorities selected to participate in the Municipal Financial Impact Review was confirmed. It is noted that the participating municipalities/authorities list was developed with the objective of considering a range of existing municipal waste management situations, including municipal/public sector ownership and operation of all, some or no required processing/disposal facilities. The finalized list of participating municipalities/authorities for the Municipal Financial Impact Review assignment was as follows;

1. Town of Antigonish (project budgetary requirements covered by DMA).
2. Cape Breton Regional Municipality.
3. Municipality of the District of Chester.
4. Municipality of the County of Colchester.
5. Pictou County Solid Waste Management (December 2014 report findings to be updated as necessary).

1.2 Key Assumptions

The following key assumptions were used as a basis for the completion of this assignment:

1. The analysis is to focus on the potential waste management system cost implications of implementing actions identified within actions 1, 2, 3 and 6 of the ROPF document. With reference to those actions, the specific materials and associated generation sources to be incorporated in the analysis are presented in Table 1-1.

TABLE 1-1: WASTE STREAM MATERIALS TO BE ANALYZED

Material	Generation Source	Management/Diversion Program Responsibility	
		Current	Proposed
1. Asphalt Shingles	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
2. Carpet	Res and ICI C&D activities	Municipality/Authority	EPR Program
3. Clean Wood[1]	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
4. Wallboard[2]	Res and ICI C&D activities	Municipality/Authority	Municipality/Authority
5. Household Hazardous Waste (HHW)	Res only	Municipality/Authority	EPR Program
6. Mattresses and Box Springs	Res and ICI	Municipality/Authority	EPR Program
7. Packaging and Printer Paper (PPP)	Res only[3]	Municipality/Authority	EPR Program
8. Textiles	Res and ICI	Municipality/Authority	Private Sector/Association for Textile Recycling (AFTeR)
9. Tires[4]	Res and ICI	Municipality/Authority	RRFB Nova Scotia

Notes:
1. Clean wood is typically defined as milled wood that is free of adhesives, coatings and preservatives. In the future, it is anticipated that limited amounts of engineered and coated wood items will be acceptable for incorporation in the overall mass of material that is managed as "clean wood".
2. Wallboard from new construction and renovation activities as well as dismantling ("gutting") of the interiors of concrete and brick structures.
3. Depending on municipality can include multi-residential and condominium units and select ICI sources.
4. Additional "OTR" (off the road) tire sizes from those currently accepted under the provincial program.
Res = Residential
ICI = Industrial, Commercial and Institutional
C&D = Construction and Demolition

2. The analysis is to develop estimates on costs currently borne specifically by the public sector system, including collection, storage, transfer, processing and disposal.
3. The analysis will utilize information provided by NS Environment and the subject municipality/authority to support the estimate of current/future tonnage data and associated management costs for the identified waste streams.
4. For the purposes of the cost estimate/comparison, a 10 year period (2016-2025) will be used for the assessment, with findings being presented as a 2015 Net Present Value (or Cost).
5. The level of financial analysis provided by the study is to be appropriate for comparative planning purposes only.

For the 2016 to 2025 analysis period under the "Proposed Conditions" scenario, the following additional assumptions are noted;

- Costs associated with new site infrastructure and processing requirements for three of the C&D-related materials (asphalt shingles, clean wood, wallboard) will be the responsibility of the subject municipality/authority.
- Costs associated with new site infrastructure and processing requirements for carpet, HHW, mattresses/box springs, printed paper and packaging (PPP), textiles and OTR tires will be the responsibility of designated EPR or private sector-led programs. In the case of PPP, it is noted that it was assumed that a portion of program costs would remain with the subject municipality/authority. Noting the preference for the municipality to continue to own and operate its existing MRF, an additional "Proposed Conditions" scenario has been developed for the County of Colchester (see Section 4.2).
- Conceptual layouts of proposed new material drop off areas at existing municipal waste management facilities are depicted on Figures 4-1 through 4-7.
- Additional assumptions associated with the characterization and forecasting of the Proposed Conditions scenario are presented in Sections 5.1.2 and 5.2.
- Additional details on assumed capital and operating costs to support new diversion activities under the "Proposed Conditions" scenario are discussed in Section 6.1.2.

2.0 Methodology

Completion of this assignment involved the execution of the following six tasks.

Task 1 - Hold Project Initiation Meeting

- Confirmation of the content of the work plan, with a specific emphasis on scope, methodology (including analysis assumptions) and schedule.
- Establishment of contract terms.
- Confirmation of Project Steering Committee and Dillon team member contact coordinates.
- Initiation of the discussion on the preferred attributes of candidate municipalities/waste management authorities to include (in addition to PCSWM) in the study – to be carried forward to Task 2.
- Definition of reporting mechanisms for the project.

Task 2 - Assemble Background Information and Visit Participating Units

- Selection of the participating Municipalities/Regional Authorities (in addition to PCSWM).
  - This requirement was met as a component of Task 1 through a collaborative effort with RRFB Nova Scotia, DMA, UNSM and NSE.
- Background data collection and facility visits for the four new municipalities.
  - Information assembled for PCSWM as part of the 2014 study was carried forward for the purposes of this report.
  - Current/historic cost and material tonnage information for the study area as provided by NSE (e.g., FY2013 Municipal Data Call) and the participating municipalities.
  - Statistics Canada population data for the communities receiving solid waste management services from the participating municipalities.
  - Information on the anticipated components and cost implications of planned EPR programs for carpet, HHW, mattresses/box springs and PPP, as provided by NSE.
  - Completion of a current conditions questionnaire through a face to face meeting with representatives of each participating municipality and the Dillon project team.
  - Escorted tour of facilities that are owned/operated by the participating municipalities to observe current practices associated with the management of the targeted materials.
  - Walkover inspection of existing municipal waste management sites to identify candidate storage and transfer locations to support proposed diversion requirements for the targeted materials.

Task 3 – Develop Material Quality and Quantity Forecasts

- Use of historic population and waste tonnage information to develop a 10 year solid waste generation forecast (2016 – 2025) for the study area.
- Definition of an approximate waste stream characterization to support the preparation of an annual generation tonnage forecast specifically for the nine targeted materials.

Task 4 - Define Current and Proposed Future Management Systems

- For each participating municipality/authority, use of Task 2 and 3 outputs to identify solid waste service and infrastructure requirements for a) continued service under current management requirements, and b) proposed services to meet the requirements of actions 1, 2, 3 and 6 of the ROPF document.

Task 5 - Develop NPV Forecasts for Current & Proposed Management Systems

- Development of an estimate of the current annualized cost for each participating municipality/authority to manage (disposal and/or diversion) the targeted materials as compared to the estimated future annualized costs for to meet the requirements of actions 1, 2, 3 and 6 of the ROPF document. Both gained and lost revenues (e.g., tip fees), where identifiable, were considered in the assessment of current and proposed future conditions.

Task 6 - Prepare Draft and Final Project Reports

- Preparation of a draft project report, including a review meeting with representatives of the participating municipalities/authorities, RRFB Nova Scotia, NSE and DMA.
- Following the confirmation of necessary revisions to the draft document, issuing of a final project report.

3.0 Study Area Descriptions

As described in Section 1.1, five municipalities/authorities were selected for evaluation as part of Financial Impact Review assignment; 1) Town of Antigonish, 2) Cape Breton Regional Municipality (CBRM), 3) Municipality of the District of Chester, 4) Municipality of the County of Colchester, and 5) Pictou County Solid Waste Management (PCSWM). In the case of PCSWM, information assembled as part of their evaluation from the fall of 2014 was to be carried forward, with the analysis and results being revised as necessary. It is noted that all population data presented in this section was acquired from Statistics Canada (www.statcan.gc.ca).

3.1 Town of Antigonish

The Town of Antigonish provides waste management services to residential generators (including apartment buildings with up to four units) within its boundaries. Table 3-1 presents a summary of services provided by the municipality by waste type.

TABLE 3-1: TOWN OF ANTIGONISH SERVICE AREA POPULATIONS – BY MATERIAL TYPE AND SERVICE

	Service Area			
Material and Service	2011 Population	2006 Population	Change from 2006 (%)	Contributing Municipalities
C&D Waste - Collection/Transport	N/A	N/A	N/A	Service not provided by the municipality
C&D Waste - Processing/Disposal	N/A	N/A	N/A	Service not provided by the municipality
MSW - Collection/Transport	4,524	4,236	6.8%	Town of Antigonish
MSW - Processing/Disposal	N/A	N/A	N/A	Service not provided by the municipality
Recyclables - Collection/Transport	4,524	4,236	6.8%	Town of Antigonish
Recyclables - Processing/Marketing	N/A	N/A	N/A	Service not provided by the municipality

Notes:
N/A – not applicable

Antigonish acts as a service and retail hub for the surrounding region, including Antigonish and Guysborough Counties. Key employers include St. Francis Xavier University and St. Martha's Regional Hospital.

Further information on the current waste management-related activities of the Town of Antigonish is provided in Section 4.1.

3.2 Cape Breton Regional Municipality

Cape Breton Regional Municipality provides waste management services to generators within its municipal boundaries as well as several other municipalities situated on Cape Breton Island. Table 3-2 presents a summary of services provided by the municipality by waste type.

TABLE 3-2: CAPE BRETON REGIONAL MUNICIPALITY SERVICE AREA POPULATIONS – BY MATERIAL TYPE AND SERVICE

	Service Area			
Material and Service	2011 Population	2006 Population	Change from 2006 (%)	Contributing Municipalities
C&D Waste - Collection/Transport	N/A	N/A	N/A	Service not provided by the municipality
C&D Waste - Processing/Disposal[1]	97,398	102,250	-4.7%	CBRM
MSW - Collection/Transport	97,398	102,250	-4.7%	CBRM
MSW - Processing/Disposal	N/A	N/A	N/A	Service not provided by the municipality
Recyclables - Collection/Transport	101,613	105,930	-4.1%	CBRM
Recyclables - Processing/Marketing	111,640	115,810	-3.6%	CBRM, Richmond County, Town of Port Hawkesbury, Membertou, Eskasoni

Notes:
N/A – not applicable
1. *C&D waste generators have the option of using other Provincially-approved processing/disposal facilities.*

In the latter part of the 20th century, CBRM transitioned from an economy focused on heavy industrial activities to one with an emphasis on services, retail and tourism. Noted institutional facilities include the Cape Breton University, Cape Breton Regional Hospital, Northside General Hospital, Glace Bay Health Care Facility, Riverview High School, Sydney Academy, Glace Bay High School, Memorial High School and NSCC's Marconi Campus.

Further information on the current waste management-related activities of CBRM is provided in Section 4.1.

3.3 Municipality of the District of Chester

The Municipality of the District of Chester provides a range of waste management services to its residents and businesses and also offers select services to a number of municipalities in the South Shore and Annapolis Valley regions of the province. Table 3-3 presents a summary of services provided by the municipality by waste type.

TABLE 3-3: MUNICIPALITY OF THE DISTRICT OF CHESTER SERVICE AREA POPULATIONS – BY MATERIAL TYPE AND SERVICE

	Service Area			
Material and Service	2011 Population	2006 Population	Change from 2006 (%)	Contributing Municipalities
C&D Waste - Collection/Transport[1]	10,599	10,741	-1.3%	MD of Chester
C&D Waste - Processing/Disposal[2]	10,599	10,741	-1.3%	MD of Chester
MSW - Collection/Transport	10,599	10,741	-1.3%	MD of Chester
MSW - Processing/Disposal	155,671	155,565	0.1%	MD of Chester, MD of Lunenburg, Annapolis County, Kings County, Town of Annapolis Royal, Town of Berwick, Town of Bridgetown, Town of Bridgewater, Town of Kentville, Town of Lunenburg, Town of Mahone Bay, Town of Middleton, Town of Wolfville
Recyclables - Collection/Transport	10,599	10,741	-1.3%	MD of Chester[3]
Recyclables - Processing/Marketing	N/A	N/A		Service not provided by the municipality

Notes:
N/A – not applicable
1. *Collection provided as part of seasonal bulky waste events.*
2. *C&D waste generators have the option of using other Provincially-approved processing/disposal facilities.*
3. *Town of Lunenburg recyclables delivered to Kaiser Meadow for transport to HRM MRF.*

The most significant employment sectors within the District of Chester are resources (forestry and fisheries), retail and services. The Canexel (Louisiana Pacific Canada Ltd.) wallboard facility in East River and the Atlantica Oak Island Inn in Western Shore are noted industrial/commercial operations within the district. Key institutional facilities include Forest Heights Community School, New Ross Consolidated School, Chester District School and Aspotogan Consolidated Elementary School. It is acknowledged, however, that the 12 other municipalities that are serviced by the Kaizer Meadow Environmental Management Centre include a wide range of significant public and private sector generators.

Further information on the current waste management-related activities of the Municipal District of Chester is provided in Section 4.1.

3.4 Municipality of the County of Colchester

The Municipality of the County of Colchester provides a range of waste management services to its residents and businesses and also offers select services to a number of other municipalities. Table 3-4 presents a summary of services provided by the municipality by waste type.

TABLE 3-4: MUNICIPALITY OF THE COUNTY OF COLCHESTER SERVICE AREA POPULATIONS – BY MATERIAL TYPE AND SERVICE

	Service Area			
Material and Service	2011 Population	2006 Population	Change from 2006 (%)	Contributing Municipalities
C&D Waste - Collection/Transport[1]	52,406	51,444	1.9%	Colchester County, Town of Stewiacke
C&D Waste - Processing/Disposal[2]	63,027	61,788	2.0%	Colchester County, Town of Truro
MSW - Collection/Transport	52,406	51,444	1.9%	Colchester County, Town of Stewiacke
MSW - Processing/Disposal	64,465	63,209	2.0%	Colchester County, Town of Truro, Town of Stewiacke
Recyclables - Collection/Transport	52,406	51,444	1.9%	Colchester County, Town of Stewiacke
Recyclables - Processing/Marketing	125,752	125,810	0.0%	Colchester County, Pictou County, MD of Guysborough, MD of St. Mary's, Town of Antigonish, Town of Truro, Town of Stewiacke, Town of Windsor, Town of Mulgrave, Town of Pictou, Town of New Glasgow, Town of Westville, Town of Stellarton, Town of Trenton, Pictou Landing FN

Notes:
1. *Collection provided as part of seasonal bulky waste events.*
2. *C&D waste generators have the option of using other Provincially-approved processing/disposal facilities.*

Significant employment sectors within Colchester County include agriculture, resources (forestry) and retail. Key institutional facilities within the County include the Agricultural Campus of Dalhousie University (Bible Hill), Debert Industrial Park, Central Colchester Junior High School, Bible Hill Junior High School, West Colchester Consolidated School, North Colchester High School and Cobequid Consolidated Elementary. It is acknowledged, however, that the 13 other municipalities and one First Nation that are serviced by Colchester's facilities at their Kemptown site include a wide range of significant public and private sector generators.

Further information on current waste management-related activities of the County of Colchester is provided in Section 4.1.

3.5 Pictou County Solid Waste Management

As a regional authority, Pictou County Solid Waste Management (PCSWM) oversees solid waste management services for six area municipalities and one local First Nations community. Table 3-5 presents a summary of services provided by the municipality by waste type.

TABLE 3-5: PICTOU COUNTY SOLID WASTE MANAGEMENT SERVICE AREA POPULATIONS – BY MATERIAL TYPE AND SERVICE

	Service Area			
Material and Service	2011 Population	2006 Population	Change from 2006 (%)	Contributing Municipalities
C&D Waste - Collection/ Transport	N/A	N/A	N/A	Service not provided by the authority
C&D Waste - Processing/Disposal[2]	45,641	46,509	-1.9%	Pictou County, Town of Pictou, Town of Stellarton, Town of Trenton, Town of New Glasgow, Town of Westville, Pictou Landing FN
MSW - Collection/Transport	45,641	46,509	-1.9%	Pictou County, Town of Pictou, Town of Stellarton, Town of Trenton, Town of New Glasgow, Town of Westville, Pictou Landing FN
MSW - Processing/Disposal	N/A	N/A	N/A	Service not provided by the authority
Recyclables - Collection/Transport	45,641	46,509	-1.9%	Pictou County, Town of Pictou, Town of Stellarton, Town of Trenton, Town of New Glasgow, Town of Westville, Pictou Landing FN
Recyclables - Processing/Marketing	N/A	N/A	N/A	Service not provided by the authority

Notes:
N/A – not applicable

Manufacturing, retail, services, and construction are important contributors to the area's economy. Key industrial employers include Michelin North America, Northern Pulp Nova Scotia and Scotsburn Cooperative Services. Noted institutional facilities include the Aberdeen Hospital, North Nova Education Centre, Northumberland Regional High School and NSCC's Pictou Campus.

Pictou County Solid Waste Management (PCSWM) was established through an inter-municipal services agreement between the Towns of New Glasgow, Pictou, Stellarton, Trenton and Westville and the Municipality of the County of Pictou. As described in the agreement, "*the Shared Services Authority shall provide services as set by the Board of Directors from time to time, but shall provide services as previously provided by the Planning Commission in relation to…Solid Waste Management – which shall include operation of the Mount William Landfill site, Recycling and Garbage Collection, Waste Reduction Education and Composting Services…*" PCSWM, through a cost recovery arrangement with the First Nation, provide waste collection services to residences at Pictou Landing.

Further information on current waste management-related activities of PCSWM is provided in Section 4.1.

4.0 Services for Targeted Materials

4.1 Current Conditions

Tables 4-1 to 4-5 present a summary of the current management procedures provided/coordinated by each of the five municipalities/authorities that participated in this study. Further, the tables focus on services associated with the nine materials being considered as part of the analysis.

For the 2016 to 2025 analysis period under the "Current Conditions" scenario, it has been assumed that all services presented in the summary table will remain consistent, unless otherwise noted. Additional assumptions associated with the characterization and forecasting of the Current Conditions scenario for the five participating municipalities/authorities are presented in Sections 5.1.1 and 6.1.1.

4.2 Proposed Conditions

Tables 4-6 to 4-11 present a summary of the proposed management procedures to be provided/ coordinated by the five participating municipalities/authorities and other noted entities for the nine materials being considered as part of the analysis.

For the 2016 to 2025 analysis period under the "Proposed Conditions" scenario, the following key assumptions are noted;

- Costs associated with new site infrastructure and processing requirements for C&D-related materials (asphalt shingles, clean wood, wallboard) will be the responsibility of the respective municipality/authority.
- Costs associated with new site infrastructure and processing requirements for HHW, mattresses/box springs, carpet, printed paper and packaging (PPP), textiles and OTR tires will be the responsibility of designated EPR or private sector-led programs. In the case of PPP, it is noted that it was assumed that a portion of program costs would remain with the respective municipality/authority (see Section 6.1.2).
- In the case of municipalities that currently own MRFs, after consultation with the respective municipal owners, the following was assumed under the "Proposed Conditions" scenario:
  - CBRM: The municipality will sell the MRF building and its associated equipment assets in 2016.
  - Colchester County: Option 1 - The municipality will sell the MRF building and its associated equipment assets in 2016, Option 2 - The municipality will continue to be owners/operators of the MRF within the structure of a PPP EPR agreement.
- Conceptual layouts of proposed new material drop off areas at existing municipal waste management facilities are depicted on Figures 4-1 to 4-7. As the Town of Antigonish does not own or operate any solid waste management facilities, no Proposed Conditions figures have been developed for this municipality.
- Additional details on assumed capital and operating costs to support new diversion activities under the "Proposed Conditions" scenario are discussed in Section 6.1.2.

Additional assumptions associated with the characterization and forecasting of the Proposed Conditions scenario are presented in Sections 5.1.2 and 6.1.2.

Table 4-1
Town of Antigonish
Summary of Current Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads.	NA	NA	As coordinated by ESL, Beech Hill or private site operators.	-
2	Carpet	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads. Also included in fall/spring residential bulky waste collections.	NA	NA	As coordinated by ESL, Beech Hill or private site operators.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads.	NA	NA	As coordinated by ESL, Beech Hill or private site operators.	-
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads.	NA	NA	As coordinated by ESL, Beech Hill or private site operators.	-
5	HHW	Res only	One drop off event per year in collaboration with Antigonish County.	NA	NA	Contractor removal, processing and disposal.	-
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to ESL Adam Street or Beech Hill (Antigonish County). Also included in fall/spring residential bulky waste collections.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res generators.	NA	Direct haul to Colchester MRF.	Processing and delivery to end markets cooridinated by Colchester MRF.	-
8	Textiles	Res and ICI	Delivered to ESL Adam Street or Beech Hill (Antigonish County) in mixed MSW loads.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-
9	Tires[2]	Res and ICI	Delivered to ESL Adam Street or Beech Hill (Antigonish County) as individual items.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste-Resources Management By-law; dumping, abandonment or disposal of waste-resources at unlicensed facilities prohibitied.	By-law Enforcement Officer	Currently included as a provincial (NSE) enforcement responsibility in the Solid Waste-Resource Management Regulations. Based on information provided by NSE, approximately 250 staff days per year is directed to this effort for the entire province.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Current three year funding term is set to expire in 2016.
b	Open Burning	Solid Waste-Resources Management By-law; burning of waste-resources in a barrel, stove, other device or in the open prohibited.	By-law Enforcement Officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable.

Table 4-2
Cape Breton Regional Municipality
Summary of Current Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
2	Carpet	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to existing public drop off.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wood by CBRM forces for use in on-site biosolids management activities - end product used as C&D LF cover. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" can include items with coatings and adhesives.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
5	HHW	Res only	Drop Off at Green Island MRF.	Temporary storage at Green Island MRF.	NA	Contractor removal from Green Island MRF and final off-site processing/disposal.	-
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to CBRM WMF and as part of an annual residential heavy garbage curbside collection.	NA	Included in MSW transport from CBRM Transfer Station to Guysborough Regional Landfill.	Disposal at the Guysborough Regional Landfill.	-
7	Printed Paper and Packaging	Res and ICI	Curbside collection by contractors and municipal forces from Res and select small ICI generators. All ICI generators can deliver PP&P materials to the Green Island MRF with no tip fee charge.	As defined by EPR program.	As defined by EPR program.	Processing at Green Island MRF with subsequent delivery to end markets.	-
8	Textiles	Res and ICI	Delivered to CBRM WMF in mixed MSW loads.	NA	Included in MSW transport from CBRM Transfer Station to Guysborough Regional Landfill.	Disposal at the Guysborough Regional Landfill.	All diversion system costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to CBRM WMF as individual items.	Held temporarily in proximity to the on-site C&D landifll.	Unprocessed tires directed to the CBRM transfer station by municipal forces - included in MSW transport to Guysborough Regional Landfill.	On-site shredder used to process select tires with disposal at on-site C&D landfill. Disposal of remaining tires at the Guysborough Regional Landfill.	-

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste Resource Management By-Law S-300; accumulation of litter prohibited, requirement for litter management plans. Public Property By-Law P-300; no deposition of dirt, filth or rubbish on public property. Minimum Standards By-Law M-100; all parts of a building to be kept free of rubbish. Vacant and Derelict Buildings By-Law V-300; no exterior accumulation of debris, rubbish or garbage.	Officer assigned to Solid Waste	Currently included as a provincial (NSE) enforcement responsibility in the Solid Waste-Resource Management Regulations. Based on information provided by NSE, approximately 250 staff days per year is directed to this effort for the entire province.	Officer assigned to Solid Waste partially funded by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Current three year funding term is set to expire in April 2016.
b	Open Burning	None identified.	NA	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-3
Municipality of the District of Chester
Summary of Current Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to the Kaiser Meadow EMC in mixed C&D loads or in segregated loads using a preferential tip fee.	Temporary storage area for larger segregated quantities (e.g., contractors) near the on-site C&D landfill.	For small quantities, on-site transport from public drop off roll off to the storage area near the on-site C&D landfill.	Grinding of shingles by a contractor to produce a end product for on site road/yard surfacing. Non-extractable quantities within mixed loads to on-site C&D landfill.	Staff report that the number of on-site locations to use processed shingles as a surfacing material is nearing exhaustion - an off-site solution is required.
2	Carpet	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads and as part of two annual residential bulky waste curbside collections.	NA	NA	Disposed of at on-site C&D landfill.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads or in segregated loads using a preferential tip fee.	Temporary storage area for larger segregated quantities (e.g., contractors) near the on-site C&D landfill.	For small quantities, on-site transport from public drop off roll off to the storage area near the on-site C&D landfill.	Grinding of clean wood by a contractor with end product directed to Brooklyn Energy. Grinding of dirty wood for use on-site as landfill cover. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" includes bare milled wood items and brush.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads. Segregated ground wall board received from VWRM.	VWRM wallboard kept in a dedicated stockpile on top of the on-site C&D landfill.	NA	Disposed of at on-site C&D landfill; VWRM material remains in stockpile awaiting a management solution.	-
5	HHW	Res only	Drop off depot at Kaiser Meadow EMC.	Temporary storage at Kaiser Meadow EMC.	NA	Contractor removal from Kaiser Meadow EMC and final off-site processing/disposal.	-
6	Mattresses/Box Springs	Res and ICI	Delivered to Kaiser Meadow EMC and as part of two annual residential bulky waste curbside collections.	NA	NA	Disposal at the on-site MSW landfill.	-
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res and ICI (within Res set out limit) generators.	Collected materials directed to dedicated roll off containers on-site.	Roll off containers transported by contractors to HRM's Bayers Lake MRF.	Processing at HRM's Bayers Lake MRF with subsequent delivery to end markets.	-
8	Textiles	Res and ICI	Delivered to Kaiser Meadow EMC in mixed MSW loads.	NA	NA	Disposal at the on-site MSW landfill.	-
9	Tires[2]	Res and ICI	Delivered to Kaiser Meadow EMC as individual items.	Held temporarily in proximity to the on-site C&D landiffl.	NA	Miscellaneous on-site uses. No offsite processing.	-

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Waste Collection and Disposal By-Law #131; no unauthorized waste disposal, deposition or storage. Public Properties By-Law #134; no deposition of garbage, rubbish, filth or refuse on public property. Dangerous or Unsightly Premises Policy P-80; authority to bring an unsightly property into compliance.	Municipal by-law enforcement officer	Currently included as a provincial (NSE) enforcement responsibility in the Solid Waste-Resource Management Regulations. Based on information provided by NSE, approximately 250 staff days per year is directed to this effort for the entire province.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Current three year funding term is set to expire in 2016.
b	Open Burning	Outdoor Fire By-Law; no burning of general, garden or yard waste.	Municipal by-law enforcement officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-4
Municipality of the County of Colchester
Summary of Current Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to the Colchester WMF in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
2	Carpet	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	NA	NA	Grinding/removal of clean wood by a contractor. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" can include items with coatings and adhesives.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads.	NA	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wallboard by a contractor for use at the on-site Composting Facility . Non-extractable quantities within mixed loads to on-site C&D landfill.	-
5	HHW	Res only	Monthly drop off (Feb to Nov) at contractor facilities in Debert (Clean Harbours or AIS) plus three mobile drop off events per year within the County.	Temporary storage at contractor facilities.	NA	Contractor processing/disposal.	-
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to Colchester WMF and during spring/fall bulky waste residential curbside collections.	NA	NA	Disposal at the on-site balefill.	-
7	Printed Paper and Packaging	Res and ICI	Curbside collection by contractors from Res generators.	NA	NA	Processing at on-site (Colchester) MRF.	Materials from 13 municipalities, one First Nation plus Colchester County are processed at the Colchester MRF.
8	Textiles	Res and ICI	Delivered to Colchester WMF in mixed MSW loads.	NA	Included in MSW transport from the baling station to the on-site balefill.	Disposal at the on-site balefill.	-
9	Tires[2]	Res and ICI	Delivered to Colchester WMF as individual items.	Held temporarily in proximity to the on-site C&D landfill.	NA	Select tires sold to local reprocessor - others placed in the on-site balefill.	-

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste By-law; no illegal dumping, no accumulation of solid waste, removal of uncollected/scattered solid waste, no placement of waste on a property without consent.	Municipal by-law enforcement officer	Currently included as a provincial (NSE) enforcement responsibility in the Solid Waste-Resource Management Regulations. Based on information provided by NSE, approximately 250 staff days per year is directed to this effort for the entire province.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Current three year funding term is set to expire in 2016.
b	Open Burning	Solid Waste By-law; no solid waste burning.	Municipal by-law enforcement officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-5
Pictou County Solid Waste Management
Summary of Current Management Procedures for Targeted Materials

			PCSWM Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads.	NA	For small quantities, on-site transport from public drop off bins to the on-site C&D landfill.	Disposed of at on-site C&D landfill.	-
2	Carpet	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	Initial segregation/ grinding efforts commenced in late 2014.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads.	NA	NA	Disposed of at on-site C&D landfill.	-
5	HHW	Res only	Drop Off at PCSWM Admin Building + Mobile Collection Trailer (beginning 2014).	Temporary storage at HHW Building.	NA	Contractor removal from Mount William and final off-site processing/disposal.	-
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to Mount William.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-
7	Printed Paper and Packaging	Res with a small proportion of ICI	Curbside collection by contractors from Res and select small ICI generators.	Temporary storage of blue bags within Transfer Station building.	Included in recyclables transport to Colchester MRF.	Processing and delivery to end markets cooridinated by Colchester MRF.	-
8	Textiles	Res and ICI	Delivered to Mount William in mixed MSW loads.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-
9	Tires[2]	Res and ICI	Delivered to Mount William in mixed MSW loads.	NA	Included in MSW transport to Guysborough Landfill.	Disposal at the Guysborough Regional Landfill.	-

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Pictou County Solid Waste Management System Solid Waste-Resource Management Bylaw; requirement of property owners/ generators and contractors to remove litter associated with waste collection activities, illegal dumping prohibited.	Bylaw Enforcement Officer (any town police offcer or bylaw officer of a municipality).	Currently included as a provincial (NSE) enforcement responsibility in the Solid Waste-Resource Management Regulations. Based on information provided by NSE, approximately 250 staff days per year is directed to this effort for the entire province.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Current three year funding term is set to expire in 2016.
b	Open Burning	Pictou County Solid Waste Management System Solid Waste-Resource Management Bylaw; prohibition on burning of waste/recyclables with the exception of clean wood.	Bylaw Enforcement Officer (any town police offcer or bylaw officer of a municipality).	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-6
Town of Antigonish
Summary of Proposed Future Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads or in segregated quantities.	NA	NA	As coordinated by ESL, Beech Hill or private site operators, consistent with new regulatory requirements.	-
2	Carpet	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads or in segregated quantities. Also included in fall/spring residential bulky waste collections.	NA	NA	As coordinated by ESL, Beech Hill or private site operators consistent with requirements of EPR program.	-
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads or in segregated quantities.	NA	NA	As coordinated by ESL, Beech Hill or private site operators, consistent with new regulatory requirements.	-
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to ESL Adam Street, Beech Hill (Antigonish County) or private sites in mixed C&D loads or in segregated quantities.	NA	NA	As coordinated by ESL, Beech Hill or private site operators, consistent with new regulatory requirements.	-
5	HHW	Res only	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	80% of diversion program costs to be covered by private sector-led program, remainder by Town of Antigonish.
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to ESL Adam Street or Beech Hill (Antigonish County). Also included in fall/spring residential bulky waste collections.	As defined by EPR program.	As defined by EPR program.	Contractor removal via EPR program from drop off locations and final off-site processing/disposal.	All diversion program costs to be covered by EPR program.
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	As defined by EPR program.	As defined by EPR program.	Processing at an EPR-designated MRF with subsequent delivery to end markets.	Assume a 5% increase in total collected PPP tonnage under the Proposed Conditions scenario. 70% of diversion system costs to be covered by EPR program, remainder by Town of Antigonish.
8	Textiles	Res and ICI	Delivered to ESL Adam Street or Beech Hill (Antigonish County) in mixed MSW loads or in segregated quantities to drop off containers.	Segregated textiles to dedicated storage containers (provided by stewards).	Textiles remaining in mixed waste included in MSW transport to Guysborough Regional Landfill.	Contractor removal via Private Sector program from drop off containers and final off-site processing/disposal. Textiles remaining in mixed waste disposed at the Guysborough Regional Landfill.	All diversion program costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to ESL Adam Street or Beech Hill (Antigonish County) as individual items.	NA	NA	Contractor removal via EPR program from ESL Adam Street or Beech Hill (Antigonish County) and final off-site processing/disposal.	All diversion program costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste-Reources Management By-law; dumping, abandonment or disposal of waste-resources at unlicensed facilities prohibited.	By-law Enforcement Officer	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Solid Waste-Reources Management By-law; burning of waste-resources in a barrel, stove, other device or in the open prohibited.	By-law Enforcement Officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable.

Table 4-7
Cape Breton Regional Municipality
Summary of Proposed Future Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to existing public drop off.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of shingles to produce a divertable end product (Halifax C&D procedure). Non-extractable quantities within mixed loads to on-site C&D landfill.	Assumed collection of segregated shingles by Halifax C&D with transport to their Milford NS processing facility.
2	Carpet	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from CBRM WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to existing public drop off.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wood by CBRM forces for use in on-site biosolids management activities - end product used as C&D LF cover. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" can include items with coatings and adhesives.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to CBRM WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to existing public drop off.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wallboard by CBRM forces for use at the adjacent Composting Facility . Non-extractable quantities within mixed loads to on-site C&D landfill.	Ability of CBRM Composting Facility to accept ground wallboard to be confirmed in the future.
5	HHW	Res only	Drop Off at Green Island MRF.	Temporary storage at Green Island MRF.	NA	Contractor removal via EPR program from Green Island MRF and final off-site processing/disposal.	80% of diversion system costs to be covered by private sector-led program, remainder by CBRM.
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to CBRM WMF and as part of an annual residential heavy garbage curbside collection.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from CBRM WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	As defined by EPR program.	As defined by EPR program.	Processing at an EPR-designated MRF with subsequent delivery to end markets.	Assume a 5% increase in total collected PPP tonnage under the Proposed Conditions scenario. 70% of diversion system costs to be covered by EPR program, remainder by CBRM.
8	Textiles	Res and ICI	Delivered to CBRM WMF in mixed MSW loads or in segregated quantities.	Segregated textiles to on-site storage containers (provided by stewards).	Textiles remaining in mixed waste included in MSW transport to Guysborough Regional Landfill.	Contractor removal via EPR program from CBRM WMF and final off-site processing/disposal. Textiles remaining in mixed waste disposed at the Guysborough Regional Landfill.	All diversion system costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to CBRM WMF as individual items.	Held temporarily in a dedicated area in proximity to the on-site C&D landifll.	NA	Contractor removal via EPR program from CBRM WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste Resource Management By-Law S-300; accumulation of litter prohibited, requirement for litter management plans. Public Property By-Law P-300; no deposition of dirt, filth or rubbish on public property. Minimum Standards By-Law M-100; all parts of a building to be kept free of rubbish. Vacant and Derelict Buildings By-Law V-300; no exterior accumulation of debris, rubbish or garbage.	Officer assigned to Solid Waste	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Officer assigned to Solid Waste partially funded by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Include a prohibition on the open burning of waste as a component of By-Law S-300.	Officer assigned to Solid Waste	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-8
Municipality of the District of Chester
Summary of Proposed Future Management Procedures for Targeted Materials

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to the Kaiser Meadow EMC in mixed C&D loads or in segregated loads using a preferential tip fee.	Temporary storage area for larger segregated quantities (e.g., contractors) near the on-site C&D landfill.	For small quantities, on-site transport from public drop off roll off to the storage area near the on-site C&D landfill.	Grinding of shingles to produce a divertable end product (Halifax C&D procedure). Non-extractable quantities within mixed loads to on-site C&D landfill.	Assumed collection of segregated shingles by Halifax C&D with transport to their Milford NS processing facility.
2	Carpet	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads, as part of two annual residential bulky waste curbside collections or in segregated loads using a preferential tip fee.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Kaiser Meadow EMC and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads or in segregated loads using a preferential tip fee.	Temporary storage area for larger segregated quantities (e.g., contractors) near the on-site C&D landfill.	For small quantities, on-site transport from public drop off roll off to the storage area near the on-site C&D landfill.	Grinding of clean wood by a contractor with end product directed to Brooklyn Energy. Grinding of dirty wood for use on-site as landfill cover. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" includes bare milled wood items and brush.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Kaiser Meadow EMC in mixed C&D loads or in segregated loads using a preferential tip fee. Segregated ground wall board received from VWRM.	Segregated wallboard kept in a dedicated stockpile on top of the on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Transport of ground wallboard to Whynott's Settlement for use at the Composting Facility.	Ability of Whynott's Settlement Composting Facility to accept ground wallboard to be confirmed in the future.
5	HHW	Res only	Drop off depot at Kaiser Meadow EMC.	Temporary storage at Kaiser Meadow EMC.	Return of Trailer to Kaiser Meadow EMC as required	Contractor removal from Kaiser Meadow EMC and final off-site processing/disposal.	80% of diversion system costs to be covered by private sector-led program, remainder by MODC.
6	Mattresses/Box Springs	Res and ICI	Delivered to Kaiser Meadow EMC and as part of two annual residential bulky waste curbside collections.	NA	NA	Contractor removal via EPR program from Kaiser Meadow EMC and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	As defined by EPR program.	As defined by EPR program.	Processing at an EPR-designated MRF with subsequent delivery to end markets.	Assume a 5% increase in total collected PPP tonnage under the Proposed Conditions scenario. 70% of diversion system costs to be covered by EPR program, remainder by MODC.
8	Textiles	Res and ICI	Delivered to Kaiser Meadow EMC in mixed MSW loads.	Segregated textiles to on-site storage containers (provided by stewards).	NA	Disposal at the on-site MSW landfill.	All diversion system costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to Kaiser Meadow EMC as individual items.	Held temporarily in a dedicated area in proximity to the on-site C&D landfill.	NA	Contractor removal via EPR program from Kaiser Meadow EMC and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Waste Collection and Disposal By-Law #131; no unauthorized waste disposal, deposition or storage. Public Properties By-Law #134; no deposition of garbage, rubbish, filth or refuse on public property. Dangerous or Unsightly Premises Policy P-80; authority to bring an unsightly property into compliance.	Municipal by-law enforcement officer	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Outdoor Fire By-Law; no burning of general, garden or yard waste.	Municipal by-law enforcement officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-9
Municipality of the County of Colchester
Summary of Proposed Future Management Procedures for Targeted Materials - PPP Option 1

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of shingles to produce a divertable end product (Halifax C&D procedure). Non-extractable quantities within mixed loads to on-site C&D landfill.	Assumed collection of segregated shingles by Halifax C&D with transport to their Milford NS processing facility.
2	Carpet	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding/removal of clean wood by a contractor. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" can include items with coatings and adhesives.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wallboard by a contractor for use at the on-site Composting Facility . Non-extractable quantities within mixed loads to on-site C&D landfill.	Ability of Colchester Composting Facility to accept ground wallboard to be confirmed in the future.
5	HHW	Res only	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	80% of diversion system costs to be covered by private sector-led program, remainder by Colchester.
6	Mattresses/Box Springs	Res and ICI	Delivered by residential generators to Colchester WMF and as part of an annual residential heavy garbage curbside collection. Direct delivery by ICI generators.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
7	Printed Paper and Packaging	Res only	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	As defined by EPR program.	As defined by EPR program.	Processing at an EPR-designated MRF with subsequent delivery to end markets.	Assume a 5% increase in total collected PPP tonnage under the Proposed Conditions scenario. 70% of diversion system costs to be covered by EPR program, remainder by Colchester (TBC).
8	Textiles	Res and ICI	Delivered to Colchester WMF in mixed MSW loads or in segregated quantities.	Segregated textiles to on-site storage containers (provided by stewards).	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal. Textiles remaining in mixed waste disposed at the on-site balefill.	All diversion system costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to Colchester WMF as individual items.	Held temporarily in a dedicated area in proximity to the on-site C&D landfill.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste By-law; no illegal dumping, no accumulation of solid waste, removal of uncollected/scattered solid waste, no placement of waste on a property without consent.	Municipal by-law enforcement officer	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Solid Waste By-law; no solid waste burning.	Municipal by-law enforcement officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-10
Municipality of the County of Colchester
Summary of Proposed Future Management Procedures for Targeted Materials - PPP Option 2

			Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of shingles to produce a divertable end product (Halifax C&D procedure). Non-extractable quantities within mixed loads to on-site C&D landfill.	Assumed collection of segregated shingles by Halifax C&D with transport to their Milford NS processing facility.
2	Carpet	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding/removal of clean wood by a contractor. Non-extractable quantities within mixed loads to on-site C&D landfill.	"Clean wood" can include items with coatings and adhesives.
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Colchester WMF in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wallboard by a contractor for use at the on-site Composting Facility . Non-extractable quantities within mixed loads to on-site C&D landfill.	Ability of Colchester Composting Facility to accept ground wallboard to be confirmed in the future.
5	HHW	Res only	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	As defined by EPR program.	80% of diversion system costs to be covered by private sector-led program, remainder by Colchester.
6	Mattresses/Box Springs	Res and ICI	Delivered by residential generators to Colchester WMF and as part of an annual residential heavy garbage curbside collection. Direct delivery by ICI generators.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.
7	Printed Paper and Packaging	Res and ICI	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	NA	NA	Processing at on-site (Colchester) MRF.	Assume PPP tonnage remains consistent with Existing Conditions forecast (with a 5% increase in tonnages). Assume Colchester continues to serve as owner/operator of MRF. Use the current MRF net per tonne cost/revenue value as a basis for future financial forecasting. 70% of PPP collection costs to be covered by EPR program, remainder by Colchester (TBC).
8	Textiles	Res and ICI	Delivered to Colchester WMF in mixed MSW loads or in segregated quantities.	Segregated textiles to on-site storage containers (provided by stewards).	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal. Textiles remaining in mixed waste disposed at the on-site balefill.	All diversion system costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to Colchester WMF as individual items.	Held temporarily in a dedicated area in proximity to the on-site C&D landfill.	NA	Contractor removal via EPR program from Colchester WMF and final off-site processing/disposal.	All diversion system costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Solid Waste By-law; no illegal dumping, no accumulation of solid waste, removal of uncollected/scattered solid waste, no placement of waste on a property without consent.	Municipal by-law enforcement officer	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Solid Waste By-law; no solid waste burning.	Municipal by-law enforcement officer	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

Table 4-11
Pictou County Solid Waste Management
Summary of Proposed Future Management Procedures for Targeted Materials

			PCSWM Management Procedures				
	Material	Generation Source	Collection	Storage	Transport	Processing/Disposal	Notes
No.			Description	Description	Description	Description	
1	Asphalt Shingles	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to the on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of shingles to produce a divertable end product (Halifax C&D procedure). Non-extractable quantities within mixed loads to on-site C&D landfill.	Assumed collection of segregated shingles by Halifax C&D with transport to their Milford NS processing facility.
2	Carpet	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads or in segregated loads using a preferential tip fee.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Mount William and final off-site processing/disposal.	All diversion program costs to be covered by EPR program.
3	Clean Wood	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to the on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wood by a contractor for use in on-site composting activities. Non-extractable quantities within mixed loads to on-site C&D landfill.	-
4	Wallboard[1]	Res and ICI C&D activities	Delivered by generators to Mount William in mixed C&D loads or in segregated loads using a preferential tip fee.	Segregated quantities directed to storage area adjacent to the on-site C&D landfill.	For small quantities, on-site transport from new public drop off area to the on-site C&D landfill.	Grinding of clean wallboard by PCSWM forces for use in on-site composting activities. Non-extractable quantities within mixed loads to on-site C&D landfill.	-
5	HHW	Res only	Drop Off at PCSWM Admin Building + Mobile Collection Trailer.	Temporary storage at HHW Building.	Return of Trailer to Mount William as required.	Contractor removal via private sector-led program from Mount William and final off-site processing/disposal.	80% of diversion program costs to be covered by private sector-led program, remainder by PCSWM.
6	Mattresses/Box Springs	Res and ICI	Delivered by generators to Mount William.	Dedicated, weather protected, 40 cy roll off container on-site. Bay to be added to existing public drop off structure.	NA	Contractor removal via EPR program from Mount William and final off-site processing/disposal.	All diversion program costs to be covered by EPR program.
7	Printed Paper and Packaging	Res with a small proportion of ICI	Curbside collection by contractors from Res generators - coordinated/paid for as part of the PPP EPR agreement.	As defined by EPR program.	As defined by EPR program.	Processing at an EPR-designated MRF with subsequent delivery to end markets.	Assume a 5% increase in total collected PPP tonnage under the Proposed Conditions scenario. 70% of diversion program costs to be covered by EPR program, remainder by PCSWM.
8	Textiles	Res and ICI	Delivered to Mount William in mixed MSW loads or in segregated quantities.	Segregated textiles to on-site storage containers (provided by stewards).	Textiles remaining in mixed waste included in MSW transport to Guysborough Regional Landfill.	Contractor removal via Private Sector program from Mount William and final off-site processing/disposal. Textiles remaining in mixed waste disposed at the Guysborough Regional Landfill.	All diversion program costs to be covered by industry program.
9	Tires[2]	Res and ICI	Delivered to Mount William in mixed MSW loads or in segregated quantities.	Segregated tires and tires removed from tip floor to on-site storage pen (existing).	NA	Contractor removal via EPR program from Mount William and final off-site processing/disposal.	All diversion program costs to be covered by EPR program.

	Littering/Open Burning Provisions	Municipal By-Laws	Municipal Enforcement	Provincial Role/Support Activities	Notes
a	Littering	Pictou County Solid Waste Management System Solid Waste-Resource Management Bylaw; requirement of property owners/ generators and contractors to remove litter associated with waste collection activities, illegal dumping prohibited.	Bylaw Enforcement Officer (any town police offcer or bylaw officer of a municipality).	Solid Waste-Resource Management Regulations to be revised to limit NSE enforcement mandate to indicidents that present a potential for significant environmental impact.	Enforcement of municipal waste management bylaws supported by a $100K/year regional allowance (Municipal Enforcement Program) from RRFB NS. Additional municipal effort to assume previous NSE enforcement responsibilities to be determined based on area population.
b	Open Burning	Pictou County Solid Waste Management System Solid Waste-Resource Management Bylaw; prohibition on burning of waste/recyclables with the exception of clean wood.	Bylaw Enforcement Officer (any town police offcer or bylaw officer of a municipality).	See above	See above

Notes:
1. Wallboard from new construction, renovation and interior dismantling activities.
2. Additional tire sizes from those currently accepted under the provincial program.

NA: Not applicable

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DATE MAY 2015

PROJECT
MUNICIPAL FINANCIAL IMPACT REVIEW

PROJECT NO.
15-1479

TITLE
PROPOSED FACILITIES
CBRM SOLID WASTE MANAGEMENT FACILITY

FIGURE NO.
4-1

FileName: c:\projectwise\working directory\active\50tlr\dms42238\151479-00-site-fig4-1.dwg

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DATE: MAY 2015	PROJECT: MUNICIPAL FINANCIAL IMPACT REVIEW	PROJECT NO.: 15-1479
	TITLE: PROPOSED FACILITIES KAIZER MEADOW ENVIRONMENTAL MANAGEMENT CENTRE	FIGURE NO.: 4-2

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DATE MAY 2015

PROJECT **MUNICIPAL FINANCIAL IMPACT REVIEW**

PROJECT NO. **15-1479**

TITLE **PROPOSED FACILITIES**
KAIZER MEADOW ENVIRONMENTAL MANAGEMENT CENTRE

FIGURE NO. **4-3**

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DATE: MAY 2015	PROJECT: MUNICIPAL FINANCIAL IMPACT REVIEW	PROJECT NO.: 15-1479
	TITLE: PROPOSED FACILITIES COLCHESTER WASTE MANAGEMENT FACILITY	FIGURE NO.: 4-4

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PROJECT **MUNICIPAL FINANCIAL IMPACT REVIEW**

PROJECT NO. **15-1479**

TITLE **PROPOSED FACILITIES**
COLCHESTER WASTE MANAGEMENT FACILITY

FIGURE NO. **4-5**

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PROJECT **MUNICIPAL FINANCIAL IMPACT REVIEW**

PROJECT NO. **15-1479**

TITLE **PROPOSED FACILITIES MOUNT WILLIAM TRANSFER STATION**

FIGURE NO. **4-6**

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PROJECT MUNICIPAL FINANCIAL IMPACT REVIEW

TITLE PROPOSED FACILITIES
MOUNT WILLIAM TRANSFER STATION

PROJECT NO. 15-1479

FIGURE NO. 4-7

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5.0 Waste Generation Forecast

The waste stream for a given area can be characterized by defining a percentage breakdown of specific material types. This definition of composition is essential as it allows (in concert with an overall waste stream quantity estimate) for the estimation of quantities of specific materials (e.g., recyclables, C&D materials, etc.) and the operational requirements for future infrastructure and related systems. As the nine items described in Table 1-1 in Section 1.2 are the focal point of this study, the project team was primarily concerned with these materials as part of the overall waste stream.

5.1 Assumptions

For this study, a generated waste characterization for the year 2012 was developed as a baseline. The baseline waste characterization was for tonnages managed by the five participating municipalities/authorities only, and did not include the C&D materials managed by private sites. No single ideal data source was identified to properly characterize the quantities of the nine materials that are managed by the municipalities/authorities evaluated as part of this assignment. Thus, the project team used its best judgment to develop an approximate breakdown.

In order to develop approximate quantities of the nine materials, the waste tonnage data submitted to the NSE Data Call by each of the five participating municipalities/authorities for fiscal year (FY) 2013 was used in conjunction with waste audit data from municipalities with similar populations and geographic conditions. Waste generation data for a few select materials was provided by NSE and the RRFB Nova Scotia.

The sources of information and assumptions made to create the generated waste quantity baseline and forecast for the Current Conditions scenario are presented in Section 5.1.1. The assumptions used to determine quantities managed in the Proposed Conditions scenario are presented in Section 5.1.2.

5.1.1 Current Conditions

Material 1: Asphalt Shingles

Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
Assumptions on Material Handling:

- Town of Antigonish
  - No direct C&D material services are coordinated/provided by the Town
  - 100% of generated materials are landfilled at a C&D site in the region
- CBRM
  - 100% of incoming materials are landfilled at the CBRM C&D site
- Municipality of the District of Chester
  - 75% of incoming asphalt shingles (segregated) are processed as onsite road/yard surfacing material
  - Acknowledges limited acceptance of mixed C&D loads at the Kaizer Meadow facility
  - Remainder of incoming materials are landfilled at the Kaizer Meadow C&D site
- Municipality of the County of Colchester
  - 100% of incoming materials are landfilled at the Colchester County C&D site

- Pictou County Solid Waste Management
  - 100% of incoming materials are landfilled at the PCSWM C&D site

Material 2: Carpet

Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
Assumptions on Material Handling:

- Town of Antigonish
  - Town services for carpet limited to fall/spring residential bulky waste collection by contractor
  - 100% of generated materials are landfilled at a C&D site in the region
- CBRM
  - 100% of incoming materials are landfilled at the CBRM C&D site
- Municipality of the District of Chester
  - 100% of incoming materials are landfilled at the Kaizer Meadow C&D site
- Municipality of the County of Colchester
  - 100% of incoming materials are landfilled at the Colchester County C&D site
- Pictou County Solid Waste Management
  - 100% of incoming materials are landfilled at the PCSWM C&D site

Material 3: Clean Wood

Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
Assumptions on Material Handling:

- Town of Antigonish
  - No direct C&D material services are coordinated/provided by the Town
  - 100% of generated materials are landfilled at a C&D site in the region
- CBRM
  - 70% of incoming clean wood is processed to produce C&D LF cover (it is noted that CBRM currently manage wood under one “mixed” category; no clear designation of clean versus dirty wood)
  - Remainder of incoming materials are landfilled at the CBRM C&D site
- Municipality of the District of Chester
  - 80% of incoming clean wood is processed and used as fuel at Brooklyn Energy
  - 80% of incoming dirty wood is processed to produce landfill cover
  - Acknowledges limited acceptance of mixed C&D loads at the Kaizer Meadow facility
  - Remainder of incoming materials are landfilled at the Kaizer Meadow C&D site
- Municipality of the County of Colchester
  - 50% of incoming clean wood is processed and removed from the site by a contractor
  - Remainder of incoming materials are landfilled at the Colchester County C&D site
- Pictou County Solid Waste Management
  - 100% of incoming materials are landfilled at the PCSWM C&D site

Material 4: Wallboard

Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
Assumptions on Material Handling:

- Town of Antigonish
  - No direct C&D material services are coordinated/provided by the Town
  - 100% of generated materials are landfilled at a C&D site in the region
- CBRM
  - 100% of incoming materials are landfilled at the CBRM C&D site
- Municipality of the District of Chester
  - 100% of incoming materials are landfilled at the Kaizer Meadow C&D site (quantities of ground wallboard received from VWRM and are stockpiled on the C&D landfill)
- Municipality of the County of Colchester
  - 100% of incoming materials are landfilled at the Colchester County C&D site
- Pictou County Solid Waste Management
  - 100% of materials are landfilled at the PCSWM C&D site

Material 5: HHW

- Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 100% of collected amount removed for final offsite processing/disposal

Material 6: Mattresses and Box Springs

- Source of Baseline Generated Waste Tonnage Info: Otter Lake Landfill estimates, Halifax C&D Report, California Product Stewardship Council Report
- Assumption on Generation Rate:
  - All Municipalities/Authorities
    - 0.1 mattresses or box springs/person/year
- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 90% of the material generated is managed by the Municipality/Authority and landfilled
    - 10% are not received (including illegal dumping)

Material 7: Packaging and Printer Paper (PPP)

- Source of Baseline Generated Waste Tonnage Info: FY2013 Data Call
- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 100% of collected amount transferred to a processing facility/MRF (recycled)

Material 8: Textiles

- Source of Baseline Generated Waste Tonnage Info: Information provided by NSE from results of a waste audit and textile quantity data from Value Village and other charities
- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 19% of the material generated is collected through charities (diverted)
    - 81% trucked and disposed of at an MSW Landfill (landfilled)

Material 9: Tires (OTR)

- Source of Baseline Generated Waste Tonnage Info: RRFB Nova Scotia and Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry
- Assumption on Generation Rate:
  - All Municipalities/Authorities
    - 0.1% of tire stream are OTR tires
- Assumptions on Material Handling:
  - Town of Antigonish
    - Not applicable (not collected under municipal contracts)
  - CBRM
    - 50% are processed and disposed of in the C&D landfill (landfilled)
    - 50% are trucked and disposed of at the Guysborough Landfill (landfilled)
  - Municipality of the District of Chester
    - 100% are held on-site for unspecified future use (landfilled)
  - Municipality of the County of Colchester
    - 100% are held on-site for future diversion
  - Pictou County Solid Waste Management
    - 100% trucked and disposed of at the Guysborough Landfill (landfilled)

5.1.2 Proposed Conditions

Material 1: Asphalt Shingles

- Assumptions on Material Handling:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Remaining Municipalities/Authorities
    - 80% of the material generated will be received in segregated loads:
      - Segregated shingles will be processed offsite by a contractor hired by the Municipality/Authority (diverted)
    - 20% of the materials generated will be received in mixed C&D loads:
      - Shingles in mixed loads will be landfilled at the respective C&D site (landfilled)

Material 2: Carpet

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 80% of the material generated will be received in segregated loads:
      - Segregated carpet will be collected and managed by an EPR program
    - 20% of the materials generated will be received in mixed C&D loads:
      - Carpet in mixed loads will be landfilled at the respective C&D site (landfilled)

Material 3: Clean Wood

- Assumptions on Material Handling:
  - Municipality of the District of Chester
    - 80% of incoming clean wood is processed and used as fuel at Brooklyn Energy
    - 80% of incoming dirty wood is processed to produce landfill cover
    - Acknowledges limited acceptance of mixed C&D loads at the Kaizer Meadow facility
    - Remainder of incoming materials are landfilled at the Kaizer Meadow C&D site
  - CBRM
    - 80% of incoming clean wood is processed to produce C&D LF cover
    - Remainder of incoming materials are landfilled at the CBRM C&D site
  - All Remaining Municipalities/Authorities
    - 60% of the material generated will be received in segregated loads:
      - Segregated clean wood will be processed onsite by the municipality or contractor (diverted)
    - 40% of the materials generated will be received in mixed C&D loads:
      - Clean wood in mixed loads will be landfilled at the respective C&D site (landfilled)

Material 4: Wallboard

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 60% of the material generated will be received in segregated loads:
      - Segregated wallboard will be processed onsite by the municipality or contractor for use as an amendment at the nearest public-sector composting facility (diverted)
    - 40% of the materials generated will be received in mixed C&D loads:
      - Wallboard in mixed loads will be landfilled at the respective C&D site (landfilled)

Material 5: HHW

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 100% of tonnages collected and managed by EPR program

Material 6: Mattresses and Box Springs

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 90% of the material generated is collected and managed by EPR program
    - 10% are not received (including illegal dumping)

Material 7: Packaging and Printer Paper (PPP)

- Assumptions on Material Handling:
  - All Municipalities/Authorities, including “Option 1” for Municipality of the County of Colchester
    - Material collected and managed by EPR program

  - Assume overall costs are shared between the EPR program and the Municipality/Authority (see Section TBA)
  - Assume a 5% increase in total collected tonnage with an associated decrease in the amount of MSW requiring landfilling
- "Option 2" for the Municipality of the County of Colchester
  - Material collection covered through the EPR program
  - Assume incoming PPP tonnage/cost/revenue remains consistent with Existing Conditions forecast. Assume Colchester continues to serve as owner/operator of MRF using 2015 clients and associated user tip fees

Material 8: Textiles

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - Diversion rate is expected to double from 19% to 38% with the implementation of the new programs
      - 38% of the material generated is collected and managed by Private Sector Programs
      - 62% trucked and disposed of at the respective landfill (landfilled)

Material 9: Tires (OTR)

- Assumptions on Material Handling:
  - All Municipalities/Authorities
    - 100% of tonnages collected and managed by the RRFB Nova Scotia

5.2 2016-2025 Material Quantity Forecast

For this study, projections of waste tonnage quantity were developed based on current waste tonnages, population data and waste generation rate forecasts. Waste generation quantities are closely linked to changes in population and economic activity.

Projected population growth information for each municipality for the 10-year study period was obtained from the percent change in population noted between the 2006 and 2011 Statistics Canada censuses. The population of serviced areas was used for forecasting population projections. For example, since CBRM accepts PPP from CBRM, Richmond County, the Town of Port Hawkesbury, Eskasoni and Membertou, the population of all five municipal units was used to forecast future PPP tonnages that CBRM will manage. The percentage population change for each municipality for each material is presented in Tables 5-1 to 5-5. An annual per capita waste generation rate increase of 1% was chosen for this study as it is consistent with reported trends within North America.

The baseline managed waste characterization for the year 2012 was projected by forecasted population growth and waste generation rate growth to the starting point of this study, 2016. Founded on the information presented in the preceding sections, Tables 5-1 to 5-5 present the waste generation forecast for the total amount of the nine materials managed by the five municipalities included in this study. For presentation purposes, values for 2016, 2020 and 2025 are presented and more detailed estimates are provided in Appendix A1 (Town of Antigonish), A2 (CBRM), A3 (District of Chester), A4 (Colchester County) and A5 (PCSWM). These tables serve as the foundation for the forecasting of quantities of the nine materials.

Table 5-1
Municipal Financial Impact Review - TOWN OF ANTIGONISH
Waste Managed by the Town of Antigonish - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material		2016		2020		2025	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Town of Antigonish	4,586	1.36%	1	Asphalt Shingles	0.0	0	0.0	0	0.0	0
			2	Carpet	0.0	0	0.0	0	0.0	0
			3	Clean Wood	0.0	0	0.0	0	0.0	0
			4	Wallboard	0.0	0	0.0	0	0.0	0
			5	HHW	0.5	2	0.5	3	0.6	3
			6A	PP&P - Current	81.0	392	89.0	455	100.1	547
			6B	PP&P - Proposed[1]	85	412	93	478	105	574
			7	Mattresses/Boxsprings	2.0	10	2.3	11	2.5	14
			8A	Textiles - Current	17.1	83	18.7	96	21.1	115
			8B	Textiles - Proposed[2]	13.8	67	15.2	78	17.1	93
			9	Tires (new)	0.06	0.26	0.06	0.28	0.07	0.32
			10	Cost Savings from Landfilling Less Waste	4.1	20	4.5	23	5.0	27

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

Table 5-2
Municipal Financial Impact Review - CBRM
Waste Managed by CBRM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[3]	% change in Population	Material		2016		2020		2025	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Cape Breton Regional Municipality	96,482	-0.94%	1	Asphalt Shingles	19.8	1,840	19.8	1,776	19.9	1,698
			2	Carpet	11.3	1,052	11.4	1,016	11.4	971
			3	Clean Wood	115.8	10,758	116.0	10,381	116.3	9,927
			4	Wallboard	14.8	1,374	14.8	1,325	14.9	1,267
			5	HHW	0.2	19	0.2	19	0.2	18
	112,889	-0.79%	6A	PP&P - Current	78.1	7,255	78.7	7,042	79.5	6,785
			6B	PP&P - Proposed[1]	82	7,618	83	7,394	83	7,124
	96,482	-0.94%	7	Mattresses/Boxsprings	3.7	340	3.7	328	3.7	313
			8A	Textiles - Current	37.8	3,511	37.9	3,388	38.0	3,240
			8B	Textiles - Proposed[2]	30.6	2,844	30.7	2,744	30.8	2,624
			9	Tires (new)	0.1	12	0.1	11	0.1	11
			10	Savings from disposing less waste	3.9	363	3.9	352	4.0	339

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[3] CBRM MRF accepts PPP from Richmond County, Port Hawksbury, Eskasoni and Membertou

Table 5-3
Municipal Financial Impact Review - CHESTER
Waste Managed by Chester - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1.00%

Municipal Unit	Estimated 2012 Population[3]	% change in Population	Material	2016		2020		2025	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Chester	10,571	-0.26%	1 Asphalt Shingles	66.6	697	68.6	711	71.2	728
			2 Carpet	98.2	1,028	101.2	1,048	105.0	1,073
			3 Clean Wood	182.8	1,913	188.3	1,949	195.3	1,996
			4 Wallboard	58.9	617	60.7	629	63.0	644
			5 HHW	3.9	41	4.0	42	4.2	43
			6A PP&P - Current	93.9	982	96.7	1,001	100.3	1,025
			6B PP&P - Proposed[1]	99	1,031	102	1,051	105	1,076
	112,234	-0.11%	7 Mattresses/Boxsprings	3.3	372	3.4	381	3.6	393
			8A Textiles - Current	34.5	3,855	35.5	3,954	36.9	4,081
			8B Textiles - Proposed[2]	27.9	3,123	28.8	3,203	29.9	3,306
			9 Tires (OTR)	0.2	18	0.2	18	0.2	19
			10 Savings from disposing less waste		49		50		51

Notes:

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[2] Chester accepts waste (e.g. mattresses, textiles, etc.) from the Municipality of the District of Lunenburg, the Towns of Lunenburg, Bridgewater and Mahone Bay, Annapolis County and Kings County

Table 5-4
Municipal Financial Impact Review - COLCHESTER
Waste Managed by Colchester - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[3]	% change in Population		Material	2016		2020		2025	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Colchester	50,285	0.33%	1	Asphalt Shingles	9.0	457	9.5	488	10.1	530
			2	Carpet	12.9	655	13.6	700	14.5	760
			3	Clean Wood	28.7	1,461	30.2	1,560	32.3	1,694
			4	Wallboard	9.2	471	9.7	503	10.4	546
			5	HHW	0.4	21	0.4	23	0.5	25
	50,285	0.33%	6B-1	PP&P - Proposed (Option 1)	56.9	3,042	59.9	3,249	64.0	3,528
	125,645	0.01%	6A	PP&P - Current	77.1	9,699	80.3	10,113	84.5	10,665
			6B-2	PP&P - Proposed[1] (Option 2)	81	10,184	84	10,619	89	11,198
	50,285	0.33%	7	Mattresses/Boxsprings	2.5	128	2.6	137	2.8	148
			8A	Textiles - Current	45.5	2,319	48.0	2,477	51.3	2,690
			8B	Textiles - Proposed[2]	36.9	1,878	38.9	2,006	41.5	2,179
			9	Tires (OTR)	0.2	8	0.2	9	0.2	10
			10	Cost Savings from Landfilling Less Waste	3.9	485	4.0	506	4.2	533

Notes:

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[3] Colchester's MRF accepts PPP from the Towns of Antigonish, Windsor and Mulgrave, Antigonish County, District of Saint Mary's, Guysborough County and PCSWM

Table 5-5
Municipal Financial Impact Review - PCSWM
Waste Managed by PCSWM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material	2016		2020		2025	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Pictou County	44,998	-0.39%	1 Asphalt Shingles	7.2	320	7.4	322	7.6	326
			2 Carpet	13.1	579	13.4	584	13.8	590
			3 Clean Wood	22.5	998	23.1	1,006	23.8	1,016
			4 Wallboard	6.8	301	7.0	303	7.2	306
			5 HHW	0.2	10	0.2	10	0.2	10
			6A PP&P - Current	61.7	2,731	63.2	2,753	65.1	2,782
			6B PP&P - Proposed[1]	65	2,868	66	2,891	68	2,921
			7 Mattresses	2.2	97	2.2	98	2.3	99
			8A Textiles - Current	33.3	1,477	34.1	1,489	35.2	1,504
			8B Textiles - Proposed[2]	27.0	1,196	27.7	1,206	28.5	1,218
			9 Tires (new)	0.1	4	0.1	4	0.1	4
			10 Cost Savings from Landfilling Less Waste		137		138		139

[1] 5% more PP&P collected under the Proposed Conditions Scenario
[2] 19% less textiles collected under the Proposed Conditions Scenario

6.0 Cost of Service Forecast

This section provides an overview of the methods and assumptions employed to estimate the net benefit of the Current Conditions and Proposed Conditions scenarios.

6.1 Assumptions

The sources of information and assumptions used to create the baseline operating costs, revenue and net benefit for the nine materials in the Current Conditions scenario are presented in Section 6.1.1. The assumptions used to determine the incremental capital costs, operating costs, revenues and net benefit of the Proposed Conditions scenario are presented in Section 6.1.2.

Current amortized capital costs were not included in the baseline costing analysis for the Current Conditions scenario since current capital costs are relevant to both scenarios. The costing analysis only includes incremental capital costs borne in the Proposed Conditions scenario.

6.1.1 Current Conditions

The baseline operating costs for 2012 for the nine materials was created based on the operating costs reported in the FY2013 Data Call. Operating costs were allocated proportionally to the materials based on the percentage composition of that material in the waste stream. For the C&D materials, an allowance of $5/tonne for future closure/capping requirements of a municipally-owned C&D landfill was added to the operating costs, where applicable, if not previously identified in the Data Call.

Current tip fees, multiplied by tonnes of material managed, was used to determine the baseline revenue for each material.

The net benefit per tonne is simply the revenue per tonne minus the operating costs per tonne.

A summary table of the baseline operating costs, revenues and net benefit for the Current Conditions scenario for each of the five participating municipalities/authorities is presented in Appendices B1 through B5.

6.1.2 Proposed Conditions

New capital cost items and operating requirements are required for the C&D materials that will be managed by the respective Municipalities/Authorities under the Proposed Conditions scenario. The materials include asphalt shingles, clean wood and wallboard. New capital cost items include a C&D laydown area and a small quantity C&D public drop-off area. New capital and operating costs are proportionally allocated to shingles, clean wood and wallboard.

Assumptions for operating costs, incremental capital costs, and revenues for each material under the Proposed Conditions scenario are presented below.

Additional effort for municipal enforcement of current provincial littering and open burning regulations will be required under the Proposed Conditions scenario. Based on data provided by NSE, the estimated additional annual enforcement cost for each municipality is presented in Appendix B7. The costs were included in the overall system NPV analysis presented in Section 6.2.

Material 1: Asphalt Shingles

- Assumptions on Incremental Operating Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - Transported and processed offsite by Halifax C&D (Milford) at a rate of $71/tonne
    - No additional site personnel time over existing
  - Municipality of the District of Chester
    - Transported and processed offsite by Halifax C&D (Milford) at a rate of $51/tonne
    - No additional site personnel time over existing
  - Municipality of the County of Colchester
    - Transported and processed offsite by Halifax C&D (Milford) at a rate of $46/tonne
    - No additional site personnel time over existing
  - Pictou County Solid Waste Management
    - Transported and processed offsite by Halifax C&D (Milford) at a rate of $49/tonne
    - Proportional allocation of new full time PCSWM C&D site operator

- Assumptions on Incremental Capital Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Municipalities/Authorities
    - Proportional allocation of the amortized cost of the new C&D laydown area and small quantity C&D drop-off

- Assumptions on Revenues:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - 80% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $40/tonne will be collected by the Municipality
    - 20% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $80/tonne will be collected by the Municipality
  - Municipality of the District of Chester
    - 80% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $35/tonne will be collected by the Municipality
    - 20% of the materials generated will be received in mixed C&D loads and landfilled
    - Tip fee of $70/tonne will be collected by the Municipality
  - Municipality of the County of Colchester
    - 80% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $30/tonne will be collected by the Municipality
    - 20% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $95/tonne will be collected by the Municipality
      - Tip fee of $112/tonne will be collected for C&D materials mixed with garbage

  - Pictou County Solid Waste Management
    - 80% of the material generated will be received in segregated loads and processed onsite by the Authority
      - An incentivized tip fee of $50/tonne will be collected by the Authority
    - 20% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $90/tonne will be collected by the Authority

Material 2: Carpet

- Assumptions on Incremental Operating Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Remaining Municipalities/Authorities
    - 80% of the material generated will be received in segregated loads
      - Costs borne by EPR Program
    - 20% of the materials generated will be received in mixed C&D loads
      - Baseline operating cost to landfill carpet

- Assumptions on Incremental Capital Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Remaining Municipalities/Authorities
    - None to the Municipality/Authority
    - Capital costs associated with expansion of public drop off structure to be covered by EPR program

- Assumptions on Revenues:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Remaining Municipalities/Authorities
    - 80% of the material generated will be received in segregated loads and managed by EPR Program
      - None to the Municipality/Authority
    - 20% of the materials generated will be received in mixed C&D loads and landfilled by the Municipality/Authority
      - Tip fee of $80/tonne will be collected by CBRM
      - Tip fee of $70/tonne will be collected by District of Chester
      - Tip fee of $95/tonne will be collected by the County of Colchester
      - Tip fee of $90/tonne will be collected by PCSWM

Material 3: Clean Wood

- Assumptions on Incremental Operating Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - Assume a 20% increase over current annual wood processing costs

- Municipality of the District of Chester
  - Assume no change to current annual wood processing costs
- Municipality of the County of Colchester
  - Assume a 20% increase over current annual wood processing costs
- Pictou County Solid Waste Management
  - Processed onsite for 40 hours/year at a rate of $300/hour
  - Proportional allocation of a full time C&D site operator

- Assumptions on Incremental Capital Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - All Remaining Municipalities/Authorities
    - Proportional allocation of the amortized cost of the new C&D laydown area and small quantity C&D drop-off

- Assumptions on Revenues:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $40/tonne will be collected by the Municipality
    - 40% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $80/tonne will be collected by the Municipality
  - Municipality of the District of Chester
    - 80% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $35/tonne will be collected by the Municipality
    - 20% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $70/tonne will be collected by the Municipality
  - Municipality of the County of Colchester
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $30/tonne will be collected by the Municipality
    - 40% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $95/tonne will be collected by the Municipality
      - Tip fee of $112/tonne will be collected for C&D materials mixed with garbage
  - Pictou County Solid Waste Management
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality/Authority:
      - A reduced tip fee of $50/tonne will be collected by the Authority
    - 40% of the materials generated will be received in mixed C&D loads and landfilled:
      - Tip fee of $90/tonne will be collected by the Authority

Material 4: Wallboard

- Assumptions on Incremental Operating Costs:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - Processed on site for use at PCSWM Composting Facility with a processing allowance of $5000/year
  - Municipality of the District of Chester
    - Processed on site for use at Whynott's Settlement Composting Facility with a processing and trucking allowance of $2500/year
  - Municipality of the County of Colchester
    - Processed on site for use at Colchester Composting Facility with a processing allowance of $7000/year
  - Pictou County Solid Waste Management
    - Processed on site for use at PCSWM Composting Facility with a processing allowance of $5000/year
    - Proportional allocation of a new full time C&D site operator

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities
    - Proportional allocation of the amortized cost of the new C&D laydown area and small quantity C&D drop-off

- Assumptions on Revenues:
  - Town of Antigonish
    - No direct C&D material services are coordinated/provided by the Town
  - CBRM
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - A reduced tip fee of $50/tonne will be collected by the Municipality/Authority
    - 40% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $90/tonne will be collected by the Municipality
  - Municipality of the District of Chester
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $35/tonne will be collected by the Municipality
    - 40% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $70/tonne will be collected by the Municipality
  - Municipality of the County of Colchester
    - 60% of the material generated will be received in segregated loads and processed onsite by the Municipality
      - An incentivized tip fee of $30/tonne will be collected by the Municipality
    - 40% of the materials generated will be received in mixed C&D loads and landfilled
      - Tip fee of $95/tonne will be collected by the Municipality
      - Tip fee of $112/tonne will be collected for C&D materials mixed with garbage
  - Pictou County Solid Waste Management
    - 60% of the material generated will be received in segregated loads and processed onsite by the Authority:

  - A reduced tip fee of $50/tonne will be collected by the Authority
- 40% of the materials generated will be received in mixed C&D loads and landfilled: Tip fee of $90/tonne will be collected by the Authority

Material 5: HHW

- Assumptions on Incremental Operating Costs:
  - All Municipalities/Authorities
    - 80% of costs borne by EPR Program
    - 20% of costs borne by the Municipality/Authority

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities
    - 80% of costs borne by EPR Program
    - 20% of costs borne by the Municipality/Authority

- Assumptions on Revenues:
  - All Municipalities/Authorities
    - None to the Municipality/Authority

Material 6: Mattresses and Box Springs

- Assumptions of Incremental Operating Costs:
  - All Municipalities/Authorities
    - None to the Municipality/Authority
    - Costs borne by EPR Program

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities
    - None to the Municipality/Authority
    - Capital costs associated with expansion of public drop off structure to be borne by EPR program

- Assumptions on Revenues:
  - All Municipalities/Authorities
    - None to the Municipality/Authority

Material 7: Packaging and Printer Paper (PPP)

- Assumptions on Incremental Operating Costs:
  - All Municipalities/Authorities, including “Option 1” for Municipality of the County of Colchester
    - Assume a sharing of overall net costs to acknowledge uncertainties related to the EPR agreement
      - 70% of costs will be borne by the EPR Program
      - 30% of costs will be borne by the Municipality/Authority

  - "Option 2" for the Municipality of the County of Colchester
    - Assume County residential collection services are provided as a component of the EPR agreement
    - Assume incoming PPP tonnage remains consistent with Existing Conditions forecast
    - Use the current MRF per tonne operating cost as a basis for future financial forecasting

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities, including "Option 1" for Municipality of the County of Colchester
    - None
  - "Option 2" for the Municipality of the County of Colchester
    - Identify key Colchester MRF capital replacement expenditures for the 10 year study period

- Assumptions on Revenues:
  - CBRM and "Option 1" for Municipality of the County of Colchester
    - Assume a building and equipment value for the sale of the existing municipal MRFs at the beginning of the 10 year study period
  - All Remaining Municipalities/Authorities
    - None
  - "Option 2" for the Municipality of the County of Colchester
    - Use the current MRF per tonne revenue value as a basis for future financial forecasting

Material 8: Textiles

- Assumptions on Incremental Operating Costs:
  - All Municipalities/Authorities
    - 38% of the material that is diverted through Private Sector Programs
      - None to the Municipality/Authority
      - Costs borne by Private Sector Programs
    - 62% of the materials that is landfilled
    - Baseline landfilling costs to the Municipality/Authority

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities
    - None to the Municipality/Authority
    - Costs borne by Private Sector Programs

- Assumptions on Revenues:
  - All Municipalities/Authorities
    - 38% of the material that is diverted through Private Sector Programs
      - None to the Municipality/Authority
    - 62% of the materials that is landfilled
      - Standard waste tip fee to the Municipality/Authority

Material 9: Tires (OTR)

- Assumptions on Incremental Operating Costs:
  - All Municipalities/Authorities
    - None to the Municipality/Authority
    - Costs borne by EPR Program

- Assumptions on Incremental Capital Costs:
  - All Municipalities/Authorities
    - None to the Municipality/Authority
    - Costs borne by EPR Program

- Assumptions on Revenues:
  - All Municipalities/Authorities
    - None to the Municipality/Authority

A detailed summary of new operating and capital costs is presented in Appendix B.

6.2 Net Present Value Forecast

The net benefit is a measure of the present value of the revenue from tipping fees minus all capital and operating costs over a 10-year period for each scenario. If the net benefit is positive, the scenario is economically beneficial to implement, where the tipping fees (benefits) are greater than scenario capital and operating costs.

The scenario benefits are calculated as the tipping fees per tonne for each type of waste multiplied by the projected tonnes of waste managed over the 10-year period.

There are two cost items included in the analysis:

- Capital costs are one time capital purchases for equipment. These costs are added to the scenario as an annual capital cost, using the capital recovery factor equation provided in Table 6-1.
- Annual operating and maintenance (O&M) costs occur over the 10-year time period.

Consistent with public project economic analysis, financing costs are not included in this evaluation. A discount rate of 5% is used however to reflect the time value of money, expressing future costs in 2015 dollars (see Table 6-1 below). Similarly, inflation is not included in the analysis, and therefore no consumer price index is applied to future tipping fees.

The main indicator developed is the net benefit, which is a measure of the present value of the benefits of the scenario (tipping fees) minus the present value of the scenario costs (capital and operating). A value greater than zero indicates the scenario is economically desirable. The present value of the net benefit is calculated from the stream of future benefits less scenario costs discounted back to 2015 from the year in which they accrue. Table 6-1 provides the method and assumptions used to calculate the net benefit in present value terms.

There are three other indicators provided in Tables 6-2 to 6-6:

- Waste managed is the cumulative waste managed in tonnes for each scenario.
- The net benefit per tonne is simply the net present value divided by the waste managed.

The annualized cost takes the net benefit (present value of benefits minus costs) over the 10-year year timeframe and breaks it down into equal annual increments. Tables 6-2 to 6-6 provide the Equivalent Annual Cost (EAC) equation used.

TABLE 6-1: SUMMARY OF PARAMETERS USED IN THE NPV ANALYSIS

Parameter	Description	Value
Analysis Time Period	The timeframe in which the appraisal is conducted.	10 years: 2016 to 2025
Base Year	The year in which the expenditures are anticipated.	2015 prices
Discount Rate for NPV Calculation	The discount rate brings streams of costs and benefits back to the base year (2014). $\mathrm{NPV}(i,N)=\sum_{t=0}^{N}\frac{R_t}{(1+i)^t}$, where t is the years and r is the discount rate	r = 5% discount rate t = 10 years
Equivalent Annual Cost (EAC)	Converts a present value of the total capital and operating costs into an annual cost over the specified time period, at a specified discount rate: $EAC=\frac{NPV}{A_{t,r}}$, where *A* is expressed as $\frac{1-1/(1+r)^y}{r}$, where r is the discount rate and y are the years.	r = 5% discount rate y = 10 years
Capital Recovery Factor	The CRF is used to annualize the capital costs in equal proportion over the 10 year timeframe. The equation is: $CRF=\frac{r(1+r)^y}{(1+r)^y-1}$	r = 5% discount rate y = 10 years

A summary of annual net benefit per scenario is presented in Tables 6-2 to 6-6 for the five Municipalities. For each type of waste managed, the scenario with the higher (or less negative) dollar value is more desirable. Across all waste streams managed, the Proposed Conditions scenario is more economically desirable. This is not the case for some individual waste streams, with significant variation in the net benefit between the different types of managed waste.

6.2.1 Town of Antigonish

A summary of annual net benefit per scenario for the Town of Antigonish is presented in Table 6-2. Across all waste streams managed, the Proposed Conditions scenario is more economically desirable with an annual net benefit of -$58,400 relative to -$200,860 for the Current Conditions scenario.

TABLE 6-2: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO (TOWN OF ANTIGONISH)

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Asphalt Shingles	Current Conditions	$0	0	-	$0
	Proposed Conditions	$0	0	-	$0
Carpet	Current Conditions	$0	0	-	$0
	Proposed Conditions	$0	0	-	$0

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Clean Wood	Current Conditions	$0	0	-	$0
	Proposed Conditions	$0	0	-	$0
Wallboard	Current Conditions	$0	0	-	$0
	Proposed Conditions	$0	0	-	$0
HHW	Current Conditions	-$7,000	27	-$259	-$910
	Proposed Conditions	-$1,000	27	-$37	-$130
PPP	Current Conditions	-$1,384,000	4,658	-$297	-$179,230
	Proposed Conditions	-$376,000	4,891	-$77	-$48,690
Mattresses	Current Conditions	-$20,000	117	-$171	-$2,590
	Proposed Conditions	$0	117	$0	$0
Textiles	Current Conditions	-$139,000	981	-$142	-$18,000
	Proposed Conditions	-$113,000	795	-$142	-$14,630
Tires (new)	Current Conditions	-$1,000	3	-$348	-$130
	Proposed Conditions	$0	3	$0	$0
Cost Savings from Landfilling Less Waste*	Proposed Conditions	$41,000	233	$176	$5,310
Additional littering-open burning enforcement effort	Proposed Conditions	-$2,000	-	-	-$260
Total	Current Conditions	-$1,551,000	5,786	-$268	-$200,860
	Proposed Conditions	-$451,000	5,833	-$77	-$58,400

Notes:

** 5% more PPP will be recovered in the Proposed Conditions Scenario. Cost savings will be realized from an associated decrease in the amount of MSW requiring landfilling.*

*** Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).*

6.2.2 CBRM

A summary of annual net benefit per scenario for CBRM is presented in Table 6-3. Across all waste streams managed, the Proposed Conditions scenario is more economically desirable with the net benefit of -$1,055,000 relative to -$2,418,000 for the Current Conditions scenario. This is not the case for the individual waste streams, with significant variation in the net benefit between the different types of managed waste.

TABLE 6-3: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO (CBRM)

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Asphalt Shingles	Current Conditions	-$337,000	17,684	-$19	-$44,000
	Proposed Conditions	-$480,000	17,684	-$27	-$69,000
Carpet	Current Conditions	-$160,000	10,114	-$16	-$21,000
	Proposed Conditions	$15,400	10,114	$2	$2,000
Clean Wood	Current Conditions	$854,000	103,378	$8	$111,000
	Proposed Conditions	$494,000	103,378	$5	$47,000
Wallboard	Current Conditions	-$247,000	13,198	-$19	-$32,000
	Proposed Conditions	$108,000	13,198	$8	$12,000
HHW	Current Conditions	-$184,000	185	-$995	-$24,000
	Proposed Conditions	-$37,000	185	-$200	-$5,000
PPP	Current Conditions	-$13,769,000	70,173	-$196	-$1,783,000
	Proposed Conditions	-$6,248,000	73,682	-$85	-$809,000
Sale of the MRF		$1,333,000	-	-	$173,000
Mattresses	Current Conditions	-$423,000	3,265	-$130	-$55,000
	Proposed Conditions	$0	3,265	$0	$0
Textiles	Current Conditions	-$4,387,000	33,739	-$130	-$568,000
	Proposed Conditions	-$3,553,000	27,329	-$130	-$460,000
Tires (new)	Current Conditions	-$15,000	112	-$134	-$2,000
	Proposed Conditions	$0	112	$0	$0
Cost Savings from Landfilling Less Waste*	Proposed Conditions	$456,000	-	-	$59,000
Additional littering-open burning enforcement effort	Proposed Conditions	-$40,000	-	-	-$5,000
Total	Current Conditions	-$18,668,000	251,848	-$74	-$2,418,000
	Proposed Conditions	-$8,147,600	248,946	-$33	-$1,055,000

Notes:

**5% more PPP will be recovered in the Proposed Conditions Scenario. Cost savings will be realized from an associated decrease in the amount of MSW requiring landfilling.*

** *Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).*

6.2.3 Municipality of the District of Chester

A summary of annual net benefit per scenario for the Municipality of the District of Chester is presented in Table 6-4. Across all waste streams managed, the Proposed Conditions scenario is more economically desirable with the annual net benefit of -$173,480 relative to -$299,600 for the Current Conditions scenario. This is not the case for the individual waste streams, with significant variation in the net benefit between the different types of managed waste.

TABLE 6-4: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO (CHESTER)

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Asphalt Shingles	Current Conditions	$124,000	7,123	$17	$16,000
	Proposed Conditions	-$70,000	7,123	-$10	-$9,000
Carpet	Current Conditions	$275,000	10,505	$26	$36,000
	Proposed Conditions	$73,000	10,505	$7	$9,000
Clean Wood	Current Conditions	$316,000	19,542	$16	$41,000
	Proposed Conditions	$113,000	19,542	$6	$15,000
Wallboard	Current Conditions	$219,000	6,305	$35	$28,000
	Proposed Conditions	$18,000	6,305	$3	$2,000
HHW	Current Conditions	-$172,000	417	-$412	-$22,000
	Proposed Conditions	-$34,000	417	-$82	-$4,000
PPP	Current Conditions	-$1,896,000	10,033	-$189	-$246,000
	Proposed Conditions	-$569,000	10,535	-$54	-$74,000
Mattresses	Current Conditions	-$80,000	3,823	-$21	-$10,000
	Proposed Conditions	$0	3,823	$0	$0
Textiles	Current Conditions	-$1,097,000	39,671	-$28	-$142,000
	Proposed Conditions	-$889,000	32,134	-$28	-$115,000
Tires (new)	Current Conditions	-$5,000	181	-$28	-$600
	Proposed Conditions	$0	181	$0	$0
Cost Savings from Landfilling Less Waste*	Proposed Conditions	$14,000	-	-	$2,000
Additional littering-open burning enforcement effort	Proposed Conditions	$4,000	-	-	$520
Total	Current Conditions	-$2,316,000	97,600	-$24	-$299,600
	Proposed Conditions	-$1,340,000	90,564	-$15	-$173,480

Notes:
**5% more PPP will be recovered in the Proposed Conditions Scenario. Cost savings will be realized from an associated decrease in the amount of MSW requiring landfilling.*
*** Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).*

6.2.4 Municipality of the County of Colchester

A summary of annual net benefit per scenario for the Municipality of the County of Colchester for Option 1 and Option 2 for PPP is presented in Table 6-5. Across all waste streams managed, the Proposed Conditions scenario (both Option 1 and Option 2) is more economically desirable with the net benefit of -$375,720 (Option 1) and -$384,720 (Option 2) relative to -$904,520 for the Current Conditions scenario. This is not the case for the individual waste streams, with significant variation in the net benefit between the different types of managed waste.

TABLE 6-5: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO (COLCHESTER)

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Asphalt Shingles	Current Conditions	$269,000	4,930	$55	$35,000
	Proposed Conditions	-$162,000	4,930	-$33	-$16,000
Carpet	Current Conditions	$385,000	7,063	$55	$50,000
	Proposed Conditions	-$44,000	7,063	-$6	-$6,000
Clean Wood	Current Conditions	-$144,000	15,748	-$9	-$19,000
	Proposed Conditions	-$758,000	15,748	-$48	-$81,000
Wallboard	Current Conditions	$277,000	5,078	$55	$36,000
	Proposed Conditions	-$76,000	5,078	-$15	-$6,000
HHW	Current Conditions	-$111,000	230	-$483	-$14,000
	Proposed Conditions	$0	230	$0	$0
PPP	Current Conditions	-$6,468,000	101,729	-$64	-$838,000
PPP (OPTION 1)**	Proposed Conditions	-$2,444,000	31,232	-$78	-$317,000
Sale of the MRF (OPTION 1)		$1,524,000			$197,000
PPP (OPTION 2)	Proposed Conditions	-$1,227,000	106,815	-$11	-$159,000
Mattresses	Current Conditions	-$62,000	1,379	-$45	-$8,000
	Proposed Conditions	$0	1,379	$0	$0
Textiles	Current Conditions	-$1,129,000	25,002	-$45	-$146,000
	Proposed Conditions	-$914,000	20,252	-$45	-$118,000
Tires (new)	Current Conditions	-$4,000	91	-$44	-$520
	Proposed Conditions	$0	91	$0	$0

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Cost Savings from Landfilling Less Waste*	Proposed Conditions	$230,000	-	-	$30,000
Additional littering-open burning enforcement effort	Proposed Conditions	-$21,000	-	-	-$2,720
Total	Current Conditions	-$6,987,000	161,250	-$43	-$909,520
	Proposed Conditions (Option 1)	-$2,895,000	86,003	-$34	-$375,720
Total	Current Conditions	-$6,987,000	161,250	-$43	-$909,520
	Proposed Conditions (Option 2)	-$2,972,000	161,586	-$18	-$384,720

Notes:
**5% more PPP will be recovered in the Proposed Conditions Scenario. Cost savings will be realized from an associated decrease in the amount of MSW requiring landfilling.*
*** Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).*

6.2.5 Pictou County Solid Waste Management (PCSWM)

A summary of annual net benefit per scenario for PCSWM is presented in Table 6-6. Across all waste streams managed, the Proposed Conditions scenario is more economically desirable with the annual net benefit of -$468,000 relative to -$702,520 for the Current Conditions scenario. This is not the case for the individual waste streams, with significant variation in the net benefit between the different types of managed waste.

TABLE 6-6: SUMMARY OF ANNUAL NET BENEFIT PER SCENARIO (PCSWM)

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
Asphalt Shingles	Current Conditions	$164,000	3,227	$51	$21,000
	Proposed Conditions	-$153,000	3,227	-$47	-$20,000
Carpet	Current Conditions	$298,000	5,846	$51	$39,000
	Proposed Conditions	$65,000	5,846	$11	$8,000
Clean Wood	Current Conditions	$513,000	10,070	$51	$66,000
	Proposed Conditions	-$174,000	10,070	-$17	-$23,000
Wallboard	Current Conditions	$155,000	3,035	$51	$20,000
	Proposed Conditions	-$89,000	3,035	-$29	-$12,000

Material	Scenario	Net Benefit (NPV @5%; 10 years)	Total over 10 years		Annual Net Benefit (net benefit annualized)
			Waste Managed	Net Benefit/tonne	
HHW	Current Conditions	-$157,000	100	-$1,570	-$20,000
	Proposed Conditions	-$31,000	100	-$310	-$4,000
PPP	Current Conditions	-$5,158,000	27,562	-$187	-$668,000
	Proposed Conditions	-$2,415,000	28,940	-$83	-$313,000
Mattresses	Current Conditions	-$98,000	981	-$100	-$13,000
	Proposed Conditions	$0	981	$0	$0
Textiles	Current Conditions	-$1,133,000	14,905	-$76	-$147,000
	Proposed Conditions	-$918,000	12,073	-$76	-$119,000
Tires (new)	Current Conditions	-$4,000	40	-$100	-$520
	Proposed Conditions	$0	40	$0	$0
Cost Savings from Landfilling Less Waste*	Proposed Conditions	$129,000	-	-	$17,000
Additional littering-open burning enforcement effort	Proposed Conditions	-$19,000	-	-	-$2,000
Total	Current Conditions	-$5,420,000	65,766	-$82	-$702,520
	Proposed Conditions	-$3,605,000	64,312	-$56	-$468,000

Notes:

** 5% more PPP will be recovered in the Proposed Conditions Scenario. Cost savings will be realized from an associated decrease in the amount of MSW requiring landfilling.*

*** Net Benefits (Revenue – Costs) presented are high level figures for planning purposes only. Costs are not inclusive of all relevant cost items (e.g., current amortized capital costs are not included).*

7.0 Summary of Findings

As presented in Section 6, in comparison to current procedures and with a focus on the period of 2016 to 2025, the implementation of the new waste diversion activities under the Proposed Conditions scenario is forecasted to result in a reduction of costs over current expenditure for all five municipalities/authorities that participated in this study. It is acknowledged that a key assumption supporting this finding is that costs associated with the full operation of the curbside blue bag program within the each of the five evaluated municipalities/authorities will be addressed through a proposed Printed Paper and Packaging (PPP) Extended Producer Responsibility (EPR) program.

The completion of this assessment, with regards to the Municipality of Colchester, included the consideration of a variation on the PPP EPR option. Unlike the assumed "default" PPP alternative (with the EPR stewards assuming responsibility for all aspects of a municipality's curbside bluebag program), Colchester County requested that a second option be considered that assumed that they continued to own and operate its Kemptown MRF, serving its existing clientele consistent with current tip fee and tonnage forecasts.

As illustrated in Tables 6-2 to 6-6, the anticipated establishment of EPR or private sector-led programs (e.g., HHW, mattresses/box springs, carpet, textiles) for other materials will also contribute to the positive financial projection. For these programs, it has also been assumed that all diversion costs will be covered by industry stewards.

Clearly, the details of the finalized EPR agreements, particularly for PPP, will have a significant impact on the actual financial desirability of the proposed diversion program changes for the five municipalities/authorities that participated in this study.

As anticipated, based on a noted gap between tipping fees and reported NSE FY2013 Data Call disposal costs, the existing management of C&D materials serves as a revenue generation source for the four study participants that offer C&D management services. Even with an allowance added to reported disposal costs to address future capping/closure requirements for the on-site C&D material landfill (where required), the acceptance of C&D currently generates (on a NPV basis) between $14,000 and $146,000 of revenue per year, depending on the municipality. Acknowledging the additional costs (versus landfilling) to appropriately divert the targeted C&D materials, this positive revenue stream is forecasted to be significantly reduced under the "Proposed Conditions" scenario. But, as described above, this C&D stream revenue decline is relatively minor in comparison to the positive contribution forecasted with the establishment of a PPP EPR program.

With regard to C&D materials, and considering HRM as an example, it is noted that the potential exists (ultimately) for municipalities to rely entirely on the private sector for the provision of required diversion and disposal services. It is anticipated that the establishment of the proposed C&D material disposal bans will necessitate an enhanced level of regulatory oversight, ideally leading to a "level playing field" for private C&D facility operators. Consistency in facility operational requirements within the province has the potential to create a more attractive, long term business opportunity for the private sector.

Additional effort for municipal enforcement of current provincial littering and open burning regulations will be required under the Proposed Conditions scenario. It is noted that a perceived barrier for municipalities will be the enforcement of a littering and open burning by-law. Based on

comments received from municipal representatives, significant effort may be required from the municipalities' legal department to establish an enforceable by-law under the summary offence act.

With reference to the project assumptions identified in Section 1.2, it is reiterated that the findings presented in this document are "appropriate for comparative planning purposes only". As noted in Sections 5 and 6, a significant number of assumptions and approximations (including those associated with future EPR programs and the sale of existing MRF assets in CBRM and Colchester County) were required to conduct the comparative analysis between the "Current Conditions" and "Proposed Conditions" scenarios. A more formalized and robust analysis of both individual material tonnages and current/future management costs could potentially provide a different NPV outcome from that presented in this report.

Appendix A

Waste Stream Characterization and Projection Information

Appendix A1 – Waste Stream Characterization and Tonnage Forecast
Town of Antigonish

TOWN OF ANTIGONISH

Table A1-1 - Baseline Waste Tonnage Information

Note: Town of Antigonish only manages (collects and transfers) Residential waste

Year: 2012	Waste Managed by Antigonish (tonnes)
	Residential
Waste	398.5
Recyclables	338.3
Organics	391.2
L&Y	
C&D	71.5
Metal	8.4
Bulky Waste	36.0
HHW	1.0
Other	12.8
Total:	1,257.7
Gen Rates (kg/person/year):	274.3

PP&P	338.3
Mattresses	8.6
Textiles	71.2
Tires (all)	23.1
Tires (OTR)	0.2

2012 Population
4,586

References:

Waste quantities from the data call for 2012

Population from 2011 Census (Stats Canada) forecasted to 2012 based on population growth trends

Table A1-2
Municipal Financial Impact Review - TOWN OF ANTIGONISH
Waste Managed by the Town of Antigonish - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material	2016		2017		2018		2019		2020	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Town of Antigonish	4,586	1.36%	1 Asphalt Shingles	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			2 Carpet	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			3 Clean Wood	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			4 Wallboard	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			5 HHW	0.5	2	0.5	2	0.5	2	0.5	3	0.5	3
			6A PP&P - Current	81.0	392	83.0	407	84.9	422	87.0	438	89.0	455
			6B PP&P - Proposed[1]	85	412	87	427	89	443	91	460	93	478
			7 Mattresses/Boxsprings	2.0	10	2.1	10	2.1	11	2.2	11	2.3	11
			8A Textiles - Current	17.1	83	17.5	86	17.9	89	18.3	92	18.7	96
			8B Textiles - Proposed[2]	13.8	67	14.1	70	14.5	72	14.8	75	15.2	78
			9 Tires (new)	0.06	0.26	0.06	0.26	0.06	0.27	0.06	0.28	0.06	0.28
			10 Cost Savings from Landfilling Less Waste	4.1	20	4.1	20	4.2	21	4.3	22	4.5	23

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

Table A1-2
Municipal Financial Impact Review - TOWN OF ANTIGONISH
Waste Managed by the Town of Antigonish - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material	2021		2022		2023		2024		2025	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Town of Antigonish	4,586	1.36%	1 Asphalt Shingles	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			2 Carpet	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			3 Clean Wood	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			4 Wallboard	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
			5 HHW	0.5	3	0.6	3	0.6	3	0.6	3	0.6	3
			6A PP&P - Current	91.1	472	93.3	490	95.5	508	97.8	527	100.1	547
			6B PP&P - Proposed[1]	96	496	98	515	100	533	103	553	105	574
			7 Mattresses/Boxsprings	2.3	12	2.4	12	2.4	13	2.5	13	2.5	14
			8A Textiles - Current	19.2	99	19.6	103	20.1	107	20.6	111	21.1	115
			8B Textiles - Proposed[2]	15.5	80	15.9	83	16.3	87	16.7	90	17.1	93
			9 Tires (new)	0.06	0.29	0.06	0.30	0.07	0.30	0.07	0.31	0.07	0.32
			10 Cost Savings from Landfilling Less Waste	4.6	24	4.7	25	4.8	25	4.9	26	5.0	27

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

Appendix A2 – Waste Stream Characterization and Tonnage Forecast

CBRM

CBRM

Table A2-1 - Baseline Waste Tonnage Information

Note: Waste from CBRM goes to Guysborough. Accept PPP from Richmond, Port Hawkesbury, Eskasoni and Membertou

Year: 2012	Waste Managed by CBRM (tonnes)		
	Residential	ICI	Totals
Waste	18,661.5	12,084.7	30,746.2
Recyclables	5,263.3	2,210.4	7,473.7
Organics	7,572.8	3,572.8	11,145.6
L&Y	1,459.2	2,580.3	4,039.5
Wood	2,787.5	8,362.5	11,150.0
Mixed C&D	2,787.8	8,363.3	11,151.0
White Goods/Metal	431.5	1,294.6	1726.15
HHW	14.0	6.0	20
Total:	38,977.6	38,474.6	77,452.2
Gen Rates (kg/person/year):	404.0	398.8	

2012 Population
96,482

Res	ICI
0.7	0.3

Assumed Res/ICI split for Organics and PPP

References:

Waste quantities from the data call for 2012

Population from 2011 Census (Stats Canada) forecasted to 2012 based on population growth trends

	Tonnes	% of Ind Waste Stream
Shingles	1,874.2	9.54%
Carpet	1,069.1	6.22%
Clean Wood	11,189.9	61.92%
Wallboard	1,397.2	7.57%
PP&P	7,473.7	100%
Mattresses	348.8	1.06%
Textiles	3,607.9	10.98%
Tires (all)	1,202.6	3.66%
Tires (OTR)	12.0	0.04%

Table A2-2
Municipal Financial Impact Review - CBRM
Waste Managed by CBRM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[3]	% change in Population		Material	2016		2017		2018		2019		2020	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Cape Breton Regional Municipality	96,482	-0.94%	1	Asphalt Shingles	19.8	1,840	19.8	1,824	19.8	1,808	19.8	1,792	19.8	1,776
			2	Carpet	11.3	1,052	11.3	1,043	11.3	1,034	11.3	1,025	11.4	1,016
			3	Clean Wood	115.8	10,758	115.9	10,663	115.9	10,568	116.0	10,474	116.0	10,381
			4	Wallboard	14.8	1,374	14.8	1,361	14.8	1,349	14.8	1,337	14.8	1,325
			5	HHW	0.2	19	0.2	19	0.2	19	0.2	19	0.2	19
	112,889	-0.79%	6A	PP&P - Current	78.1	7,255	78.2	7,201	78.4	7,147	78.6	7,094	78.7	7,042
			6B	PP&P - Proposed[1]	82	7,618	82	7,561	82	7,504	82	7,449	83	7,394
	96,482	-0.94%	7	Mattresses/Boxsprings	3.7	340	3.7	337	3.7	334	3.7	331	3.7	328
			8A	Textiles - Current	37.8	3,511	37.8	3,480	37.8	3,449	37.8	3,418	37.9	3,388
			8B	Textiles - Proposed[2]	30.6	2,844	30.6	2,819	30.6	2,794	30.7	2,769	30.7	2,744
			9	Tires (new)	0.1	12	0.1	12	0.1	11	0.1	11	0.1	11
			10	Cost Savings from Landfilling Less Waste	3.9	363	3.9	360	3.9	357	3.9	355	3.9	352

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[3] CBRM MRF accepts PPP from Richmond County, Port Hawksbury, Eskasoni and Membertou

Table A2-2
Municipal Financial Impact Review - CBRM
Waste Managed by CBRM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[3]	% change in Population		Material	2021		2022		2023		2024		2025	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Cape Breton Regional Municipality	96,482	-0.94%	1	Asphalt Shingles	19.9	1,760	19.9	1,744	19.9	1,729	19.9	1,713	19.9	1,698
			2	Carpet	11.4	1,006	11.4	998	11.4	989	11.4	980	11.4	971
			3	Clean Wood	116.1	10,288	116.2	10,197	116.2	10,106	116.3	10,016	116.3	9,927
			4	Wallboard	14.8	1,314	14.8	1,302	14.8	1,290	14.8	1,279	14.9	1,267
			5	HHW	0.2	18	0.2	18	0.2	18	0.2	18	0.2	18
	112,889	-0.79%	6A	PP&P - Current	78.9	6,990	79.0	6,938	79.2	6,886	79.3	6,835	79.5	6,785
			6B	PP&P - Proposed[1]	83	7,340	83	7,285	83	7,230	83	7,177	83	7,124
	96,482	-0.94%	7	Mattresses/Boxsprings	3.7	325	3.7	322	3.7	319	3.7	316	3.7	313
			8A	Textiles - Current	37.9	3,358	37.9	3,328	37.9	3,298	37.9	3,269	38.0	3,240
			8B	Textiles - Proposed[2]	30.7	2,720	30.7	2,696	30.7	2,671	30.7	2,648	30.8	2,624
			9	Tires (new)	0.1	11	0.1	11	0.1	11	0.1	11	0.1	11
			10	Cost Savings from Landfilling Less Waste	3.9	350	4.0	347	4.0	344	4.0	342	4.0	339

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[3] CBRM MRF accepts PPP from Richmond County, Port Hawksbury, Eskasoni and Membertou

Appendix A3 – Waste Stream Characterization and Tonnage Forecast
Municipality of the District of Chester

CHESTER

Table A3-1 - Baseline Waste Tonnage Information

Note: Chester Accepts Waste from TOL, TOMB, Annapolis, Kings, etc.

Year: 2012	Waste Managed by Chester (tonnes)
Waste	34,183.2
Recyclables	963.7
Organics	1,621.3
L&Y	34.7
Wood	843.8
Shingles	454.1
Drywall	2,431.0
Mixed C&D	4,857.9
White Goods/Metal	145.0
HHW	30.0
Total:	45,564.6
Gen Rates (kg/person/year):	406.0

2012 Population
112,234

References:

Waste quantities from the data call for 2012

Population from 2011 Census (Stats Canada) forecasted to 2012 based on population growth trends

	Tonnes	% of Ind Waste Stream
Shingles	684.0	11.11%
Carpet	1,009.0	16.34%
Clean Wood	1,877.0	30.48%
Wallboard	605.0	9.83%
PP&P	963.7	
Mattresses	362.3	1.06%
Textiles	3,760.2	11.00%
Tires (all)	17.1	
Tires (OTR)	0.2	0.05%

Table A3-2
Municipal Financial Impact Review - CHESTER
Waste Managed by Chester - Tonnage Projections

ssumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1.00%

Municipal Unit	Estimated 2012 Population[3]	% change in Population	Material	2016		2017		2018		2019		2020	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Chester	10,571	-0.26%	1 Asphalt Shingles	66.6	697	67.1	700	67.6	704	68.1	707	68.6	711
			2 Carpet	98.2	1,028	99.0	1,033	99.7	1,038	100.4	1,043	101.2	1,048
			3 Clean Wood	182.8	1,913	184.2	1,922	185.5	1,931	186.9	1,940	188.3	1,949
			4 Wallboard	58.9	617	59.4	620	59.8	623	60.3	626	60.7	629
			5 HHW	3.9	41	3.9	41	4.0	41	4.0	41	4.0	42
			6A PP&P - Current	93.9	982	94.6	987	95.3	991	96.0	996	96.7	1,001
			6B PP&P - Proposed[1]	99	1,031	99	1,036	100	1,041	101	1,046	102	1,051
	112,234	-0.11%	7 Mattresses/Boxsprings	3.3	372	3.3	374	3.4	376	3.4	379	3.4	381
			8A Textiles - Current	34.5	3,855	34.8	3,880	35.0	3,904	35.3	3,929	35.5	3,954
			8B Textiles - Proposed[2]	27.9	3,123	28.2	3,143	28.4	3,162	28.6	3,182	28.8	3,203
			9 Tires (OTR)	0.2	18	0.2	18	0.2	18	0.2	18	0.2	18
			10 Cost Savings from Landfilling Less Waste	4.7	49	4.7	49	4.8	50	4.8	50	4.8	50

Notes:

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[2] Chester accepts waste (e.g. mattresses, textiles, etc.) from the Municipality of the District of Lunenburg, the Towns of Lunenburg, Bridgewater and Mahone Bay, Annapolis County and Kings County

Table A3-2
Municipal Financial Impact Review - CHESTER
Waste Managed by Chester - Tonnage Projections

ssumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1.00%

Municipal Unit	Estimated 2012 Population[3]	% change in Population		Material	2021		2022		2023		2024		2025	
					Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Chester	10,571	-0.26%	1	Asphalt Shingles	69.1	714	69.6	717	70.2	721	70.7	724	71.2	728
			2	Carpet	101.9	1,053	102.7	1,058	103.4	1,063	104.2	1,068	105.0	1,073
			3	Clean Wood	189.7	1,959	191.1	1,968	192.5	1,977	193.9	1,987	195.3	1,996
			4	Wallboard	61.2	632	61.6	635	62.1	638	62.5	641	63.0	644
			5	HHW	4.0	42	4.1	42	4.1	42	4.1	42	4.2	43
			6A	PP&P - Current	97.4	1,006	98.1	1,010	98.8	1,015	99.6	1,020	100.3	1,025
			6B	PP&P - Proposed[1]	102	1,056	103	1,061	104	1,066	105	1,071	105	1,076
	112,234	-0.11%	7	Mattresses/Boxsprings	3.4	383	3.5	386	3.5	388	3.5	391	3.6	393
			8A	Textiles - Current	35.8	3,979	36.1	4,004	36.3	4,030	36.6	4,055	36.9	4,081
			8B	Textiles - Proposed[2]	29.0	3,223	29.2	3,243	29.4	3,264	29.6	3,285	29.9	3,306
			9	Tires (OTR)	0.2	18	0.2	18	0.2	18	0.2	18	0.2	19
			10	Cost Savings from Landfilling Less Waste	4.9	50	4.9	51	4.9	51	5.0	51	5.0	51

Notes:

[1] 5% more PP&P collected under the Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under the Proposed Conditions Scenario starting in 2016

[2] Chester accepts waste (e.g. mattresses, textiles, etc.) from the Municipality of the District of Lunenburg, the Towns of Lunenburg, Bridgewater and Mahone Bay, Annapolis County and Kings County

Appendix A4 – Waste Stream Characterization and Tonnage Forecast
Municipality of the County of Colchester

COLCHESTER

Table A4-1 - Baseline Waste Tonnage Information

Note: Colchester accepts PPP from multiple municipalities

Year: 2012	Waste Managed by Colchester (tonnes)		
	Residential	ICI	Totals
Waste	6,081.7	13,655.2	19,736.9
Recyclables	8,179.4	1,129.7	9,309.1
Organics	4,798.5	2,456.5	7,255.1
Wood	1,269.0		1,269.0
Mixed C&D	4,294.0		4,294.0
White Goods/Metal	221.0		221.0
HHW	20.0		20.0
Total:	24,863.6	17,241.4	42,105.0

References:

Waste quantities from the data call for 2012

Population from 2011 Census (Stats Canada) forecasted to 2012 based on population growth trends

C&D	6.72%	4,294.0	% of C&D Stream
Asphalt Shingles	0.67%	428.1	9.97%
Carpet	0.96%	613.4	14.29%
Clean Wood	2.14%	1,367.4	31.85%
Wallboard	0.69%	440.9	10.27%
Other C&D Materials	2.26%		

From Rules of Thumb:

Waste	Total Managed:	19,736.9
Mattresses (0.1 generated/person/ year)	0.61%	119.8
Textiles (11% of disposed waste)	11%	2,171.1
OTR Tires (0.1% of tire stream = 0.04% of waste stream)	0.04%	7.9

Table A4-2
Municipal Financial Impact Review - COLCHESTER
Waste Managed by Colchester - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1.00%

Municipal Unit	Estimated 2012 Population[3]	% change in Population	Material	2016		2017		2018		2019		2020	
				Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated
Colchester	50,285	0.33%	1 Asphalt Shingles	9.0	457	9.1	465	9.2	473	9.3	480	9.5	488
			2 Carpet	12.9	655	13.0	666	13.2	677	13.4	688	13.6	700
			3 Clean Wood	28.7	1,461	29.1	1,485	29.4	1,510	29.8	1,535	30.2	1,560
			4 Wallboard	9.2	471	9.4	479	9.5	487	9.6	495	9.7	503
			5 HHW	0.4	21	0.4	22	0.4	22	0.4	22	0.4	23
	50,285	0.33%	6B-1 PP&P - Proposed (Option 1)	56.9	3,042	57.6	3,092	58.4	3,144	59.2	3,195	59.9	3,249
	125,645	0.01%	6A PP&P - Current	77.1	9,699	77.9	9,801	78.7	9,903	79.5	10,007	80.3	10,113
			6B-2 PP&P - Proposed[1] (Option 2)	81	10,184	82	10,291	83	10,398	83	10,507	84	10,619
	50,285	0.33%	7 Mattresses/Boxsprings	2.5	128	2.5	130	2.6	132	2.6	134	2.6	137
			8A Textiles - Current	45.5	2,319	46.1	2,357	46.7	2,397	47.4	2,436	48.0	2,477
			8B Textiles - Proposed[2]	36.9	1,878	37.4	1,909	37.9	1,942	38.4	1,973	38.9	2,006
			9 Tires (OTR)	0.2	8	0.2	9	0.2	9	0.2	9	0.2	9
			10 Cost Savings from Landfilling Less Waste (from diverting 5% more PP&P)	3.9	485	3.9	490	3.9	495	4.0	500	4.0	506

Notes:

[1] 5% more PP&P collected under Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under Proposed Conditions Scenario starting in 2016

[3] Colchester's MRF accepts PPP from the Towns of Antigonish, Windsor and Mulgrave, Antigonish County, District of Saint Mary's, Guysborough County and PCSWM

Table A4-2
Municipal Financial Impact Review - COLCHESTER
Waste Managed by Colchester - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1.00%

Municipal Unit	Estimated 2012 Population[3]	% change in Population	Material	2021		2022		2023		2024		2025	
				Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/yr)	Total Tonnes Generated
Colchester	50,285	0.33%	1 Asphalt Shingles	9.6	497	9.7	505	9.8	513	10.0	522	10.1	530
			2 Carpet	13.7	711	13.9	723	14.1	735	14.3	748	14.5	760
			3 Clean Wood	30.6	1,586	31.0	1,612	31.4	1,639	31.9	1,666	32.3	1,694
			4 Wallboard	9.9	511	10.0	520	10.1	529	10.3	537	10.4	546
			5 HHW	0.4	23	0.5	24	0.5	24	0.5	24	0.5	25
	50,285	0.33%	6B-1 PP&P - Proposed (Option 1)	60.7	3,302	61.5	3,358	62.4	3,414	63.2	3,470	64.0	3,528
	125,645	0.01%	6A PP&P - Current	81.1	10,220	81.9	10,329	82.8	10,440	83.6	10,552	84.5	10,665
			6B-2 PP&P - Proposed[1] (Option 2)	85	10,731	86	10,845	87	10,962	88	11,080	89	11,198
	50,285	0.33%	7 Mattresses/Boxsprings	2.7	139	2.7	141	2.8	144	2.8	146	2.8	148
			8A Textiles - Current	48.6	2,518	49.3	2,560	49.9	2,602	50.6	2,646	51.3	2,690
			8B Textiles - Proposed[2]	39.4	2,040	39.9	2,074	40.4	2,108	41.0	2,143	41.5	2,179
			9 Tires (OTR)	0.2	9	0.2	9	0.2	9	0.2	10	0.2	10
			10 Cost Savings from Landfilling Less Waste (from diverting 5% more PP&P)	4.1	511	4.1	516	4.1	522	4.2	528	4.2	533

Notes:

[1] 5% more PP&P collected under Proposed Conditions Scenario starting in 2016

[2] 19% less textiles collected under Proposed Conditions Scenario starting in 2016

[3] Colchester's MRF accepts PPP from the Towns of Antigonish, Windsor and Mulgrave, Antigonish County, District of Saint Mary's, Guysborough County and PCSWM

Appendix A5 – Waste Stream Characterization and Tonnage Forecast
Pictou County Solid Waste Management

PCSWM

Table A5-1 - Baseline Waste Tonnage Information

Year: 2012	Waste Managed by PCSWM (tonnes)		
	Residential	ICI	Total
Waste	3,984.9	6,957.5	10,942.4
Recyclables	2,708.5		2,708.5
Organics	3,980.9	1,614.4	5,595.3
L&Y	252.2		252.2
C&D	1,183.5	2,104.0	3,287.5
White Goods	137.5	244.4	381.8
HHW	10.0		10.0
Total:	12,257.4	10,920.3	23,177.7

References:

Waste quantities managed by PCSWM from the data call for 2012

Population from 2011 Census (Stats Canada)

	Tonnes	% of Ind Waste Stream
Shingles	317.0	9.65%
Carpet	575.0	17.48%
Clean Wood	990.0	30.10%
Wallboard	298.0	9.08%
PP&P	2,708.0	100%
Mattresses	96.0	0.93%
Textiles	1,187.0	10.73%
Tires (OTR)	0.1	0.04%

Table A5-2
Municipal Financial Impact Review - PCSWM
Waste Managed by PCSWM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material	2016		2017		2018		2019		2020	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Pictou County	44,998	-0.39%	1 Asphalt Shingles	7.2	320	7.3	320	7.3	321	7.4	322	7.4	322
			2 Carpet	13.1	579	13.2	580	13.2	582	13.3	583	13.4	584
			3 Clean Wood	22.5	998	22.7	1,000	22.8	1,002	22.9	1,004	23.1	1,006
			4 Wallboard	6.8	301	6.8	301	6.9	302	6.9	303	7.0	303
			5 HHW	0.2	10	0.2	10	0.2	10	0.2	10	0.2	10
			6A PP&P - Current	61.7	2,731	62.0	2,736	62.4	2,742	62.8	2,748	63.2	2,753
			6B PP&P - Proposed[1]	65	2,868	65	2,873	66	2,879	66	2,885	66	2,891
			7 Mattresses	2.2	97	2.2	97	2.2	98	2.2	98	2.2	98
			8A Textiles - Current	33.3	1,477	33.5	1,480	33.7	1,483	33.9	1,486	34.1	1,489
			8B Textiles - Proposed[2]	27.0	1,196	27.2	1,199	27.3	1,201	27.5	1,204	27.7	1,206
			9 Tires (new)	0.1	4	0.1	4	0.1	4	0.1	4	0.1	4
			10 Cost Savings from Landfilling Less Waste		137		137		137		137		138

[1] 5% more PP&P collected under the Proposed Conditions Scenario

[2] 19% less textiles collected under the Proposed Conditions Scenario

Table A5-2
Municipal Financial Impact Review - PCSWM
Waste Managed by PCSWM - Tonnage Projections

Assumptions:

1 Population growth projection from Statistics Canada 2011 Census; www.statcan.gc.ca/

2 Waste generation rate growth estimate 1%

Municipal Unit	Estimated 2012 Population[2]	% change in Population	Material	2021		2022		2023		2024		2025	
				Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated	Per Capita Generation Rate Managed Waste (kg/person/year)[1]	Total Tonnes Generated
Pictou County	44,998	-0.39%	1 Asphalt Shingles	7.4	323	7.5	324	7.5	324	7.6	325	7.6	326
			2 Carpet	13.5	585	13.6	586	13.6	588	13.7	589	13.8	590
			3 Clean Wood	23.2	1,008	23.4	1,010	23.5	1,012	23.6	1,014	23.8	1,016
			4 Wallboard	7.0	304	7.0	304	7.1	305	7.1	306	7.2	306
			5 HHW	0.2	10	0.2	10	0.2	10	0.2	10	0.2	10
			6A PP&P - Current	63.5	2,759	63.9	2,765	64.3	2,770	64.7	2,776	65.1	2,782
			6B PP&P - Proposed[1]	67	2,897	67	2,903	68	2,909	68	2,915	68	2,921
			7 Mattresses	2.3	98	2.3	98	2.3	99	2.3	99	2.3	99
			8A Textiles - Current	34.4	1,492	34.6	1,495	34.8	1,498	35.0	1,501	35.2	1,504
			8B Textiles - Proposed[2]	27.8	1,209	28.0	1,211	28.2	1,213	28.3	1,216	28.5	1,218
			9 Tires (new)	0.1	4	0.1	4	0.1	4	0.1	4	0.1	4
			10 Cost Savings from Landfilling Less Waste		138		138		139		139		139

[1] 5% more PP&P collected under the Proposed Conditions Scenario

[2] 19% less textiles collected under the Proposed Conditions Scenario

Appendix B
Cost Information

Appendix B1 – Cost Information
Town of Antigonish

TOWN OF ANTIGONISH

Table B1-1 - Current Conditions - Baseline Tonnages & Costs (Year: 2012)

					Tonnages Managed		Operating Costs	Revenue	Net Cost
			Quantity (Generated)	Approx. Quantity Managed	Managed Waste Generation Rate	Annual Operating Costs	Operating Cost per Tonne Managed[10]	Revenue (Current Tip Fee)	Net Cost Per Tonne Managed
	Material	Waste Stream	(tonnes)	(tonnes)	kg/person/ year	($)	($/tonne)	($/tonne)	($/tonne)
1	Asphalt Shingles[1]	C&D		0.00	0.0	$0.00	$0.00	$0.00	$0.00
2	Carpet[2]	Waste/C&D		0.00	0	$0.00	$0.00	$0.00	$0.00
3	Clean Wood[1]	C&D		0.00	0	$0.00	$0.00	$0.00	$0.00
4	Wallboard[1]	C&D		0.00	0.0	$0.00	$0.00	$0.00	$0.00
5	HHW[3]	Waste		2.00	0.4	$675	$337.50	$0	-$337.50
6	PP&P	Recyclables		338.34	74	$125,867.10	$372.01	$0.00	-$372.01
7	Mattresses[4]	Waste		8.55	1.9	$1,874.37	$219.17	$0.00	-$219.17
8	Textiles[5]	Waste		71.18	16	$15,601.35	$219.17	$0.00	-$219.17
9	Tires (OTR - new)[6]	Waste		0.23	0.1	$50.72	$219.17	$0.00	-$219.17

Info for Proportional Costing

Asphalt Shingles	7.20%
Carpet	14.70%
Clean Wood	31.80%
Wallboard	10.30%
Mattresses/Boxsprings	1.31%
Textiles	10.88%
OTR Tires	0.04%

Assumptions

1. Town of Antigonish does not manage C&D

2. Quantities managed include waste generated from the Residential sector only (including buildings with 4 units or less). ICI sector is not included.

3. Approximate HHW quantity managed estimated from PCSWM study & Product Care Manitoba HHW 2012 Program Year Annual Report

4. Mattresses generation rate: 0.1 mattresses/person/year (Ref: Otter Lake estimates, Hfx C&D Report, CPSC Report)

average weight: 52.58 lbs 23.81874 kgs

5. Textiles

average diversion rate: 18.92% **% of textiles in MSW landfilled waste: 11%**

Textiles generation rate: 0.032547598 tonnes/person/year (disposed)

2012 population 4,586

(7,000 tonnes diverted, 30,000 tonnes landfilled)

Ref: Bob Kenney (Truro waste audit + data from Value Village and Charities)

6. Tires (new): assume 0.1% of tire stream are OTR tires (new)

average weight: 251.0 lbs 113.7 kgs

Reference: Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry

7. Baseline year is Fiscal 2013 (April 2012 - March 2013)

8. 2012 population from 2011 Stats Canada Census (forecasted forward 1 year based on historical % change in population)

9. Current Tip Fees:

Antigonish does not collect tip fees

	Annual Op. Costs	Annual Revenue
C&D	$0	$0
Recyclables	$125,867	$0
Waste	$143,458	$0
HHW	$675	$0

*Residents/Contractors pay their own disposal fees

Table B1-2 - Current Conditions Scenario vs. Proposed Conditions Scenario - Tonnages & Costs - Baseline Year: 2016

TOWN OF ANTIGONISH

										CAPITAL $ (1)	OPERATING $ (2)		REVENUE $ (3)		NET BENEFIT $ (3)-(2)-(1)	
	Material	Waste Stream	Diversion Program Responsibility	Scenario	Approx. Quantity Managed 2016 (tonnes)	Assumed % of segregated material	Quantity Segregated (Diverted) (tonnes)	Assumed % of non-segregated material	Quantity in Mixed Loads (Landfilled) (tonnes)	Incremental Capital Costs ($)	Annual Operating Costs ($)	Operating Cost per Tonne Managed ($/tonne)	Annual Tip Fee Revenue ($)	Tip Fee[1] ($/tonne)	Net Benefit ($)	Net Benefit Per Tonne Managed ($/tonne)
1	Asphalt Shingles	C&D	Municipality	Current Conditions	0						$0	$0.00	$0.00	$0.0	$0.0	$0.00
				Proposed Conditions							$0	$0.00	$0.0	$0.0	$0.0	$0.00
2	Carpet	C&D	EPR	Current Conditions	0						$0	$0.00	$0.00	$0.0	$0.0	$0.00
				Proposed Conditions							$0	$0.00	$0.0	$0.0	$0.0	$0.00
3	Clean Wood	C&D	Municipality	Current Conditions	0						$0	$0.00	$0.00	$0.0	$0.0	$0.00
				Proposed Conditions							$0	$0.00	$0.0	$0.0	$0.0	$0.00
4	Wallboard	C&D	Municipality	Current Conditions	0						$0	$0.00	$0.00	$0.0	$0.0	$0.00
				Proposed Conditions							$0	$0.00	$0.0	$0.0	$0.0	$0.00
5	HHW[2]	Waste	EPR	Current Conditions	2				2		$675	$337.50	$0.00	$0.0	-$675.0	-$337.50
				Proposed Conditions[2]		100%	2				$34	$67.50	$0.0	$0.0	-$33.8	-$67.50
6	PP&P[3]	Recyclables	EPR	Current Conditions	392	100%	392				$125,867	$372.01	$0	$0.0	-$125,867	-$372.01
				Proposed Conditions[3]	412	100%	412	0%	0		$39,648	$96.33	$0.0	$0.0	-$39,648	-$96.33
7	Mattresses	Waste	EPR	Current Conditions	10			90%	10		$1,874	$219.17	$0.00	$0.0	-$1,874	-$219.17
				Proposed Conditions		90%	10	10%	-		$0	$0.00	$0.0	$0.0	$0.0	$0.00
8	Textiles	Waste	Private Sector	Current Conditions	83			100%	83		$15,601	$219.17	$0.00	$0.0	-$15,601	-$219.17
				Proposed Conditions	67	19%	8	81%	67		$14,735	$177.53	$0	$0.0	-$14,735	-$219.17
9	Tires (OTR - new)	Waste	RRFB	Current Conditions	0.26				0.26		$51	$219.17	$0.00	$0.0	-$50.7	-$219.17
				Proposed Conditions		100%	0.26	0%	-		$0	$0.00	$0.0	$0.0	$0.0	$0.00
				Current Conditions												
10	5% Reduction in Waste Tonnages			Proposed Conditions	20						$4,296		$0.0		$4,296	$219.17
				Current Conditions												
11	Additional littering/open burning enforcement effort			Proposed Conditions							-$240				-$240	

[1]Tip Fees:
None

Proposed Scenario New Operating Costs (2016 $)
None

Proposed Scenario New Capital Costs (2016 $)
New Capital Items (Diversion Program Scenario) (2015 Expenditures)
None

Textiles:

Current Diversion	19%
Future Diversion	38%

Assumptions:

[2] 20% of HHW costs borne by municipality in Proposed Conditions Scenario

[3] 30% of PPP costs borne by municipality in Proposed Conditions Scenario

Table B1-3 - Operating Costs and Revenues from the Data Call (2012/13) -- TOWN OF ANTIGONISH

OPERATING COSTS

Data Call Ref Page #:	Pg. 1	Provided by Nicole H	Pg. 8	Pg. 14	Pg. 15	
	Curbside Collection	Recyclables Processing Fee	Tip Fees paid to Landfill site	Admin	Education Costs	Total
C&D						$0
Recyclables	$92,001	$21,992		$7,291	$4,583	$125,867
Waste	$94,624		$29,012	$6,076	$3,775	$133,487
Bulky Waste	$9,971					$9,971
HHW				$405	$270	$675

REVENUES

NO REVENUES

Appendix B2 – Cost Information

CBRM

CBRM

Table B2-1 - Current Conditions - Tonnages & Costs - Baseline Year: 2012

			Tonnage Managed		Operating		Revenue		Net Cost
	Material	Waste Stream	Approx. Quantity Managed	Managed Waste Generation Rate	Annual Operating Costs	Operating Cost per Tonne Managed[10]	Annual Revenue	Revenue (Current Tip Fee)	**Net Cost Per Tonne Managed**
			(tonnes)	kg/person/ year	($)	($/tonne)	($)	($/tonne)	**($/tonne)**
1	Asphalt Shingles[1]	C&D	1,895	19.6	131,608	$70.83	$90,738	$47.89	-$22.94
2	Carpet[1]	C&D	1,083	11	85,872	$70.83	$59,205	$54.69	-$16.14
3	Clean Wood[1]	C&D	11,150	116	436,921	$39.19	$579,800	$52.00	$12.81
4	Wallboard[1]	C&D	1,414	14.7	104,443	$70.83	$72,009	$50.94	-$19.89
5	HHW[3]	Waste	20	0.2	24,316	$1,215.80	$0	$0	-$1,215.80
6	PP&P	Recyclables	7,474	77	2,780,119	$371.99	$1,039,611	$139.10	-$232.88
7	Mattresses[4]	Waste	349	3.6	64,055	$183.65	$8,791	$25.21	-$158.45
8	Textiles[5]	Waste	3,608	37	665,277	$184.40	$91,308	$25.31	-$159.09
9	Tires (OTR - new)	Waste	12	0.1	2,218	$184.40	$304	$25.31	-$159.09

Info for Proportional Costing (weighted average)

Asphalt Shingles	9.54%
Carpet	6.22%
Clean Wood	61.92%
Wallboard	7.57%
Mattresses	1.06%
Textiles	10.98%
Tires (OTRl)	0.04%

Assumptions

1. C&D quantities generated managed by CBRM from 2012 Data Call (provided by NSE).

2. ***Approximate carpet generation rate****:*

Carpet gen. rate: 0.0075 tonnes/person/year

Ref: http://www.environmental-expert.com/news/landfill-diversion-of-carpet-waste-continues-to-rise-says-carpet-recycling-uk-466244?utm_source=News_Waste_Recycling

3. Approximate HHW quantity managed from Data Call (Page 39) & Product Care Manitoba HHW 2012 Program Year Annual Report

4. Mattresses generation rate: 0.1 mattresses/person/year (Ref: Otter Lake estimates, Hfx C&D Report, CPSC Report)

average weight: 52.58 lbs 23.81874 kgs

5. Textiles

avg diversion rate: 18.92% % of textiles in MSW landfilled waste: 11%

Textiles gen. rate: 0.0401 tonnes/person/year

2012 population 96,482

(7,000 tonnes diverted, 30,000 tonnes landfilled)

Ref: Bob Kenney (Truro waste audit + data from Value Village and Charities)

	Annual Op. Costs	Annual Revenue
C&D	$1,379,542	$951,130
Recyclables	$2,780,119	$1,039,611
Waste	$6,057,958	$831,442
HHW	$24,316	$0

6. Tires (new): assume 0.1% of tire stream are OTR tires (new)

average weight: 251.0 lbs 113.7 kgs

Reference: Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry

7. Baseline year is Fiscal 2013 (April 2012 - March 2013)

8. 2012 population from 2011 Stats Canada Census (forecasted forward 1 year based on historical % change in population)

9. Current Tip Fees:

	minimum fee:		/tonne
Waste (at transfer station):		$80	/tonne
Recyclables		$65	/tonne
Mixed C&D		$80	/tonne
Segregated C&D		$40	/tonne

10. C&D in mixed loads incoming

C&D $40 /tonne C&D in mixed loads: $80 /tonne

Table B2-2 - Current Conditions Scenario vs. Proposed Conditions Scenario - Tonnages & Costs - Baseline Year: 2016

CBRM

											CAPITAL $ (1)	OPERATING $ (2)		REVENUE $ (3)		NET BENEFIT $ (3)-(2)-(1)	
	Material	Waste Stream	Diversion Program Responsibility	Scenario	Approx. Quantity Managed 2016 (tonnes)	Assumed % of segregated material	Quantity Segregated (Diverted) (tonnes)	Assumed % of non-segregated material	Quantity in Mixed Loads (Landfilled) (tonnes)	Incremental Capital Costs ($)	Annual Operating Costs ($)	Operating Cost per Tonne Managed ($/tonne)	Annual Tip Fee Revenue ($)	Tip Fee[1] ($/tonne)	Net Benefit ($)	Net Benefit Per Tonne Managed ($/tonne)
1	Asphalt Shingles	C&D	Municipality	Current Conditions	1,840			100%	1,840		$131,608	$70.83	$88,117	$47.9	-$43,492	-$22.94
				Proposed Conditions		80%	1,472	20%	368	$13,761	$143,825	$78.17	$88,320	$48.0	-$69,266	-$37.64
2	Carpet	C&D	EPR	Current Conditions	1,052			100%	1,052		$85,872	$70.83	$57,535	$54.7	-$28,336	-$16.14
				Proposed Conditions		80%	842	20%	210		$14,902	$14.17	$16,832	$48.0	$1,930	$1.83
3	Clean Wood	C&D	Municipality	Current Conditions	10,758	70%	7,531	30%	3,227		$436,921	$39.19	$559,416	$52.0	$122,495	$12.81
				Proposed Conditions		80%	8,606	20%	2,152	$89,318	$392,394	$36.47	$516,384	$48.0	$34,671	$3.22
4	Wallboard	C&D	Municipality	Current Conditions	1,374			100%	1,374		$104,443	$70.83	$69,994	$50.9	-$34,449	-$19.89
				Proposed Conditions		60%	824	40%	550	$10,921	$55,415	$40.33	$76,944	$56.0	$10,608	$7.72
5	HHW[2]	Waste	EPR	Current Conditions	19			100%	19		$24,316	$1,215.80	$0	$0.0	-$24,316	-$1,215.80
				Proposed Conditions[2]		100%	19				$4,620	$243.16	$0	$0.0	-$4,620	-$243.16
6	PP&P[3]	Recyclables	EPR	Current Conditions	7,255		7,255				$2,780,119	$371.99	$1,009,187	$139.1	-$1,770,933	-$232.88
				Proposed Conditions[3]	7,618	100%	7,618	0%	0		$834,036	$109.49	$0	$0.0	-$834,036	-$109.49
7	Mattresses	Waste	EPR	Current Conditions	340				340		$64,055	$183.65	$8,570	$25.2	-$55,485	-$158.45
				Proposed Conditions		90%	340				$0	$0.00	$0	$0.0	$0	$0.00
8	Textiles	Waste	Private Sector	Current Conditions	3,511			100%	3,511		$665,277	$184.40	$88,856	$25.3	-$576,421	-$159.09
				Proposed Conditions	2,844						$524,407	$184.40	$71,974	$25.3	-$452,433	-$159.09
9	Tires (OTR - new)	Waste	RRFB	Current Conditions	12				12		$2,218	$184.40	$304	$25.3	-$1,914	-$159.09
				Proposed Conditions		100%	12	0%	100%		$0	$0.00	$0	$0.0	$0	$0.00
				Current Conditions												
10	Savings from 5% Reduction in Waste Tonnages			Proposed Conditions	363						$66,890		-$9,180		$57,709	$159.09
				Current Conditions												
11	Additional littering/open burning enforcement effort			Proposed Conditions							-$5,177				-$5,177	
				Current Conditions												
12	Sale of the MRF (assume $ to be received in 2016)			Proposed Conditions									$1,400,000		$1,400,000	

[1]Tip Fees:

Segregated C&D Loads (Municipal Programs):	$40
Mixed C&D Loads:	$80
Waste tip fee (2015):	$85

Note: Tip fee for "Proposed Conditions" is weighted average for Items 1-4 and 8

Textiles:

Current Diversion	19%
Future Diversion	38%

Scenario (B) New Operating Costs (2016 $)

Shingles Processing and Hauling Cost:

Total: $80 /tonne

Clean Wood Processing Cost:

Already processing wood - assume a 20% increase in costs

$40,000

Drywall Processing and Hauling Cost:

Total: $20 /tonne

Scenario (B) New Capital Costs (2016 $)

New Capital Items (Diversion Program Scenario) (2015 Expenditures)

C&D Landfill Laydown Area	$52,000	borne by Municipality
Extension to Public Drop Off	$31,000	covered by EPR
Small Quantity C&D Drop Off	$62,000	borne by Municipality

Shingles	9.54%	12.1%
Carpet	6.22%	
Clean Wood	61.92%	78.3%
Wallboard	7.57%	9.6%
	85.26%	79.03%

Assumptions:

[2] 20% of HHW costs borne by municipality in Proposed Conditions Scenario

[3] 30% of PPP costs borne by municipality in Proposed Conditions Scenario

Table B2-3 - Operating Costs and Revenues from the Data Call (2012/13) - CBRM

OPERATING COSTS

Data Call Ref Page #:	Page 2	Page 5	Page 9		Page 25		Page 27			Page 50	Page 43	Page 44	From Francis	
	Curbside Collection Operating Costs	Freight for PPP	Recycling Operating Costs (MRF Costs)	Recycling Operating Costs (Commission Fee)	Tipping Fees paid to landfill	Line Hauling	C&D Disposal Operating Costs	Long term disposal site close-out	C&D processing costs (shredder)	HHW operating costs	Admin Costs	Education Costs	TS Operating Costs	Totals
C&D							$1,359,234	$20,308						$1,379,542
Wood									$200,000					$200,000
Recyclables	$408,633	$116,431	$1,954,843	$159,951							$101,342	$38,919		$2,780,119
Waste	$1,464,248				$2,169,062	$939,970		$20,308			$430,702	$165,404	$570,000	$5,759,694
Bulky Waste	$298,264													$298,264
HHW										$12,628	$8,445	$3,243		$24,316

REVENUES

Data Call Ref Page	Page 5	Page 11	page 34		
	Recyclable Materials Marketed	Recycling Revenue for tip fees & processing contracts	C&D Revenues	Transfer Station Revenue	Totals
C&D			$951,130		$951,130
Recyclables	$751,628	$287,983			$1,039,611
Waste				$831,442	$831,442

APPENDIX B2-4
Proposed/Future Costs Scenario

Municipality/Authority: **CAPE BRETON REGIONAL MUNICIPALITY**

CAPITAL (2016 expenditures)

1) C&D Landfill Laydown Area

- Development of two areas in proximity to Public Drop Off; one for clean wood and for shingles/drywall.
- To accommodate segregation/grinding/storage of asphalt shingles, clean wood and drywall.
- Drywall pile to be tarped to minimize exposure to precipitation.
- Assume 1500 m^2 area for clean wood and 1200 m^2 for clean wood/drywall, aggregate surface (300 mm thick).

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	2,700	$ 1.00	$ 3,000
2	Geotextile	m^2	2,700	$ 3.25	$ 9,000
3	Granular Class B (300 mm)	m^3	810	$ 35.00	$ 28,000
				Subtotal	$ 40,000
				Engineering/Contingency at 30%	$ 12,000
				Total Estimated Budget	**$ 52,000**

*: costs rounded to nearest $1000

2) Extension to Public Drop Off Structure

- Addition of a roof structure over two of the bays at the current drop off to accommodate two 40 cy weather protected roll offs.
- Reassign two existing mixed C&D roll off bays to carpet and mattress/box spring roll offs. Direct mixed C&D to Small Quantity Drop Off Area (see below).
- One roll off for mattresses/box springs, one for carpet.
- Assumption that mattress/box spring and carpet stewardship agencies will provide the roll offs from their own supply.
- Stewards will deliver an empty roll off when they remove a full one as part of a provincial collection system.
- Assumption that the capital cost for the extended drop off structure will be covered by the stewards.

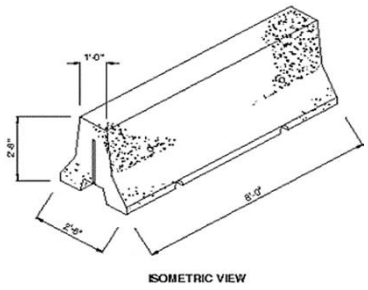
Cost for two bay steel roof structure	$25,000
Engineering/Contingency at 25%	$6,000
Total Estimated Budget	**$31,000**

3) Small Quantity C&D Drop Off Area

- To accommodate utility trailer/pick up truck loads of C&D materials, larger contractor loads will be directed to the C&D Landfill Laydown Areas.
- To be located to the east of the public drop off area.
- To consist of a 10m x 50m asphalt pad with concrete jersey barrier separated stalls for clean wood, shingles, drywall and mixed C&D.

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	500	$ 1.00	$ 1,000
2	Geotextile	m^2	500	$ 3.25	$ 2,000
3	Granular Class B (300 mm)	m^3	150	$ 35.00	$ 5,000
4	Asphalt	m^2	500	$ 45.00	$ 23,000
5	Concrete Jersey Barriers (2.4m)	ea	31	$ 500.00	$ 16,000
6	Signage	LS	1	$ 1,000.00	$ 1,000
				Subtotal	$ 48,000
				Engineering/Contingency at 30%	$ 14,000
				Total Estimated Budget	**$ 62,000**

*: costs rounded to nearest $1000



ISOMETRIC VIEW

Jersey Barrier (typical)

Appendix B3 – Cost Information
Municipality of the District of Chester

CHESTER

Table B3-1 - Current Conditions - Tonnages & Costs - Baseline Year: 2012

			Tonnage Managed		Operating		Revenue		Net Cost	
			Approx. Quantity Managed	Managed Waste Generation Rate	Annual Operating Costs	Operating Cost per Tonne Managed[10]	Annual Revenue	Revenue/ tonne	**Net Cost**	**Net Cost per Tonne**
	Material	Waste Stream	(tonnes)	kg/person/ year	($)	($/tonne)	($)	($/tonne)	($)	($/tonne)
1	Asphalt Shingles[1]	C&D	684	64.7	$21,377	$31.25	$31,809	$46.50	$10,432	$15.25
2	Carpet[1]	C&D	1,009	95	$35,300	$35.00	$66,565	$66.00	$31,265	$31.00
3	Clean Wood[1]	C&D	1,877	178	$58,181	$31.00	$84,831	$45.20	$26,651	$14.20
4	Wallboard[1]	C&D	605	57.2	$21,180	$35.00	$39,939	$66.00	$18,759	$31.00
5	HHW[3]	Waste	40	3.8	$21,951	$548.78	$0	$0.00	-$21,951	-$548.78
6	PP&P	Recyclables	964	91	$240,823	$249.91	$0	$0.00	-$240,823	-$249.91
7	Mattresses[4]	Waste	362	3.2	$39,811	$109.87	$23,652	$65.28	-$16,159	-$44.60
8	Textiles[5]	Waste	3,760	34	$413,132	$109.87	$245,446	$65.28	-$167,686	-$44.60
9	Tires (OTR - new)	Waste	17	0.2	$1,878	$109.87	$1,116	$65.28	-$762	-$44.60

Info for Proportional Costing (weighted average)

Asphalt Shingles	11.11%
Carpet	16.38%
Clean Wood	30.48%
Wallboard	9.83%
Mattresses	1.06%
Textiles	11.00%
Tires (OTR)	0.05%

Assumptions

1. C&D quantities generated managed by Chester from 2012 Data Call (provided by NSE).

4. Mattresses generation rate: 0.1 mattresses/person/year (Ref: Otter Lake estimates, Hfx C&D Report, CPSC Report)

average weight: 52.58 lbs 23.81874 kgs

5. Textiles

average diversion rate 18.92% % of textiles in MSW landfilled waste: 11%

Textiles generation rat 0.032547598 tonnes/person/year

2012 population 10,571 112,234

(7,000 tonnes diverted, 30,000 tonnes landfilled)

Ref: Bob Kenney (Truro waste audit + data from Value Village and Charities)

	Annual Op. Costs	Annual Revenue
C&D	$115,677	$331,337
Recyclables	$240,823	$0
Waste	$3,755,742	$2,231,323
HHW	$21,951	$0

6. Tires (new): assume 0.1% of tire stream are OTR tires (new)

average weight: 251.0 lbs 113.7 kgs

Reference: Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry

7. Quantities include waste generated from the Residential and ICI sector that is managed by Chester.

8. Baseline year is Fiscal 2013 (April 2012 - March 2013)

9. 2012 population from 2011 Stats Canada Census (forecasted forward 1 year based on historical % change in population)

10. Current Tip Fees:

Waste	$69	/tonne
C&D - mixed	$52	/tonne
C&D - segregated	$35	/tonne
Waste - Outside Chester	$78	/tonne
C&D - mixed (outside Chester)	$80	/tonne
C&D - segregated (outside Chester)	$45	/tonne

11. C&D in mixed loads incoming

11. C&D in mixed loads incoming

	mixed	segregated
Shingles:	25%	75%
Carpet:	100%	0%
Wood:	20%	80%
Wallboard:	100%	0%

Table B3-2 - Current Conditions Scenario vs. Proposed Conditions Scenario - Tonnages & Costs - Baseline Year: 2016

CHESTER

										CAPITAL $ (1)	OPERATING $ (2)		REVENUE $ (3)		NET BENEFIT $ (3)-(2)-(1)	
	Material	Waste Stream	Diversion Program Responsibility	Scenario	Approx. Quantity Managed 2016 (tonnes)	Assumed % of segregated material	Quantity Segregated (Diverted) (tonnes)	Assumed % of non-segregated material	Quantity in Mixed Loads (Landfilled) (tonnes)	Incremental Capital Costs ($)	Annual Operating Costs ($)	Operating Cost per Tonne Managed ($/tonne)	Annual Revenue ($)	Tip Fee[1] ($/tonne)	Net Benefit ($)	Net Benefit Per Tonne Managed ($/tonne)
1	Asphalt Shingles	C&D	Municipality	Current Conditions	697	75%	523	25%	174		$21,781	$31.25	$37,464	$53.8	$15,683	$22.50
				Proposed Conditions		80%	558	20%	139	$11,019	$34,989	$50.20	$36,244	$52.0	-$9,765	-$14.01
2	Carpet	C&D	EPR	Current Conditions	1,028						$35,300	$34.34	$66,565	$64.8	$31,265	$30.41
				Proposed Conditions		80%	822	20%	206		$7,196	$7.00	$16,448	$16.0	$9,252	$9.00
3	Clean Wood	C&D	Municipality	Current Conditions	1,913	80%	1,530	20%	383		$59,303	$31.00	$99,476	$52.0	$40,173	$21.00
				Proposed Conditions		80%	1,530	20%	383	$30,233	$59,303	$31.00	$99,476	$52.0	$9,940	$5.20
4	Wallboard	C&D	Municipality	Current Conditions	617	0%	0	100%	617		$21,595	$35.00	$49,360	$80.0	$27,765	$45.00
				Proposed Conditions		60%	370	40%	247	$9,748	$25,667	$41.60	$36,403	$59.0	$988	$1.60
5	HHW[2]	Waste	EPR	Current Conditions	41						$21,951	$535.39	$0	$0.0	-$21,951	-$535.39
				Proposed Conditions[2]		100%	41	0%			$4,390	$107.08	$0	$0.0	-$4,390	-$107.08
6	PP&P[3]	Recyclables	EPR	Current Conditions	982						$240,823	$245.24	$0	$0.0	-$240,823	-$245.24
				Proposed Conditions[3]	1,031	100%	1,031	0%	0		$72,247	$70.07	$0	$0.0	-$72,247	-$70.07
7	Mattresses	Waste	EPR	Current Conditions	372						$39,811	$107.02	$29,760	$80.0	-$10,051	-$27.02
				Proposed Conditions		90%	372	10%	-		$0	$0.00	$0	$0.0	$0	$0.00
8	Textiles	Waste	Private Sector	Current Conditions	3,855						$423,553	$109.87	$308,400	$80.0	-$115,153	-$29.87
				Proposed Conditions	3,123						$343,078	$109.87	$249,804	$80.0	-$93,274	-$29.87
9	Tires (OTR - new)	Waste	RRFB	Current Conditions	18						$1,878	$104.33	$1,116	$62.0	-$762	-$42.34
				Proposed Conditions							$0	$0.00	$0	$0.0	$0	$0.00
				Current Conditions												
10	Savings from 5% Reduction in Waste Tonnages			Proposed Conditions	49						$5,395		-$3,205		$1,467	$29.87
				Current Conditions												
11	Additional littering/open burning enforcement effort			Proposed Conditions							$563				$563	

[1]Tip Fees:

Segregated C&D Loads (EPR Programs):	$0
Segregated C&D Loads (Municipality Responsible):	$45
Mixed C&D Loads:	$80
Waste tip fee (2016):	$80

Note: Tip fee for "Proposed Conditions" is weighted average for Items 1-4 and 8

Assumptions:

[2] 20% of HHW costs borne by municipality in Proposed Conditions Scenario

[3] 30% of PPP costs borne by municipality in Proposed Conditions Scenario

Proposed Scenario New Operating Costs (2016 $)

Shingles Processing and Hauling Cost:

(current)	$30 /tonne
(proposed future)	$54 /tonne

Wood: assume no change to current processing costs

Drywall Processing and Hauling: $46 /tonne

Proposed Scenario New Capital Costs (2016 $)

New Capital Items (Diversion Program Scenario) (2015 Expenditures)

C&D Landfill Laydown Area	$17,000	borne by Municipality
Extension to Public Drop Off Structure	N/A	covered by EPR
Small Quantity C&D Drop Off	$34,000	borne by Municipality

Table B3-3 - Operating Costs and Revenues from the Data Call (2012/13) -- CHESTER

OPERATING COSTS

Data Call Ref Page #:	Page 2	Page 18			Page 26	Page 50	Page 43	Page 44		
	Curbside Collection Operating Costs	Landfill site operating cost	Long term disposal site close out	C&D waste processing	C&D Debris Disposal Site Operating Cost	HHW Operating Costs	Admin Costs	Education Costs	Recycling Processing Fees	Totals
C&D		$84,968.00		$27,709	$3,000					$115,677
Recyclables	$120,910						$20,500	$13,750	$85,663	$240,823
Waste	$293,720	$2,732,022	$550,000				$150,000	$30,000		$3,755,742
Metal Collection										$0
HHW						$17,451	$3,000	$1,500		$21,951
		$2,847,699 MSW + C&D								

REVENUES

Data Call Ref Page #:	Page 20	Page 33	
	Disposal Site Revenue	Sale of White goods/metal	Totals
C&D	$0	$9,799	$9,799
Recyclables			$0
Waste	$2,231,323		$2,231,323
Asbestos			$0

Appendix B3-4
Proposed/Future Costs Scenario

Municipality/Authority: **MUNICIPALITY OF THE DISTRICT OF CHESTER**

CAPITAL (2016 expenditures)

1) C&D Landfill Laydown Area

- Large rough graded area west of C&D landfill already in place.
- To accommodate segregation/grinding/storage of asphalt shingles, clean wood and drywall.
- Drywall pile to be tarped to minimize exposure to precipitation.
- Assume 30m x 30m aggregate surface (300 mm thick).

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	900	$ 1.00	$ 1,000
2	Geotextile	m^2	900	$ 3.25	$ 3,000
3	Granular Class B (300 mm)	m^3	270	$ 35.00	$ 9,000
				Subtotal	$ 13,000
				Engineering/Contingency at 30%	$ 4,000
				Total Estimated Budget	**$ 17,000**

*: costs rounded to nearest $1000

2) Extension to Public Drop Off Structure

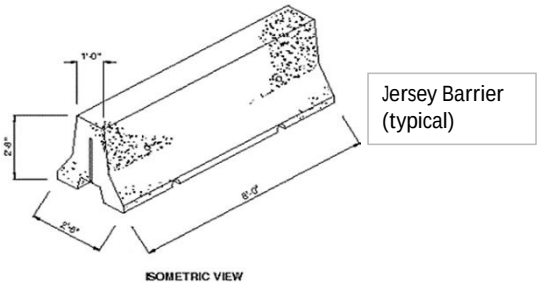
- Reassign clean wood and dirty wood roll off bays to carpet and mattress/box spring roll offs. Direct clean and dirty wood to Small Quantity Drop Off Area (see below).
- One roll off for mattresses/box springs, one for carpet.
- Assumption that mattress/box spring and carpet stewardship agencies will provide the roll offs from their own supply.
- Stewards will deliver an empty roll off when they remove a full one as part of a provincial collection system.
- Extension to existing Public Drop Off Structure not required.

3) Small Quantity C&D Drop Off Area

- To accommodate utility trailer/pick up truck loads of C&D materials, larger contractor loads will be directed to the C&D Landfill Laydown Areas.
- To be located to the east of the existing public drop off area.
- To consist of a 10m x 50m asphalt pad with concrete jersey barrier separated stalls for clean wood, shingles, drywall and mixed C&D.

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	250	$ 1.00	$ 1,000
2	Geotextile	m^2	250	$ 3.25	$ 1,000
3	Granular Class B (300 mm)	m^3	75	$ 35.00	$ 3,000
4	Asphalt	m^2	250	$ 45.00	$ 11,000
5	Concrete Jersey Barriers (2.4m)	ea	18	$ 500.00	$ 9,000
6	Signage	LS	1	$ 1,000.00	$ 1,000
				Subtotal	$ 26,000
				Engineering/Contingency at 30%	$ 8,000
				Total Estimated Budget	**$ 34,000**

*: costs rounded to nearest $1000



Jersey Barrier (typical)

Appendix B4 – Cost Information
Municipality of the County of Colchester

COLCHESTER

Table B4-1 - Current Conditions - Tonnages & Costs - Baseline Year: 2012

			Tonnage Managed		Operating		Revenue		Net Cost	
	Material	Waste Stream	Approx. Quantity Managed	Managed Waste Generation Rate	Annual Operating Costs	Operating Cost per Tonne Managed[10]	Annual Revenue	Revenue per Tonne Managed	Net Cost	**Net Cost Per Tonne Managed**
			(tonnes)	kg/person/ year	($)	($/tonne)	($)	($/tonne)	($)	**($/tonne)**
1	Asphalt Shingles[1]	C&D	428	8.5	16,588	$38.75	$24,652	$57.58	$8,064	$18.84
2	Carpet[1]	C&D	613	12	23,768	$38.75	$35,322	$57.58	$11,554	$18.84
3	Clean Wood[1]	C&D	1,367	27	94,903	$69.40	$78,738	$57.58	-$16,165	-$11.82
4	Wallboard[1]	C&D	441	8.8	17,083	$38.75	$25,387	$57.58	$8,304	$18.84
5	HHW[3]	Waste	20	0.4	13,264	$663.20	$0	$0.00	-$13,264	-$663.20
6	PP&P[2]	Recyclables	9,309	74	2,645,944	$284.23	$1,916,337	$205.86	-$729,607	-$78.38
7	Mattresses[4]	Waste	120	2.4	14,852	$124.00	$8,169	$68.21	-$6,682	-$55.79
8	Textiles[5]	Waste	2,171	43	269,208	$124.00	$148,079	$68.21	-$121,129	-$55.79
9	Tires (OTR - new)	Waste	8	0.2	979	$124.00	$538	$68.21	-$440	-$55.79

Info for Proportional Costing (weighted average)

Asphalt Shingles	9.97%
Carpet	14.29%
Clean Wood	31.85%
Wallboard	10.27%
Mattresses/Boxsprings	0.61%
Textiles	11.00%
OTR Tires	0.04%

Assumptions

1. C&D quantities generated managed by Colchester from 2012 Data Call (provided by Colchester WM).

2. Colchester receives PPP from 10 municipalities

3. Approximate HHW quantity managed from Data Call (Page 39) & Product Care Manitoba HHW 2012 Program Year Annual Report

4. Mattresses generation rate: 0.1 mattresses/person/year (Ref: Otter Lake estimates, Hfx C&D Report, CPSC Report)

average weight: 52.58 lbs 23.81874 kgs

5. Textiles

average diversion rate 18.92% % of textiles in MSW landfilled waste: 11%

Textiles generation ra 0.040142038 tonnes/person/year

2012 population (Col 50,285

2012 (serviced by MR 125,645

(7,000 tonnes diverted, 30,000 tonnes landfilled)

Ref: Bob Kenney (Truro waste audit + data from Value Village and Charities)

	Annual Op. Costs	Annual Revenue
C&D	$144,903	$247,251
Recyclables	$2,645,944	$1,916,337
Waste	$2,447,346	$1,346,170
HHW	$13,264	$0

6. Tires (new): assume 0.1% of tire stream are OTR tires (new)

average weight: 251.0 lbs 113.7 kgs

Reference: Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry

7. Quantities include waste generated from the Residential and ICI sector that is managed by Colchester

8. Baseline year is Fiscal 2013 (April 2012 - March 2013)

9. 2012 population from 2011 Stats Canada Census (forecasted forward 1 year based on historical % change in population)

10. Allowance to close landfill $5 /tonne

11. Current Tip Fees (2015):

Waste:	$112	/tonne
Segregated C&D:	$35	/tonne
C&D in mixed loads:	$112	/tonne
Recyclables	$0/$87.5/$142.5	/tonne

Table B4-2 - Current Conditions Scenario vs. Proposed Conditions Scenario - Tonnages & Costs - Baseline Year: 2016

COLCHESTER

										CAPITAL $ (1)	OPERATING $ (2)		REVENUE $ (3)		NET BENEFIT $ (3)-(2)-(1)	
	Material	Waste Stream	Diversion Program Responsibility	Scenario	Approx. Quantity Managed 2016 (tonnes)	Assumed % of segregated material	Quantity Segregated (Diverted) (tonnes)	Assumed % of non-segregated material	Quantity in Mixed Loads (Landfilled) (tonnes)	Incremental Capital Costs ($)	Annual Operating Costs ($)	Operating Cost per Tonne Managed ($/tonne)	Annual Revenue ($)	Tip Fee[1] ($/tonne)	Net Benefit ($)	Net Benefit Per Tonne Managed ($/tonne)
1	Asphalt Shingles	C&D	Municipality	Current Conditions	457	0		100%			$17,707	$38.75	$51,184	$112.00	$33,477	$73.25
				Proposed Conditions		80%	366	20%	91	$23,163	$21,090.13	$46.15	$23,033	$50.40	-$21,220	-$46.43
2	Carpet	C&D	EPR	Current Conditions	655	0%		100%			$25,378	$38.75	$73,360	$112.00	$47,982	$73.25
				Proposed Conditions		80%	524	20%	131		$5,076	$7.75	$0	$0.00	-$5,076	-$7.75
3	Clean Wood	C&D	Municipality	Current Conditions	1,461	50%	731	50%	731		$123,207	$84.33	$107,384	$73.50	-$15,823	-$10.83
				Proposed Conditions		60%	877	40%	584	$73,983	$117,546	$80.46	$96,134	$65.80	-$95,395	-$65.29
4	Wallboard	C&D	Municipality	Current Conditions	471	0%		100%			$18,249	$38.75	$52,752	$112.00	$34,503	$73.25
				Proposed Conditions		60%	283	40%	188	$23,854	$18,604	$39.50	$30,992	$65.80	-$11,466	-$24.34
5	HHW[2]	Waste	EPR	Current Conditions	21						$13,264	$631.62	$0	$0.00	-$13,264	-$631.62
				Proposed Conditions[2]							$0	$0.00	$0	$0.00	$0	$0.00
6-1A	PP&P[3] (OPTION 1)	Recyclables	EPR	Current Conditions - 1	9,699						$2,756,772	$284.23	$1,996,605	$205.86	-$760,167	-$78.38
6-1B	PP&P[3] (OPTION 1)			*Proposed Conditions[3] - 1	3,042						$294,092	$96.68	$0	$0.00	-$294,092	-$96.68
	Sale of the MRF (assume $ to be received in 2016)			Proposed Conditions - 1									$1,600,000		$1,600,000	
6-2A	PP&P (OPTION 2)[4]	Recyclables	EPR	Current Conditions - 2	9,699						$2,756,772	$284.23	$1,996,605	$205.86	-$760,167	-$78.38
6-2B				**Proposed Conditions - 2	10,184							$0.00		$0.00	-$152,181	-$14.94
7	Mattresses	Waste	EPR	Current Conditions	128						$15,872	$124.00	$8,730	$68.21	-$7,141	-$55.79
				Proposed Conditions							$0	$0.00	$0	$0.00	$0	$0.00
8A	Textiles	Waste	Private Sector	Current Conditions	2,319						$287,553	$124.00	$158,169	$68.21	-$129,384	-$55.79
8B				Proposed Conditions	1,878						$232,918	$100.44	$128,117	$68.21	-$104,801	-$55.79
9	Tires (OTR - new)	Waste	RRFB	Current Conditions	8						$992	$124.00	$546	$68.21	-$446	-$55.79
				Proposed Conditions							$0	$0.00	$0	$0.00	$0	$0.00
10	5% Reduction in Waste Tonnages (from increase in PPP tonnages under Proposed Conditions)			*Proposed Conditions[3] - 1	145						$17,961	$124.00	-$9,880	-$68.21	$8,082	$55.79
				**Proposed Conditions - 2	485						$60,133	$124.00	-$33,076	-$68.21	$27,057	$55.79
				Current Conditions												
11	Additional littering/open burning enforcement effort			Proposed Conditions							$2,709				-$2,709	

[1]Tip Fees:

Segregated C&D Loads (EPR Programs):	$0
Segregated C&D Loads (Municipality Responsible):	$35
Mixed C&D Loads:	$112
Waste tip fee (2015):	$112

Note: Tip fee for "Proposed Conditions" is weighted average for Items 1-4 and 8

Assumptions:

[2] 20% of HHW costs borne by municipality in Proposed Conditions Scenario

[3] 30% of PPP costs borne by municipality in Proposed Conditions Scenario (OPTION 1)

Scenario (B) New Operating Costs (2016 $)

Shingles Processing and Hauling Cost:

$48 /tonne

Wood Processing Costs:

$94,903 /year

(status quo processing costs)

Drywall Processing Costs:

$40 /tonne

Scenario (B) New Capital Costs (2016 $)

New Capital Items (Diversion Program Scenario) (2015 Expenditures)

C&D Landfill Laydown Area	$70,000	borne by Municipality
Extension to Public Drop Off	$47,000	covered by EPR
Small Quantity C&D Drop Off	$51,000	borne by Municipality

PP&P Options[4]:

Option 1: MRF Operations are taken over by EPR

Assume a sharing of overal net costs (Collection & processing)

70% borne by EPR

30% borne by Colchester

PP&P processing costs $87.5/tonne

Collection costs -- status quo

Option 2: Colchester continues MRF operation

Residential collection costs/Education costs by EPR

70% borne by EPR

30% borne by Colchester

Use current MRF net $/tonne to estimate operating costs

$6.09 /tonne

$714,145 total curbside coll'n & education costs

$214,244 30% of curbside/education costs

Table B4-3 - Operating Costs and Revenues from the Data Call (2012/13) - COLCHESTER

OPERATING COSTS

Data Call Ref Page #:	Page 2	Page 11		Page 35		46	47
	Curbside Collection	Recycling Operating Costs	Disposal Site Operating Costs	C&D Waste Processing (wood grinding)	Admin Costs	Education Costs	Totals
C&D			$50,000	$94,903			$144,903
Recyclables	$590,769	$1,828,250			$103,549	$123,376	$2,645,944
Waste	$755,219		$1,439,546		$87,413	$112,801	$2,394,979
Bulky Waste	$52,367						$52,367
HHW					$2,689	$10,575	$13,264

REVENUES

Data Call Ref Page #:	Page 13		page 37			From Darlyne		
	Recycling Revenue	Plus Revenue from RRFB for processing glass (incl. HRM glass)	Disposal Site Revenue (Residential)	Sale of Materials	Disposal Site Revenue (ICI)	Approx C&D Revenues based on new tonnages	Garbage revenues from Truro and Stewiacke	Totals
C&D						$247,251		$247,251
Recyclables	$743,099	$252,868		$920,370				$1,916,337
Waste			$4,025	$531	$1,246,654		$94,960	$1,346,170

APPENDIX B4-4
Proposed/Future Costs Scenario

Municipality/Authority: **MUNICIPALITY OF THE COUNTY OF COLCHESTER**

CAPITAL (2016 expenditures)

1) C&D Landfill Laydown Area

- Large rough graded area west of C&D landfill already in place.
- To accommodate segregation/grinding/storage of asphalt shingles, clean wood and drywall.
- Drywall pile to be tarped to minimize exposure to precipitation.
- Assume 60m x 60m aggregate surface (300 mm thick).

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	3,600	$ 1.00	$ 4,000
2	Geotextile	m^2	3,600	$ 3.25	$ 12,000
3	Granular Class B (300 mm)	m^3	1,080	$ 35.00	$ 38,000
				Subtotal	$ 54,000
				Contingency at 30%	$ 16,000
				Total Estimated Budget	**$ 70,000**

*: costs rounded to nearest $1000

2) Extension to Public Drop Off Structure

- Addition of two bays to current structure to accommodate two 40 cy weather protected roll offs.
- One roll off for mattresses/box springs, one for carpet.
- Assumption that mattress and carpet stewardship agencies will provide the roll offs from their own supply.
- Stewards will deliver an empty roll off when they remove a full one as part of a provincial collection system.
- Assumption that the capital cost for the extended drop off structure will be covered by the stewards.

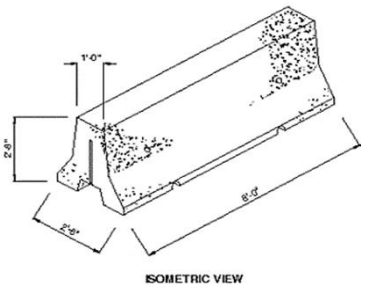
Cost for existing six bay PCSWM drop off structure	$156,000	- from 2012 PCSWM data call information including yard paving.
Assumed cost for two bay extension	$39,000	- assume 25% of original cost, larger bays to accommodate 40 yd roll offs.
Contingency at 20%	$8,000	
Total Estimated Budget	**$47,000**	

3) Small Quantity C&D Drop Off Area

- To accommodate utility trailer/pick up truck loads of C&D materials, larger contractor loads will be directed to the C&D Landfill Laydown Area.
- To be located to the north of the new public drop off area.
- To consist of a 15m x 25m asphalt pad with concrete jersey barrier separated stalls for clean wood, shingles, drywall and mixed C&D.

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	375	$ 1.00	$ 1,000
2	Geotextile	m^2	375	$ 3.25	$ 1,000
3	Granular Class B (300 mm)	m^3	113	$ 35.00	$ 4,000
4	Asphalt	m^2	375	$ 45.00	$ 17,000
5	Concrete Jersey Barriers (2.4m)	ea	29	$ 500.00	$ 15,000
6	Signage	LS	1	$ 1,000.00	$ 1,000
				Subtotal	$ 39,000
				Contingency at 30%	$ 12,000
				Total Estimated Budget	**$ 51,000**

*: costs rounded to nearest $1000



ISOMETRIC VIEW

Jersey Barrier (typical)

Appendix B5 – Cost Information
Pictou County Solid Waste Management

PCSWM

Table B5-1 - Current Conditions - Tonnages & Costs - Baseline Year: 2012

				Tonnage Managed		Operating		Revenue	Net Cost
	Material	Waste Stream	Quantity (Generated)	Approx. Quantity Managed	Managed Waste Generation Rate	Annual Operating Costs	Operating Cost per Tonne Managed[10]	Revenue (Current Tip Fee)	**Net Cost Per Tonne Managed**
			(tonnes)	(tonnes)	kg/person/ year	($)	($/tonne)	($/tonne)	**($/tonne)**
1	Asphalt Shingles[1]	C&D	540	317	7.1	$5,460.14	$17.21	$79.81	$62.60
2	Carpet[1]	C&D	978	575	13	$9,890.42	$17.21	$79.81	$62.60
3	Clean Wood[1]	C&D	1,684	990	22	$17,033.54	$17.21	$79.81	$62.60
4	Wallboard[1]	C&D	508	298	6.6	$5,134.89	$17.21	$79.81	$62.60
5	HHW[3]	Waste	293	10	0.2	$19,233	$1,923.30	$0	-$1,923.30
6	PP&P	Recyclables	10,376	2,708	60	$984,620.00	$363.53	$133.64	-$229.89
7	Mattresses[4]	Waste	107	96	2.1	$22,755.30	$235.90	$113.18	-$122.72
8	Textiles[5]	Waste	1,465	1,187	26	$264,041.84	$222.35	$113.18	-$109.17
9	Tires (OTR - new)	Waste	4	4	0.1	$983.92	$245.98	$113.18	-$132.80

Info for Proportional Costing (weighted average)

Asphalt Shingles	9.65%
Carpet	17.48%
Clean Wood	30.10%
Wallboard	9.08%
HHW	
PP&P	
Mattresses	0.93%
Textiles	10.73%
Tires (total)	0.04%

Assumptions

1. C&D quantities generated managed by PCSWM from 2012 Data Call (provided by NSE). % breakdown of C&D quantities from Cumberland County Project/waste audit of Otter Lake Landfill.

2. Capital Cost summary table provided by D. MacQueen for Pictou County (2012)

3. Approximate HHW quantity managed from Data Call (Page 39) & Product Care Manitoba HHW 2012 Program Year Annual Report

4. Mattresses generation rate: 0.1 mattresses/person/year (Ref: Otter Lake estimates, Hfx C&D Report, CPSC Report)

average weight: 52.58 lbs 23.81874 kgs

5. Textiles

avg diversion rate: 18.92% % of textiles in MSW landfilled waste: 11%

Textiles gen rate: 0.032547598 tonnes/person/year

2012 population 44,998

(7,000 tonnes diverted, 30,000 tonnes landfilled)

Ref: Bob Kenney (Truro waste audit + data from Value Village and Charities)

	Annual Op. Costs	Annual Capital Cost[2]	Annual Revenue
C&D	$40,145	$30,339	$275,262
Recyclables	$984,620	$1,298	$394,105
Waste	$2,459,791	$164,220	$1,380,000
HHW	$19,233	$2,236	$750
		(not included in calcs)	

6. Tires (new): assume 0.1% of tire stream are OTR tires (new)

average weight: 251.0 lbs 113.7 kgs

Reference: Atlantic Tire Dealers Association, Tire Weight by Size, Farm & Industry, OTR & Forestry

7. Quantities include waste generated from the Residential and ICI sector that is managed by PCSWM

8. Baseline year is Fiscal 2013 (April 2012 - March 2013)

9. 2012 population from 2011 Stats Canada Census (forecasted forward 1 year based on historical % change in population)

10. Allowance to close landfill $5 /tonne

11. Current Tip Fees:

minimum fee:	$5	/tonne	
Waste:	$113	/tonne	
C&D	$75	/tonne	
C&D in mixed loads:	$112	/tonne	
Recyclables	$134	/tonne	

12. C&D in mixed loads incoming

88.4%	C&D	$76	/tonne
11.6%	in mixed loads:	$112	/tonne

This is a user pay site and all vehicles will be weighed. **There is a minimum $5 fee for all vehicles entering the site. Tipping fees per metric tonne are as follows: regular waste weighing 50 kgs and up will be charged $113.18 per metric tonne.** Tipping fees may be adjusted to reflect the cost of living and fuel surcharge. **Organic material is $75.79 per metric tonne, construction and demolition is $75.00, and asbestos is $200.00. Blue Bag recycling is $133.64.**

Ref: PCSWM website

Table B5-2 - Current Conditions Scenario vs. Proposed Conditions Scenario - Tonnages & Costs - Baseline Year: 2016

PCSWM

										CAPITAL $ (1)	OPERATING $ (2)		REVENUE $ (3)		NET BENEFIT $ (3)-(2)-(1)	
	Material	Waste Stream	Diversion Program Responsibility	Scenario	Approx. Quantity Managed 2016 (tonnes)	Assumed % of segregated material	Quantity Segregated (Diverted) (tonnes)	Assumed % of non-segregated material	Quantity in Mixed Loads (Landfilled) (tonnes)	Incremental Capital Costs ($)	Annual Operating Costs ($)	Operating Cost per Tonne Managed ($/tonne)	Annual Tip Fee Revenue ($)	Tip Fee[1] ($/tonne)	Net Benefit ($)	Net Benefit Per Tonne Managed ($/tonne)
1	Asphalt Shingles	C&D	Municipality	Current Conditions	320			100%	320		$5,460	$17.21	$25,540.34	$79.8	$20,080.2	$62.60
				Proposed Conditions		80%	256	20%	64	$18,972	$20,579	$64.31	$18,560.0	$58.0	-$20,991.6	-$65.60
2	Carpet	C&D	EPR	Current Conditions	579			100%	579		$9,890	$17.21	$46,212.05	$79.8	$36,321.6	$62.60
				Proposed Conditions		80%	463	20%	116		$1,993	$3.44	$10,422.0	$18.0	$8,428.9	$14.56
3	Clean Wood	C&D	Municipality	Current Conditions	998			100%	998		$17,034	$17.21	$79,653.93	$79.8	$62,620.4	$62.60
				Proposed Conditions		60%	599	40%	399	$59,186	$50,058	$50.16	$80,838.0	$81.0	-$28,406.0	-$28.46
4	Wallboard	C&D	Municipality	Current Conditions	301			100%	301		$5,135	$17.21	$24,023.88	$79.8	$18,889.0	$62.60
				Proposed Conditions		60%	181	40%	120	$17,842	$15,095	$50.15	$19,866.0	$66.0	-$13,070.9	-$43.43
5	HHW[2]	Waste	EPR	Current Conditions	10				10		$19,233	$1,923.30	$0.00	$0.0	-$19,233.0	-$1,923.30
				Proposed Conditions[2]		100%	10				$3,855	$385.46	$0.0	$0.0	-$3,854.6	-$385.46
6A	PP&P[3]	Recyclables	EPR	Current Conditions	2,731	100%	2,731		2,731		$984,620	$363.53	$364,971	$133.6	-$619,649.2	-$229.89
6B				Proposed Conditions[3]	2,868	100%	2,868	0%	0		$310,155	$108.16	$0	$0.00	-$310,155	-$108.16
7	Mattresses	Waste	EPR	Current Conditions	97				97		$22,755	$235.90	$10,978.46	$113.2	-$11,776.8	-$122.72
				Proposed Conditions		90%	97	10%	-		$0	$0.00	$0.0	$0.0	$0.0	$0.00
8A	Textiles	Waste	Private Sector	Current Conditions	1,187			100%	1,187		$264,042	$222.35	$134,400.59	$113.2	-$129,641.3	-$109.17
8B				Proposed Conditions	962	19%	226	81%	962		$213,874	$222.35	$108,864	$113.2	-$105,009.4	-$109.17
9	Tires (OTR - new)	Waste	RRFB	Current Conditions	4				4		$984	$222.35	$452.72	$113.2	-$531.2	-$109.17
				Proposed Conditions		100%	4	0%	-		$0	$0.00	$0.0	$0.0	$0.0	$0.00
				Current Conditions												
10	5% Reduction in Waste Tonnages			Proposed Conditions	137						$30,362		-$15,454.7		$14,907.45	$109.17
				Current Conditions												
11	Additional littering/open burning enforcement effort			Proposed Conditions							-$2,426				-$2,426	

[1]Tip Fees:

Segregated C&D Loads (EPR Programs):	$0
Segregated C&D Loads (Municipality Responsible):	$50
Mixed C&D Loads:	$90
Waste tip fee (2015):	$113

Note: Tip fee for "Proposed Conditions" is weighted average for Items 1-4 and 8

Textiles:

Current Diversion	19%
Future Diversion	38%

Assumptions:

[2] 20% of HHW costs borne by municipality in Proposed Conditions Scenario

[3] 30% of PPP costs borne by municipality in Proposed Conditions Scenario

Scenario (B) New Operating Costs (2016 $)

Shingles Operating Cost:

Fee to process:	$40	/tonne
Hauling Fee:	$12	/tonne
Total:	$52	/tonne

New Operator (full-time) for C&D Site:

{currently, operator works 10 hrs/week)

Add. hours:	30	hours
	$20	/hour
	$31,200	/year

Clean Wood and Wallboard Operating Costs:

Wood	$40	/tonne
Wallboard	$40	/tonne

Scenario (B) New Capital Costs (2016 $)

New Capital Items (Diversion Program Scenario) (2015 Expenditures)

C&D Laydown Area	$48,000	borne by Municipality
Extension to Public Drop Off	$47,000	covered by EPR
Small Quantity C&D Drop Off	$48,000	borne by Municipality

Table B5-3 - Operating Costs and Revenues from the Data Call (2012/13) -- PCSWM

OPERATING COSTS

Data Call Ref Page #:	Page 2	Page 15		Page 17	Page 41	Info from Carol	Page 43	Page 44			
	Curbside Collection	Tip Fees paid to Landfill	Line Hauling	C&D Operating Costs	HHW Operating Costs	HHW Trailer	Admin Costs	Education Costs	TS Operating Costs	Recycling Processing Fees	Totals
C&D				$25,295					$14,850		$40,145
Recyclables	$509,796		$42,685				$59,112	$79,808	$99,000	$194,219	$984,620
Waste	$955,370	$812,435	$191,916				$59,112	$59,808	$381,150		$2,459,791
HHW					$15,133	$4,100					$19,233

REVENUES

Data Call Ref Page #:	Page 24	Page 32	Page 45		
	C&D Debris Revenue	Transfer Station Revenue	Funding and Other Revenues	Info From PCSWM on Revenues	Totals
C&D	$232,551	$42,711			$275,262
Recyclables				$394,105	$394,105
Waste				$1,380,000	$1,380,000
Asbestos	$4,946				$4,946

APPENDIX B5-4
Proposed/Future Costs Scenario

Municipality/Authority: **PICTOU COUNTY SOLID WASTE MANAGEMENT**

CAPITAL (2016 expenditures)

1) C&D Landfill Laydown Area

- Large rough graded area east of C&D landfill already in place.
- To accommodate segregation/grinding/storage of asphalt shingles, clean wood and drywall.
- Drywall pile to be tarped to minimize exposure to precipitation.
- Assume 50m x 50m aggregate surface (300 mm thick).

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	2,500	$ 1.00	$ 3,000
2	Geotextile	m^2	2,500	$ 3.25	$ 8,000
3	Granular Class B (300 mm)	m^3	750	$ 35.00	$ 26,000
				Subtotal	$ 37,000
				Engineering/Contingency at 30%	$ 11,000
				Total Estimated Budget	**$ 48,000**

*: costs rounded to nearest $1000

2) Extension to Public Drop Off Structure

- Addition of two bays to current structure to accommodate two 40 cy weather protected roll offs.
- One roll off for mattresses/box springs, one for carpet.
- Assumption that mattress/box spring and carpet stewardship agencies will provide the roll offs from their own supply.
- Stewards will deliver an empty roll off when they remove a full one as part of a provincial collection system.
- Assumption that the capital cost for the extended drop off structure will be covered by the stewards.

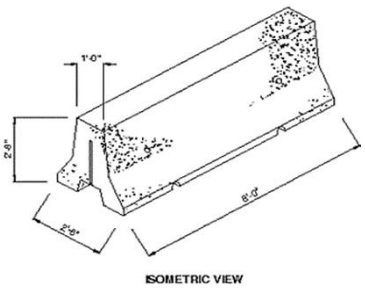
Cost for existing six bay PCSWM drop off structure	$156,000	- from 2012 PCSWM data call information including yard paving.
Assumed cost for two bay extension	$39,000	- assume 25% of original cost, larger bays to accommodate 40 yd roll offs.
Contingency at 20%	$8,000	
Total Estimated Budget	**$47,000**	

3) Small Quantity C&D Drop Off Area

- To accommodate utility trailer/pick up truck loads of C&D materials, larger contractor loads will be directed to the C&D Landfill Laydown Area.
- To be located on gravel parking area on the eastern edge of the former asbestos disposal area.
- Assumption that the area below the proposed drop off area does not contain asbestos (to be confirmed).
- To consist of a 20m x 20m asphalt pad with concrete jersey barrier separated stalls for clean wood, shingles, drywall and mixed C&D.
- The two 18 yd roll off bins at the Drop Off structure currently used for C&D would be now be designated for "blue bag" recyclables.

Item No.	Description	Unit	Estimated Quantity	Assumed Unit Price	Proposed Amount*
1	Final Grading	m^2	400	$ 1.00	$ 1,000
2	Geotextile	m^2	400	$ 3.25	$ 1,000
3	Granular Class B (300 mm)	m^3	120	$ 35.00	$ 4,000
4	Asphalt	m^2	400	$ 45.00	$ 18,000
5	Concrete Jersey Barriers (2.4m)	ea	23	$ 500.00	$ 12,000
6	Signage	LS	1	$ 1,000.00	$ 1,000
				Subtotal	$ 37,000
				Engineering/Contingency at 30%	$ 11,000
				Total Estimated Budget	**$ 48,000**

*: costs rounded to nearest $1000



ISOMETRIC VIEW

Jersey Barrier (typical)

Appendix B6

Future Operating Costs (Proposed Scenario)

Table B6
Proposed/Future Costs Scenario

Municipality/Authority: AS IDENTIFIED

OPERATION & MAINTENANCE (2016 expenditures)

Assumptions

Shingles

- Segregated, clean shingles to be maintained in a stockpile in laydown area.
- Service provided by Halifax C&D; production of shingle flake and asphalt grit product.
- Municipality to provide excavator/operator to load trailer.
- Transportation cost to Milford NS processing facility - round trip ($/hr) = $150
- Average transport speed (km/hr) = 90
- Number of tonnes per 53' trailer = 30
- Processing cost ($/tonne) = $40

Clean Wood & Drywall Processing

- Segregated, clean materials to be maintained in a stockpile in laydown area.
- Use of ground wood at on-site composting facilities (where available) or blending into final LF cover. See Note 2 for District of Chester end use assumptions.
- Use of ground drywall at designated composting facilities.
- Processing using a tub or horizontal bed grinder.
- Municipality to provide excavator/operator to load grinder.
- Operating cost; municipally-owned grinder ($/tonne) = $20
- Operating cost; contractor-owned grinder ($/tonne) = $40

General

- Costs developed through consulation with Halifax C&D and municipal contacts.

	Shingles					Clean Wood	Drywall				
Municipality[1]/ Authority	Haul Distance - Round Trip (km)	Haul Time (hr)	Haul Cost ($/tonne)	Processing Cost ($/tonne)	Total Cost/Tonne	Processing Cost ($/tonne)[3]	Processing Cost ($/tonne)	Haul Distance - Round Trip[4] (km)	Haul Time (hr)	Haul Cost ($/tonne)	Total Cost/Tonne
CBRM[2]	708	7.9	$40	$40	$80	$20	$20	N/A	N/A	N/A	$20
District of Chester	240	2.7	$14	$40	$54	$30	$40	100	1.1	$6	$46
Colchester County	132	1.5	$8	$40	$48	$40	$40	N/A	N/A	N/A	$40
PCSWM	206	2.3	$12	$40	$52	$40	$40	N/A	N/A	N/A	$40

Notes:

1. No direct C&D material services are coordinated/provided by the Town of Antigonish.
2. CBRM have their own vertical bed grinder to process wood and drywall.
3. The District of Chester's lower per tonne processing cost acknowledges the delivery of the material by the contractor to Brooklyn Energy as a fuel.
4. Assumption that CBRM, Colchester and PCSWM will utilize processed/ground drywall as an amendment at their on-site composting facilities.

Processed materials from the District of Chester will require transport to the Whynott's Settlement composting facility.

Appendix B7
Additional Littering/Open Burning
Enforcement Effort

Table B7
Proposed/Future Costs Scenario

Municipality/Authority: **ALL**

OPERATION & MAINTENANCE (2016 expenditures)
Additional Littering/Open Burning Enforcement Effort

From Bob Kenney - NSE, email March 11, 2015;
- estimates ~250 days provincially for NSE to address current issues of open burning, illegal dumping and littering.
- assume 20% of effort (250 x 0.2 = 50 days) was associated with incidents with "environmental impact implications", e.g., incidents that NSE will continue to respond to under the future conditions scenario.

NSE staff effort[1] (days/ year)	NS Population (2014)	NSE Staff Effort per Person (days/year)
200	940,592	0.00021

Enforcement officer salary (per year)	Benefits allowance (30%)	Enforcement Officer Cost (per year)	Expenses Allowance - 25 % Salary & Benefits (per year)	Total Enforcement Officer Cost (per year)	Total Enforcement Officer Cost (per day @ 260 days/yr)
$40,000	$12,000	$52,000	$13,000	$65,000	$250

Municipality/Authority	Population (2011)	Additional Municipal Staff Effort (days/year)	Estimated Additional Annual Enforcement Cost
Town of Antigonish	4,524	0.96	$240
Cape Breton Regional Municipality	97,398	20.71	$5,177
Municipality of the District of Chester	10,599	2.25	$563
Municipality of the County of Colchester	50,968	10.84	$2,709
Pictou County Solid Waste Management	45,641	9.70	$2,426

Notes:
1. Assumed level of NSE staff effort related to littering and open burning incidents that did not have significant environmental impact implications.

Contacts and References

CONTACTS

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Framework and Implementation Plan for a Waste Packaging and Paper Stewardship Program across Atlantic Canada

Deliverable 4: Final Framework and Proposed Implementation Plan

Submitted to: **Recycle NB**

May 29, 2014

Submitted by: **Giroux Environmental Consulting**

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DUNCAN BURY CONSULTING

and

Gardner Pinfold Consulting Economists Inc. East Coast Office

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Table of Contents

List of Exhibits

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Introduction

Project Overview

The Governments of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador have made a commitment to work together on the first step of an initiative to review the current recycling programs in Atlantic Canada for packaging and waste paper and work towards implementing Extended Producer Responsibility (EPR).

The objectives of this initiative were to:

- Develop a proposed **Framework** for a waste packaging and paper stewardship program for Atlantic Canada, and;
- Develop an **Implementation Plan** which could be adapted to serve the needs of each of the four Atlantic Provinces individually or collectively.

The steering committee for this initiative included representatives from Recycle New Brunswick, RRFB Nova Scotia, Multi-Material Stewardship Board (MMSB) of Newfoundland and Labrador, and the Prince Edward Island Department of Environment. The proposed framework and plan are intended to be used as working documents as governments move forward with formal consultations and more specific program development activities for a new waste packaging and paper recycling framework for Atlantic Canada. Both the Framework and Implementation Plan are written in a generic fashion so that they can be adapted and/or used by Atlantic Governments either individually or collectively.

The proposed **Framework** is presented in Section 1 of this document. The proposed **Implementation Plan** is presented in Section 2.

Scope

The proposed model is intended to apply to the residential waste packaging and paper stream, under the assumption that this is the stream currently being paid for through the general taxpayer base since it is general practice that the Industrial, Commercial and Institutional (ICI) sector already pays for its own recycling and waste programs.

Methodology

This project began in November 2013. A jurisdictional review was undertaken of both Canadian and European programs that use various EPR models for packaging and paper. Programs were documented and assessed to highlight advantages and disadvantages of the various models. The results of this jurisdictional review were presented to the steering committee in January 2014. Following this presentation a series of interviews were undertaken with twenty four people, including five provincial representatives (two for NS and one for each of the others) and nineteen municipal and regional recycling coordinators and processors across Atlantic Canada.

The results of the literature review, the interviews, and input from the steering committee informed the development of the proposed framework and implementation plan.

Terminology

In this document, the following terms are utilized:

- The terms *producers, stewards, and brand owners* refer to the same group of stakeholders: the companies that place or first import the packaging and paper onto the market. This document uses the term producers.
- The term *"framework"* refers to the type of program design utilized for a packaging and paper recycling program within a jurisdiction. This could refer to an Extended Producer Responsibility model, a Shared Responsibility Model, or another model.
- The terms "*Producer Responsibility Organization*" (PRO), Stewardship Responsibility Organization (SRO) and "Industry Funding Organization" (IFO) are used in different Canadian jurisdictions but refer to the same type of organization: the organization that collectively represents stewards or producers in fulfilling their financial and operational obligations in an EPR program. The term PRO will be used in this document.

1 Framework for a Waste Packaging and Paper Stewardship Program

This proposed framework includes the following:

Section 1.1 Overview of Existing Waste Packaging and Paper Programs in Atlantic Canada
Section 1.2 Overview of Waste Packaging and Paper Stewardship Models
Section 1.3 Recommended Waste Packaging and Paper Stewardship Model
Section 1.4 Estimated Program Costs, Steward Obligation, and Diversion
Section 1.5 Processes to Define and Verify Eligible Net Costs
Section 1.6 Designated Packaging and Paper
Section 1.7 Stakeholder Roles and Responsibilities
Section 1.8 Levels of Service
Section 1.9 Implementation Aspects to Consider Moving Forward

The implementation aspects are elaborated upon further in Section 2: Implementation Plan.

1.1 Overview of Existing Waste Packaging and Paper Programs in Atlantic Canada

Currently, the four Atlantic Canada jurisdictions operate distinct product stewardship programs to manage waste packaging and paper in their respective jurisdictions. All four provinces are currently using government and/or municipal taxpayer funded product stewardship programs for the majority of recycling programs for waste packaging and paper, although there are some voluntary arrangements where producers contribute to some recycling programs (e.g. Atlantic Dairy Council). Across the Atlantic region, waste packaging and paper programs are at differing stages of maturity, have had different levels of provincial funding, and consequently there are various types of levels of service in place (e.g. curbside vs. depot, municipal service vs. municipally contracted third party). Diversion performance can vary widely among provinces depending on such factors as regulations in place, program maturity, population density, and material accepted. One commonality among all four provinces is that they all have a deposit-return program for beverage containers.

A brief overview of the approach taken by each of the four jurisdictions is presented below, with descriptions for each province following. Note that specific detail on infrastructure and levels of service is presented in Section 2.2 Infrastructure Services Review – the summary information presented in Exhibit 1 is intended to be introductory.

Exhibit 1: Summary Comparative Table of Existing Waste Packaging and Paper Programs for the Residential Sector in Atlantic Canada

Program Detail	New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland and Labrador
Stewardship Model:	Product Stewardship (Government and/or Taxpayer Financed)	Product Stewardship (Government and/or Taxpayer Financed)	Product Stewardship (Government and/or Taxpayer Financed)	Product Stewardship (Government and/or Taxpayer Financed)
Is there a regulation to require recycling of waste packaging and paper?	No	Yes	Yes	Yes
Roles:	Regional Service Commissions/Authorities	Regional Service Commissions/Authorities	Crown Corp.	Regional Service Commissions/Authorities
Municipal Collection:	Yes	Yes	No	Yes
Municipal Processing:	Yes	Yes	No	Yes
Deposit - return bev. containers	Yes	Yes	Yes	Yes
Infrastructure:	Curbside service: urban. Depots: rural areas. Remote areas no service	Curbside service: all areas	Curbside service: All areas	Curbside service: urban. Depots: rural areas Remote areas no service
Level of Service (# materials)	Medium	High	High	Medium

1.1.1 New Brunswick

New Brunswick has a Waste Reduction and Diversion Action Plan which includes goals for the Regional Service Commissions to develop waste diversion programs. Waste management is regionalized in the province of New Brunswick with twelve (12) regional service commissions that vary in how they handle materials. Curbside collection exists in some regions (i.e. service commission 7, 8, 11), and drop-off of selected items at designated locations or depots is established in other regions (i.e. commissions 1, 5, 12). More remote areas still may not have source-separation for certain paper and packaging materials so a portion goes in the waste stream but this may be changing.

New Brunswick operates a beverage container program using a product stewardship model through the Beverage Containers Act. The un-refunded portion of each deposit is used to recover the costs of administering the program. A portion is also deposited into New Brunswick's Environmental Trust Fund, used to promote environmental activities, such as recycling. Beverage container handling fees are paid by beverage distributors to New Brunswick's privately-run beverage container redemption centres as compensation for receiving, paying out refunds for, and sorting beverage containers.

In 2013, the province diverted an estimated 30,500 tonnes of waste packaging and paper from households, which does include some industrial, commercial, and institutional (ICI) amounts. The province has three large processing facilities, and seven smaller sorting operations.

1.1.2 Nova Scotia

Nova Scotia has a Solid Waste Management Strategy that drives all diversion activity in the province. As part of the strategy, there is a provincial disposal target that municipalities strive to meet. Waste management is regionalized through seven (7) solid waste management regions. Nova Scotia has established residential curbside recycling (100% access), green cart collection of residential organics (90%) and curbside garbage collection programs. In most regions/municipalities, waste materials are collected bi-weekly. Nova Scotia also maintains a network of approximately 80 Enviro-Depots that accept recyclable items including deposit-refund beverage containers, paint and electronics.

Nova Scotia has landfill bans in place for a number of waste packaging and paper materials: beverage containers, corrugated cardboard, newsprint, steel/tin and glass food containers, as well as low and high-density polyethylene bags and packaging. In addition, some municipalities have banned additional products from their landfills. As a result, the items designated for diversion differ slightly between regions/ municipalities.

In 2013, the province diverted 49,600 tonnes of waste packaging and paper from households, which does not include ICI. The province has 10 processing facilities.

1.1.3 Newfoundland and Labrador

Waste diversion in Newfoundland and Labrador is managed through eleven regional waste management authorities located in four regions of the province: Labrador, Western, Central, and Eastern regions. Each Regional Waste Management Authority (RWMA) is responsible for designating, financing, and operating regional waste management systems.

Recycling services are not offered in Labrador where programs are primarily focused on reducing and re-using materials. The remaining three regions (Western, Central, and Eastern regions) offer a mix of services, not standardized or mandatory. In all three regions, urban areas offer curbside collection (i.e. St. John's, Corner Brook), while drop-off locations and depots are used in some rural communities (i.e. Gander, Stephenville) although this is changing by 2015. More remote locations are less likely to sort waste as the distance to drop-offs/depots is prohibitive.

Beverage containers are managed through a product stewardship program operated by the Multi-Material Stewardship Board (MMSB) – a crown agency of the government authorized to develop, implement and manage waste diversion and recycling programs province-wide. Beverage container deposits apply to: aluminum cans; drink boxes; plastic and glass bottles; steel cans; and gable top containers. Milk containers are also diverted in the Eastern region through a voluntary EPR agreement with milk producers. There are fifty-six Green Depots across the province that primarily accept beverage containers - most are permanent but some are satellite locations and mobile units to service remote areas. Eighteen of the Green Depots also accept paper for recycling.

In 2013, the province diverted 7,364 tonnes of waste packaging and paper, which does not include any ICI generators. The province has one main processing facility. The amount diverted will increase in 2014 as major infrastructure investments become operational.

1.1.4 Prince Edward Island (PEI)

PEI has the most standardized recycling program of all the Atlantic provinces, operated by the Island Waste Management Corporation (IWMC) which is a crown corporation. IWMC operates the recycling bag program that requires waste packaging and paper source separation by the residential and ICI sectors. Municipalities are not involved in curbside recycling in PEI. The residential sector is provided with curbside pick-up of all waste packaging and paper recyclables, and the ICI sector must provide their own service to IWMC depots or by contracted haulers.

In 2008, legislative changes allowed the sale of non-refillable beverage containers in stores across PEl and established a deposit and return system for beverage containers. Most beverage containers sold, with the exception of dairy products, carry a deposit and are worth a cash refund when returned to one of the province's nine licensed depots. Resources from this system are used to finance the recycling program. The biomass-fuelled hot water district heating system in Charlottetown accepts some waxed paper products so a small portion of this stream is not recycled.

In 2013, the province diverted 11,600 tonnes of PPP, which does not include any ICI. The province’s processing facilities are operated by the private sector.

1.2 Overview of Waste Packaging and Paper Stewardship Models

A literature and jurisdiction review identified three types of stewardship models: 1) product stewardship; 2) shared responsibility and 3) full Extended Producer Responsibility (EPR). An overview of each model is below, followed by a summary table (Exhibit 2).

1.2.1 Product Stewardship/Status Quo in Atlantic Canada

What is it?

Product stewardship programs are operated by governments (e.g. municipalities or other regional authorities) where manufacturers, brand owners and importers are neither directly responsible for program funding, nor for program operations.

How does it work?

These are waste diversion initiatives funded by general taxpayers, authorized by a provincial government, in all cases except in New Brunswick, and implemented at a municipal level either through municipalities, regional authorities, or by a contracted third party where collection and processing takes place. A product stewardship recycling program may be mandated through a regulation or may be voluntary. There are no producer responsibilities in this model, financially or physically. However, in some cases such as with dairy producers provincial representatives have been successful in negotiating voluntary contributions from this sector to pay for recycling of milk packaging.

Where is it used currently?

The Atlantic Provinces, Alberta, and the Northern Territories are the only jurisdictions in Canada currently using a product stewardship approach for waste packaging and paper. Alberta is in the process of considering the designation waste packaging and paper to be managed under an EPR model and have just completed formal consultations on the potential options.

What are the Advantages and Disadvantages of this Model?

The primary advantage of this model is that municipalities have full and exclusive control over the operation and management of the program. They can determine the level of service, materials list for collection, terms of service for contractors, and are the primary contact with the public and the community regarding the collection of recyclables. The major disadvantage is that taxpayers, primarily municipal taxpayers, are solely responsible for funding the program and they have no control over the costs associated with processing the recyclable materials and are exposed to the fluctuation of materials markets over which they have no control. The product stewardship approach also has the disadvantage that it does not provide any incentives to producers to design and market more environmentally friendly packaging.

1.2.2 Shared Responsibility EPR

What is it?

The shared responsibility EPR model is a program that is operated by governments or public agencies but with varying degrees of producer funding. In this model, municipalities or regional authorities provide collection and recycling services as a front-line service for the residential sector and sometimes the small business sector, with a designated amount of producer funding provided to the municipality for reimbursing pre-determined net eligible costs. A shared responsibility EPR model is the type of stewardship model most commonly used for waste packaging and paper programs.

How does it work?

The shared responsibility EPR model would see municipalities or regional authorities continuing to operate curbside and depot collection programs for waste packaging and paper and to be responsible for processing the collected materials and selling them to end markets. Municipalities or regional authorities currently provide these services using their own staff, equipment and facilities or they contract these out to private sector contractors. Obligated producers would be required to fund a designated percentage of net municipal costs for recycling only (not for garbage services) relieving municipalities of a set portion of the financial responsibility for recycling.

For the public, the shared responsibility EPR model would not see any obvious changes in terms of levels of service offered, as municipalities or regional authorities would remain as the first point of contact for recycling services (or in PEI, IWMC). In some instances it is possible that this model could facilitate program improvements with additional producer funding to bring all areas of all four Atlantic Provinces up to a similar standard of service.

In a shared responsibility EPR model the program can be designed to continue the operation of existing deposit-return programs for beverage containers since they are traditionally successful programs with high return rates in all provinces where they operate.

Where is it used currently?

A shared responsibility EPR program is the model used in Québec, Saskatchewan, Manitoba and Ontario, with varying levels of producer funding. The shared model is the most common approach used in Europe.

What are the Advantages and Disadvantages of this Model?

The primary advantage of this model is that municipalities or regional authorities continue to operate current recycling programs or are able to expand them if they wish to collect more waste packaging and paper materials and improve diversion – striving for higher goals within their particular municipality. Municipalities or regional authorities would continue to be the

primary player with considerable input and control over program design, operation and practices. In many cases, municipalities and regional authorities have invested considerable effort and resources over many years to establish recycling programs.

There are two large European programs that have been operating full EPR programs for many years (Germany and Sweden) and both are considering switching back to a shared responsibility model for two reasons. The first is that members of the public continue to approach their municipality directly with service issues or information requests. The second is that some proactive municipalities would like to strive for higher diversion targets and recycle additional waste packaging and paper materials not currently collected in the producer-run program. Without any operational or management involvement in recycling this is impossible to do.

In the shared EPR model producers have financial contributions but no direct control over program operations. Many producers in existing Canadian waste packaging and paper programs dislike this model because their ability to control program efficiencies or minimize costs is somewhat inhibited. However, it is the model that producers in large provinces such as Ontario and Québec have operated for a decade so it is a familiar model to most large producers in Canada. In Ontario the producer contribution is 50%, in Québec it is now 100%.

Producers do have some level of control during program design and there is usually a process set up to establish certain levels of eligible funding which identifies specific costs that are allowed to be reimbursed by a municipality or public agency collecting waste packaging and paper for recycling. In some provinces, there can be significant debates regarding the definition of eligible costs and in Ontario an arbitrator has been retained to resolve disputes between the municipalities and Stewardship Ontario. Negotiated clearly written lists of eligible costs during program design would therefore be extremely important to avoid this situation. In addition, the reality that many municipalities' contract out these services and award contracts based on efficiency criteria that may result in lowest cost/highest value operations should be considered in the determination of eligible costs.

1.2.3 Full EPR

What is it?

A full EPR model is a program in which manufacturers, brand owners and first importers are directly responsible both for program funding (100%) and for program operations.

How does it work?

In a full EPR program, producers are responsible financially for all program operations including collection, processing, and marketing of collected materials. In a pure application of this model municipalities have no role in the program which would operate in a distinct and separate way from other municipal waste management operations. Municipalities could however act as service providers and thereby operate in the same way as a private sector contractor would in providing collection or other services associated with the program. A full EPR program would

operate in a similar fashion to a number of other EPR programs such as those for tires where industry has taken full ownership of the obligations including establishing and running the collection system and contracting for the end-of-life management.

Where is it used currently?

In Germany, Austria and Sweden, municipalities have no role in the full EPR program. British Columbia has established a full EPR approach but producers have opted to offer municipalities the opportunity to continue to provide collection services as a contractor to the stewardship agency administering the program. The majority of BC municipalities have accepted this role as a service provider.

What are the Advantages and Disadvantages of this Model?

The primary advantage of the full EPR model is in the direct cost control that it would give to producers who would draft, tender and award the contracts for the collection and processing of designated waste packaging and paper for recycling. Under this system producers would have financial incentives to run efficient programs and would be more closely tied to the marketing of materials. In full EPR programs for materials such as tires, electronics, used oil, etc. the obligated producers have had to fund and develop the necessary markets for the collected materials. As a result, for some recyclable materials such as tires there are new re-manufacturing businesses developed to provide closed-loop recycling and manufacture of such as shingles, flooring and animal bedding mats. This responsibility could therefore stimulate design for environment and new businesses.

Some of the specific operational challenges associated with switching from a product stewardship model to a full EPR model include:

- What to do with and how to manage existing municipal investment in collection and processing equipment and facilities if producers are taking over those roles? There are potential issues with stranded publicly owned capital assets.
- What to do with and how to manage existing service contracts held by third party contractors for municipalities that contract out recycling and processing services?
- How to manage the change from municipalities being the first point of contact to a third party for levels of service inquiries or information requests? Given the long history of municipal involvement in recycling programs the communications and education necessary to facilitate such a change could be challenging.

The following exhibit is a comparative table identifying some of the key advantages and disadvantages of all three types of stewardship models.

Exhibit 2: Summary Comparative Table of Stewardship Models

Product Stewardship		Shared Responsibility EPR		Full EPR	
Municipal or provincial funding and operation		Varying degrees of producer funding (50-100%) of net municipal costs, with municipal responsibility for collection and processing		Full producer funding and operational responsibility for collection and processing	
Atlantic status quo		SK, MN, ON, QC Majority of EU Member States		BC, Germany, Austria and Sweden	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**	**Advantages**	**Disadvantages**
Full control over program design and operation. Full control over which waste packaging and paper materials to include. Municipal or public agency control over collection, first point-of-contact for public inquiries. Consistent and clear messaging to public regarding levels of service and municipal roles. Provinces and/or municipalities can feel confident about long-term investments in infrastructure. Standardized program across jurisdiction.	No involvement of producer; Government and consumers pay full costs of recycling packaging.	Maintain municipal operations and levels of service communities are used to (consistency). Opportunity to negotiate financing suitable for each jurisdiction (range of 50%-100% currently used in Canada). Clear public understanding of municipal role and responsibility for collection Opportunity to formalize a dispute resolution mechanism in program design with municipal sector for residential program. Opportunity to standardize and develop higher levels of recycling collection and service. Some programs (QC) with high producer financial contribution led to Design for Environment changes and a Recycling Code of Practice. Opportunity to expand waste packaging and paper diversion programs to include ICI generated waste packaging and paper wastes. Could use competitive compliance schemes as in the EU, for ICI sector or residential sector.	Producers do not have control over how their money is spent when they do not have control over municipal costs. Canadian programs are residential only. Potential for argument between municipalities and PROs over eligible costs and levels of funding. Producers and municipalities can develop an adversarial relationship: the higher the funding contribution from producers = higher number of disputes and general dissatisfaction about controls over costs.	Full producer control over the system with ability to effect program costs and rationalize infrastructure Full producer involvement in operations could stimulate Design for Environment in packaging innovation. Could use competitive compliance schemes as in the EU, for ICI sector or residential sector. Opportunity to standardize and develop higher levels of recycling collection and service without any municipal cost. Opportunity to expand waste packaging and paper diversion programs to include ICI generated waste packaging and paper wastes.	No direct municipal involvement Municipal challenge/risk of providing a service level above the agreed waste packaging and paper program if costs are higher than negotiated amount. Concerns about stranded infrastructure assets - Municipalities already have long-term investments in infrastructure. Canadian programs are residential only. Challenges associated with transitioning traditionally municipally operated programs to producer operated programs Communicating to the public that municipalities are not responsible for collection service (either they are not involved at all or function as a service provider/contractor) is challenging Germany and Sweden are reviewing their models and considering changing back to a model with municipal control because municipalities in these jurisdictions often wish to provide enhanced collection and recycling services beyond that provided by the producer run program.

1.3 Recommended Waste Packaging and Paper Stewardship Model for Atlantic Canada

The recommended waste packaging and paper stewardship model for Atlantic Canada is a:

Shared Responsibility EPR Model

In a *Shared Responsibility EPR Model*, municipalities / regional authorities would continue to operate, manage, and be fully responsible for the curbside and depot programs just as they are now, and producers (stewards) would fund eligible net costs of collection and processing on an agreed upon formula (percent of net costs funded is discussed in Section 1.4). This model would ideally maintain local decision-making for recycling in each jurisdiction in Atlantic Canada.

1.3.1 Rationale for this Model

The rationale for the recommended Shared Responsibility EPR model for Atlantic Canada is as follows:

- Municipalities / regional authorities would continue to be a primary player with decision-making responsibilities over program design, operation and practices. This is desirable for most municipalities / regional authorities who have invested considerable effort and resources to establish recycling programs and infrastructure.
- For provinces with small or remote communities with modest existing depot service operated by regional authorities possible improvements to levels of service could be made as all provinces make efforts to provide a consistent level of service in a harmonized program (see Section 1.10 Implementation Aspects).
- The shared responsibility EPR model would also allow for continuation of existing contracts with collectors and processors currently operating recycling services.
- A shared responsibility model is the most common type of model used for waste packaging and paper in Canada and Europe. In Europe, two of the three countries using a full EPR model (Germany and Sweden) are both reviewing options to transition back to shared responsibility model from a full EPR model.
- Operating under a shared responsibility approach would also allow time for municipalities and producers to learn to work together and to cooperate and would give time for programs to be expanded where warranted to meet new harmonized program standards and for performance measures to be established.

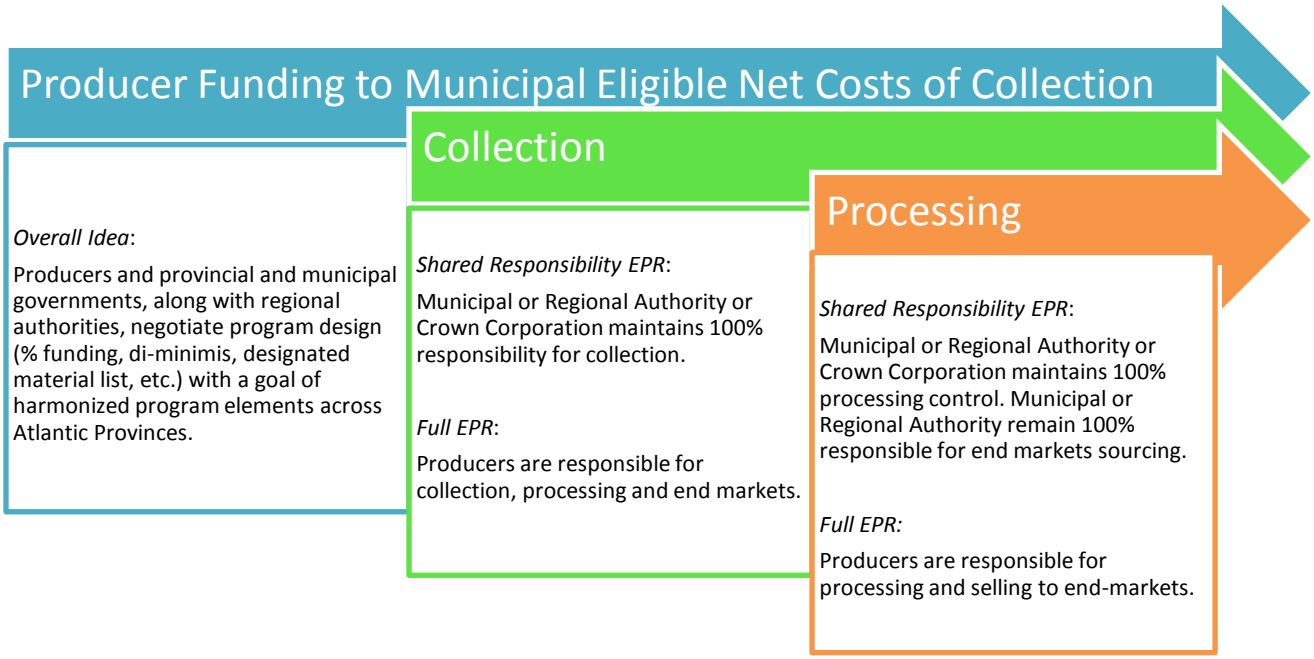
Implementing this model will allow the Atlantic Provinces to learn from current full EPR roll out and challenges observed in BC and review the results of a study being undertaken in Québec for completion in 2015 to review the advantages and disadvantages and the costs and benefits associated with changing the Québec shared responsibility model to a full EPR approach.

1.3.2 *Level of Producer Involvement in a Shared Responsibility EPR Model*

In existing waste packaging and paper shared responsibility EPR models in Ontario, Saskatchewan, Manitoba, and Québec, the producers fund municipal net costs of collection and processing. The "eligible" net costs are defined in the development of the program plan. Currently there are a range of % contribution amounts being used on Canadian waste packaging and paper programs. Further detail on the funding %, and on program costs is presented in Section 1.4.

The following exhibit explains the difference between shared responsibility and full EPR.

Exhibit 3: Difference Between Shared Responsibility EPR and Full EPR



1.3.3 *Types of Producer Responsibility Organizations*

The following exhibit presents key details of the types of Producer Responsibility Organizations (PRO) used in other Canadian waste packaging and paper programs.

Exhibit 4: Types of Producer Responsibility Organizations in Waste Packaging and Paper EPR

Name of PRO & Year Formed	Board of Directors Representation	Location of Board Members	Harmonizing with another PRO?	Transparency and Reporting	Key Activities of PRO
Multi-Material BC (MMBC) (2012)	Grocery Retailers Distributors Food Service 2014 plans to expand from 7-15 members	Ontario 2014 plans for regional representation on Board Committees	Yes – Canadian Stewardship Services Alliance (CSSA)	Annual reports to the BC Minister of Environment on performance. Audited financials only required if fees charged at point of sale.	▪ Financing and physical execution of collection and processing. ▪ Contract administration for collection and processing. ▪ Auditing of stewards.
Multi-Material Stewardship Western (MMSW) SK (2012)	Grocery Consumer products Co-operatives	Saskatchewan Ontario	Yes - CSSA	No identified information.	▪ Funding for municipalities net costs. ▪ Municipal program optimization / cost containment. ▪ Auditing of stewards.
Multi-Material Stewardship Manitoba (MMSM) (2006)	Grocery Consumer products Beverages Retailers Printed paper Newspaper Independent	Manitoba Ontario	Yes - CSSA	Annual reports to the MB Minister of Environment. Performance and audited financials.	▪ Funding for municipalities net costs. ▪ Municipal program optimization / cost containment. ▪ Auditing of stewards.
Stewardship Ontario (2003)	Food and consumer product manufacturers Retailers Distributors Independent	Ontario	Yes - CSSA	Annual reports to WDO (quasi-government body) Performance and audited financials.	▪ Funding for municipalities net costs. ▪ Annual material fee setting. ▪ Municipal program optimization / cost containment. ▪ Auditing of stewards.
Eco-Entrerprise Québec (EEQ) (2005)	Food and consumer product manufacturers Retailers Distributors Services Durable goods	Québec	No	Annual reports to Recyc-Québec (quasi-government body) Performance and audited financials.	▪ Funding for municipalities net costs. ▪ Pre-determined level of funding for municipal administrative costs ▪ Annual material fee setting. ▪ Municipal program optimization / cost containment. ▪ Auditing of stewards.

All PROs have a mission of representing its members (stewards or producers) that fund the program and optimizing program costs.

Note: Atlantic Governments may designate the number and type of representatives they prefer for a PRO (e.g. the number of local and independent representatives in addition to the national representatives). They may also designate the type of transparency and reporting they require by the PRO to Atlantic governing bodies.

1.4 Estimated Program Costs, Steward Obligation, and Diversion

Developing a new shared responsibility EPR model will require the following:

1. An understanding of current and proposed program costs based on estimated waste packaging and paper diversion volumes in a Shared Responsibility EPR Framework;
2. Defining the percent (%) producer contribution of those eligible net costs; and
3. Potential diversion volumes in this proposed program.

A discussion of each of these follows.

Note that work to substantiate estimated program costs and articulate potential diversion volumes is typically developed by a PRO and would be approved by Atlantic Governments in a designated Program Plan. Information on these aspects is presented here as preliminary estimates. Atlantic Governments may define the % producer contribution they would like in a regulation. It is recommended that this be done in a harmonized fashion (e.g. the same designated % across all four Provinces).

1.4.1 Program Costs – Other Canadian Waste Packaging and Paper EPR Programs

Typical costs of other Canadian waste packaging and paper programs are presented below. This includes program administration and management costs, and eligible net costs (often called "supply chain costs") of collection and processing. In current programs the supply chain costs represent between 77-95% of all costs. Other program costs include the following:

- Developing best practice guidelines for municipal collection and processing for waste packaging and paper recycling;
- Directing system optimization and market development activities for processed material; Auditing of municipal costs (the "verification process");
- Administration such as legal fees, accounting fees, management of salaries to administer and implement the program;
- Enforcement costs paid to government regulators;
- Promotion and education – outreach to the public about the program; and
- Conducting research and development activities into recycling difficult to recycle materials.

In addition, there are also one-time program start-up costs such as stewardship plan development, stakeholder consultations, and steward recruitment and registration. Exhibit 5 presents the overall dollar amount of steward obligations in other programs, along with available performance information across programs[1]. Exhibits 6-10 present additional detail on program costs[2].

[1] Data from Canadian Stewardship Services Alliance Inc. (CSSA) Annual Stewards Meeting - October 31, 2013 Presentation Deck, accessible at http://www.cssalliance.ca/wp-content/uploads/2013/11/Final-Amalgamated-Presentations-October-31-2013.pdf and Éco Enterprises Québec 2012 Annual Report.
[2] IBID.

Exhibit 5: Steward Obligations and Performance Overview

Obligation	Ontario		Manitoba		BC		Québec	
	%	Obligation	%	Obligation	%	Obligation	%	Obligation
Amount of Steward Obligation	50% costs	$ 104,005,507	80% costs	$ 11,076,642	100% costs	$ 23,500,000 (Est. Start-Up) $ 60,887,500 (Est. Operational)	100% costs	$128,000,000
Number of stewards	4000 stewards registered, 1500 obligated (135 stewards = 80% of fees)		808 stewards registered, 585 obligated		678 stewards registered representing 80% of waste packaging and paper		1570 obligated	
Total packaging and paper tonnes collected	892,924 (2012 data)		131,672 (2012 data)		247,321 (2014 data)		656,000 (2010 data)	
Collection Target	60% (achieving 64%)		None (achieving 54%)		75%		70%	
% Population Access	99%		93%		73%		99%	

Exhibit 6: Ontario Summary of Costs 2013-14 (Steward Obligation is 50% Net Costs)

Steward Obligation	2014	2013
Share of Net Eligible Costs	$99,016,092	$98,500,681
Promotion and Education (P&E)	-	$900,000
Research and Development	-	$1,650,000
Program Management	$4,989,415	$6,284,077
TOTAL Obligation	**$104,005,507**	**$107,334,758**
Year over Year change %	-3.1%	

Exhibit 7: Manitoba Summary of Costs 2013-14 (Steward Obligation is 80% Net Costs)

Steward Obligation	2014	2013
Share of Net Eligible Costs	$ 10,012,800	$ 9,700,000
Promotion and Education (P&E)	$ 720,000	$ 700,000
Research and Development	$ 25,000	$ 50,000
Program Management	$ 1,818,842	$ 1,833,850
Surplus to Return	($ 1,500,000)	-
TOTAL Obligation	**$11,076,642**	**$12,283,850**
Year over Year change %	-9.8%	

Exhibit 8: BC Summary of Projected Costs for 2014 (Steward Obligation is 100% Net Costs)

Steward Obligation	2014
Share of Supply Chain costs	$ 55,512,500
Promotion and Education (P&E)	$ 1,000,000
Research and Development	-
Program Management	$ 4,375,000
Operational Costs for 2014	**$ 60,887,500**
Start Up costs	$ 7,500,000
Start up working capital needs	$ 16,000,000
TOTAL Obligation	**$ 84,387,500**

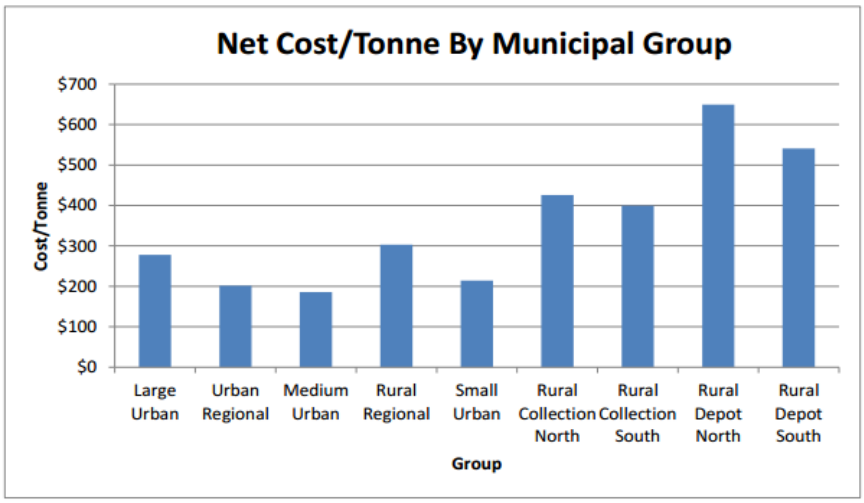
In Saskatchewan and BC the deposit return programs for beverage containers will be maintained and this means that high value aluminum will continue to be handled through depots and not collected through the new programs. This will affect program revenues. Ontario does not have a deposit return program for non-alcoholic beverages so this revenue stream stays in the program.

Exhibit 9: Financial Performance of Details for Available Programs (2012)[34]

Costs	Current Programs		
	Manitoba	Ontario	Québec
Net cost per tonne	$246.70	$272.30	$180 (2010 data)
Program management as a % of net cost	13.8%	2.4%	3%
Net cost per capita	$15	$19	$15
Recycled kg per capita	60.3	69.6	83

Waste Diversion Ontario (WDO) has conducted analysis on the program costs by type of municipality – which gives an indication of the differences in program costs between urban and remote communities. WDO identified differences ranging from $186/tonne in a medium-sized urban municipality to $649/tonne for a rural depot in the northern area of the province.

Exhibit 10: Ontario's Per Tonne by Municipality Type[5]



Québec has indicated that from 2005 program initiation to 2010 eligible net costs of recycling dropped 16% from $215 to $180 per ton. From 2000 to 2010 municipal residential curbside recycling performance increased 44%. Ontario's Blue Box program is generally a more expensive program compared to Manitoba's, on both a per tonne (by 10%) and a per capita basis (by 27%). Ontario accepts more material than Manitoba in its recycling program such as a greater variety of plastics which are more expensive to recycle.

[3] For Manitoba and Ontario numbers: CSSA Discussion Paper for Annual General Meeting, Packaging & Printed Paper Programs across Canada: Look Back & Look Forward, October 31, 2013.
[4] For Quebec numbers: used data from EEQ Annual Report (2012) tonnage recycled, population data from Statistics Canada, and calculations for costs.
[5] Waste Diversion Ontario 2013. 2012 Blue Box Program Financial Trends. December 3, 2013. http://wdo.ca/files/6513/8610/0703/2012_Blue_Box_Financial_Summary.pdf

1.4.2 *Estimated Program Costs – Atlantic Canada EPR Program*

Program costs typically found in other provinces include:

- Supply-chain costs (e.g. net costs of collection and processing from municipal authorities);
- Promotion and education (e.g. from municipal authorities and the PRO);
- Research and development (R&D) activity undertaken by the PRO, and
- Program management / administration (e.g. PRO management including information technology, accounting services, auditing and verification of municipal costs, and even PRO payment of some provincial government enforcement costs).

The following exhibit presents *a partial* program cost estimate to provide a general *indication* of what producers might be obligated to contribute in Atlantic Canada for supply chain and promotion and education costs reimbursed to municipal/regional authorities. The information presented is based on available information from other jurisdictions adjusted for population. Assumptions made are listed following the exhibit.

R&D costs have not been included at this time because it is uncertain whether a separate R&D program is applicable for the Atlantic Canada region as there has been significant R&D activity in other provinces. Also for this preliminary estimate, current service providers are assumed to maintain their role in delivering promotion and education so this cost is included in the estimates below and is typically included in the net eligible costs to be reimbursed by producers.

Current recycling cost data was not available from all jurisdictions for this study. However, preliminary producer obligation estimates have been derived using current program diversion data from all four provinces, and other assumptions listed below the table. Nova Scotia and PEI have the most stable programs in place where diversion and cost data have remained relatively the same over recent reporting periods; however New Brunswick and Newfoundland and Labrador are currently undergoing transformational changes in their waste management systems so their costs are expected to change substantially over the coming years.

Cost estimates will change according to specific program components adopted. Note that the revenues from the current deposit return programs are expected to remain with the program operators in these assumptions (see Section 1.4.3).

The significant line item not included at this time is the overall Program Management costs for the PRO, which would include such things as information technology systems, accounting processes, management, data auditing and verification work, and reimbursement of provincial enforcement costs. A PRO would need to develop cost estimates for this part of the program.

Note: These partial cost estimates are a starting point for further analysis going forward with program planning. More accurate estimates may be developed as program planning proceeds.

Exhibit 11: Preliminary (Partial) Estimates of Steward Obligation Amount for Supply Chain Costs in 2018-19 (Potential Launch Date for EPR)

Statistics	PEI	NS	NB	NL	Atlantic
Population served					
Provincial population	140,204	921,727	751,171	514,536	2,327,638
Population access to recycling %	100%	100%	100%	100%	100%
Packaging and paper diversion					
Amount consumed per capita (kg)	78	78	78	78	78
The total market of packaging and paper (t/per capita by population)	10,967	72,098	58,757	40,247	182,070
Target % collection (*Example of 60%* provinces may choose a different %)	60%	60%	60%	60%	60%
Target tonnage (t / % of market)	6,580	43,259	35,254	24,148	109,242
Preliminary producer obligation amount for supply chain costs and promotion and education reimbursement					
Packaging and paper net $/t	425	400	425	475	431
Packaging and paper total $	$ 2,796,557	$ 17,303,604	$ 14,983,112	$11,470,534	$ 46,553,807
Producer obligation at 80% reimbursement	80%	80%	80%	80%	80%
Producer obligation $ at 80% reimbursement	$2,237,246	$13,842,883	$11,986,490	$9,176,427.48	$ 37,243,046
Producer obligation at 100% reimbursement	100%	100%	100%	100%	100%
Producer obligation $ at 100% reimbursement	$2,796,557	$ 17,303,604	$14,983,112	$11,470,534	$ 46,553,807

The *estimated* producer obligation amounts are for supply chain and promotion and education reimbursements only and are the result of progressive calculations as follows:

- **Provincial populations** are based on the Statistics Canada 2011 Census.
- **Population access** percentages specify the proportion of residents expected to be served in a future EPR program based on anticipated levels of service once current infrastructure plans are fully implemented (see Section 2.2).
- **Population served** is derived from the total population multiplied by the population access.
- **Packaging and paper per capita** is the estimated amount of materials consumed by residents in each province. This is an average of the rates calculated for Ontario, Manitoba, and British Columbia (69kg, 109kg, and 56kg respectively). A more specific calculation should be developed as part of program implementation which accounts for the relatively high tourist contribution to material volumes in PEI.
- **Total Market** tonnages are the result of per capita rates multiplied by population served in each province.
- **Target % packaging and paper** is the desired aggregate rate for diversion/recycling of materials in each province. The rate selected for this analysis (60%) is the rate for Ontario.
- **Packaging and paper target tonnages** are the result of market tonnages multiplied by the target percentage.
- **Packaging and paper net costs per tonne** are adjusted Ontario values. This will depend on what materials are included. The base estimate is equivalent to the "rural south" cost of $400/t in Ontario (see Exhibit 10), then costs are adjusted upward to reflect the balance of urban/rural settlement and proximity to end markets.
- **Packaging and paper total costs** are the result of multiplying target tonnages by net costs per tonne.
- **Producer obligation percentages** are set to the desired level for Atlantic Canada based on interview findings.
- **Producer funding obligations** are the annual reimbursements for eligible costs obtained by multiplying the tonnage total costs by the producer funding obligation percentages.

Key Uncertainties:

- Waste packaging and paper per capita (ranging from 56kg to 109kg)
- Net costs per tonne (ranging up to $600/t)
- Based on programs that include steward fees for boxboard (in Halifax boxboard is composted not recycled).

1.4.3 Deposit Return Systems for Beverage Packaging

Deposit return systems for beverage packaging exist in all four jurisdictions. The programs are funded by consumers and are managed directly or indirectly by public agencies under legislative or regulatory mandates. The packaging included in the deposit return programs across all four jurisdictions are very similar. The following summarizes the respective programs.

- Nova Scotia: The deposit return system for beverage containers was established in 1996 under the province's Solid Waste Management Regulations and is managed by the RRFB Nova Scotia through a network of licensed independently owned and operated "Enviro-Depots". The program is a "half back" deposit system under which 50% of the deposit on each container is refunded upon return.

- New Brunswick: The New Brunswick Beverage Container Program operates under the authority of the 1992 *Beverage Containers Act*. Distributors are directly responsible for collecting and recycling the containers that they introduce into the New Brunswick market. Soft drink distributors established Encorp Atlantic Inc. as a means to work collectively in an effort to meet their obligations under the Act, while ANBL (Crown Liquor Corporation) manages their own containers and obligations. Both Encorp Atlantic Inc. and ANBL have submitted beverage container management plans acceptable to the Minister. The New Brunswick program is a "half back" deposit system under which 50% of the deposit on each recyclable container is refunded upon return. Refillable beverage containers are managed by way of a "full back" scheme. The Department of Environment and Local Government licences independently owned "Redemption Centres" charged with counting and sorting the containers returned by consumers.

- Prince Edward Island: Since May 2008 all non-fillable beverage containers, except those for dairy products, have been part of the province's beverage container management system which operates a half back deposit return program with containers being returned to container recycling depots. The program is provincially operated.

- Newfoundland and Labrador: The Used Beverage Container Recycling Program has been operating since 1997 and is managed by the Multi-Material Stewardship Board under the authority of the Waste Management Regulations. It operates with 50% back on alcohol beverage containers; and approximately 70% back on non-alcoholic containers. Surpluses from the program go to the Waste Management Trust Fund. Containers are returned to a network of Green Depots operated under licence to the MMSB.

Beverage Container Recovery Rates

National data collected on beverage container recovery rates consistently shows the high rates of recovery achieved by deposit return systems in contrast to non-deposit return systems. Recent data shows that deposit return jurisdictions have a total recovery rate of 84% and non-deposit programs have a recovery rate of 52%[6].

[6] CM Consulting 2012, Who Pays What Report: An Analysis of Beverage Container Recycling in Canada

Exhibit 12: Jurisdictional Collection Rates, All Beverage Containers, 2010[7]

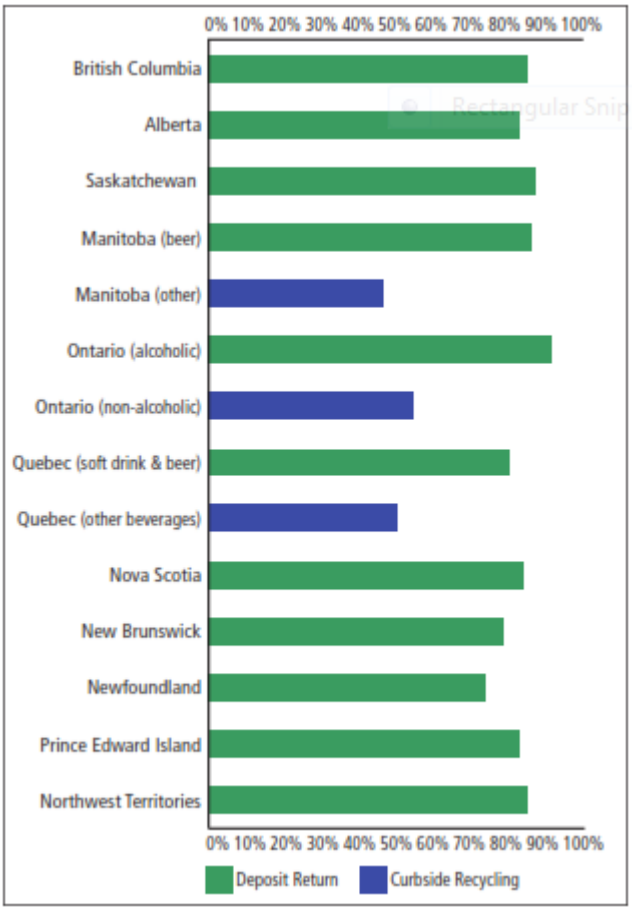
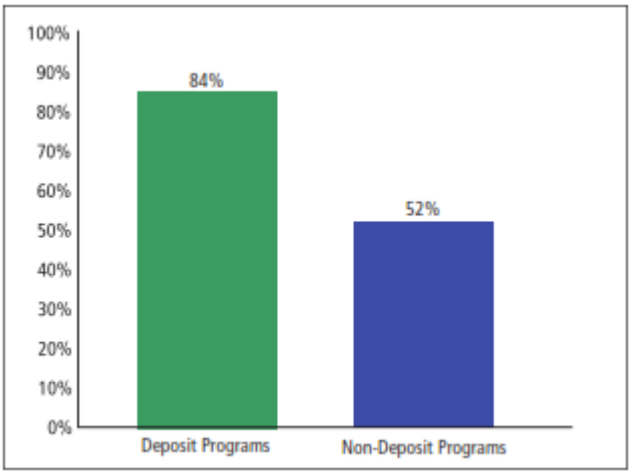


Exhibit 13: Deposit Return Program Performance 2010[8]



Note: It is recommended that beverage packaging continue to be managed through the deposit return systems. This may be specified in a regulation.

[7] CM Consulting 2012, Who Pays What Report: An Analysis of Beverage Container Recycling in Canada
[8] CM Consulting 2012, Who Pays What Report: An Analysis of Beverage Container Recycling in Canada

1.4.4 Producer Contribution Percentage

Exhibit 14 presents the % producer contributions used in other Canadian waste packaging and paper programs including Manitoba, Ontario, and Québec, BC (2014) and Saskatchewan (2015)[9].

Exhibit 14: Five Canadian Models that Involve Producers in Funding % Net Costs

	Current Programs			Planned Programs	
	Manitoba	Ontario	Québec	BC	Saskatchewan
% Net Costs Paid by Industry	80%	50%	100%	100%	75%
Model	Municipality-Operated	Municipality-Operated	Municipality-Operated	Industry-Operated (May 2014)	Municipality-Operated (January 2015)

Advantages of Requiring 100% Producer Contribution

- **Québec was the first province to set a precedent and move to a 100% shared responsibility EPR model while retaining municipal control of collection and processing**. Moving from 80% to 100% does not mean loss of control by regional authorities (that would only happen in a full EPR model where producers are designated in a regulation to control collection and processing, such as in BC). Québec increased their percentage of producer funding to their shared responsibility model in an incremental fashion, moving up the percentage scale every couple of years. These planned increases to the contribution amount were outlined in a regulation, and the province ensured the retention of municipal control of collection and processing. This type of change may be stated in a regulation. Note that Québec has also mandated that producers pay 50% of the cost of disposing of residuals at the materials recovery facility (non-recyclables or contaminated recyclables – the other 50% is shared with municipalities).

- **A higher percent contribution will ensure that the vast majority of recycling costs are covered and would decrease the reliance on landfill tipping fees to subsidize recycling expenses.** Municipal and regional authorities in New Brunswick indicated that a 100% producer financing contribution is desirable for this new program because in some regions of New Brunswick the tipping fees on landfill materials help cover the costs of recycling programs (cross-subsidy). If there are strong drivers to increase waste paper and packaging recycling (targets, action plans, regulations), then there will be less material being sent to landfill which will reduce revenues and increase total recycling costs simultaneously. In addition, taxpayers will be relieved of the financial responsibilities for waste that they were not parties to designing or using. For this reason, regional operators are aware that to make this transition financially sustainable and most effective from an environmental perspective, the highest level of producer contribution is important.

[9] Saskatchewan's program was originally set for launch in 2014 but has been delayed until 2015 to allow time for infrastructure to be in place in all regions of the province to ensure a standard level of service is in place.

- **It's possible that national retailers located in Atlantic Canada are already over-charging Atlantic consumers for costs that they are obligated to pay to EPR programs in other jurisdictions**. Often, national retailers set their prices nationally and therefore it is possible that Atlantic consumers are indirectly contributing to recycling programs in other provinces because the producer costs in other provinces are built into the costs of packaging and products which are in most cases marketed on a national basis. Setting a higher percentage contribution ensures that Atlantic costs will be covered and financing will flow to collectors and processors based in Atlantic Canada.

Disadvantages of Requiring 100% Contribution / Advantages of Requiring 80% Contribution

- **Municipalities should be cautioned to not view the producer funding as "additional" funding that they will have on top of current recycling costs covered by property taxes.** Under a new EPR model, the general public will expect to see associated reductions in their property tax bills for specific recycling collection costs which will now be financed by producers rather than the tax base. Municipalities across all four provinces will have to deliver on this expectation when this new program is implemented to ensure that the true EPR model of transitioning costs from the taxpayer base to producers is fully realized. If the Atlantic program is set at 80% producer funding municipalities can still charge taxpayers for a small portion (~20%) of recycling collection costs so the demand to see these costs completely removed from the property tax bill will be reduced.

- **The volume of waste packaging and paper to be recycled in Atlantic Canada is much smaller than other provinces due to lower populations.** The costs to administer the program ("back-office" services such as information technology, accounting services, staff, etc.) largely remain the same regardless of how much volume of waste packaging and paper is recycled, so in provinces with lower volumes due to lower populations the costs to run the program can be much higher than in provinces with higher populations. In Manitoba the program management cost is almost 14% of net costs while in Ontario it is 2.4%, and Québec 3%. Atlantic Canada's program will likely be slightly more expensive than the others and similar to Manitoba's rate, if a 100% producer contribution amount is used.

Note: The % contribution may be designated in a regulation.

1.4.5 Exemption Options to Consider

Current Exemptions in Existing Programs

The following table presents current exemption conditions, called "De Minimis" thresholds, below which companies would not need to contribute financially to program operations.

Exhibit 15: De Minimis Conditions to Exempt Producers in Existing Programs

Details	ON	MB	BC	QC
Exemption Conditions	<$2M in revenues; or <15 tonne waste packaging and paper supplied onto market. Newspaper sector is exempt.	<$750,000 in revenues from MB market	<$1M in revenues; or <1 tonne waste packaging and paper supplied onto market; or Business operates as a single point of retail sale and is not supplied by or operated as part of franchise, chain or under a banner; or Is a registered charity.	<$1M in revenues; or <10 tonnes waste packaging and paper supplied onto market.
Flat Fee for Small Business?	No	No	Yes: $150 flat fee annually to submit declaration. $550 for producers that supply 1-2.5 t waste packaging and paper to market; $1200 for producers that supply 2.5-5 t waste packaging and paper to market	No
Population (2013)	13,538,000	1,265,000	4,582,000	8,155,300

In other programs, producers that meet any of the De Minimis criteria are required to register with the stewardship organization and sign an annual declaration indicating they fall within the exemption threshold. Manitoba, a province with a small population compared to the other provinces in the exhibit above, is applying a much lower threshold for exemptions due to its smaller business base compared to the other provinces listed. It is important to select a De Minimis threshold that would make sense for Atlantic Canada as an entire region.

Only one Canadian program has proposed using a flat fee for low volume paper and packaging producers. This approach has proved difficult for the BC program launch. In an effort to provide a level playing field which is indeed an important aspect for producers who desire fairness in the program, utilization of a flat fee for very small volumes of packaging and paper placed on the market has resulted in confusion about the program and entire sectors of businesses have stated that they are not willing to participate and have launched advertising campaigns to halt the launch of the program until further consultation takes place. Putting the onus on small businesses to estimate and track the amount of waste packaging and paper they produce and place onto the market in order to determine if they fall within can be viewed as burdensome.

The Atlantic Business Community

There is a smaller business base in Atlantic Canada compared to all other provinces. For example, preliminary data available from Industry Canada[10] shows that for 2011 in all of Atlantic Canada's four provinces combined there were:

- 18 paper manufacturing businesses
- 1820 food and beverage retail stores (grocery, specialty, alcohol)
- 352 general merchandise / department stores
- 380 office supply / stationary stores.

The highest nine revenue-earning companies out of the 18 paper manufacturers identified have less than $650,000 in annual revenue. There is a larger food and beverage retail sector and within this group, the highest portion of revenue-earners (representing approximately 910 out of 1820 businesses), have approximately $1.5M in annual revenue.

Recommendations:

- **Further impact analysis may be needed on the Atlantic business sector**: A more detailed impact assessment of the businesses that contribute packaging and paper onto the Atlantic market is warranted prior to recommending whether an exemption is preferable or not. It would be best to have the analysis conducted on 2-3 options (e.g. no exemption, and 1 or 2 threshold exemptions) to allow for a comparison among options, leading to a well-informed decision with a full understanding of the potential burden on small business.

- **Conducting market analysis on the Atlantic business sector demonstrates that Atlantic governments have the interests of the Atlantic business community in mind**. Other provinces have left the establishment of exemptions up to a Producer Responsibility Organization (PRO) to decide in their Program Plan and this has proven to cause confusion and a perception of major financial impacts to small businesses in some provinces (e.g. BC). It has resulted in strained public relations among the PRO and local business community, as well as between regulators and the local business community who feel abandoned.

Note: Exemptions may be written in a regulation.

[10] Industry Canada SME Benchmarking Tool. Accessed April 2014. http://www.ic.gc.ca/eic/site/pp-pp.nsf/eng/home

1.5 Processes to Define and Verify Eligible Net Costs

Developing a new shared responsibility EPR model includes defining the eligible net costs to be reimbursed by producers. This sub-section reviews existing process to define eligible net costs.

1.5.1 Defining and Verifying Eligible Net Costs

Defining eligible net costs of recycling is currently done differently among programs – see below.

Ontario's Approach :

In Ontario, the eligible net costs are outlined in a Program Plan developed by the PRO, and approved by WDO. The 2002 Waste Diversion Act required a Program Request Letter from the Minister of Environment to WDO to authorize development of the program. The Program Request Letter outlined that the Program Plan should include:

- The *method* for municipalities to use to calculate the total net costs incurred for recycling;
- The *funding formula* to be used for determining payments to municipalities, including variations in costs dependant on north/south and urban/rural differences; and
- A funding *performance incentive* to encourage program efficiency and effectiveness.

WDO, together with Stewardship Ontario (PRO) developed the calculation method for municipalities, the funding formula to determine payments to municipalities, and all related incentives to encourage program efficiency and effectiveness. These are all outlined in the Program Agreement – a contractual arrangement between Stewardship Ontario and WDO. An annual datacall by WDO collects recycling program cost, volume, and system type information from all communities. The data from these communities is verified, analyzed, and entered into the municipal funding cost model.

Cost containment: there are extensive policies and practices that municipalities must follow to receive their funding contribution such as: following WDO guidance for awarding contract arrangements that reduce costs; using WDO sanctioned service delivery frequencies and type of collection services; using WDO guidance for service sharing arrangements; participating in municipal data call audits; and providing data to WDO on revenues, capital expenditure planning, and annual budgets.

Net Eligible Costs Defined in the Ontario and Saskatchewan Programs Include:

- Where the collection service is contracted, payments to contractors;
- The amortized cost of collection containers;
- Where the collection service is delivered with local government staff:
    1. The amortized cost of collection vehicles;
    2. Collection operating costs including:
        - Salary, overhead and payroll, staff training expenses
        - Vehicle repair and maintenance, and fuel
        - Advertising expenses such as radio airtime, graphic design, printing, postage etc.
        - Licenses and permits, insurance
        - Utilities, rent or lease costs, taxes
        - Interest on debt to acquire buildings, equipment or vehicles
        - Information technology for program service
        - Legal costs for program service

Manitoba's Approach:

In Manitoba, the eligible net costs are outlined in an approved Program Plan[11]. MMSM uses funding rates according to municipal categories based on population size. An "efficiency standard" was introduced as the basis for setting the funding rate for each category. Manitoba's table of costs per metric tonne is as follows.

Population Category	Rate per metric tonne *
0 - 1,000	$324.22
1,001 - 5,000	$234.68
5,001 - 15,000	$190.46

Manitoba's Efficiency Standard used to Evaluate Municipal Costs[12]

1. An annual datacall collects recycling program cost, volume, and system type information from all participating communities. The data from these communities is verified, analyzed, and entered into the municipal funding cost model.

2. Communities will be sorted into categories based on population, and the median cost for each population group will be determined based on the average net per tonne recycling costs for those communities within that population category.

3. Communities within each population category will be paid 80% of the median net cost per tonne for that population category. This will determine the "efficiency standard" for that group for that particular year.

4. Communities operating at a cost below the efficiency standard will receive funding at a level greater than 80% of their cost while those communities that are operating at a cost higher than the efficiency standard will receive less than 80% of their cost, thus providing an incentive to lower costs.

5. During Year 1, criteria are established to define whether recycling programs should be considered to be operating at best practice. The reported cost for communities that do not meet the best practice criteria will not be included in the median net cost calculation. As with program costs that are analysed to be statistical outliers, the costs for such communities will not be used to calculate the efficiency standard for any particular population category. However, those communities still will be eligible to receive recycling support payments.

6. If a community or group of communities is of a sufficient population size or contains other distinctive characteristics that drive its recycling costs, consideration will be given to creating another population category for the purpose of calculating recycling funding rates.

[11] MMSB PPP Program Plan (2009). http://stewardshipmanitoba.org/wp-content/uploads/2013/MMSM_PPP_Program_Plan_June_22_09_Plan_and_Appendices.pdf
[12] IBID

Québec's Approach:

In Québec, the funding formula for municipalities to follow was developed by the government and written into the regulation. Some municipalities, particularly the largest ones, are not happy with the formula.

The importance of avoiding arbitration between producers and municipalities has been important in this province. In 2011 Québec moved from a negotiation process to one with a clear set of rules on eligible municipal expenses and a set amount for administrative overhead (8.55% of net costs). RecycQuébec does the necessary quantification and activity based accounting to verify municipal net costs (similar to the WDO role in Ontario).

They have 6 basic municipal cost brackets based on differentiation by municipal size, population and other factors. Cost formulas are different depending on which group a municipality is in. Municipalities are penalized for being late with filing their costs for payment by EEQ (PRO).

1.5.2 Summary Points on Eligible Net Costs

- **Some provinces delegate the development of municipal cost formulas to the PRO and it is outlined in a Program Plan, while other governing bodies develop their own municipal cost formula**. Atlantic Governments may wish to review in detail both of these formulas and decide if they wish to develop a formula for their regulation or delegate to a PRO.

- **Some provinces use variable cost rates to encourage efficiency**. In Manitoba, if a municipality is operating at a cost below the efficiency standard they will receive funding at a level greater than 80% of their cost while those communities that are operating at a cost higher than the efficiency standard will receive less than 80% of their cost, thus providing an incentive to lower costs. Atlantic Governments may wish to consider this issue as they move forward with further analysis of municipal cost formula assessment.

- **In all EPR programs where producers fund a percentage of municipal net program costs, there is a requirement to verify eligible net costs**. This verification process is extensive. It typically requires adherence to use of formal methodologies outlined in a program plan and verified by auditors. Municipalities, regional commissions, and other parties involved in collection and processing in Atlantic Provinces will be faced with the following types of changes: they will need to ensure that approved formulas to monitor and track waste packaging and paper collected and processed are utilized by service staff; they may have additional processes to implement such as formal approval of expenses by their own auditing service / accountants; and they must to be open to extensive scrutiny regarding their costs by PRO third party auditors who may randomly audit their submitted expenses. Expenses that may not be included in net costs submitted for reimbursement typically include: revenue from processed material sales; processing fees charged at municipal MRFs; revenue from sale of containers; or revenue from grants or other funding.

Note: The process to define the methodologies used for tracking costs may be outlined in a regulation (as in Québec), or left up to producers to define in their Program Plan. The verification process used to audit collection and processing expenses is typically developed by the PRO.

1.6 Designated Packaging and Paper

It is recommended that the recycling programs be standardized with the same designated lists of packaging and paper for all four Atlantic Provinces. The types of packaging to be included in the program may be listed and examples cited.

The description of paper may be more inclusive than in some programs and not be limited to printed paper but rather also include general use paper (which, if adopted, would move away from using the "PPP" terminology since the category would then be more broad-based than packaging and printed paper and include all general use paper). The following list was developed based on a review of material lists from other Canadian programs. The material lists recently published in the newly released National Stewards Guidebook by the Canadian Stewardship Services Alliance[13] may also be useful to examine specific material types in more detail.

1.6.1 Definitions

The program regulation may include definitions of packaging categories, and of paper. For example:

- Generic descriptions of packaging:
  - *Primary packaging*
  - *Secondary packaging*
  - *Transportation, distribution or tertiary packaging that goes to a household*
  - *Service packaging designed and intended to be filled at the point of sale and "disposable" items sold, filled or designed and intended to be filled at the point of sale*
  - *Packaging components and ancillary elements integrated into packaging (BC Recycling Regulation)*

- Generic descriptions of paper:
  - *Paper that is not packaging, but is printed with text or graphics as a medium for communicating information, and includes telephone directories, but does not include other types of bound reference books, bound literary books, or bound text books (BC Recycling Regulation)*
  - *Paper that is not packaging, but is used in the home for copying, writing or other general use.*

[13] Canadian Stewardship Services Alliance 2014. National Steward Guidebook – Part Three Material Lists. http://guidebook.cssalliance.ca/table-of-contents/

1.6.2 Designated Material Lists

The following list is drawn from current programs. Note that another way of looking at the material lists more specifically by packaging type is presented in Appendix B[14].

- Priority standardized list of materials conventionally collected and recycled in many programs:
  - *Dry and clean paper (fine paper)*
  - *Newspapers, flyers*
  - *Glossy magazines, catalogues*
  - *Envelopes*
  - *Paper egg cartons*
  - *Paperback books & phone books*
  - *Corrugated cardboard*
  - *Boxboard*[15]
  - *All plastic containers, tubs and lids*
  - *All plastic bags including: grocery, retail, bread, dry cleaning & frozen food bags, bubble wrap*
  - *Glass bottles and jars*
  - *Steel & aluminum cans*
  - *Aluminum foil & plates*
  - *Paper packaging coated in wax or plastic*
  - *Aseptic packaging*
- Other materials which are not widely recycled presently in the Atlantic region:
  - *Aerosol containers*
  - *Plant pots, Flower box/wrap*
  - *Plastic clamshells*
  - *Hot and cold disposable drink cups, disposable plates, take-out and home delivery food service packaging*
  - *Food wraps provided by the grocer for meats, fish, cheese, etc.*
  - *Prescription bottles*
  - *Gift wrapping/tissue paper*
  - *Construction/craft paper*

Over time packaging will change and newer packaging materials and designs will appear in the marketplace. Waste characterization studies and reviews of in-store packaging are techniques that may be used to review and update the listing of designated materials.

Note: Definitions of waste paper and packaging may be outlined in a regulation. The designated material lists may be referred to in the regulation as a companion document to facilitate regular updating.

[14] Canadian Stewardship Services Alliance (CSSA) Guidebook, 2014

[15] Boxboard is composted as part of the organics program in Halifax Regional Municipality (and is widely recycled in the rest of Nova Scotia)

1.6.3 Non-Recyclable Packaging

The primary objective of the packaging and paper framework can be to both maximize the diversion of materials from disposal but also to encourage and support the redesign of packaging so that it is sustainable and meets design for environment goals such as reduced use of materials and enhanced recyclability. The CCME's October 2009 Canada-Wide Strategy for Sustainable Packaging prompts these concepts and adopted the Sustainable Packaging Coalition's definition of sustainable packaging as follows[16]:

> *The SPC definition states sustainable packaging:*
>
> *1. Is beneficial, safe and healthy for individuals and communities throughout its life cycle*
> *2. Meets market criteria for performance and cost*
> *3. Is sourced, manufactured, transported, and recycled using renewable energy*
> *4. Maximizes the use of renewable or recycled source materials*
> *5. Is manufactured using clean production technologies and best practices*
> *6. Is made from materials healthy in all probable end-of-life scenarios*
> *7. Is physically designed to optimize materials and energy*
> *8. Is effectively recovered and utilized in biological and/or industrial cradle-to-cradle cycles.*

In non-packaging EPR programs producers are obligated to not only to fund and run the collection programs but are also given direct responsibility for the processing and marketing of the collected materials. In the case of EPR programs for tires for example producers have had to fund and support the development of processing capacity and end markets. This has led to the building of processing capacity that did not exist before and investment in new end market businesses that have used the recycled tire crumb rubber for the manufacture of a whole new range of products including truck mats, roofing shingles, animal bedding and garden mulch.

In a shared responsibility EPR framework the ability to influence packaging design is less direct than under a full EPR model where producers would be responsible for not only funding but also program operations. In a shared responsibility framework municipalities will operate the system from collection through to processing and be funded by producers but producers will have no direct operational role, so the goal of sustainability needs to be tempered by the realities of the shared roles and responsibilities of both municipalities, provinces and producers.

Despite the fact that direct influence over packaging design does not exist under the shared framework in contrast to a full EPR model there are two areas where public sector influence over packaging sustainability and non-recyclability can be exercised – through the designation of packaging and materials for collection and through the promotion and adoption of sustainability guidelines.

Packaging Designation

The framework could help to drive packaging sustainability by ensuring that the designation of packaging and materials is as broad and as comprehensive as possible and that the list of eligible

[16] CCME Canada-Wide Strategy for Sustainable Packaging, October 2009, page 9

materials for collection is adjusted over time to account for changes in materials and packaging designs in the marketplace. Municipalities would have the ability under the shared responsibility framework to collect materials which were traditionally viewed as non-recyclable – various types of multi-laminate packaging or stand up pouches for example – and seek processors and markets for the collected materials. Any such collection and processing would become a financial obligation of the producers under the agreed funding formula if this packaging was "designated". Any higher costs paid by municipalities to collect and process problematic packaging would be eligible for funding by producers under the shared model.

The limitation on this approach is the inability of municipalities to directly invest in or otherwise support new markets as is done by producers in full EPR programs. Municipalities might collect problematic packaging and find there is no market for it. Such a problem already exists with glass containers in many parts of the Maritimes and could also occur with packaging which is more complex and expensive to process and difficult to market.

The ability of municipalities and provinces to designate new packaging for eligibility under the framework could however serve to let producers know that their financial obligations could change as pressures develop to collect newly marketed packaging types. While the relatively small market represented by the Maritimes might have a limited influence, it is known that packaging stewards are starting to track and cost problematic packaging which "disrupts" the normal collection and processing systems. Penalties are starting to be assigned to producers whose packaging designs and materials create costly challenges for processing and marketing such as glass containers with ceramic caps and paper reinforced with plastic. This is being done in France, and in Ontario differential higher fees are being assigned to certain types of non-coded plastics and for differently coloured PET bottles (clear/blue PET - $0.0037/unit; coloured $0.009/unit)[17].

Another approach to "disrupter" materials is being used in Québec. In Québec non-recyclable/non-designated packaging that gets collected by the curbside recycling programs has been estimated to be as much as 15% of the total weight collected. Under the terms of the provincial/Recyc-Québec agreement with ÉEQ producers are obligated to pay 50% of the net costs of managing these residual materials which are then disposed of. These costs are therefore some incentive to producers to not only assist through promotion and education in minimizing non-recyclable materials entering the collection system in the first place but also to consider packaging design. There is however no evidence to date to suggest that the costs have had any influence and it is unclear whether this financial incentive is sufficient to actually result in any packaging redesign.

Promotion and Adoption of Sustainability Guidelines

One jurisdiction which appears to have seriously attempted to address the issue of packaging sustainability and eco-design is Québec, where by 2016 producers will be required to determine actual costs for each product category managed under EPR programs and to adjust costs based on environmental characteristics and end-of-life management. In the packaging area this policy is supported by the *Voluntary Code for the Optimization of Containers, Packaging and Printed Matter*

[17] Victor Bell, Environmental Packaging International, Product Stewardship Institute webinar presentation, March 19, 2014

developed by ÉEQ. The Code is a proactive approach which supports companies in the adoption of best practices for the design of packaged products and printed matter in consideration of the product life cycle. The Code's general objectives are as follows[18]:

- Help companies better understand and manage the environmental impacts of their packaging and printed matter;
- Provide a framework to increase consistency among packaging optimization initiatives;
- Give companies the tools to design better packaged products and printed matter;
- Create a directory of information on packaging optimization and best company practices;
- Promote and recognize signatory companies.

The initiative has worked to gather information on packaging sustainability, establish a multi-disciplinary committee of experts, develop and apply a survey of packaging, set up focus groups and meet with business associations. Over the years since the beginning of the initiative there has been a staged review of particular sectors looking at manufacturers and retailers; fast food and quick service restaurants and general services. The review will lead to work being undertaken in 2014 and next year to review and adjust the ÉEQ stewardship fees and individual packaging and materials contribution schedules in light of the findings. This work will likely lead to "disrupter" fees and will in addition support the provincial objective of segregating costs by products and materials rather than aggregating costs of collection and processing all together.

Note: Atlantic Governments may wish to consider the issue of non-recyclable packaging and the examples identified on methods to attempt to address it.

[18] Éco-Entreprises Quebec, Voluntary Code for the Optimization of Containers, Packaging and Printed Matter, Product Stewardship Institute presentation, October 18, 2011

1.7 Stakeholder Roles and Responsibilities

Defining major stakeholder roles and responsibilities will be important as the program is designed. The following outlines some key considerations for reflection in relation to the following stakeholder groups: producers, municipal / regional authorities, and provincial regulators.

1.7.1 Producer Responsibilities

Definitions of a Producer / Steward

Producers may be defined in a regulation with obligations described. This may include individual obligations or collective obligations. In both Canada and the EU producers have most often formed collective organizations to undertake their responsibilities. This demonstrates that businesses prefer to operate based on economies of scale to improve efficiencies.

Examples of definitions are outlined below for consideration.

From the Saskatchewan Household Packaging and Paper Stewardship Program Regulations:

> *A producer is:*
>
> *a) The brand owner with respect to the packaging or paper, unless the brand owner is a non-resident brand owner;*
>
> *b) If there is no brand owner as described in clause (a), the person that first imports the packaging or paper into the jurisdiction; or*
>
> *c) If there is no brand owner as described in (a) or person that first imports the packaging or paper as described in clause (b), the purchaser of the packaging or paper outside of the jurisdiction that purchases it for use in the jurisdiction.*

The CSSA Steward Guidebook[19] offers the following definitions:

> *A brand owner is an organization or company that is the registered trademark holder associated with the packaging or printed paper. If the brand/trademark is unregistered, then the steward responsible becomes the organization or company that owns the intellectual property rights to the brand/trademark.*
>
> *A first importer is a company that is the first to take title to, possession of or control of products in one of the regulated provinces where the brand owner does not have residency and where a Canadian-based non-resident brand owner has not joined the stewardship agency as a voluntary steward.*

[19] Canadian Stewardship Services Alliance 2014. National Stewards Guidebook. http://guidebook.cssalliance.ca/table-of-contents/

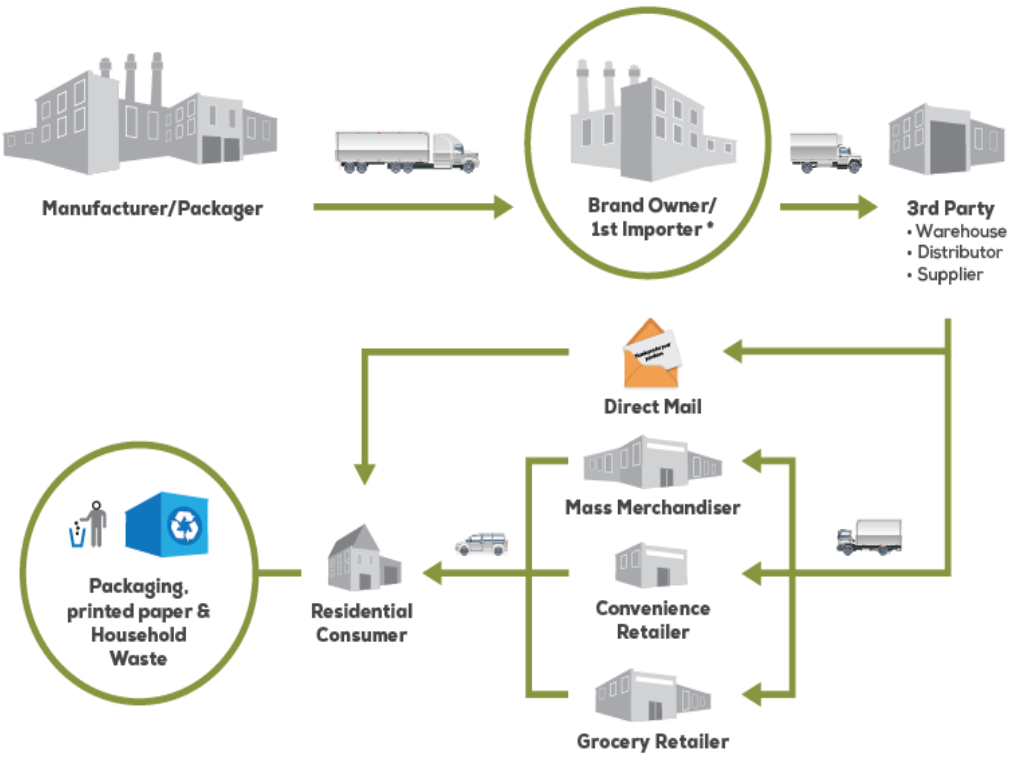
A franchisor is similar to a brand owner in the obligated provinces since it is considered to be:

a) A business or organization that is a registered trademark holder or licensee of a trademark/brand;

b) A business or organization that owns or is a licensee of intellectual property rights of a trademark/ brand;

c) A resident franchisor is the responsible steward for all packaging and printed paper that is supplied by its entire franchise system in these provinces. A Canadian-based franchisor not resident in an obligated province can become a voluntary steward.

The CSSA Steward Guidebook demonstrates what it means to be a steward and who exactly the Brand Owner or 1st Importer is in the packaging supply-chain as follows[20]:



*The brand owner and first importer that directly or indirectly supplies to the residential consumer is a steward.

[20] Canadian Stewardship Services Alliance 2014. National Stewards Guidebook. http://guidebook.cssalliance.ca/table-of-contents/

Responsibilities of Producers

The designated responsibilities of producers may be outlined in a regulation. The following example is adapted from the Saskatchewan Household Packaging and Paper Stewardship Program Regulations[21].

- Designated producers are (individually or collectively) responsible to meet regulatory obligations;
- Producers are responsible for funding of net municipal program costs but have no direct operational responsibilities;
- Producers share responsibility with municipalities for program promotion and education (if this is decided upon);
- Producers have an obligation and an interest with respect to compliance promotion and ensuring participation from all potentially obligated producers;
- Producers have reporting requirements to the Provincial Government(s) or to a third party designated by the Provincial Government(s) (see Section 2.4 Implementation Plan);
- Producers have responsibilities to produce audited financial statements on an annual basis.
- Producers are responsible for preparing and filing a stewardship plan (by a specified date) indicating how they individually or collectively propose to fulfill their obligations and to meet the established diversion targets;
- Producers could be required to include certain components in their Program Plan. Examples are provided below.
    - *Mandate of the Stewardship Agency /PRO*
    - *Responsibilities of Stewards*
    - *Responsibilities of Board of Directors and Advisory Committee(s)*
    - *Outline of the PRO Management Structure*
    - *Definitions and Sources of Waste Packaging and Paper*
    - *Overview of How the Program Represents Interests of Stakeholders*
    - *Funding Process for Collection and Recycling Costs*
    - *Definition of Recycling Net Eligible Costs*
    - *Measurement and Verification Processes to be Used for Recycling Expenses*
    - *Collector and Processor Policies and Procedures to be Used*
    - *Dispute Resolution Process*
    - *Communications Plans*
    - *Program Launch Date*

Note that in most other Canadian programs, producers typically needed up to one-year to develop and submit a Program Plan in fulfillment of stewardship regulations.

[21] Adapted from the Saskatchewan Household Packaging and Paper Stewardship Program Regulations.

1.7.2 Municipal / Regional Authority Roles and Responsibilities

Under a shared responsibility framework municipalities or regional service authorities or delegated contractors as applicable would continue their current roles and be directly responsible for the collection of designated material through current programs.

Responsibilities of a Municipal or Regional Service Commission

Current responsibilities for the processing and end marketing of collected recyclables would remain the same in the new framework. Examples of specific responsibilities that may be outlined in a regulation include the following.

- Municipalities or regional service authorities continue current arrangements for establishing and/or operating curbside and/or depot collection systems for the designated waste packaging and paper materials;
- Municipalities or regional service authorities continue current arrangements for processing collected materials;
- Municipalities or regional service authorities would continue current methods of program promotion and education and these expenses would be included in the list of net eligible costs for reimbursement by producers. There may also be promotion and education costs borne by producers for communicating the new program to obligated stewards during program implementation, these costs would also be included in program administration costs of the producer organization.

Atlantic governments may also chose to define the places from which waste packaging and paper will be collected in this program, and this may be included in a regulation. For example:

- Waste packaging and paper would be collected from the following sources:
    - *Single family residences*
    - *Multi-family residences*
    - *"Streetscapes" – public spaces including sidewalks, public squares/spaces, parks, beaches*
    - *Small business commercial generators as an adjunct to or as part of a residential recycling collection route, at municipal/regional authority discretion.*

1.7.3 Provincial Roles and Responsibilities

Under a new EPR program the provinces or their delegated authorities would be responsible for providing the necessary regulatory framework to ensure that producer obligations are enforced, and that producers are operating in accordance with their Program Plan.

Responsibilities of Provincial Regulators - Enforcement

Enforcement responsibilities would be undertaken in accordance with each provincial authority, and where it makes sense to do so provinces may decide to work together to conduct joint enforcement activity where producers operate regionally across more than one province.

Enforcement activities include both assisting the PRO to obtain participation via financial contributions from obligated producers, and also other possible enforcement activity such as conducting waste audits of material destined for landfill to gauge success of promotion and education programs, or even performance audits of the PRO for example.

When necessary, provinces and/or their delegated authorities should be prepared to initiate enforcement action against free riders to obtain participation from all obligated producers. This could be documented as part of a regulation that outlines how the PRO is primarily responsible to obtain participation and following repeated attempts to secure participation they would then be justified to involve a provincial enforcement regulator who could then initiate actions to communicate with the producer and obtain participation. Other provinces have an informal process for this activity, although it could be formalized in a regulation if desired.

The following text box outlines how some provinces have approached enforcement.

Example of Enforcement Responsibilities - Québec's Program

In Québec enforcement of regulatory provisions is a shared responsibility of the Ministère du Développement durable, de l'Environnement et des Parcs and Recyc-Québec. Recyc-Québec reports to the Minister and is responsible for developing and interpreting the applicable regulations and for monitoring individual EPR programs. Recyc-Québec enters into agreements with PROs or stewards with individual programs. These agreements and the regulations set out obligations for producers and each PRO, which must file their lists of registered members. These filings are key for enforcement action in situations where companies are "free-riding" on the program and not contributing. In such cases the Ministère will contact potential violators to review their obligations and obtain their commitment to participate in the EPR program.

Harmonization of the EPR regulations with the Environment Quality Act was initiated in 2013 with a view to streamlining and better facilitating the application of sanctions under the legislation for companies violating the requirements of the EPR programs. Criminal and administrative sanctions can be applied. To minimize the need for such action compliance promotion is undertaken by Recyc-Québec through such means as publicly available guides on both the EPR regulations themselves and the enforcement provisions.

Funding for these oversight and enforcement functions is provided by obligated stewards typically through their representative PRO. Under the provincial regulations, an "indemnity" is payable annually to Recyc-Québec to pay for the management costs and other related program oversight activities it undertakes. For the packaging and paper program operated by ÉEQ the rate is set at 2% of the annual compensation that is owed by the stewards to municipalities. This rate was initially set in 2010 at 3.25% but has progressively dropped over the past 4 years to the current 2% rate. The maximum that can be paid to Recyc-Québec is set in regulation as $3 million per year.

Similar provisions are made in Ontario where Stewardship Ontario paid to Waste Diversion Ontario and the Ministry of Environment $2,176,000 in 2012 for costs that related to the oversight of the both the blue box recycling program and the municipal household and special waste program – the two EPR programs operated by Stewardship Ontario.

Ongoing improvement in the oversight of the Quebec EPR programs is supported by an EPR Monitoring Committee which was created in 2012 and is made up of representatives of the Ministère, Recyc-Quebec, the Conseil Quebecois du commerce de detail (CQCD), the Canadian Federation of Independent Businsess (CFIB), the Retail Council of Canada (RCC) and the Conseil patronal de l'environnement (CPEQ). This body meets four times a year to identify needed improvements in the oversight and in the implementation of EPR programs in the province.

1.7.4 Dispute Resolution Mechanism for all Stakeholder Relations

Disputes appear to be common in other Canadian waste packaging and paper programs. In Ontario, there are disputes over "eligible net costs" and the level of scrutiny undertaken to have 50% of net costs paid by producers. Arbitration is currently being utilized to settle disputes in Ontario between municipalities, represented by the Association of Municipalities of Ontario, the City of Toronto (which is not an AMO member) and Stewardship Ontario.

It is recommended that the Atlantic Provinces consider the development of a formal dispute resolution mechanism to be put in place for resolving disputes between a stewardship association that pays net municipal costs and municipal or regional authorities that submit those costs. During program development, a list of eligible net costs and a process for cost verification is developed. In the event of a dispute, an agreed-to dispute resolution mechanism is important to resolve differences in an efficient manner.

1.8 Levels of Service

The development of provincial (and possibly regional – Atlantic wide) standards for collection is recommended in the interests of supporting a goal of having harmonized program elements across the region. Standards should reflect current municipal practice and differences in municipal size and population density.

Suggestions for standardizing levels of service under the new EPR framework are outlined below. Note that governments may require the development of standardized levels of service for any of these elements in a regulation and then leave it up to a PRO to articulate further in their Program Plan.

- Identify standardized levels of curbside and depot collection service for different sized communities and establish accessibility standards that recognize differences between urban areas and rural and remote communities.

- Identify standardized levels of service for the different sources of waste packaging and paper materials – e.g. single family residential, multi-family residential, streetscape, small business commercial. BC will be the first EPR program in Canada to require waste packaging and paper diversion from streetscape / public spaces province-wide, although some regions of Nova Scotia already require this (e.g. HRM). Consideration should be given to requiring this in the regulation. BC has defined the “streetscape" as:

    a) Sidewalks which are municipal property, which adjoin buildings in an urban commercial area and which are used for pedestrian traffic;
    b) Plazas or town squares which are municipal property and which are available to the public;
    c) Parks which are municipal property; and
    d) Roadside litter cleanups.

- Identify collection and processing standards that should be adhered to.

Note: Expectations for levels of service may be written into a regulation and guided by a provincial ‘levels of service’ policy if applicable. The specific details of how to achieve consistent and standardized levels of service may be outlined in a Program Plan.

1.9 Implementation Aspects to Consider Moving Forward

The following aspects of implementation of the framework are important to consider as the Atlantic Governments move forward with program planning.

- **The shared commitment to work together towards the goal of a streamlined Atlantic approach for key program elements (such as % contribution funding, designated material lists, levels of service policy, material fees, verification processes) rather than a province-by-province approach is a key message to producers and should continue to be a focus moving forward**: Having a goal of consistency among these key program fundamentals will facilitate easier negotiations with producers at the outset of program design. Each province will have their own specific processes and timetables for regulation development, approvals, consultations, monitoring and reporting preferences, etc. and these implementation aspects can roll out separately as needed in each jurisdiction, including an incremental roll-out of the program depending on provincial readiness. Provinces may continue to work together on the key operational elements that should be the same among all four provinces, such as % contribution funding, designated material lists, levels of service policy, material fees, and verification processes that the PRO will use to verify net collection and processing costs.

- **Due to the greater proportion of small and medium-sized businesses in Atlantic Canada compared to other Canadian jurisdictions, provinces may wish to conduct further study on potential exemptions for this region (see Impact Assessment, Section 2.3)**. Analysis on various options for exemption thresholds, including no exemption threshold, would help inform discussions with potential obligated stewards, would help increase an understanding of the potential program revenue base, and would demonstrate due diligence for considering the unique situations of small businesses in this region.

- **In the development of program regulations, consideration should be given to potential issues of competition.** Program regulations in other provinces do not address the competition issue between compliance schemes. The newly created CSSA is concerning for some small businesses and the issue of monopolistic practices is being watched by stakeholders and the Competition Bureau. It would be wise to solicit advice from the Competition Bureau regarding monopolistic PRO schemes and what path the Atlantic Region might want to pursue in this regard.

- **The primary issue from the perspective of a PRO will be the need for cost containment by municipal / regional service authorities responsible for collection of material**. The issue of cost containment has been a major focus in other programs and it can have a negative impact on municipal autonomy and ability to expand programs. There will be many changes for municipal and regional collectors and processors in terms of data management, data monitoring and data verification under the new program. These changes will need to be discussed thoroughly with these stakeholders during program development activities (see Section 2.3 Proposed Strategy for Change Management).

- **Detailed analysis on the various methods in use for calculating net municipal costs ("the funding formula") in existing programs is warranted to understand full impacts to municipalities prior to writing a regulation**. Details that are important include a review of each program's list of eligible net costs, what the cost formula is for each program; whether there are variations for cost formulas based on population or location (e.g. programs are more expensive to operate in remote locations with lower populations) such as the cost variations used in Québec's program. This information will help Atlantic Governments understand the potential issues surrounding eligible net costs for their regional operators and they can then decide if they wish to mandate variable cost formulas in their regulations as Québec has done in their regulation.

- **Certain industry sectors, such as magazines and newspaper associations, are adamantly opposed to financial contributions resulting from their materials being designated in EPR programs**. In the past, newspaper stewards have been considered differently compared to other stewards in stewardship programs in other provinces because of the recognition that they provide a public benefit, that they can make a significant contribution to public education on recycling. Newspaper producers in Atlantic Canada might not be in favour of the potential elimination of the in-kind contribution model currently used in Nova Scotia under which newspaper stewards provide their recycling contributions through in-kind advertising rather than funds. Other Atlantic provinces do not have agreements in place with newspaper stewards. In BC, the newspapers association are now obligated stewards that are required to contribute funds but they are very opposed to this new role. In Ontario and Québec newspaper stewards contribute funding towards the program as well as in-kind advertising.

- **Key messaging strategies outlined in Section 2.3 (Change Management) are very important to manage the upcoming changes for potential stewards following the release of new regulations**. Some provinces such as BC and Québec are in the middle of legal battles with some industries who are opposed to becoming obligated stewards. Government regulators should be aware of the potential for a similar situation in Atlantic Canada and may want to engage in bilateral discussions with other governments in BC and Québec to find out the status of this situation and any key recommendations these governments may have (in terms of lessons learned) to avoid similar disputes.

- **There are currently differences in waste packaging and paper recycling programs among Atlantic Provinces**: Each province is at a different stage in their waste packaging and paper recycling programs in terms of community access, range of materials accepted, program requirements (legal versus voluntary), public engagement, as well as data availability on packaging and paper tonnages collected. These differences might necessitate a slightly different timeline for implementing the program among provinces with one or more rolling it out before others.

- **The estimated program costs have been based on programs that include steward fees to cover boxboard in recycling programs**. In Halifax Regional Municipality boxboard is composted, not recycled whereas elsewhere in Nova Scotia this material is widely recycled. Atlantic governments, together with producers should decide how to address this issue moving forward.

- **A key issue for the residential sector will be their expectation to see property tax reductions as a result of the new producer funding**. Since the intent of the program is to shift program costs from the municipal tax base to producers, this issue will likely come up during consultation activities and during program roll out. Government representatives may need to consider this issue, consult with municipal associations and prepare responses in advance of consultations with municipalities.

- **Although not addressed in the infrastructure services review, Atlantic Governments may wish to consider how to include First Nations in program planning.** Both the Ontario and Saskatchewan programs include involvement of First Nations. They are considered to be the same as a municipal authority and have similar responsibilities for monitoring and reporting of materials collected for recycling. The Saskatchewan program plan specifically includes the interests of First Nations by providing financial incentives to deliver curbside and multi-family building collection services and/or to operate depots[22]. This is an important consideration in Atlantic Canada, as Nova Scotia has 13 First Nations communities, New Brunswick has 15 First Nations communities and 28 Indian Reserves, PEI has 2 First Nations communities, and Newfoundland and Labrador has 4 First Nations communities.

[22] Adapted from MMSW Program Plan (2013). Waste Packaging and Paper Stewardship Plan
http://www.mmsk.ca/sites/default/files/documents/pdf/plan/MMSW-WPP-Stewardship-Plan-Dec-12-2013.pdf

2 Proposed Implementation Plan

The proposed Implementation Plan includes the following:

Section 2.1 Proposed Waste Packaging and Paper Program Delivery Principles
Section 2.2 Infrastructure Services Review
Section 2.3 Proposed Strategy for Change Management
Section 2.4 Proposed Program Performance Strategy
Section 2.5 Suggested Workplan (to be adapted by Atlantic Governments)

Note that this Implementation Plan is to be considered a working guidance document for Atlantic Governments as they move forward individually or collectively in more detailed program design planning. It may be used as a starting point for more detailed planning to be undertaken by each jurisdictional government authority in Atlantic Canada.

2.1 Proposed Waste Packaging and Paper Program Delivery Principles

The fundamental objective of the new framework for the Atlantic provinces is to increase the diversion of waste paper and packaging from disposal, shift the financial responsibilities currently borne by taxpayers for recycling programs to the producers (manufacturers, brand owners and importers) of designated packaging and paper, and serve the needs of the four Atlantic provinces, individually and collectively.

To achieve this objective, the following eight principles are proposed to guide program design:

1. Respect for the 4rs Hierarchy: program design considers first the importance of 1) reducing waste, 2) reusing waste, 3) recycling waste, and lastly 4) residuals management.

2. Inclusiveness: To allow participating municipalities and local governments, including First Nations, to design their recycling program to meet the specific needs of their community in all four Provinces. Recycling programs can be delivered by municipal /regional authorities or contracted to private suppliers. Each municipality retains responsibility for establishing, promoting and maintaining their own recycling services[23]. This recognizes established municipal roles, responsibilities and experience in waste diversion and recycling.

3. Fairness for unique communities: Based on demonstrated need, municipalities in remote northern communities in Labrador should be eligible for additional assistance payments to offset higher costs of shipping materials to larger communities for processing and marketing[24].

[23] Adapted from a program design option identified in the Multi-Material Stewardship Manitoba 2013 Municipal Recycling Program Registration Guide & Forms. http://stewardshipmanitoba.org/wp-content/uploads/2013/10/Municipal-Guide2.pdf
[24] IBID

4. Fairness regarding treatment of industry sectors across jurisdictions: Consideration should be given to the respective costs per kilogram of the same material produced by the same sector in other Canadian jurisdictions[25]. A consistent approach to how a sector is treated across provinces is important within the Atlantic Region.

5. Consistency: Consistency among levels of service offered is important. For example, the program design should have a plan to improve levels of service in under-serviced areas to a standardized level set out in a Program Plan, while respecting appropriate levels of service designations for all types of communities.

6. Clarity: The roles and responsibilities of all stakeholders (regulators, municipal and regional authorities, third party service providers, the producers and the public) should be documented and understood by all.

7. Accountability and transparency: Use of an agreed upon process and formal methodology to monitor performance, verify data, and report on performance, as outlined by a performance monitoring and reporting strategy with clearly outlined reporting obligations. This is relevant for all stakeholders involved.

8. Public outreach: recognition of the importance of appropriate consultation and engagement with all stakeholders during program design and planning, including the public, municipalities, regional authorities, third party service providers, and the business sector.

These proposed principles may be revised by Atlantic governments as needed and may be included in a regulation.

[25] For example, the newspaper service sector pays approximately a half a cent per kilogram produced on the Ontario market, while in BC they are being asked to pay 20 cents per kilogram. Consistency across the Atlantic market is important.

2.2 Infrastructure Services Review

2.2.1 Overview of Infrastructure Services Currently in Place

The following exhibit highlights key aspects of the infrastructure, materials, and processing related to paper and packaging recycling across Atlantic Canada. Results are presented by province and discussion of key points follows the table below.

Exhibit 16: Current (May 2014) Infrastructure and Services in Place

Infrastructure / Levels of Service	New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland and Labrador
Infrastructure				
Infrastructure/service type coverage:	71% curbside / 29% depot	100% curbside / 0% depot	100% curbside / 0% depot	65-70% curbside[26] 0-5% depot
Remote areas:	0% no service	0% no service	0% no service	30% no service
	-	-	-	NW Newfoundland Some remote communities in Labrador
Plans in place for additional infrastructure or new service:	RSC2 – 2015 RSC3 – 2014	No	No	Central and Western Newfoundland begin operations in fall 2014, by 2020 full coverage
Is there a need for new infrastructure expansion?	Yes	No	No	Yes, Infrastructure plans in place and will be implemented 2014- 2019
Materials Collected				
# of materials collected / comprehensiveness of program in *urban* areas	Medium	High	High	Medium
# of materials collected / comprehensiveness of program in *rural* areas	Low	High	High	Low
Processing				
Public ownership of facility:	89% municipal	87% municipal	0% public	100% municipal
Private operation of facility:	16% private	85% private	100% private	84% private
Term of contracts in place?	3-5 years	3-5 years	2018	3-5 years
Materials which processors indicate they have difficulty marketing:	Wax coated packaging, plastic bags, EPS, plastic film, glass, newsprint, plastics 3 and 6, clamshells	Plastic film, glass (colored), EPS, coffee cups, aerosols, milk cartons and gable tops, some boxboard and paper go in green bin, frozen juice containers	Boxboard limitation to 20% in bales	Plastic bags, clamshells, glass, styrofoam, plastics 6,7, and no number plastics

[26] Personal communication with MMSB. By end of 2014 curbside service will be at 70% and there will no longer be depots used. By 2016, curbside service will be 95% coverage. Remaining infrastructure improvements to increase access to 100% population will be completed by 2019-2020.

2.2.2 *Discussion of Infrastructure Services Review*

The following observations were based on information gathered from twenty-four interviewees and analysis of infrastructure services currently in place and planned for each province.

- **There is currently a wide variation in levels of service for waste packaging and paper recycling across the Atlantic Provinces.** Nova Scotia and PEI have the most complete and consistent infrastructure with province-wide curbside collection offering a comprehensive list of materials included and demonstrating high diversion rates. Newfoundland and Labrador lacks coverage in some remote areas but areas that are serviced currently offer predominantly curbside collection. Significant investments to improve levels of service across Newfoundland are expected to be implemented by the end of 2020. New Brunswick has province-wide coverage, a mixture of curbside and depot collection methods without legislated bans on landfilling recyclable materials.

- **Nova Scotia and PEI currently have high levels of infrastructure service in both urban and rural areas, with very high community access to service.** Both provinces also have a high number of materials accepted for recycling and high diversion rates. There are no significant plans to increase access in either province, however some processors in Nova Scotia are exploring equipment and system upgrades in urban areas (e.g. Halifax Regional Municipality) to improve efficiencies even further.

- **There is a need for further analysis regarding the financial implications of composting boxboard versus recycling boxboard in Halifax Regional Municipality.** Although the material is widely recycled elsewhere in Nova Scotia, it is composted in Halifax Regional Municipality and national paper producers strongly encourage composting this material in areas where it is not as economically feasible to recycle it. This issue needs some review in planning the new EPR program including decisions with respect to whether this material will need different treatment in terms of steward fees if it is being composted not recycled, and how it will be calculated in diversion tonnages for waste paper/packaging.

- **Newfoundland and Labrador is already implementing a plan to consolidate waste management across the province and has committed investments to improve infrastructure where needed.** Infrastructure improvements and increases in levels of service have seen major changes, and they will complete this implementation by 2020. Northern parts of the province, particularly the northwestern tip of Newfoundland, and Labrador are not fully integrated into the new central processing system yet, but the majority of communities will have full access by 2020 given the new funding that EPR will bring.

- **New Brunswick is undertaking discussions toward a new provincial waste management strategy and will be determining where service level improvements can be made and how the system should be structured.** Considering EPR at the same time will encourage coordination and improved recycling service, and then specific infrastructure investments may be identified to bring the level of service up to a similar level across New Brunswick to meet the other Atlantic Provinces. Curbside service expansion is already underway or planned for implementation this year in some areas (e.g. RSC 2 and 3). However, there is

no immediate plan to implement curbside collection in some others (e.g. RSC 10 and 12). The return on facility investment in numerous small communities may not be high compared to investment in large urban processors that have capacity to accept additional material from elsewhere in the province.

- **There are differences in existing regulations among Atlantic Provinces which could impact the timeline to adopt new EPR programs for recycling**. Nova Scotia, PEI, and Newfoundland and Labrador all have recycling regulations in effect along with landfill bans on recyclables, and an over-arching waste diversion strategy. New Brunswick does have regulations but does not have landfill bans or a supporting strategy for waste diversion. New Brunswick may need to conduct additional consultations to educate and inform stakeholders about new changes, and they may also need a regulation to restrict the landfilling of recyclable paper and packaging.

- **The infrastructure services review has demonstrated that the shared responsibility EPR model is the best choice for Atlantic Canada in part because of the high proportion of publicly-owned infrastructure**. Private sector ownership of facility operations is 100% in the smallest province of PEI, however in the other three larger provinces with extensive infrastructure - public sector investment in processing facilities is consistently high (approximately 90% in New Brunswick, Nova Scotia, and Newfoundland and Labrador).

- **Bringing systems to a similar level of service across provinces and the region could have multiple benefits in terms of improving efficiency and performance of recycling programs.** For example, promotion and education can be coordinated to a greater degree; material sorting at source could be improved by processors operating to a consistent standard; transfer of materials within and between provinces for bulk processing and shipping could be facilitated by having similar materials definitions and standards. Some savings could be achieved by joint municipal tendering and contracting for marketing recyclables because of material and quality consistency. There may also be some small opportunities for developing recycling processes in the region to avoid shipping materials over great distances to reach markets almost at a loss.

- **In an EPR program there will be new requirements to accurately track material flows and costs for collection and processing for the purpose of cost verification, and collectors and processors must be open to new auditing processes.** Nova Scotia and PEI are expected to be in a relatively good position to implement new processes because regional authorities already conduct detailed data tracking to receive RRFB funding (in Nova Scotia) and fulfill legal obligations (in PEI). In addition, there are fewer processors in PEI due to the small size of the island so new training will likely not take much time. New Brunswick and Newfoundland and Labrador will likely need longer time to build capacity among collectors and processors in the use of new accounting methodologies and data tracking processes that are developed by the PRO. This is not just a matter of weighing and tracking volumes, but involves adopting a robust and consistent set of accounting procedures that is quite different from current practices.

2.3 Proposed Strategy for Change Management

2.3.1 Introduction

The process of switching from the current system of a product stewardship approach to packaging and paper recycling to a shared responsibility EPR approach in all four provinces will necessitate a strategy to manage change to ensure a smooth transition of existing programs to the new framework.

Change management is a tangible set of practices that is part science and part art. The science is the use of a structured methodology and tools to transition people from where they are today to where they will be at a point in the future. The art is customizing the methods and approach based on the existing culture and the unique needs of the project[27].

Regardless of the methodology used all change management initiatives have similar basic elements as depicted in the graphic below. Each element is discussed following the Exhibit.

Exhibit 17: Change Management Process

[27] Sue Ann Bartecko, MPA, PMP, "Common Misperceptions of Change Management" article post on linkedin.com

2.3.2 *Impact Assessment to Target Audience*

Managing change could start with the identification and assessment of the change on the target audience group. The assessment could include how they will be impacted and to what degree the impacts will affect them. This assessment helps to determine the scope and breadth of the change program elements required to facilitate a successful transition.

As part of this process, it is suggested that the primary stakeholder groups relevant to this program be identified – a preliminary list of these stakeholders are presented in the following exhibit. This list could be considered as a starting point for program planning, and the intention is that this list would be expanded upon as program planning begins.

Exhibit 18: Preliminary Stakeholder List

Stakeholder Category	Primary Stakeholders Identified
Municipal government	Local municipalities in all 4 Provinces Union of Nova Scotia Municipalities Union of New Brunswick Municipalities Municipalities Newfoundland and Labrador Federation of Prince Edward Island Municipalities
Regional government / delegated service authority	Regional waste authorities / service commissions in all 4 Provinces Island Waste Management Corporation (IWMC) in PEI
Producers of packaging and paper - *associations*	Atlantic Food and Beverage Processors Association Retail Council of Canada Canadian Newspapers Association Canadian Beverage Association (CBA) Canadian Federation of Independent Grocers Food and Consumer Products of Canada (FCPC) Canadian Stewardship Services Alliance (CSSA)
Chambers of Commerce	Atlantic Chamber of Commerce
Processors	Scotia Recycling
First Nations	Nova Scotia has 13 First Nations communities. New Brunswick has 15 First Nations communities and 28 Indian Reserves. Newfoundland and Labrador has 4 First Nations communities. There were no First Nations communities identified in PEI.
General Public	Residential sector in all four provinces.

The assessment would include some analysis of how each stakeholder group will be impacted by the new program and to think about what degree the impacts will affect each group. This assessment is recommended to help to determine the scope and breadth of the change program elements required to facilitate a successful transition. It is recommended that economic analysis on potential exemption thresholds (including no exemption) be a part of this assessment for small and medium sized businesses.

2.3.3 Leadership to Drive Communication Principles and Consistent Messaging

Provincial representatives and decision-makers in each of the four jurisdictions may review and confirm the preliminary stakeholder engagement principles to guide their communication and outreach activities as program planning evolves if they wish. It is recommended that the principles for engagement, and the key messages used for target stakeholders are consistent across all four provinces.

Principles for Engagement

A consistent and open approach to consultation and communication with stakeholders is recommended and the following consultation principles are proposed[28]:

- Early involvement: Stakeholder involvement begins at the design of the consultation plan;
- Inclusiveness: The consultation process involves a broad cross-section of stakeholders;
- Efficiency: Stakeholders are provided with timely notice of consultation opportunities and adequate time to participate;
- Effectiveness: Stakeholders are able to determine the implications to their interests by reading documentation that is the subject of the consultation with ease – it is professionally written with clarity for the target audience;
- Accountability: Stakeholders are advised on how their responses were considered and associated rationale for decisions being made based on consultation activity in subsequent steps of program development, and
- Transparency: Proceedings and results of activities that are part of the consultation process are properly documented and available for public scrutiny.

Key Messaging to Target Audiences

Messaging regarding the proposed framework is a key part of the change management strategy. The two most impacted stakeholder groups are:

1. **Municipalities or authorized service delivery agents** (e.g. regional service commissions in New Brunswick and IWMC in PEI) that currently operate recycling programs; and
2. **Producers of packaging and paper** - represented by stewards who are participants in other packaging and paper programs operating in other provinces.

Proposed messaging for these two groups is outlined below.

[28] Adopted from British Columbia Recycling Regulation Guide, page 7

Messaging to Municipalities / Regional Authorities & Commissions

The following are some of the key messages that Governments may wish to emphasize as they progress with their consultations plans.

- ✓ *The proposed framework is consistent with the commitments the four Atlantic Provinces made through the CCME's Canada-wide Action Plan on EPR approved by all Canadian provinces, territories and the federal government in October 2009.*
- ✓ *The proposed framework will relieve municipalities / regional authorities & commissions of the cost burden that they currently and historically have borne for the recycling services they provide (including curbside and depot recycling programs and the associated processing and marketing costs for collected materials).*
- ✓ *The new framework recognizes and respects the long term municipal / regional recycling experience and proposes building on that experience to develop more sustainable programs and higher rates of diversion.*
- ✓ *Municipalities / regional authorities & commissions will continue to operate the programs under the recommended shared model and will therefore continue have a direct relationship with their communities and residents and will continue to have a stake in how the programs operate.*
- ✓ *Municipalities / regional authorities & commissions will be prepared to be accountable for how recycling program costs are to be documented and verified.*
- ✓ *Experience with datacalls in other jurisdictions[29] indicates that the first effort to compile program data from municipalities typically includes significant inaccuracies as a result of: a) difficulty extracting data from local government data management systems; b) inconsistent interpretation of terminology among local governments resulting in inconsistent data reporting; and c) lack of experience allocating shared or blended costs to certain services. Typically a number of years of experience, supported by local staff training and implementation of a rigorous verification protocol will reach a steady-state of reliable data and all parties are willing to work towards this.*
- ✓ *The framework will provide opportunities to enhance recycling program harmonization, coordination and consolidation of materials marketing and the development of consistent and more standardized program promotion and education.*
- ✓ *Levels of recycling service will be developed and agreed upon and a determination of eligible net costs for reimbursement to municipalities for program operations will be agreed with the stewardship organization(s) and be formalized.*

[29] Adapted from MMSW Program Plan (2013). Waste Packaging and Paper Stewardship Plan http://www.mmsk.ca/sites/default/files/documents/pdf/plan/MMSW-WPP-Stewardship-Plan-Dec-12-2013.pdf

- ✓ *Municipalities / regional authorities & commissions with modest recycling programs may expand their programs to an agreed-upon consistent higher standard / improved level of service across the Atlantic Region. Any increases to current levels of service would be decided-upon together within current decision-making processes used by each jurisdiction (e.g. provincial regulators or third party designated authorities).*

- ✓ *The existing beverage deposit programs will be retained in all four provinces.*

Messaging to Producers

The implications for producers of the proposed framework are considerably different than for municipalities. The large national retailers, and national food or consumer product chains and brand name owners are already participating in similar programs, however regionally based companies that market exclusively within the four Atlantic Provinces which may be impacted are likely unfamiliar with EPR.

The following are some of the key messages that Atlantic Governments may wish to emphasize as they progress with their consultations plans.

- ✓ *The proposed framework is consistent with the commitments the four Atlantic Provinces made through the CCME's Canada-wide Action Plan on EPR approved by all Canadian provinces, territories and the federal government in October 2009.*

- ✓ *All four Provincial Governments have made a commitment to work together towards the development of a similar Atlantic program for managing waste packaging and paper. They have agreed on the model (shared EPR) and have agreed to continue to work together moving forward with program planning activity. Efforts will be made to harmonize key program elements important to producers (e.g. designated material lists, % producer funding, recycling cost verification processes, material fees, etc.), however - actual program implementation aspects such as communication strategies, monitoring and reporting requirements, and regulatory or program plan approvals is subject to the respective agendas of each provincial government.*

- ✓ *The proposed framework is a shared EPR model approach similar to that currently operating in Manitoba, Ontario and Québec and is planned for Saskatchewan. It differs from the BC model which is a full EPR model where producers are responsible for collection and processing province-wide.*

- ✓ *Producers will be designated as individually obligated stewards who are free to manage their own obligations or to do so collectively with others.*

- ✓ *Levels of recycling service which recognize variations in municipality size, capacity, location, housing mix and current practice should be considered in program planning.*

- ✓ *An agreement on the eligible levels of funding including a determination of an acceptable level of municipal administrative costs is considered important moving forward to avoid arbitration situations.*

- ✓ *Producers will be obligated to cover a portion of the costs for the management of the inadvertent collection of non-recyclable materials which are not designated for collection under the program. Québec is currently the only province requiring this agreement: management of residuals (estimated to be 15% of all collected material based on waste characterization studies) collected is shared 50% with municipalities and 50% producers. Each Atlantic government should consider this as a possible program element and outline their requirements in their regulation.*

- ✓ *A regional presence for obligated stewards could be maintained to avoid concerns that producers are based outside the region to ensure understanding of regional or local circumstances.*

- ✓ *The listing of designated materials for collection and recycling will seek to be broadly inclusive of all packaging and paper materials that producers put on the market (regardless of whether they are currently recycled or not) and will be updated based on regular reviews of materials in the marketplace conducted through such means as waste characterization studies for example.*

- ✓ *The existing beverage deposit programs will be retained and will continue to operate as they currently do completely separately from the municipal recycling programs.*

- ✓ *Promotion of efficiencies in the existing recycling infrastructure and collection and processing innovation is encouraged.*

- ✓ *Designated producers will have some responsibilities for engaging in and otherwise facilitating communication, promotion and education strategies in support of the proposed framework. These responsibilities should extend to all stages of the change management strategy.*

- ✓ *It is expected that producers individually or through established producer responsibility organizations will contribute to the promotion and education programs necessary to support municipal recycling programs.*

<u>Other Stakeholder Groups</u>

The only other stakeholder group to note regarding messaging would be the residential sector (assuming that the majority of the ICI sector pays for its own waste management and recycling costs and does not need to be considered further).

2.3.4 Communication and Engagement Activities as part of Managing Change

Optional stages of communication and engagement are outlined below with the caveat that each province has their own processes used for consultation and may deviate from what is outlined below. These stages can be considered as a package of ideas for each province to adapt and use as deemed appropriate.

Before Posting Draft Regulations

The communication and engagement activity at this stage could introduce the proposed program to stakeholders, and aim to gather feedback from stakeholders. A consultation paper outlining the rationale for and the key elements of the proposed new model may be used for early consultations in some jurisdictions. In addition, in-person meetings could be offered for the most affected stakeholder groups to more openly discuss the changes and gather feedback if a jurisdictions wishes to conduct this type of consultation activity at this stage.

After Posting Draft Regulations

Each of the four Atlantic jurisdictions has their own formal protocols related to the posting of draft regulations and consultation prior to legislative adoption. Standard consultation protocols will be followed upon the release of any necessary draft regulations. Most provinces post draft regulations for public review and comment in keeping with commitments to increased transparency. Deadlines for review and comment are usually posted.

After Adoption of Regulations / During Program Launch Preparations

Following formal adoption of the regulations, producers will be formally aware about the requirement to develop a Program Plan. Typically, a six-month to one-year window is allowed for development of a Program Plan, which is then reviewed and approved by each Provincial Government.

Following approval of the Program Plan, there is a need for communication and outreach about the program to potential stewards and the general public. This could include a broad-based communications strategy with a primary message to promote awareness about the new producer funding but with emphasis that current programs will continue with current operators, as well as local outreach where needed to target audiences (e.g. potential stewards / local businesses). Promotion and education ideas could include hosting a hotline telephone inquiry number and having meetings with key business associations for example. Note that a PRO would likely be responsible to send out letters to all businesses introducing them to the new program and outlining the registration process to determine if they are obligated stewards. This is typically the stage where confusion may arise so particular attention to key messaging to manage this outreach is an important part of change management[30].

[30] For example, the notification regarding changes and the process for identifying whether a business is an obligated steward was a 31 page document mailed to all BC businesses which is was considered to be confusing to many small businesses.

The type of outreach activity will be dependent on current program structure in each jurisdiction and region, and whether programs are part of a regional waste commission or authority, shared or jointly managed with neighbouring municipalities or programs operated on their own.

Key messaging during preparation for program launch includes the following:

- ✓ *This is a program authorized by Atlantic Provincial governments to shift funding of recycling from taxpayers to producers. It is similar to many other EPR programs already operating in the jurisdiction, such as those for used tires, electronics, or oil for example.*
- ✓ *The program plan was designed by the private sector to meet requirements established by the provincial governments. Private sector associations (some Atlantic, some National) were involved in program development, and are providing funding on behalf of the private sector, in an organization called a Producer Responsibility Organization (PRO). (Note: some companies may act individually on their obligations).*
- ✓ *There will be monitoring and reporting requirements for the PRO administering the program. They must verify that the costs they are reimbursing comply with an agreed-upon process, they must report on their own activities including detailed program performance using established indicators to Government regulators, and they are often required (in a regulation) to produce audited financial statements annually.*
- ✓ *Both Atlantic businesses and National Retailers that operate in Atlantic Canada and generate packaging and paper could be potential stewards that might be required to contribute funding to the program.*
- ✓ *Understanding new responsibilities for the program might be cause for confusion but it should be done in a spirit of cooperation, and communicate that there are many options available to help stewards understand their new responsibilities. By working together, businesses, producer associations, and government regulators can all achieve success in continuing to lead Canada in recycling rates for packaging across the country.*

2.3.5 Training and Support

As the program is implemented, very specific training and support should be offered to those responsible for collection and processing of recyclables so that they are able to implement the accounting methods developed by producers in the Program Plan. These new methods will likely be outlined in a Program Plan.

2.3.6 Monitor / Continuous Improvement

The change management strategy includes a phase to monitor the implementation of the program, evaluate progress, and recommend improvements in the spirit of continuous improvement. See Section 2.4 for details regarding elements of a proposed program performance monitoring strategy. Some jurisdictions may have designated timelines for reviewing stewardship programs more broadly and this new program could feed into that process.

2.3.7 Summary

The following exhibit depicts how the elements of the Change Management process fit into a generic Project Management process.

Exhibit 19: How the Change Management Process Fits into the Project Management Process

2.4 Proposed Program Performance Strategy

Note: Atlantic Governments may outline in a regulation what specific performance monitoring activities they require in the program plan. Information presented in this section provides guidance on performance monitoring and may be adapted as necessary by Atlantic Governments in their program planning development activity.

This section presents ideas for a proposed Program Performance Strategy as follows:

- Development of Key Performance Indicators and Targets;
- Monitoring and Reporting on Performance; and
- Enforcement.

2.4.1 Development of Key Performance Indicators (KPI) and Targets

Development of Key Performance Indicators

The following exhibit presents the considerations in the development of selecting good indicators for program monitoring.

Exhibit 20: Considerations in Selecting KPIs[31]

What Makes a Good Indicator?	▪ Useful for operations, stewardship and public reporting ▪ Helps improve performance ▪ Communicates performance credibly ▪ Data can be collected reliably ▪ Data have been collected consistently over time to enable year-over-year comparisons
Quality Performance Information:	▪ Links policies, targets and performance ▪ Identifies key performance indicators ▪ Presents performance data in: trends over 3+ years, and absolute (i.e. total) and/or normalized (i.e. expressed in terms of the amount per key production variable, such as amount per unit collected, or amount per 10,000 population) terms ▪ Sets and communicates performance targets ▪ Explains shortfalls and actions taken ▪ Uses benchmarks for comparisons

There are six categories of core KPIs recommended for PROs and outlined in the left–hand column in the following exhibit[32].

[31] Stratos 2007. Performance Measurement and Reporting for Extended Producer Responsibility Programs: Reporting Guidance Document prepared for Environment Canada.
[32] Stratos 2007. Performance Measurement and Reporting for Extended Producer Responsibility Programs: Reporting Guidance Document prepared for Environment Canada.

Exhibit 21: Recommended Key Performance Indicators (KPI)

Category	Indicator	Rationale and Guidance
Awareness	% of Population aware of the program	▪ Rationale: The percentage of population aware of the program provides an indication of the effectiveness of the program in terms of reaching the target community for the program. ▪ Guidance: Calculate this indicator by determining the percentage of the target community that is aware of the program, compared with the total population of your targeted community. The indicator can be presented as a percentage.
Participation / Accessibility	(1) Participation rate (2) Average travel distance to a depot	▪ Rationale (1): The participation rate indicator provides the reader with important contextual information on both the scale of the program and its use. ▪ Guidance (1): Participation rate is calculated by dividing the number of program participants (e.g. number of households that actively participate in the program) by the overall size of the target community to whom the program is available. ▪ Rationale (2): While not as informative as the participation rate, average travel distance to a depot can be used to provide an indication of program accessibility in rural and remote areas found in some regions of Atlantic Canada which only offer depot service. ▪ Guidance (2): Identify how many (potential) program participants you have (that is, the size of the target community to whom the program is available), and roughly where they are located (e.g. within 1, 2, 3 kilometers, etc.). Calculate the average travel distance by building the sum of program participants (PP) multiplied by their respective distance (D), and dividing the result through the total number of program participants.
Collection	(1) Absolute collection (2) Collection rate (3) Absolute collection per capita	▪ Rationale: (1) Absolute collection refers to the total amount of a product collected. Absolute collection should be expressed as mass (tonnes or kilograms). ▪ Guidance: (1) Absolute collection – weigh total mass collected from all collection points. ▪ Rationale: (2) The collection rate indicator indicates program efficiency and effectiveness. The collection rate is the percentage of the total amount of material placed on the market that has been collected. ▪ Guidance: (2) Collection rate: Divide the mass collected by the mass placed on the market. ▪ Rationale: (3) Absolute collection per capita is the percentage of the product that has been collected relative to the size of the target community. ▪ Guidance: (3) Divide the absolute collection (mass) by the population.
Recovery and Recycling	Post collection fate of material (3)	▪ Rationale: It is recommended that the absolute quantity and percentage of materials treated in each of five categories be reported: (1) reused, (2) recycled, (3) disposal (incineration or landfill). ▪ Guidance: For all categories, express as percentage of mass collected.
Operational Efficiency	(1) Distribution of expenses (2) Cost per amount of collected material	▪ Rationale (1): To provide an overview of the relative allocation of funds to the different functions of the organization, or put overall expenses or resource use into context with the amount of collected materials. ▪ Guidance (1): Provide dollar value or percentage of program expenses including: program administration; post-collection costs, and awareness or market development. ▪ Rationale (2): measuring and reporting on the cost per tonne or kilogram collected material helps to demonstrate accountability to stakeholders. ▪ Guidance (2): Divide the total cost to operate the program in a fiscal year by the total amount collected and reused or recycled.
Management Performance	Progress against business plan goals and/or targets	▪ Rationale: The five elements of good management practice are policy, planning, implementation, controlling and monitoring, and management review. Reporting against the goals and/or targets of a business plan shows the level to which the plan is being implemented, and demonstrates that performance is being monitored and reviewed. ▪ Guidance: Report on action taken to achieve the goal/target, issues that were encountered and how they were resolved, and action that is yet to be taken to achieve the goal/target.

Targets

The development of specific targets associated with each KPI is important to drive program performance. In addition, it would be advantageous to include both aggregate and material-specific recovery targets. The EU Packaging Directive establishes targets for specific packaging materials, rather than packaging as a category. This has not been done in any of the Canadian programs. Targets which do exist are for the "basket of goods" of total packaging and paper recycled (e.g. BC 75%), although Ontario monitors actual packaging recycled by material.

Targets should be developed in association with producers and the steward organization. There can be plans for a phased upward adjustment of target over time in consultation with stakeholders and with sufficient lead time. Examples are presented below, drawn from targets used in other Canadian programs.

Exhibit 22: Examples of Targets for KPIs

Category	Indicator	Example of Target
Awareness	% of Population aware of the program	95% of population aware of program
Participation / Accessibility	(1) Participation rate (2) Average travel distance to a depot	95% participation rate Less than 5 km travel to a depot.
Collection	(1) Absolute collection amount (2) Collection rate (3) Absolute collection per capita	(1) Tonnage amount to be collected. (2) Collection rate 65% year 1-3, 75% by end of year 5. (3) To be determined in Program Plan by PRO.
Recovery and Recycling	Post collection fate of material (3)	(1) Target amount for recycling (80%) (2) Target amount for residuals management (20%)
Operational Efficiency	(1) Distribution of expenses (2) Cost per amount of collected material	To be determined in Program Plan.
Management Performance	Progress against business plan goals and/or targets	To be determined in Program Plan.

2.4.2 Monitoring and Reporting on Performance

The regulation may reference monitoring and reporting requirements expected by a PRO. The following are suggested inclusions:

- Geographic boundaries -The facilities or regions that will be included for monitoring and reporting.
- Organizational boundaries -Whether all business lines and activities are included in the report, and how sub-contracted activities should be reported on.
- Temporal boundaries -The time period that the report should cover (e.g. annual) and whether it should include trend information (three years is recommended). As well, the specific date for report submission should be included in the regulation.
- Monitoring metrics to be used -see KPIs and targets above, and specific formulas should be documented either in the Program Plan or in associated guidance (see below).
- That a verification process be followed -see below.
- The requirement for audited financial statements -the regulation should refer to the need for annual audited financial statements to be made publicly available.
- Components of Reporting - what the regulator requires in terms of a report. This could be basic information only or it could entail great detail. Examples below.

Verification Process

The infrastructure services review conducted for this assignment revealed that there is currently a wide range of types of infrastructure and levels of service in place at both the collection and processing stages among provinces, and not surprisingly, an assortment of data monitoring practices in place. Monitoring ranged from detailed tracking using formal methodologies recommended by provincial authorities for processors, and regional verification processes, to no data monitoring and verification at all.

Given the intention to work towards a goal of a harmonized Atlantic program using the same processes, the existence of a very wide discrepancy of program monitoring and verification activity among regions of each province is problematic. It is recommended that a process be undertaken to develop a guidance document for utilization of consistent terminology and data calculations to support monitoring and verification activity, targeted towards all stakeholders, similar to the process underway in Ontario. In 2013 the Ontario Waste Management Association, together with Canadian Standards Association (CSA), initiated the development of a recycling and verification guideline to provide regulators, service providers, stewards, and generators of waste with a common set of definitions and recycling performance measurements to ensure clarity on the flow of materials, from collection through to final disposition and a method to account for these flows. This type of guidance can provide increased transparency, accuracy, accountability, and information on the performance of a waste diversion system[33]. Atlantic Governments are encouraged to review the final version of this document and assess suitability for adoption to their program.

[33] Technical Guide: Recycling process, audit and verification guidelines (draft, unpublished).

Performance Reporting

It is important to include both performance data such as the KPIs as well as contextual information. This contextual information is crucial for understanding specific performance information, especially as systems are still being put in place during the first year of the program. Reporting is an iterative process and, as a starting point, the report may include a discussion of issues where full data and information are not yet available, and plans to address the identified issues. The report may provide current data and offer comparable data when available (e.g. previous years). The report could prevent contextual information and identify limitations associated with the data, especially during the first 1-3 years of program operation where new processes are being implemented. For an Atlantic-wide program it would be useful to have performance reported on an overall regional basis as well as by jurisdiction – this could be considered as a long-term goal.

An outline of the elements that may be included in an annual PRO report could follow guidelines established for other EPR programs such as those noted below.

Exhibit 23: Recommended Outline for a PRO Performance Report[34]

Example of Reporting Format for PRO Reporting

1. Program highlights
2. Organizational profile
3. Report profile
4. Vision and strategy
   - 4.1 Context, Management statement, Strategy and objectives
5. Governance
6. Performance management
   - 6.1 Policies, Monitoring Programs, Management system elements
7. Stakeholder engagement
8. Performance information
   - 8.1 Awareness
   - 8.2 Participation
   - 8.3 Accessibility
   - 8.4 Product collection, Post-collection management, Operational efficiency,
   - 8.5 Quality of service
   - 8.6 Management performance
9. Looking forward

[34] Adapted from: Stratos 2007. Performance Measurement and Reporting for Extended Producer Responsibility Programs: Reporting Guidance Document prepared for Environment Canada.

2.5 Suggested Workplan: Proposed Next Steps for Atlantic Governments

2.5.1 Proposed Next Steps

Atlantic Governments may wish to develop their own specific workplans to outline their next steps in program planning. The following next steps are proposed as generic guidance to assist Atlantic Governments toward the formation of their own workplans.

Exhibit 24: Proposed Next Steps

Next Step	Description
1. Finalize Timeline	A preliminary timeline for all four provinces moving forward has been presented in the following page. Suggest review and update of the timeline by each jurisdiction.
2. Review and confirm program principles (Section 2.1), designated materials list (Section 1.6), % producer contribution (Section 1.4)	Three key elements of the program that should be considered consistently across Atlantic Canada are: ▪ Program Principles ▪ Designated Materials List and Materials Definitions ▪ % Producer Contribution It is suggested that these elements be agreed upon prior to developing draft regulations.
3. Research and analysis on target audience impact	Conducting an impact assessment of the target audience is important to better understand the impact to potential stewards in the region. This assessment could be used to inform decision-makers about exemption options so that impacts to small businesses are understood and various options are considered (including the option of no exemption). In working towards a goal of having consistent programs across all four jurisdictions, it is recommended that if a De Minimis exemption is decided upon, that it is consistently applied across all four jurisdictions – otherwise the business community will strongly protest unfair treatment.
4. Research and analysis on municipal cost formulas	Analysis on municipal cost formulas used in other programs, including variable cost formulas to achieve efficiencies should be reviewed and decisions made with respect to whether Atlantic Governments wish to regulate their own cost formula or let the PRO develop it.
5. Finalize Change Management Strategy	Further professional guidance may be required to finalize a Change Management Strategy for each jurisdiction (draft presented in Section 2.3)
6. Develop draft regulations	As per normal regulatory development processes in each jurisdiction.
7. Communications and engagement	As per normal regulatory development processes in each jurisdiction.
8. Adopt new regulations	As per normal regulatory development processes in each jurisdiction.
9. Approval of Program Plan	Each provincial government authority will approve the Program Plan submitted by the PRO, which is typically submitted within a year of the regulation.
10. Program Launch	On a specified date, program is formally launched.

2.5.2 Proposed Timeline

A preliminary timeline to correspond with the next steps outlined is presented on the following page. It could be used as a starting point for Atlantic Provinces to build on or revise as needed taking into account each province's circumstances.

Exhibit 25: Preliminary Implementation Plan for Atlantic Provinces – to be adapted by each Jurisdiction

Element	Est. Time Required	Est. Start Date	Estimated Completion Date			
			Nova Scotia	PEI	New Brunswick	Newfoundland and Labrador
1. Finalize Timeline / workplan for each jurisdiction	1 month	Mid 2014	Mid 2014	Mid 2014	Mid 2014	Mid 2014
2. Review and confirm program principles, designated materials, % funding	1-2 months	Mid 2014	Late 2014	Late 2014	Late 2014	Late 2014
3. Research and analysis on target audience impact	2-4 months	Late 2014	Early 2015	Early 2015	Early 2015	Early 2015
4. Research and analysis on municipal cost formulas	3-4 months	Late 2014	Early 2015	Early 2015	Early 2015	Early 2015
5. Finalize change management strategy	2 months	Early 2015	Mid 2015	Mid 2015	Mid 2015	Mid 2015
6. Develop draft regulation	6-12 months	Early 2015	Mid 2015 – late 2015	Mid 2015 – late 2015	Late 2015	Late 2015
Producers form association (PRO)	3-4 months	Mid 2015	Late 2015	Late2015	Late 2015	Late2015
7. Implement communications and engagement	As per normal regulatory processes in each jurisdiction	To be determined (TBD)	TBD (2015-16)	TBD (2015-16)	TBD (2015-16)	TBD (2015-16)
8. Finalize and adopt regulation	As per normal regulatory processes in each jurisdiction	TBD	TBD (Early 2016)	TBD (Early 2016)	TBD (Mid 2016)	TBD (Mid 2016)
Producers develop program plan and submit for approval	6-12 months	TBD	Early 2017	Early 2017	Early 2017	Early 2017
9. Approval of Plan	3-6 months	To be determined	Mid 2017	Mid 2017	Mid 2017	Mid 2017
10. Program Launch	As per PRO Program Plan date	To be determined	**Mid 2018**	**Mid 2018**	**Early 2019**	**Early 2019**

Appendix A:
Selected Summary Data from Interviews

Summary

A total of twenty four interviews were conducted to provide input for this assignment, including five provincial representatives (two for NS and one for each of the others), and nineteen regional operators (7 NS, 8 NB, 1 PEI, and 3 NL). Input from provincial representatives fed into material presented in Sections 1 and 2 of this document. The responses for material operators are presented below.

Exhibit A1: Private vs Public Collection of Waste Paper and Packaging for Recycling

Province	Public	Private	Both
NB	61%	39%	0%
NL	100%	0%	0%
NS	56%	36%	8%
PEI	0%	100%	0%

Exhibit A2: Private vs Public Processing of Waste Paper and Packaging for Recycling

Province	Municipal	Private	Both
NB	84%	16%	0%
NL	16%	84%	0%
NS	7%	85%	8%
PEI	0%	100%	0%

Exhibit A3: Ownership of Processing Facilities for Recycling Waste Paper and Packaging

Province	Municipal	Private	Both
NB	89%	11%	0%
NL	100%	0%	0%
NS	87%	5%	8%
PEI	0%	100%	0%

Exhibit A4: Recycling Collection Curbside or Depot

Province	Curbside	Depots
NB	71%	29%
NL	90%	10%
NS	100%	0%
PEI	100%	0%

Exhibit A5: Processed Material Marketed by Public or Private Processors?

Province	Public	Private	Mix
NB	56%	44%	0%
NL	0%	100%	0%
NS	29%	17%	54%
PEI	0%	100%	0%

Appendix B: CSSA Materials List

The following is an abridged list developed from the more detailed list recently published by the Canadian Stewardship Services Alliance (CSSA) – an organization which has been working to develop harmonized, national material lists among other standardized steward services.

Printed paper

- Newspaper (Canadian Newspaper Association members)
- Other newsprint (non CNA members)
- Newsprint – inserts, circulars
- Magazines
- Catalogues
- Directories
- Paper for general use
- Posters, calendars, greeting cards
- Other printed materials

Paper packaging

- Gable top containers – beverage (including alcohol), non-beverage
- Aseptic containers – beverage (including alcohol), non-beverage
- Paper laminates
- Kraft paper bags
- Corrugated cardboard
- Boxboard

Plastic/TET bottles

- PET bottles and jars – beverage (including alcohol), non-beverage

HDPE and laminates

- PET thermoform
- PLA, PHA, PHB – beverage, non-beverage
- PLA, PHA, PHB – plastic film, carry-out bags
- LDPE, HDPE – film, carry-out bags
- Expanded PS – food , other
- Non-expanded PS – beverage, other

Other plastic packaging

Steel and aluminum containers

- Aerosol containers – steel, aluminum
- Steel paint cans
- Other steel containers – beverage, non-beverage
- Aluminum – beverage, food
- Other aluminum packaging

Glass

- Clear – beverage (including alcohol), non-beverage
- Coloured – beverage (including alcohol), non-beverage

More about CSSA

CSSA is a non-profit organization founded to deliver packaging and printed paper recycling services, and implement a shared and harmonized administrative and customer service business infrastructure for stewards of extended producer responsibility (EPR) programs and provincial producer responsibility organizations in Canada.

CSSA is a shared services organization with a traditional head office/ branch office model. Each of the provincial offices is a member of the CSSA family of recycling organizations. This model allows CSSA to focus on delivering more convenient recycling options to Canadians, managing strategy, process and administrative harmonization, and allows the provincial stewardship organizations to focus on supply chain execution, local promotion and education activities, and regulatory affairs.

In March 2014 CSSA published a *National Stewards Guidebook: A Guide to Help Businesses Meet Their Packaging & Printed Paper Recycling Obligations in Canada*[35]. This Guidebook has additional information on material lists and the steward reporting process. It was primarily designed to assist stewards in their reporting obligations.

[35] CSSA website http://guidebook.cssalliance.ca/