

IDENTIFYING OPPORTUNITY IN THE GREEN ECONOMY - WASTE INDUSTRY NORTH SIMCOE COUNTY



February 26, 2010

Final Report

Prepared by Lura Consulting
for Zero Waste Simcoe Inc.



EXECUTIVE SUMMARY

The Province of Ontario is proposing to move towards a zero waste future to help reduce solid waste, increase diversion, build a greener economy and build a more sustainable society. The proposed changes are premised upon waste reduction and reuse, and they build upon Extended Producer Responsibility. Simcoe County is also in the process of defining a vision for waste management within the County. This vision could represent a change in direction, inline with the provincial direction. It could drive the local waste industry towards more sustainable practices and policies aimed at achieving zero waste, creating a driver for new jobs in the area of waste.

This report has been prepared by Lura Consulting for Zero Waste Simcoe, an incorporated not-for-profit environmental group that is dedicated to making Simcoe County a zero waste jurisdiction, and that is working to bring the benefits of zero waste to Simcoe County.

The report lays out a road map to job creation by identifying and qualifying economic opportunities based on successful practices that have been demonstrated in other jurisdictions, and that show potential for Simcoe County.

Eleven jurisdictions that have taken zero waste approaches and that have demonstrated job creation have been reviewed and their best practices identified. Those practices identified that could be enabling factors for job creation include:

- Disposal restrictions landfill bans or variable rate tipping fees
- Ordinances or By-Laws for mandatory participation in programs for residents and businesses
- Market development through incentives or resource recovery zones
- Extended Producer Responsibility (EPR)
- Research and Development

Within the context of Simcoe County, these best practices have been assessed and identified as areas where there is the most potential for waste-related job creation.

These areas include:

- Organics Processing
- Construction and Demolition Recycling and Reuse, Deconstruction Services
- Reuse Retail Outlets
- Waste Electrical and Electronic Equipment (WEEE)
- Municipal Hazardous or Special Waste (MHSW)
- Used Tires
- Material Transportation

With strong waste management leadership, and employing proven policy techniques, Simcoe County could develop into a hub for waste management, creating up to 220 - 420 net new jobs. These jobs are net new employment opportunities and will not be taking away jobs from existing waste service providers. Job creation has been demonstrated in the literature to significantly increase per ton of recyclables and reusables processed compared to the number of jobs required to landfill waste. The job creation identified in this report would not otherwise be possible if the focus of waste management is on landfilling significant fractions of the waste stream.

With appropriate policies put into place such as disposal restrictions and market development initiatives, jobs could be created within the following sectors:

Category	Net New Jobs
Organics Processing	8 - 30
C&D	95 - 130
Reuse Retail	35 - 50
WEEE	30 - 75
MHSW	5 - 15
Used Tires	20 - 70
Transportation	25 - 50
Total	220 - 420

The greatest potential for short term job creation lies in building upon provincial EPR programs and capturing construction and demolition waste. New jobs created could also strengthen the potential for further economic spin-offs and medium to long term job creation.

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DISCLAIMER

The information presented in this report serves as a guide to identify waste reduction and job potential in Simcoe County. It is based on the potential application of approaches found to be successful elsewhere, which have been theoretically applied to the current conditions in Simcoe County and Ontario. Actual job creation is subject to many variables; therefore these best estimates should not be used to determine if a certain business would be viable. Investors and businesses are advised to do their own due diligence rather than rely on the data in this report.

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1. INTRODUCTION

The province of Ontario is proposing to move towards a zero waste future to help reduce waste, increase diversion, build a greener economy and build a more sustainable society. The proposed changes are premised upon waste reduction and reuse, and they build upon Extended Producer Responsibility. More focus will be placed upon increasing reduction and diversion of waste from Industrial, Commercial, and Institutional (IC&I) sectors and clarifying roles, responsibilities, and accountabilities.

Simcoe County is also in the process of defining a vision for waste management in the County. This vision could represent a change in direction, inline with the provincial direction. It could drive the local waste industry towards more sustainable practices and policies aimed at achieving zero waste, creating a driver for new jobs in the area of waste. The implementation of a significantly revised waste management policy for Simcoe County, reinforced by proposed changes within the Province's waste diversion legislation, could affect all North Simcoe sectors of - residential, commercial, and industrial - and provide opportunities in these areas.

Purpose

As the waste industry moves away from landfill and towards waste recovery, reuse, and recycling, new jobs stand to be created. The purpose of this report is to lay out a road map to job creation by identifying and qualifying economic opportunities based on successful practices that have been demonstrated within other jurisdictions, and that show potential for Simcoe County. The report serves to inform local businesses and entrepreneurs about these opportunities and enable them to prepare plans to adjust their existing businesses or start new ones. This stands to equip local businesses with a competitive advantage and a head start toward meeting the new zero waste industry needs.

Zero Waste Simcoe

This report has been prepared for Zero Waste Simcoe Inc. courtesy of the generous funding of the North Simcoe Community Futures Development Corporation's *Community Capacity Building Program*.

Zero Waste Simcoe is an incorporated not-for-profit environmental group dedicated to transforming Simcoe County into a zero waste jurisdiction, and working toward bringing the benefits of zero waste to Simcoe County. Zero Waste Simcoe's objectives include:

1. Educating and involving the entire community
 - Engage individuals, retailers, producers and government in rethinking and changing their waste habits.
2. Having waste producers take responsibility

- Establish Extended Producer Responsibility (EPR) practices where producers take responsibility for the reduction, reuse, and/or appropriate end-of-life treatment for their waste products.
3. Changing who pays for waste
- Shift governments' waste management systems from ones relying on government and ratepayer financed waste diversion to ones based on Extended Producer Responsibility.

In addition, the purpose and findings of this report are presented in line with the goals and strategies identified in the Severn Sound Sustainability Plan regarding Environmental Sustainability and Economic Prosperity. Goals and strategies of the Plan relating to waste and economic development include:

Goals	Strategies
EN3: Reduce consumption of natural resources	Solid and Hazardous Waste
	Eliminate household hazardous and special wastes from landfill
	Decrease the total annual tonnage of solid waste disposed in landfill over the 2006 baseline
	Limit the disposal of food and garden waste in landfills
	Support extended producer responsibility for waste generation
	Support the goal of a zero waste society
	Pursue additional alternatives to minimizing the volume of waste disposed
E1: Create a sustainable, diverse and balanced economic base that provides quality employment and sustainable wages for residents	Economy
	Develop strategies or enhance support for business retention and expansions.
	Investigate opportunities for the Watershed to implement a Clean Technology plan and strategy
	Provide support, tools and incentives for existing business to become "greener" through energy, resource and process efficiencies
	Promote ecologically appropriate

	entrepreneurship within watershed communities
	Develop a formal business attraction policy for the area
	Ensure adequate supply of serviced land available to meet our needs
	Employment
	Improve/increase availability and awareness of employment opportunities
	Improve wages/affordability of living to keep people in the community
	Improve the number of opportunities for green businesses
	Improve educational apprenticeship programs in the watershed

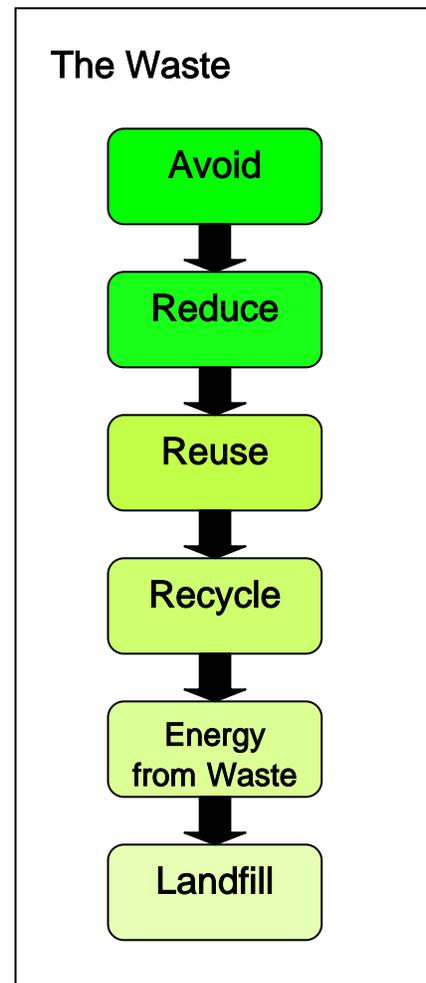
Zero Waste

The Zero Waste philosophy aims to eliminate waste rather than manage it, by considering the entire life cycle of a resource. Waste is not seen as disposable, but rather as a valuable resource. Zero Waste is based upon two key philosophies: Extended Producer Responsibility and the Waste Hierarchy.

Extended Producer Responsibility (EPR) requires producers to take responsibility for environmental impacts of their products and packaging. These include product take-back, recycling, and disposal. By shifting the responsibility for diversion to those who are most able to influence and control decisions throughout the lifecycle of a product, much of what eventually becomes waste could be eliminated at source (i.e. Design for the Environment) and/or could be returned to the producer.

The Waste Hierarchy includes the order of options for handling waste based on the highest resource value (see sidebar).

Zero Waste minimizes waste, reduces consumption, maximizes recycling, and ensures that products are made to be reused, repaired or recycled back into nature or the marketplace. It has been practiced successfully, to differing degrees, by jurisdictions



throughout Europe and North America. Fully developed Zero Waste approaches take many years to accomplish and could result in near-zero wasted resources.

Implementing a Zero Waste approach involves all levels of government, producers and consumers, and requires a tailored group of waste practices that, if combined properly, can significantly reduce the amount of garbage created and bound for landfill or incineration.

Job Creation

When discarded materials are collected with skill and care, and upgraded with quality in mind, they represent a local resource that can contribute to local revenue, job creation, business expansion, and the local economic base. For every 10,000 tons of waste landfilled, only 1 job is created. For every 10,000 tons of organic materials composted, 4 jobs are created. For every 10,000 tons of recyclables processed, 10 jobs are created. For every 10,000 tons of reusables processed, 75-250 jobs are created.¹

A study commissioned by the U.S. Environmental Protection Agency² found that recycling and reuse represent a significant facet of the U.S. economy that contributes to job creation and economic development. The study found that the industry consists of approximately 56,000 establishments that employ 1.1 million people, generating an annual payroll of nearly \$37 billion, and over \$236 billion in gross annual revenues. The study also found that strong government policies spur significant private sector investment in recycling manufacturing that promotes economic growth.

Published research specifically examining economic development and job creation resulting from waste management strategies is limited. A recent literature review³ found that in general, the field of “recycling and economic development” appears to be an incomplete area of study, particularly in terms of formally published literature.

Waste Management in Ontario

In Ontario, municipalities are responsible for municipal solid waste collection, diversion and disposal operations while the Industrial, Commercial & Institutional (IC&I) sector is responsible for managing its own waste (i.e. hiring its own private waste management services). Table 1.1 provides a brief overview of the roles and responsibilities associated with municipal solid waste management in Ontario.

¹ Institute for Local Self-Reliance. *Waste to Wealth: Recycling Means Business*. Available at <http://www.ilsr.org/recycling/recyclingmeansbusiness.html> (accessed Jan. 29, 2010).

² U.S. Recycling Economic Information Study (2001). U.S. Environmental Protection Agency (R.W. Beck/National Recycling Coalition).

³ Recycling and Economic Development: A Review of Existing Literature on Job Creation, Capital Investment, and Tax Revenues (April 2009). Prepared by Cascadia Consulting Group for King County.

Table 1.1 – Jurisdiction Over Municipal Solid Waste Management – Who Does/Can Do What	
The Province	
<ul style="list-style-type: none"> • Regulate and enforce environmental standards for the diversion and disposal of waste (implemented through Waste Diversion Ontario for municipalities) • Support municipalities through the provision of necessary tools for waste diversion and the disposal of residual waste • Issue permits (certificates of approval) for waste disposal facilities and sites and waste haulers and ensure appropriate management 	
Municipalities	
<ul style="list-style-type: none"> • Plan for and provide direct waste management services to residents (and local business in some cases where arrangements have been made for fee for service), including waste diversion programs and disposal of residual waste • Plan for, site, and invest in necessary waste management infrastructure and/or provide for municipal waste disposal • Ensure they comply with provincial waste management standards • Partially fund and implement waste diversion programs under the <i>Waste Diversion Act</i> 	
The IC&I Sectors	
<ul style="list-style-type: none"> • Plan for and help reduce the amount of waste generated by operations • Comply with all provincial waste management standards and requirements 	
Producers and Stewards	
<ul style="list-style-type: none"> • Partially fund and implement waste diversion programs under the <i>Waste Diversion Act</i> • Responsible for minimizing the life-cycle impacts of products and packaging through <i>Design for the Environment</i> (voluntary environmental management standard programs such as ISO 140001) 	
The Public	
<ul style="list-style-type: none"> • Help reduce the amount of waste they generate through consumer activities and choices • Participate in waste management prevention and diversion programs 	

Source: Adapted from Policy Statement on Waste Management Planning: Best Practices for Waste Managers (2007) Ministry of the Environment.

Evolving Waste Management in Ontario and Simcoe County

Successful economies of the future are viewed as green economies. Ontario is moving in the direction of a green economy that will reshape and refocus policies, investments, and spending to deliver better results for the environment and the economy.⁴

The *Waste Diversion Act* represents the main legislation for reduction, reuse, and recycling in Ontario. Here, waste diversion has progressed well and diversion initiatives have incorporated EPR principles throughout, including such industry-funded programs as the blue box, electronics, household hazardous waste, and tire programs.

The Ministry of the Environment is currently in the process of updating its *Waste Diversion Act* to reflect a zero waste approach aimed at achieving greater diversion and exploring the use of EPR as the foundation for Ontario's waste diversion framework. Based on the review of the Act, proposed changes to Ontario's waste diversion framework include:

1. Outcomes-Based Individual Producer Responsibility

A stronger focus on EPR, encouraging individual producers to be fully responsible for meeting waste diversion requirements within residential and IC&I sectors.

2. Clarify the Concept of Diversion

Allowing a wider range of processes and technologies to be used to meet diversion requirements and encourage innovation (e.g. anaerobic digestion, pyrolysis).

3. A Long-Term Schedule for Diversion

Developing a long-term waste diversion schedule for Ontario that would designate materials for diversion (residential and IC&I), and include timelines, material-specific collection and diversion targets.

4. Effective Oversight

Improving oversight by clearly articulating the roles of the Ministry and Waste Diversion Ontario.

5. Supporting Producer Responsibility

Establishing policies that support producer responsibility, such as banning designated materials from disposal, implementing disposal levies to narrow the gap between the cost of diversion and disposal (as well as to shift behaviour), and using disposal levies to support diversion efforts.

6. Transitioning Existing Programs

Developing transition plans for each program; setting phased end dates for each program.

⁴ From Waste To Worth: The Role of Waste Diversion in the Green Economy - Minister's Report on the Waste Diversion Act 2002 Review (October 2009). MOE.

To capture more resources, a number of Ontario's EPR programs have been expanding, or have plans to do so in the near future. These changes will support new industries and provide economic benefits. The EPR programs include:

- Municipal Hazardous or Special Waste (MHSW): Effective July 1, 2010, the program will expand the types of materials collected from 9 to 22 materials.
- Waste Electrical and Electronic Equipment (WEEE): Effective April 1, 2010, Phase 2 of the program will launch and expand on the types of materials collected.
- Used Tires: Launched September 2009, the program covers all passenger, truck, and off-road tires and will support a growing rubber recycling industry.

Simcoe County is also in the process of redeveloping their waste management policies by developing a Solid Waste Management Strategy aimed at improving the County's waste diversion programs and providing short and long term disposal options. The strategy will identify ways to further increase diversion, to reduce the amount of garbage requiring disposal, and to guide how the remaining garbage should be managed over the next 20 years. The Solid Waste Management Strategy is expected to be completed in June 2010 and was in progress when this report was written. More information about the Strategy is available at <http://wastestrategy.simcoe.ca>.

Report Contents

Section 2 of this report profiles a number of jurisdictions that have successfully implemented zero waste strategies and demonstrated job creation, followed by a summary of best practices in Section 3. Sections 4 and 5 examine Simcoe County's current waste industry and identify the potential for new job creation based on the best practices used within other jurisdictions.

Data Limitations

All jurisdictions surveyed provided information on economic impacts and job creation. It should be noted that different jurisdictions use different methodologies to collect information. The findings in this report are best estimates based on various reporting techniques. Capacities of facilities and quantities of waste are very specific to each jurisdiction. Quantified results from other jurisdictions have been identified to provide a magnitude of scale in relation to population and to serve as a guide to identify waste reduction and job potential in Simcoe County based on successful approaches used elsewhere.

Estimates of job creation are based upon the operations of typical facilities or operations. Numerous factors could influence the number of jobs required for an operation, such as population, size of an operation, availability and predictability of inputs, technologies, and availability of investment capital, among others. Due to the many factors involved, it is

impossible to define exact numbers of potential jobs, and so ranges are provided in this analysis.

2. JURISDICTIONAL REVIEW OF ZERO WASTE PRACTICES AND JOB CREATION

The purpose of this section is to identify new waste related jobs that have been created by moving towards zero waste practices. This research was conducted by reviewing zero waste practices in other jurisdictions that are comparable to Simcoe County and that include other jurisdictions using zero waste or other innovative waste conservation strategies. Selected jurisdictions have not all adapted “zero waste” policies per se, but they have achieved job creation through waste reduction policies.

Each case example focuses on different zero waste strategies to provide a variety of applicable examples that show potential for Simcoe County. Although some jurisdictions differ from Simcoe County on certain aspects, there is no reason why these strategies could not be utilized in Simcoe. Considering Ontario’s evolving waste policy as discussed in Section 1, all strategies could be achievable in Simcoe County in the short- to medium-term and enable businesses and municipalities to react to new resource market potential. The results of this review have been used to inform the review of new waste-related job potential in Simcoe County.

Broad categories of zero waste strategies include:

- Extended Producer Responsibility (EPR) / Product Stewardship
- Material collection and/or landfill restrictions
- Mandatory participation in waste diversion programs through by-laws and ordinances
- Financial incentives
- Reuse and reclamation opportunities
- Market development and financial incentives
- Resource recovery areas

Programs and operations of each jurisdiction have been reviewed and information has been received and/or confirmed through telephone interviews with the appropriate contact at each jurisdiction. Such interviews provided jurisdictional contacts with the opportunity to identify any limitations, issues, or challenges they faced with implementing the waste reduction strategy, as well as to share lessons learned.

Criteria for Inclusion

Each jurisdiction has been selected based on their zero waste strategies (or waste reduction towards zero waste) as well as their similarities to Simcoe County. Although no jurisdiction is the same as Simcoe County in terms of jurisdictional boundaries and how

waste is handled, the jurisdictions reviewed represent similarities in size and structure to Simcoe County (its urban-rural mix) as well as in states of waste management evolution (the level of advancement in policy and acceptance).

Emphasis in selecting certain jurisdictions for review has been placed upon innovative waste management approaches viewed as transferable to Simcoe County. Criteria for this selection include:

- Waste management systems (programs, technologies)
- Adoption of zero waste strategies or similar innovative waste diversion initiatives
- Implementation of zero waste/diversion strategies in the short- to medium-term
- Impacts of waste strategies on diverting waste from disposal and on creating new jobs

Data Limitations

In some cases specific data about job creation at the municipal level is limited. Markets for resources usually function at a regional level, therefore data about job creation at the state or provincial level was available. In some cases, job creation data was available at the municipal level; but in most cases data was only available for municipal operations. Since most private sector companies operate at a larger scale and cover multiple jurisdictions, job creation was difficult to associate with a specific area or strategy.

Data used came from studies and reports on economic impacts which were primarily conducted by provincial or state governments. In addition, data was obtained by contacting individual municipalities.

Jurisdictions Surveyed

<p>CANADA</p> <p>1. British Columbia (including Regional District Central Kootenay)</p> <p>2. Nova Scotia</p> <p>3. Edmonton, Alberta</p>	<p>USA</p> <p>4. California (including Alameda County)</p> <p>5. Austin, Texas</p> <p>6. Boulder County, Colorado</p> <p>7. Portland, Oregon</p> <p>8. Seattle, Washington</p> <p>INTERNATIONAL</p> <p>9. Canberra, Australia</p>
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Summary of Jurisdictions Studied

Tables 2.1 - 2.9 provide summaries of the jurisdictions surveyed.

Table 2.1 - British Columbia	
Location	British Columbia
Legislative Support	<i>Environmental Management Act</i> B.C. Reg. 449/2004 Recycling Regulation
Agency	<p>Ministry of the Environment</p> <p>Industry organizations:</p> <ul style="list-style-type: none"> • BC Used Oil Management Association • Brewers Association of Canada • Electronics Stewardship Association of BC • Encorp Pacific Canada • Post-Consumer Pharmaceutical Stewardship Association • Product Care • Tire Stewardship BC • Tree-Marking-Paint Stewardship Association <p>Regional District of Kootenay Boundary</p>
Waste Policy/Objective	<p>Cabinet endorsed a municipal solid waste management strategy in 1989 which called for a reduction of the amount of municipal solid waste requiring disposal by 50 percent, by the year 2000. Essential to the strategy is the sequential hierarchy of the 3 R's — reduce, reuse, recycle - plus recovery and residual management.</p> <p>The provincial solid waste management strategy includes the following main elements:</p> <ul style="list-style-type: none"> • Partnership with People — Environmental Education and Consultation • Partnership with Business — Economic Development and Stewardship • Partnership with Local Government — Planning and Market Development
Waste Reduction Strategies	Extended Producer Responsibility

<p>Practices/Approach</p>	<p>Provincial Stewardship programs are funded by industry funding organizations for the materials outlined in the Recycling Regulation and subsidized by government funding. Funding from the stewardship organizations is passed on largely to the consumer through an advanced disposal fee or deposit that are paid at the time of purchase.</p> <p>Regional District of Kootenay Boundary</p> <ul style="list-style-type: none"> • Landfill bans: recyclable products and yard and garden waste. • Disincentives for disposal: variable rate tipping fees and reduced fees for sorted materials.
<p>Market Development</p>	<p>Beverage Containers:</p> <ul style="list-style-type: none"> • Aluminium (strong markets) • Plastic • Polycoat • Glass <p>Electronics and Electrical:</p> <ul style="list-style-type: none"> • Explosion of electronic and electrical recycling markets in BC and Canada • Precious metals • Bulk electronic scrap slag for cement input • Plastics <p>Used Lubricating Oil, Filters and Containers:</p> <ul style="list-style-type: none"> • Alternative fuels (mainly asphalt plants) • Steel • Plastics <p>Paints, Solvents and Flammable Liquids, Gasoline and Pesticides:</p> <ul style="list-style-type: none"> • Paint used in specialty concrete and cement products • Fuels <p>Tires:</p> <ul style="list-style-type: none"> • Crumb (used to manufacture other products) • Fuel (Tire Derived Fuel as a replacement to other fuels) <p>Marketable compost</p>
<p>Jobs Creation</p>	<p>In meeting its stewardship responsibilities, the waste industry has directly generated an estimated 1,600 positions, with another 500 created indirectly for a combined total of some 2,100 full time equivalent (FTE) positions at the provincial level. The province’s beverage container deposit-refund system accounts for almost three quarters of this</p>

	<p>employment; and the stewardship programs for tires, electronics and used oil comprise the other main contributors to this employment. A breakdown of job creation for each stewardship program is as follows:</p> <p>Beverage Container Stewardship Program</p> <p>Material recovery jobs:</p> <ul style="list-style-type: none"> • Depots: 680 FTEs • Encorp administration: 26 FTEs • Transportation: 19 FTEs • Processors: 20 FTEs <p>Beer Containers Program jobs:</p> <ul style="list-style-type: none"> • Management and administration: 2.5 FTEs • Transportation: 54 FTEs • Sorting and recycling operations: 30 FTEs • Depots: 320 FTEs <p>Electronic Waste Stewardship Program</p> <p>Electronic waste program jobs in BC: Approximately 123 FTEs (administration, depots/warehousing, processing, transportation).</p> <p>Tire Stewardship Program</p> <p>Scrap tire recycling approximately 122 FTEs (administration, transportation, processing).</p> <p>Paint Stewardship Program and Solvents and Flammable Liquids, Gasoline and Pesticides Program</p> <p>Recycling paints, flammables, and pesticides jobs:</p> <ul style="list-style-type: none"> • Depots: 50 FTEs • Administration: 5.75 FTEs • Consolidation plant: 13 FTEs • Transportation: 4.5 FTEs <p>Used Lubricating Oil, Filters and Containers Stewardship Program</p> <p>Recycling of used oil materials employ approximately 103 FTEs (administration, transportation, processing).</p> <p>Pharmaceuticals Program</p> <p>Pharmaceuticals collection and disposal employ 1.2 FTEs (administration and collection).</p>
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	<p>Regional District of Kootenay Boundary</p> <ul style="list-style-type: none"> • Reuse Centre: 1 FTE • Directly servicing contracts: 20 FTE 	
<p>Spin-Off Economic Benefits</p>	<ul style="list-style-type: none"> • Avoiding operating costs to landfills (especially hazardous waste handling). Recycling produces 6-8 jobs, compared to 1 for landfilling the same materials.¹ • Selling of recycled/reclaimed products has multiple uses and multiple values compared to lost value from landfilling material. The stewardship organizations showed total revenues of about \$109 million in 2007 (79% from fees and deposits and 21% from other sources such as selling recovered materials).³ • Reduced cost of extracting raw materials. • Energy savings from using recycled materials in manufacturing processes. • Transportation associated with collecting, processing, and distributing materials. • The requirement for electronic waste recycling companies to be audited has resulted in more business for environmental consulting firms.¹ 	
<p>Limitations/Issues/Challenges</p>	<p>A major issue in material recovery was the commodity crash (2009) where overseas demands were weak and materials could not be sold.</p> <p>Siting of recycling facilities and sometimes depots can be problematic due to resistance from residents.</p>	
<p>Lessons Learned/Recommendation</p>	<p>Recycling of materials and market development should be encouraged/promoted locally to lessen the impacts of commodity fluctuations.</p>	
<p>Waste Reduction Results Achieved</p>	<p>In 2006, the provincial disposal rate was .613 tonnes per capita which represented a 30% reduction in the per capita amount of municipal solid waste requiring disposal compared to 1990. (Most recent data available).</p>	
<p>Contact</p>	<p>David Lawes, Section Head, Industry Product Stewardship British Columbia Ministry of the Environment 250-387-3588 david.lawes@gov.bc.ca</p>	<p>Tim Dueck, Solid Waste Management Coordinator Regional District of Kootenay Boundary 250-368-0231 tdueck@rdkb.com</p>

<p>Source</p>	<ol style="list-style-type: none"> 1. Economic Impacts of the BC Recycling Regulation (August 31, 2008). British Columbia Ministry of the Environment, Environmental Quality Branch. Available at http://www.env.gov.bc.ca/epd/recycling/resources/reports/pdf/econ-impacts-recycle-reg.pdf (accessed January 16, 2010). 2. B.C. Municipal Solid Waste Tracking Report 2006. British Columbia Ministry of the Environment. Available at http://www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/tracking-rpt2006.pdf (accessed January 16, 2010). 3. Recycling Council of British Columbia. http://rcbc.bc.ca/
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Table 2.2 - Nova Scotia	
Location	Nova Scotia
Legislative Support	<p><i>Environment Act</i></p> <p>Nova Scotia Reg. 61/2007 Solid Waste-Resource Management Regulations</p> <p><i>Environmental Goals and Sustainable Prosperity Act</i></p>
Agency	<p>Nova Scotia Environment</p> <p>Resource Recovery Fund Board</p>
Waste Policy/Objective	<p>The Nova Scotia Government has a goal of maintaining 50% waste diversion and to reach a target for waste disposal of 300 kilograms per person per year (kg/per/yr) by the year 2015.</p> <p>The Solid Waste-Resource Management Strategy for Nova Scotia is premised on:</p> <ul style="list-style-type: none"> • environmental protection and ecological value • wise and efficient use of renewable and non-renewable resources • economic opportunities through the development of a vibrant environmental industries sector
Waste Reduction Strategies	<p>The Solid Waste Resource Management Strategy for Nova Scotia includes:</p> <ul style="list-style-type: none"> • Bans on the disposal of beverage containers, corrugated cardboard, newsprint, scrap tires, used oil, lead-acid batteries, waste paint, automotive antifreeze, glass food containers, steel/tin cans, selected plastics and compostable organic materials. • Deposit/refund system on beer and liquor bottles and all beverage containers with the exception of milk. • The innovative use of solid waste resources to create new employment in Nova Scotia through the production of value-added goods.
Practices/Approach	<p>Focus on Economic Development</p> <p>The province and Halifax Regional Municipality stressed job creation as an integral component of the waste management system. Policies such as landfill bans were established with a focus on creating a waste diversion industry in the province.</p>

	<p>Funding for innovative value-added manufacturing led to many ventures being established that might not have been able to get started without seed funding. The money was allocated from the unreturned portion of the beverage container deposits that were collected.</p> <p>Provincial disposal bans Province-wide ban on the disposal of beverage containers, corrugated cardboard, newsprint, lead-acid (automotive) batteries, scrap tires, and leaf and yard waste, waste paint, ethylene glycol (automotive antifreeze), selected plastics, steel/tin food containers, glass food containers, and compostable organic material from industrial, commercial, institutional, and residential sources. Disposal bans were phased in with advanced dates to allow facilities to develop (e.g. composting plants).</p> <p>Enviro-Depots Network of over 80 Enviro-Depots, located throughout the province. All Enviro-Depots accept beverage containers and waste paint, while many collect additional materials, including electronic products, cardboard, newsprint, and car batteries.</p> <p>Extended Producer Responsibility - Product Stewardship Stewardship agreements with industries (e.g. dairy packaging, newsprint, residential syringes, and telephone directories) to manage their product wastes through direct funding or in-kind support. Provincially regulated stewardship programs include programs for beverage containers, waste paint, used tires, and electronic products.</p> <p>The Resource Recovery Fund The Resource Recovery Fund Board promotes the development of value-added manufacturing. It collects the deposits on beverage containers and administers the deposit-return program (generally a 10 cent deposit is paid and 5 cents are returned to the consumer when the container is returned to a recycling depot), and administers funding for waste diversion initiatives such as:</p> <ul style="list-style-type: none"> • Value-Added Approved Program Funding - financial assistance for locally-based businesses to develop value-added products from materials recovered from the waste stream • Research and Development Program Funding - to support research and development initiatives • Special Projects Funding - to support other projects that support the Province's Solid Waste-Resource Management Strategy and the mandates of Resource Recovery Fund Board • Enviro Depot Infrastructure Funding - assistance for
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	<p>improvements to an ENVIRO-DEPOT facility and/or its operation</p> <p>Construction and Demolition By-Law - Halifax Regional Municipality</p> <p>Halifax Regional Municipality requires that 75 per cent of all construction and demolition (C&D) waste entering their licensed C&D facilities be diverted. Incentives for contractors to bring C&D waste to the facilities include the ban on C&D waste at landfills as well as lower facility fees compared to those at landfills.</p>
<p>New Markets Developed/ Economic Spin-Offs</p>	<ul style="list-style-type: none"> • Nova Scotia-based companies have established stable local markets for materials such as plastic beverage containers, corrugated cardboard, compost, and paint. • Tire Derived Aggregate - Nova Scotia has very recently selected a proponent to process and market the province's used tires into a tire-derived aggregate to be used in manufacturing processes. • Twenty-one facilities in Nova Scotia compost organic materials generated by residents and businesses. • Initiation of markets for finished compost • Value-added manufacturing including everything from recycling cardboard fibre into new cardboard products to producing animal feed from candy manufacturing wastes. • Jobs created at construction and demolition debris disposal sites (27 C&D sites in Nova Scotia) and jobs created from selling used or recycled building and/or C&D materials. • Private hazardous waste management facilities. • Variety of firms ranging from consulting firms and brokers to waste management equipment producers and specialized service providers such as bin cleaners.
<p>Direct Jobs Created</p>	<p>As of 2006, there were 3300 full time equivalent (FTE) jobs in the solid waste resource management sector in Nova Scotia, an increase of 1200 or 58 % since the release of the strategy in 1995¹. "Value-adding manufacturing" makes up the largest portion of these jobs. A breakdown of job creation for each sub-sector of the economy from 1996 to 2006 is as follows:</p>

IDENTIFYING OPPORTUNITY IN THE GREEN ECONOMY - WASTE INDUSTRY

	Category	1996	2000	2006	Change (1996 - 2006)
	EnviroDepots	189	335.2	335.2	146.2 % increase
	Haulers	400.25	535.05	566.05	41 % increase
	Scrap Metal Dealers	112	107	158	41 % increase
	Disposal Sites and Transfer Stations*	193	303.5	227.85	18 % increase
	Value Added Manufacturing	561	671.5	716.75	28 % increase
	Material Recovery (Recycling) Facilities	42	132	145.85	247 % increase
	Composting	12	74	76.65	539 % increase
	Building Materials, Construction and Demolition	26	79.5	109.85	323 % increase
	Hazardous Waste	174	257	259.15	49 % increase
	Asbestos	72	80	133.5	85 % increase
	Tires	36	61	52.5	88 % increase
	Other	282.5	478	532.5	46 % increase
	* Thirteen of the 40 landfills have closed reducing the number of landfills. Reclassification of employment categories also attributed to the labour variations.				
Waste Reduction Results Achieved	2007-8 sent 430 kilograms per person of waste to landfill				

Contact	Bob M. Kenney Recycling Development Officer Nova Scotia Environment P.O. Box 442 5151 Terminal Rd., 5th Floor Halifax, N.S., B3J 2P8 Phone 902-424-2388 kenneybm@gov.ns.ca
Source	1. Work From Waste, Solid Waste-Resource Management Employment Update (August 2006). Nova Scotia Environment and Labour.

Table 2.3 - Edmonton, Alberta	
Location	City of Edmonton, Alberta
Agency	Alberta Recycling Management Authority City of Edmonton Waste Management
Legislative Support	<i>Environmental Protection and Enhancement Act</i>
Zero Waste Policy/Objective	Alberta's goal is to decrease the amount of material sent to landfills from 806 to 500 kg/capita by the year 2010.
Zero Waste Strategies	<p>Alberta's waste strategy - Too Good To Waste - includes the following objectives:</p> <ul style="list-style-type: none"> • Albertans take responsibility for resource conservation and waste minimization. • Waste management systems are integrated to provide the capacity for processing and/or recovery of materials that would otherwise be disposed of as wastes. • Facilities and practices to manage secondary materials and wastes are protective of air, land, water and human health.
Practices/Approach	<p>Stewardship Programs Industry-funded provincial Stewardship programs are in place for electronics, paint, tires, and household hazardous waste where residents can drop off these items at depots.</p> <p>Variable Rate Tipping Fees There is no charge for sorted concrete, metals, and brush/trees, and a reduced fee for wood, drywall, and asphalt shingles. Commercial refuse also costs more than residential refuse.</p> <p>Reuse Reuse Centre accepts various items from residents that are not accepted for reuse anywhere else. Items are then sold.</p>

	<p>Processing Facilities</p> <p>The Edmonton Waste Management Centre processes all materials collected and dropped off. Processing facilities include:</p> <ul style="list-style-type: none"> • Materials Recovery Facility (recyclable sorted and baled) • Composting Facility • Electronic and electrical processing and recovery facility • C&D recycling facility (drywall, metals, untreated wood, asphalt shingles, brush/trees and concrete.) • Greys Paper & Glass Recycling Facility • Integrated Processing and Transfer Facility (sorts materials collected in the garbage stream and diverts to the appropriate locations) <p>Additional Recycling Programs</p> <p>Sand recycling technology developed at the Edmonton Waste Management Centre of Excellence - winter road sand is cleaned and reused.</p> <p>Edmonton Waste Management Centre of Excellence</p> <p>A hub for innovative research, technology development and training partnership with educational institutes.</p> <p>Waste to Biofuel Facility</p> <p>Waste that cannot be recycled or composted will be processed into refuse derived fuel and gasified into a synthetic gas that can be converted to methanol and subsequently ethanol. The Biofuel facility will be a demonstration and will be full operational in 2010.</p>
<p>New Markets Developed/ Spin-Off Economic Benefits</p>	<ul style="list-style-type: none"> • Variety of different types of processing jobs have been developed including operating the material recovery and composting facilities, C&D and electronics sorting and processing. • New local companies have been developed to use materials collected from the Edmonton waste stream. For example, one company makes cellulose insulation from recovered materials and another makes asphalt from shingles. Numerous other companies use this feedstock to create further materials, such as building material and steel production.

	<ul style="list-style-type: none"> • Edmonton Waste Management Centre of Excellence is a leader in waste management research, technology development, and training. A new Advanced Energy Research Facility is also being developed which add to the number of R&D jobs and economic spin-offs. • Biofuel production and sales • Closing the Loop (Grey's Paper Recycling) will recycle and produce paper office products for the City of Edmonton (2011).
<p>Direct Jobs Created</p>	<p>Jobs have been created by both the City and by public-private partnerships. The total waste management system in Edmonton (including public and private operators) employs under 100 FTE positions in the front end of the system (public education, Ecostations, Reuse Centre). Approximately 350-400 FTE are employed in the back end of the system (processing, GEEP electronics, etc.)</p> <p>A breakdown of jobs for some of the facilities is as follows¹:</p> <ul style="list-style-type: none"> • Materials Recovery Facility: a total of 72 employees and 10 maintenance staff. • Electronics Processing Facility: 35 staff. • Greys Paper & Glass Recycling Facility (opening 2011): total number of employees at full production will be 80. • Biofuel Facility: The new biofuel facility will create a number of operation jobs.
<p>Limitations/Issues/Challenges</p>	<ul style="list-style-type: none"> • Problems dealing with private contractors. • Getting Council aligned with residents in terms of support for waste diversion initiatives. • Having enough employees to manage operations.
<p>Lessons Learned</p>	<p>Engaging the private sector has been key to keeping control over costs. A mix of public and private operations has created an effective waste management system.</p>

<p>Waste Reduction Results Achieved</p>	<p>Diversion from landfill in 2008: 60% with a voluntary compliance rate of 86%. Diversion expected to reach 90% by 2013 with the new Integrated Processing and Transfer Facility for sorting residuals.</p>
<p>Contact</p>	<p>Roy Neehall, Manager Waste Management Branch 9803 - 102A Avenue Edmonton, Alberta T5J 3A3 780-496-5405 roy.neehall@edmonton.ca</p>
<p>Source</p>	<p>1. 2008 Waste Management Brach Annual Review</p>

Table 2.4 - California	
Location	State of California Alameda County, California
Legislative Support	<i>Integrated Waste Management Act</i> (AB 939, 1989) <i>Beverage Container Recycling and Litter Reduction Act</i> (AB 2020, 1986) <i>California Oil Recycling Enhancement Act</i> <i>California Tire Recycling Act</i> (1989) <i>Electronic Waste Recycling Act</i> (SB 20, 2002)
Agency	Department of Resources Recycling and Recovery (CalRecycle) Alameda County Waste Management Authority and Recycling Board
Waste Policy/Objective	State of California: State-wide diversion goal of 50% by 2000 and 50% diversion be maintained every year afterwards. Alameda County: committed to achieving a 75% and beyond diversion goal and promoting sustainable consumption and disposal patterns. Palo Alto (Santa Clara County) has set the goal of Zero Waste to landfills by 2021.
Waste Reduction Strategies	CalRecycle - stewardship programs, grants and loans, economic development.
Practices/Approach	Stewardship Programs State Stewardship programs for electronics, used oil/filters, and beverage containers. Recycling Market Development Zones This program provides attractive loans, technical assistance, and free product marketing to startup and expanding recycling businesses that use materials from the waste stream to manufacture their products. The enterprise zones for recycling-based manufacturing activity include 40 zones around the state. Local government incentives may include relaxed building codes and zoning laws, streamlined local permit processes, reduced taxes and licensing, and

	<p>increased and consistent secondary material feedstock supply. Local incentives vary from jurisdiction to jurisdiction.</p> <p>Resource Recovery Parks (funded through grants)</p> <p>Urban Ore EcoPark (Berkeley, Alameda County) - The anchor tenant at the EcoPark is a salvage and retail facility, and there are subtenants whose businesses focus on reuse or manufacturing from recycled feedstocks. Urban Ore operates a building materials exchange., hardware exchange, arts and media exchange, a general store, salvage and recycling operations, as well as provides consulting services for conceptual designs of zero-waste disposal facilities.</p> <p>San Leandro Resource Recovery Park (San Leandro, Alameda County) – A resource recovery and processing park that includes reuse, recycling, and composting services and waste processing functions. The park includes tire processing and crum rubber facility, building materials exchange and reuse facility (collection and resale services), and deconstruction and dismantling services. Additional products sold include mulch and recycled plastic produces (e.g. plastic lumber).</p> <p>California Materials Exchange (CalMAX)</p> <p>Service to help businesses find markets for materials they have traditionally discarded which helps businesses, industries, and institutions save resources and money.</p> <p>Grants and Loans</p> <p>Numerous grants and loans are available from CalRecycle for reuse assistance, green buildings, tire and oil recycling, and Recycling Market Development Zone Loans. Some of these grant and loan programs include:</p> <ul style="list-style-type: none"> • Beverage Container Recycling Grant • Household Hazardous Waste Grant • Reuse Assistance Grant <p>Landfill Bans</p> <p>Alameda County: all plant debris banned from landfill (County Ordinance).</p>
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<p>New Markets Developed/ Economic Spin-Offs</p>	<p>California has created a mainstream industry of statewide importance comprised of 5,300 business operations employing more than 85,000 workers and generating \$4 billion in salaries and wages along with \$10 billion worth of goods and services annually¹.</p> <p>Diversion resulting from California's 50 percent diversion mandate has had significant impacts on the state's economy. Direct, indirect, and induced impacts include²:</p> <ul style="list-style-type: none"> • Output impact of \$10 billion. • Income impact of \$4 billion. • Value-added impact of \$5 billion. <p>California's recycling and reuse industry consists of:</p> <ul style="list-style-type: none"> • 5,300 establishments. • \$2.2 billion annual payroll. • \$14.2 billion annual revenues. <p>Urban Ore generated over \$600,000 per year selling reusable goods.</p> <p>A solar panel company was developed, using waste silicon from nearby manufacturing facilities.</p>
<p>Direct Jobs Created</p>	<p>As a result of California's 50% diversion mandate, 85,000 jobs have been added to the waste industry¹. These jobs are direct, indirect, and induced.</p> <p>The total number of jobs created from businesses that reported in 2008 was 8,997, through the Recycling Market Development Zones program (loan and non-loan)³. Jobs were created in the diversion of plastic, tires, cardboard and other paper products, green waste/organics, and construction & demolition materials.</p> <p>Urban Ore employs 30 employees within the retail component of the reuse store, who accept, sort, process, and sell products.</p>
<p>Waste Reduction Results Achieved</p>	<p>The Recycling Market Development Zones program has resulted in more than 7.6 million tons of waste being diverted each year.</p>
<p>Limitations/Issues/ Challenges</p>	<p>Behavioural challenges in encouraging some jurisdictions to adapt to changes. Some jurisdictions are resistant to CalRecycle initiatives.</p>

<p>Lessons Learned</p>	<p>Private companies, for the most part, have been very receptive of California's waste strategies. They realize that there is a potential for cost savings. Many have really stepped up in their extended producer responsibility, waste reduction and reuse initiatives.</p> <p>Key lesson: if appropriate strategies are in place, private companies are likely to embrace them and utilize resources.</p>	
<p>Contact</p>	<p>Beatriz Sandoval, Public Information Officer, CalRecycle 916-341-6751 beatriz.sandoval@CalRecycle.ca.gov</p>	<p>Corky Mau Branch Manager, Grant and Loan Resources 916-341-6533 corky.mau@CalRecycle.ca.gov</p>
<p>Source</p>	<ol style="list-style-type: none"> 1. The Economic Impact of Waste Disposal and Diversion in California (2002) University of California, Berkeley. 2. California Recycling Economic Information Study (2003). National Recycling Coalition. 3. Recycling Market Development Zone Annual Report 2008. Spreadsheet provided by CalRecycle, Grant and Loan Resources. 	
<p>Additional Case Studies</p>	<p>Berkeley Commercial Food Scraps Collection Program Case Study http://www.calrecycle.ca.gov/LGCentral/Library/Innovations/FoodWaste/Berkeley.htm</p> <p>Santa Cruz County Provides Seed Money for Private Initiatives Case Study http://www.calrecycle.ca.gov/LGCentral/Library/Innovations/FoodWaste/SantaCruz.htm</p>	

Table 2.5 - Austin, Texas	
Location	City of Austin, Texas
Legislative Support	Texas <i>Solid Waste Disposal Act</i>
Agency	Cit of Austin Solid Waste Services
Waste Policy/Objective	Goal to reduce the per capita solid waste disposal by 20% by 2012, diverting 75% of waste from landfills and incinerators by 2020, and 90% by 2040.
Waste Reduction Strategies	<p>Integrated Solid Waste Management Master Plan</p> <p>Key elements of Austin’s Zero Waste Plan include:</p> <ul style="list-style-type: none"> • Expanding and improving local and regional reuse, recycling, and composting programs; • Adopting new rules and incentives to reward those who embrace the goal of Zero Waste; • Developing Green Campuses and Resource Recovery Parks for Zero Waste infrastructure; • Advocating producer and retailer responsibility for product and packaging wastes, and banning problem materials. <p>Long term strategies outlined within the Zero Waste Plan have been implemented by the Master Plan, which lays out rate structures, locations of infrastructure and disposal rates.</p>
Practices/Approach	<p>Recycling Ordinance</p> <p>Apartments and Multi-Family Communities with 100 units or more must provide on-site recycling of any four of the following materials: aluminum cans, tin/steel cans, glass containers, plastic bottles, newspaper, cardboard, kraft paper bags, and home office paper. Businesses and Office Buildings with 100 employees or more must provide on-site recycling of any two of the following materials: aluminum cans, tin/steel cans, glass containers, plastic bottles.</p> <p>Pay-As-You-Throw</p> <p>Waste collection is charged based on the volume purchased by residents, measured by varying sizes of</p>

	<p>bins. Waste diversion is incentivized by charging for extra garbage set out for collection. Recycling and yardwaste are collected free of charge. This program was implemented in 1998 and has been very successful.</p> <p>Single-Stream Recycling</p> <p>Converted old dual-stream recycling system to single-stream or co-mingled collection.</p> <p>Austin Green District</p> <p>Campus of co-located, centralized, state-of-the-art recycling resource facilities.</p> <ul style="list-style-type: none"> • Facilitate a regional network of resource exchange and resourcefulness • Encourage and support a high level of local, community participation and education • Model positive environmental responsibility • Invest in sustainable infrastructures • Sustain green production practices that encompass durability, reuse and recyclability • Educate and promote waste and energy reduction processes <p>The Green District includes a material recovery facility, think pads, research facilities, community learning centre, bulk retain outlet, and demonstration sites. It is City-owned and will offer low cost rental space for resource recovery companies to support start-up businesses.</p>
<p>New Markets Developed/ Economic Spin-Offs</p>	<p>A substantially-sized paper recovery industry in Austin has been supported by the large number of IC&I paper recycling (required through the City’s Recycling Ordinance) and is also similar for other materials required by the Recycling Ordinance (e.g. aluminum cans, tin/steel cans, glass containers, plastic bottles)¹.</p> <p>Strong interests for business development have been expressed since the City adopted zero waste; however infrastructure is lacking (i.e. only two composting facilities). The City is using the Austin Green District to develop further infrastructure through public and private investment (with incentives).</p>
<p>Direct Jobs Created</p>	<p>Recycling Collection</p> <p>Full-scale recycling (residential, multi-residential, commercial) has resulted in an additional 40-50 jobs for collection. As collection becomes more efficient (e.g.</p>

	<p>single-stream collection), jobs are shifted from collection positions to newly emerging positions (e.g. facility and depot operators, etc.).</p> <p>Program Implementation</p> <p>Implementation of waste management and zero waste has resulted in numerous “green jobs” in the municipal sector. Positions include environmental management and sustainability positions and media and marketing positions. Additionally, numerous positions have been created for the new event recycling program.</p> <p>Paper Industry</p> <p>Paper recycling industry (in Texas and some in Mexico) boomed in response to Austin’s recycling ordinance. The total number of paper product manufacturing facilities in Texas is 258 with 251 of those being facilities for converted paper products. Total employment for pulp and paper industries in Texas is 19,617².</p>
<p>Waste Reduction Results Achieved</p>	<p>Single-stream recycling increased participation by 50% with a set-out rate of 90%.</p> <p>Diversion has increased to 35% in 2009 (52,000 tons recycled) with single stream recycling system compared to 20% in 2008 (32,000 tons recycled) with dual stream recycling collection.</p>
<p>Limitations/Issues/Challenges</p>	<p>The City has a franchise system for waste collection that uses licensing (a much more free market system), which creates challenges because of the complexity of numerous collection companies.</p> <p>There are zoning limitations in Austin that make it difficult to establish industrial facilities.</p> <p>Lack of recycling infrastructure for businesses to develop (e.g. composting facilities).</p>
<p>Lessons Learned</p>	<p>Due to the zoning limitations in Austin, a recycling ordinance was the best option.</p>
<p>Contact</p>	<p>Jessica Kingpetcharat-Bittner Sustainability Administrator City of Austin Solid Waste Services Department P.O. Box 1088, Austin, TX 78767 512-974-7678 jessica.king@ci.austin.tx.us</p>

Source	<ol style="list-style-type: none">1. Market Analysis of Recoverable Materials (2007) prepared for the CAPCOG region by R.W. Beck.2. Forest and Paper Industry At A Glance: Texas. American Paper and Forest Association. Available at http://www.afandpa.org/State_Brochures/Texas.pdf (accessed January 29, 2009).
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Table 2.6 - Boulder County, Colorado	
Location	Boulder County, Colorado
Legislative Support	Article 17 - Waste Diversion and Recycling
Agency	Resource Conservation Division, Boulder County EcoCycle
Waste Policy/Objective	Goal to increase waste diversion for Boulder County government and for the county as a whole to 50% or better, by the year 2010. The ultimate goal of Boulder County's Zero Waste Plan is to eliminate waste (i.e. achieve Zero Waste or "darn near") by 2025.
Waste Reduction Strategies	Zero Waste Resolution adopted in 2005 with Zero Waste as a guiding principle for all county operations and for outreach and actions within the community.
Practices/Approach	<p>Boulder County Recycling Center Recyclables are received, processed and stored prior to shipment. The Centre includes the Centre for Hard-To-Recycle Materials where many non-traditional items that can not be accepted in the recycling bin can be recycled.</p> <p>ReSource Yard A facility that salvages used building materials and resells them. It includes a drop-off and pick-up and a delivery service. Deconstruction services are also available.</p> <p>Roofs To Road Program Recycling program for shingles that started with funding from the State. Boulder County Transportation Department began using 5% recycled asphalt from shingles in the road asphalt mix. This was a pilot project that worked well and is being expanded into a full program.</p> <p>Pay As You Throw Ordinance Boulder County has updated its Trash Hauler Ordinance to help reduce waste and increase recycling and composting for residential trash customers in unincorporated Boulder County by requiring trash haulers to charge variable rates for garbage, recycling, and</p>

	<p>organics collection.</p> <p>Trash Tax The City of Boulder instituted a Trash Tax to pay for expanded recycling services, commercial recycling and hard-to-recycle materials collection. In addition, it funds the wood waste drop off program.</p> <p>Organics collection The City of Boulder has required haulers to provide organics collection. Residents in single-family homes are required to participate. Businesses are encouraged to participate in organics programs by receiving free waste audits.</p>
<p>New Markets Developed/ Economic Spin-Offs</p>	<ul style="list-style-type: none"> • Recycled asphalt market • Significantly expanded supply of organics
<p>Direct Jobs Created</p>	<p>Boulder County Recycling Center Eco-Cycle, the contractor employed by Boulder County to process and market materials employs about 30 - 40 people (6 admin, 12 staff, 30+ contract labourers)</p> <p>County Facilities Staff for planning, administration, and operations of depots include 9 FTEs, several part-time, and several hourly labourers.</p>
<p>Waste Reduction Results Achieved</p>	<p>Complete data is not available. The County is around 60% for the County's buildings zero waste program. Across the entire County (residential, commercial, and all municipal operations), they are around 35% diversion.</p> <p>15,000 tons of shingles were diverted in 2009 (first year of the program).</p>
<p>Limitations/Issues/Challenges</p>	<p>Tipping fees are very low (\$10-15/ton) and make it difficult to implement large-scale organics since it is cheaper to landfill it.</p> <p>There are very few regulations in the State (no state goals/requirements) and little funding.</p> <p>It is difficult to site facilities due to the land use (limited supply of designated industrial land outside of urban areas).</p>

Lessons Learned	The Zero Waste plan comprises 89 strategies, which has been too complex to manage. Strategies should be more focused to make it easier to implement.	
Contact	Jeff Callahan, Manager Resource Conservation Division Boulder County 1901 63rd Street Boulder, CO 80301 720-564-2221 jcallahan@co.boulder.co.us	Lisa Friend Boulder County Sustainability Office 1901 63rd Street Boulder, CO 80301 303-441-3522
Source	http://www.bouldercounty.org/recycling/index.htm	

Table 2.7 - Portland, Oregon	
Location	City of Portland, Oregon
Legislative Support	<i>Opportunity to Recycle Act</i> Electronics Recycling Law
Agency	City of Portland Bureau of Planning and Sustainability
Waste Policy/Objective	Oregon's waste diversion goal is 50% state-wide diversion by 2009. City of Portland's goal is to increase recycling rate to 75% by 2015, including businesses and at construction sites (valued at \$50,000 or more).
Waste Reduction Strategies	The Portland Recycles! Plan outlines numerous waste reduction strategies. Waste collection is a free-market system of haulers (franchising system) where haulers are regulated by the City, which also sets the rates. Mandates on residents, businesses, construction and demolition through City ordinances.
Practices/Approach	<p>Material Bans</p> <p>Electronics ban prohibits any person from disposing of computers, monitors and televisions. It also prohibits solid waste disposal facility operators from knowingly accepting these devices for disposal and requires disposal site operators to implement a program to prevent acceptance of these devices for disposal.</p> <p>Additional items banned from landfill in Oregon:</p> <ul style="list-style-type: none"> • discarded or abandoned vehicles • large home or industrial appliances • used oil • tires • lead-acid batteries <p>Mandatory Construction, Remodeling and Demolition Waste Recycling</p> <p>All building projects with a permit value of \$50,000 or more (including construction, remodelling and demolition phases) are required to separate and recycle at least 75% of waste</p>

	<p>from job sites. Required recyclable materials include wood, old corrugated cardboard, metal, rubble (concrete, asphalt) and land clearing debris. Additionally, all dry waste must be processed to recover recyclables materials (wood, metal and cardboard) before landfill disposal.</p> <p>Mandatory Business Recycling Businesses are required to recycle at least 50% of their waste materials. This requirement will be changing to 75% by 2015.</p> <p>Business Composting Mandatory food scrap diversion for businesses.</p> <p>Additional Curbside Service Collection of motor oil.</p> <p>Small Grants \$25,000 in small grants is available for waste prevention and recycling initiatives. Projects include:</p> <ul style="list-style-type: none"> • Columbia EcoVillage - Urban co-housing community will utilize large scale composting system to handle 60 residents' food scraps • The Collective of Geniuses (CoG): The CoG Reclamation Factory - multifaceted project that incorporates purchasing equipment and reusing materials to create notebooks, sketch pads, greeting cards and other paper items for disenfranchised artists.
<p>New Markets Developed/ Economic Spin-Offs</p>	<p>Waste Haulers More waste hauler jobs have been created due to the separation of waste into more streams and its transport to a variety of processing and end-market locations. There are 55 hauling companies in Portland.</p> <p>Construction Waste and Deconstruction Services Approximately 250 units were deconstructed in 2001-02, up from 50 in 2000-0. Materials sales are averaging \$10,000 per unit, which translates into about \$2.5 million in sales industry-wide, in 2001-02².</p> <p>Two to three large deconstruction companies operate in Portland and two large and several small retail outlets sell used building materials. The biggest company - The ReBuilding Center- deconstructs around 50 buildings per year and has 300 visitors to their retail store daily.</p>

	<p>Organics Processing</p> <p>There are currently no organics processing facilities in Portland, which ships organic material to Washington. Mandatory organics programs for businesses in Portland have created a large and steady supply of organic materials, so much so that four new composting facilities are opening in the Portland area (all are currently in the licensing stage).</p>	
<p>Direct Jobs Created</p>	<p>More than 1,000 people work in the recycling industry in Portland¹.</p> <p>Six deconstruction companies formed in 2001-02, which is twice as many as in the previous two years. More than 100 full-time deconstruction (decon) jobs were created during these two years².</p> <p>Numerous jobs are being created in the construction and operation of the four new composting facilities, which are the direct result of making organics mandatory for businesses.</p>	
<p>Waste Reduction Results Achieved</p>	<ul style="list-style-type: none"> • State of Oregon: 48.2% in 2008. • Metro Portland: 64% in 2008. • City of Portland: increase from 63% waste diversion in 2004 to 67% in 2008 (residential and commercial). 	
<p>Limitations/Issues/Challenges</p>	<p>It is a challenge finding the right approach to enforcement. Portland has been taking a soft approach in the past and will be becoming stricter since, but it has to find the right balance to keep businesses motivated and to ensure they are following the ordinances.</p>	
<p>Contact</p>	<p>Babe O’Sullivan Solid Waste and Recycling Section Portland Bureau of Planning and Sustainability 503-823-9582 bosullivan@ci.portland.or.us</p>	<p>Debbie Cleek Green Building Specialist Portland Bureau of Planning and Sustainability 503-823-1110 debbie.cleek@ci.portland.or.us</p>
<p>Source</p>	<ol style="list-style-type: none"> 1. 2008 Oregon Material Recovery and Waste Generation Rates Report (2009). Oregon Department of Environmental Quality 2. http://www.allbusiness.com/human-resources/careers-career-path/959757-1.html 3. http://www.rebuildingcenter.org/ 	

Table 2.8 - Seattle, Washington	
Location	City of Seattle, Washington
Agency	Seattle Public Utilities
Waste Policy/Objective	A Zero Waste policy was adopted by Council in 2007. Seattle aims to increase the percentage of waste that is recycled or reused from current 44% to 60% by 2012 and 70% by 2025 with a new set of strategies and waste reduction programs.
Waste Reduction Strategies	<p>The City of Seattle Solid Waste Plan contains the following elements:</p> <ul style="list-style-type: none"> • To increase waste reduction and resource conservation. • To increase the efficiency, fairness, convenience, and accessibility of services. • To expand local recycling markets and increase purchases of recycled-content products. • To increase producer and consumer responsibility for sustainable waste management practices.
Practices/Approach	<p>Material Bans (City Ordinance) Yard debris - such as leaves, grass, and plant trimmings - and recyclable materials are not allowed in residential or commercial garbage and will not be collected. Additional materials with recycling programs (e.g. hazardous waste, florescent bulbs, batteries, metals) are not accepted as waste in home garbage and recycling, or at Transfer Stations; they must be taken to the appropriate Station or private recycler.</p> <p>Commercial Waste Services Recycling services offered free of charge and organics collection offered at lower cost than garbage collection (32% below garbage prices).</p> <p>Mandatory Recycling (City Ordinance) Businesses are required to recycle.</p> <p>Mandatory Organics (City Ordinance) Food and yard waste service is required for all residents and businesses. Fast food establishments are also required to use compostable products. The next phase of</p>

	<p>the program will require fast food establishments to use compostable utensils. In 2010 restaurants will need to have three separate bins for customers to separate each waste stream.</p> <p>Additional Curbside Service Collection of motor oil.</p> <p>Variable Rate Tipping Fees Rates at Disposal Stations are lower for clean yard waste and clean wood waste than rates for garbage. Materials must be sorted.</p> <p>Reuse Reuse and material salvage services and stores salvage construction materials and pick up and accept drop offs of cabinets, doors, windows, plumbing fixtures, a large variety of vintage and antique lighting and door hardware, flooring, trim, and much more. Program partners include ReStore, Earthwise, and Second Use, where items are brought in for resale from contractors, demolition companies, and homeowners.</p> <p>Extended Producer Responsibility Washington State passed legislation in 2009 for electronics take-back and recycling.</p>
<p>New Markets Developed/ Economic Spin-Offs</p>	<p>Making organics programs mandatory led to immediate, significant results (an increase of 20% in organics collection). Materials collected through the organics program are processed into compost and used on local parks and gardens.</p> <p>Cedar Grove Composting Facility handles waste from Portland’s organics programs as well. They produce compost, mulch, and soil, and they also provide landscape and construction services.</p> <p>Three or four companies that provide deconstruction services or that have received material from deconstruction for resale have formed in Seattle. A number of reuse facilities have also opened.</p> <p>Washington State’s electronics take-back legislation has led to immediate effects, with two companies opening to handle electronic waste.</p> <p>A survey of Washington State's Recycling Industry found that Washington's private recycling industry is responding</p>

	<p>to increased opportunities concerning recycled organic material and C&D wastes.¹ The survey also found the recycling industry is a significant component of the state's economy, as it invested more than \$850 million into capital assets and equipment, property, and funds owned by a business.¹</p>															
<p>Direct Jobs Created</p>	<p>Washington State's recycling industry is a significant component of the state's economy, employing at least 3,620 people.¹</p> <p>The Cedar Grove Composting facility employs 250 people.</p> <p>New jobs have been created in the electronic processing and recycling industry.</p>															
<p>Waste Reduction Results Achieved</p>	<p>State-wide recovery of materials was 47% in 2007.</p> <p>The City of Seattle has seen a dramatic decrease in the amount of waste handled in 2009 (decrease of 7% from 2008), however it is difficult to determine if this was a result of waste management strategies or the economy. Diversion rates for the City of Seattle are as follows:</p> <table border="1" data-bbox="602 1018 1417 1266"> <thead> <tr> <th>Year</th> <th>Residential</th> <th>Self Haul</th> <th>Commercial</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>47.8%</td> <td>17.2%</td> <td>41.6%</td> <td>40.0%</td> </tr> <tr> <td>2008</td> <td>55.9%</td> <td>18.4%</td> <td>54.7%</td> <td>50.0%</td> </tr> </tbody> </table>	Year	Residential	Self Haul	Commercial	Total	2000	47.8%	17.2%	41.6%	40.0%	2008	55.9%	18.4%	54.7%	50.0%
Year	Residential	Self Haul	Commercial	Total												
2000	47.8%	17.2%	41.6%	40.0%												
2008	55.9%	18.4%	54.7%	50.0%												
<p>Limitations/Issues/Challenges</p>	<p>The biggest hurdles have been in educating the public, especially since Seattle is a culturally diverse area (with its language barriers and cultural differences).</p> <p>It has been difficult to find processing capacity for organics. The City is continuing to develop the proper infrastructure.</p>															
<p>Lessons Learned</p>	<p>Extended producer responsibility is the best approach.</p>															
<p>Contact</p>	<p>Ken Armstrong, Director Solid Waste Division Seattle Public Utilities 700 Fifth Avenue, Suite 4900 Seattle, WA 98124-4018 206-684-5832 ken.armstrong@seattle.gov</p>															

Source	<ol style="list-style-type: none">1. Survey of Washington State's Recycling Industry (2002). Report commissioned by King County, Washington.2. 2008 Recycling Rate Report (July 2009). Seattle Public Utilities.
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Table 2.9 - Canberra, Australia

Location	Australia Capital Territory (ACT)
Legislative Support	<i>Environmental Protection Act 1997</i> <i>Waste Minimisation Act 2001</i> Check Department of Environment, Climate Change, Energy and Water
Agency	Department of Territory and Municipal Services - ACT NOWaste
Waste Policy/Objective	Aims to achieve a waste free society through the combined efforts of industry, government, and community.
Waste Reduction Strategies	No Waste by 2010 Waste Management Strategy established the following framework: <ul style="list-style-type: none"> • Community Commitment • Avoidance and Reduction • Resource Recovery • Residual Waste Management • Creative Solutions
Practices/Approach	Waste Pricing The Waste Pricing Strategy calls for the full cost of disposal to be reflected in landfill tipping fees. Tipping fees have been increasing to encourage reuse and recycling of waste products (the current commercial tipping fee for 2009-10 is \$113.85 AUS/tonne). There is no charge for recyclable materials such as metals (including car bodies and white goods) and green waste. Differential pricing is used between sorted and unsorted wastes. Material Bans Computers are banned from landfill (not accepted for disposal - charged a recycling fee).

	<p>Construction Waste Program The ACT has had excellent results in recycling construction and demolition (C&D) waste. In 2008-09, around 28, 000 tonnes were sent to landfills, and over 280,000 tonnes were recycled. The C&D recycling facility at the Government’s Mugga Lane Resource Management Centre operates under contract with the Territory. That facility’s prices for the acceptance of C&D waste are lower than the price to send the waste to landfill. There are also privately operated C&D recycling facilities.</p> <p>Resource Recovery Estates Hume Resource Recovery Estate is a collection of enterprises aimed at generating significant synergies through the collaborative development of turning outputs or by-products of one enterprise into the inputs of another. Land in the Hume Resource Recovery Estate will be released via a public tender process in 2010.</p> <p>The Hume Resource Recovery Estate also has an Education Centre that includes business and market development activities as one of its roles.</p> <p>Ecobusiness Program to assist and encourage businesses with strategic environmental management. The program also targets large waste producers to assist with strategies to reduce waste.</p>
<p>New Markets Developed/ Economic Spin-Offs</p>	<p>Pricing strategies have been effective for C&D waste – it is now much cheaper to recycle C&D than to commercially dispose of it, resulting in a strong market for C&D materials. The same is true for garden waste and compost/soil markets. Corkhills Bros has very good markets for their garden waste.</p> <p>New businesses open all the time in ACT. Some are under contract with the Territory, and many others are private businesses. Recent examples include Tiny’s (material reuse store) and Renewable Processes (metal and e-waste recycling).</p>
<p>Direct Jobs Created</p>	<p>ACT seeks data about jobs creation in the resource recovery industry via their annual Resource Recovery Survey, but responses are voluntary and data is not comprehensive. As a rough guide, ACT estimates that resource recovery creates two or three times the jobs that</p>

	<p>simple waste disposal would.</p> <p>ACT Recycling's C&D recycling operation was commissioned in October 2007 and employs 20 staff.</p> <p>The Hume Resource Recovery Estate will lead to the establishment of a new business or businesses in 2010 as a major land release through public tender is planned for this year.</p>
Waste Reduction Results Achieved	<p>Since implementing the No Waste strategy in 1996, the rate of recovery has increased to 75% in 2008-9 from 42% in 1995-6. 85% of standard recyclables - paper, plastic, glass, metals - and over 90% of green waste is being recycled.</p>
Limitations/Issues/Challenges	<p>There will always be some problematic wastes that must be sent to landfill (e.g. asbestos and CCA treated timber). We think this is compatible with an inspirational zero waste target – i.e. Divert as much waste as you can.</p> <p>Waste reduction is very hard. ACT has seen few effective initiatives that prevent the generation of waste in the first place. How does a local or state government realistically combat consumerist behaviours? How does one jurisdiction prevent the creation of non-recyclable or unnecessary material that is created elsewhere?</p>
Lessons Learned	<p>ACT's Waste Pricing Strategy has resulted in dramatic increases in commercial landfill fees, but these have been rolled out incrementally – a small increase each year for a few years, instead of one big jump. One big increase would have been more effective – the smaller increases were simply passed on to customers of commercial waste and recycling collectors in annual increases.</p>
Contact	<p>Jo Clay Operational Policy & Business Coordinator ACT NOWaste, Territory and Municipal Services GPO Box 158 Canberra ACT 2601 (02) 6205 5341 joanne.clay@act.gov.au</p>
Source	<p>1. Turning Waste into Resources - No Waste Strategy Action Plan 2004-2007. Available at www.tams.act.gov.au/_data/assets/pdf_file/0005/12497/turningwasteintoresources.pdf (accessed Jan. 27, 2010)</p>

3. SUMMARY OF BEST PRACTICES FOR ZERO WASTE JOB CREATION

Review of zero waste and other innovative strategies being used elsewhere have provided important insight into strategies that can be utilized to move Simcoe County closer to achieving zero waste and creating green, waste-related jobs. Common successful tools used in the jurisdictions reviewed include:

Disposal Restrictions

In many cases, landfill bans and other restrictions or disincentives for disposing of certain materials have proven successful in reducing the quantities of material being disposed, and in developing strong markets for those materials. A variety of approaches have been used, including restrictions, the banning of materials from landfills, and the use of variable rate tipping fees. This approach provides a guaranteed supply of material, since the material can no longer be disposed of and makes new businesses more viable. Potential problems with this approach include non-banned disposal options existing outside of the jurisdiction, thereby creating competition. Material bans can also work in conjunction with other economic development strategies to help develop markets.

A good example of material bans can be found in Nova Scotia, which has banned organic materials (amongst many other materials), thereby creating a strong and stable market for organic processing.

Ordinances or By-Laws

Ordinances, or by-laws, have been used in many of the surveyed jurisdictions to mandate participation in recycling and organics programs. These ordinances have varied in the degree of audiences targeted; from targeting residential homeowners toward participating in curbside recycling programs, to targeting commercial establishments toward participating in recycling and organics programs. Similar to disposal restrictions, mandating programs creates a larger and steady supply of marketable materials that present additional business opportunities.

Market Development

A number of the cases examined utilized a variety of techniques to assist with market development and to promote the establishment of businesses. Techniques most commonly used included resource development zones or areas that promote the establishment of businesses by easing their financial burden. The most notable example is in California, where numerous grants, loans, and incentives have been used as economic development tools to allow innovative green and waste resource businesses to establish themselves.

Municipalities can also forge partnerships with industry. While the following example was not explicitly examined in the survey, Durham Region made a deal in the 1990s with a waste processing contractor to take a percentage of Durham Region's glass and grind it so it could be mixed with gravel for road construction. The Region then specified that their entire road base had to include 10% recycled glass, creating a market for their own material.

Extended Producer Responsibility (EPR)

Extended producer responsibility or stewardship programs have been implemented to varying degrees within most of the jurisdictions surveyed. EPR programs are similar to disposal restrictions and mandating programs, in that EPR can create a steady supply of materials that would otherwise be disposed of. Unique to EPR programs is that entirely new markets are developed for new materials. New jobs are created in the collection, processing, and transportation of a variety of materials.

Although EPR programs generally operate at a higher level of jurisdiction, opportunity is present in Simcoe County due to Ontario's evolving EPR programs. Emerging electronics collection programs for example, represent a significant supply of electronic waste that could need processing and recycling in the near future. EPR programs work best in conjunction with material bans, since in their absence, items are often disposed of rather than taken to depots for recycling.

Research and Development

Several of the surveyed jurisdictions were involved with waste management research and development, most notably in Edmonton and Australia. These jurisdictions developed R&D programs in partnership with educational institutes and became hubs for innovative waste-related and green research.

Summary of Approaches Used for Zero Waste

Overall, policies described above have been successful tools in creating new markets for waste resources and have resulted in significant job creation that would otherwise not exist if waste resources were disposed. Policy approaches are very important, and in most cases, policy approaches have been taken and have been very effective. A notable exception to the policy approach is in Edmonton, where the programs rely almost entirely on voluntary actions. Edmonton's case demonstrates that education and engaging citizenry and businesses can be as effective as policy, and it demonstrated that this should be a component of any policy approach.

Table 3.1 provides an overview of the best practice approaches and what their impacts have been in the jurisdictions surveyed.

Table 3.1 - Best Practice Approaches Used for Zero Waste

Best Practice	Notable Market/Jobs Created	Economic Benefits
Disposal Restrictions		
British Columbia	<ul style="list-style-type: none"> • Beverage container deposit-refund system • Tires, electronics, used oil • Organics 	<ul style="list-style-type: none"> • Supportive/enhancement of Provincial EPR programs • Numerous facilities developed (e.g. e-waste recycling)
Nova Scotia	<ul style="list-style-type: none"> • Numerous organics processing facilities developed • Plastic beverage containers, corrugated cardboard, compost, C&D waste, tires, and paint 	<ul style="list-style-type: none"> • Strong and stable market for organic processing • Strong markets for restricted materials • 247 % increase in material recovery facilities
Edmonton	<ul style="list-style-type: none"> • Concrete, metals, and brush/trees, wood, drywall, and asphalt shingles 	<ul style="list-style-type: none"> • Stable markets for wide variety of materials
California	<ul style="list-style-type: none"> • Organics 	<ul style="list-style-type: none"> • Stable markets for organic materials - compost production
Portland	<ul style="list-style-type: none"> • Electronics, metals, used oil, tires, lead-acid batteries 	<ul style="list-style-type: none"> • Stable markets for wide variety of materials
Seattle	<ul style="list-style-type: none"> • Organic waste • Hazardous waste, florescent bulbs, batteries, metals 	<ul style="list-style-type: none"> • Stable markets for wide variety of materials • Reuse stores
Canberra	<ul style="list-style-type: none"> • Computers • C&D waste 	<ul style="list-style-type: none"> • Computer reuse and processing • Stable markets for C&D materials • C&D processing facilities • Reuse retail stores
Ordinances or By-Laws		
Austin	<ul style="list-style-type: none"> • Aluminum cans, tin/steel cans, glass containers, plastic bottles, newspaper, cardboard, kraft paper bags, and home office paper 	<ul style="list-style-type: none"> • Substantially sized paper recovery industry

Best Practice	Notable Market/Jobs Created	Economic Benefits
Boulder County	<ul style="list-style-type: none"> • Organics • Blue box recyclables 	<ul style="list-style-type: none"> • Significantly expanded supply of organics for processing
Portland	<ul style="list-style-type: none"> • Construction, Remodelling and Demolition Waste • Deconstruction services • Organics • Blue box recycling 	<ul style="list-style-type: none"> • Reuse and recycling retail stores • Organics facility developed and also accepts organics from other jurisdictions • More organics facilities opening • Transportation
Seattle	<ul style="list-style-type: none"> • Organics • C&D Waste • Deconstruction services 	<ul style="list-style-type: none"> • Reuse and recycling retail stores • More organics facilities opening
Market Development		
Nova Scotia	<ul style="list-style-type: none"> • 28 % increase in value-added manufacturing from 1996 to 2006 	<ul style="list-style-type: none"> • Everything from recycling cardboard fibre into new cardboard products to producing animal feed from candy manufacturing wastes
Edmonton	<ul style="list-style-type: none"> • Technological processes that fully sort waste stream created operational employment 	<ul style="list-style-type: none"> • New local companies developed to use materials collected from waste stream
California	<ul style="list-style-type: none"> • Innovative manufacturing companies • Beverage container recycling, household hazardous waste, reuse retail 	<ul style="list-style-type: none"> • New local companies developed • Zones allow close proximity for materials to exchange
Austin	<ul style="list-style-type: none"> • Resource recovery 	<ul style="list-style-type: none"> • Start-up resource recovery businesses
Canberra	<ul style="list-style-type: none"> • New resource recovery and manufacturing businesses 	<ul style="list-style-type: none"> • Synergies through collaborative development turning outputs or by-products of one enterprise into the inputs of another

Best Practice	Notable Market/Jobs Created	Economic Benefits
EPR		
British Columbia	<ul style="list-style-type: none"> • Beverage container deposit-refund system • Tires, electronics and used oil 	<ul style="list-style-type: none"> • Collection, processing, transportation
Nova Scotia	<ul style="list-style-type: none"> • Beverage containers, waste paint, used tires, and electronic products 	<ul style="list-style-type: none"> • Private hazardous waste management facilities • Tire derived aggregate to be used in manufacturing processes
Edmonton	<ul style="list-style-type: none"> • Electronics, paint, tires, and household hazardous waste 	<ul style="list-style-type: none"> • Collection, processing, transportation
California	<ul style="list-style-type: none"> • Electronics, used oil/filters, and beverage containers 	<ul style="list-style-type: none"> • Collection, processing, transportation
Seattle	<ul style="list-style-type: none"> • Electronics 	<ul style="list-style-type: none"> • Collection, processing, transportation • Two companies opened to manage electronic waste
Research and Development		
Edmonton	<ul style="list-style-type: none"> • Biofuel facility • Sand, asphalt recycling 	<ul style="list-style-type: none"> • Hub for innovative research, technology development and training partnerships with educational institutes

4. CURRENT WASTE INDUSTRY IN SIMCOE COUNTY

Simcoe County

Simcoe is a County located in central Ontario, with a current population of 422,204 people⁵, which includes the separate cities of Barrie and Orillia. The population in Simcoe County (including Barrie and Orillia) is expected to reach 667,000 by 2031, and employment is expected to increase from 154,000 in 2001 to 254,000 by 2031.⁶

The land area of Simcoe County is 4,840.56 square kilometers and is located between Georgian Bay and Lake Simcoe. Simcoe County is an upper-tier municipality and comprises 16 towns and townships (Table 4.1).

Although the cities of Barrie and Orillia are separate from Simcoe County both politically and administratively, they are geographically and economically part of Simcoe.

Simcoe has a well-balanced economy with strength in agriculture (its primary sector), manufacturing, as well as service and tourism sectors. Simcoe County's diverse economic base includes traditional, resource-based industries, as well as others based on modern manufacturing and technology.

Industrial employment continues to be important within a number of different communities. The largest employment categories in Simcoe comprise manufacturing at 20.3%; wholesale and retail trade at 18.9%; other services at 16.4%; health and social services at 10.4%; and accommodation, food and beverage at 9.1%. The unemployment rate in 2007 was 6.1%, which was lower than the provincial rate. 75% of Simcoe County residents work within the County, 23.4% work in other areas of the GTA and 1.2% work in other parts of Ontario and Canada.

⁵ Statistics Canada - 2006 Community Profiles

⁶ Simcoe Area Growth Plan. (May 2008) Hemson Consulting.

Table 4.1 - Municipalities in Simcoe County	
Municipality	Population (2006)⁷
Town of Bradford West Gwillimbury	24,039
Town of Collingwood	17,290
Town of Innisfil	31,175
Town of Midland	16,300
Town of New Tecumseth	27,701
Town of Penetanguishene	9,354
Town of Wasaga Beach	15,029
Township of Adjala-Tosorontio	10,695
Township of Clearview	14,088
Township of Essa	16,901
Township of Oro-Medonte	20,031
Township of Ramara	9,427
Township of Severn	12,030
Township of Springwater	17,456
Township of Tay	9,748
Township of Tiny	10,754
City of Barrie	128,430
City of Orillia	30,259
Total Simcoe County	422,204

Simcoe County Current Waste System

For its 16 member municipalities, Simcoe County oversees the curbside collection of waste and recycling, which is collected under private contract. The residential waste program includes:

- Garbage: weekly curbside collection with a one bag limit
- Blue Box recycling: weekly curbside collection of containers and fibre
- Organics: weekly curbside collection of household organics

⁷ Statistics Canada - 2006 Community Profiles.

- Other collection (varies by municipality):
 - Leaf and yard waste
 - Bulky waste
 - Scrap metal
 - Other materials
- Ten Drop-off depots scattered across nine municipalities, accepting a variety of materials including garbage, Blue Box recyclables, scrap metal, waste wood, brush, leaf and yard waste, asphalt shingles, drywall, tires, household hazardous waste (HHW) and waste electrical and electronic equipment (WEEE).

The Industrial, Commercial, and Institutional (IC&I) sector receives limited waste services from the County. IC&I wastes are managed by private sector hauling and recycling and disposal contractors and accounts for an estimated 110,000 tonnes of waste per year in Simcoe County⁸. Although the IC&I sector is responsible for managing its own waste, Simcoe managed approximately 20,700 tonnes of IC&I waste in 2009⁹, mostly from small commercial businesses hauling materials directly to landfills and drop off depots. Private waste hauling and processing companies are outlined below.

Simcoe County has also implemented a diversion program for shingles and drywall. These materials are separated into different bins at the County landfills and transfer stations/depots and are hauled to facilities located outside of Simcoe for processing.

Extended Producer Responsibility

Under Waste Diversion Ontario, several provincial EPR programs are currently in place that allow drop off of designated materials in Simcoe County free of charge. Collection and recycling costs are the responsibility of the Industry Funding Organization. EPR programs include:

- Municipal Hazardous and Special Waste (MHSW) (e.g. paints, solvents, batteries, oil)
- Waste Electrical and Electronic Equipment (WEEE) (e.g. computers, monitors, fax machines)
- Tires

Variable Rate Tipping Fees

Simcoe County charges variable rate tipping fees at landfills and drop-off depots for the disposal of wood waste, brush, and metals under its “Mixed Waste Policy”. The variable rates provide economic incentives for the separation of recoverable material from waste.

⁸ County of Simcoe Solid Waste Management Strategy - Task D: Current System Description. Draft Technical Memo prepared by Stantec (Jan. 12, 2010).

⁹ County of Simcoe Solid Waste Management Strategy - Task D: Current System Description. Draft Technical Memo prepared by Stantec (Jan. 12, 2010).

The basic tipping fee (\$115/tonne) is reduced to one-half for divertible materials that are separated, to encourage waste generators to separate recoverable materials. In addition, loads that contain recoverable material but are not sorted for diversion are charged twice the basic tipping fee. Contractors are bound to the County’s “Mixed Waste Policy” and are responsible for any surcharges resulting from the policy.

There is no charge for items covered under the Waste Diversion Ontario programs (electronic waste, MHSW, tires, Blue Box items) and residential loads of brush and yard waste that are properly sorted.

Other Policy Approaches

Simcoe County’s current Waste Management by-law does not require participation in the Blue Box recycling program or the organics program. There are also no material bans at County landfills.

Market development or financial incentives for waste resource companies or research and development (R&D) do not currently exist in Simcoe County.

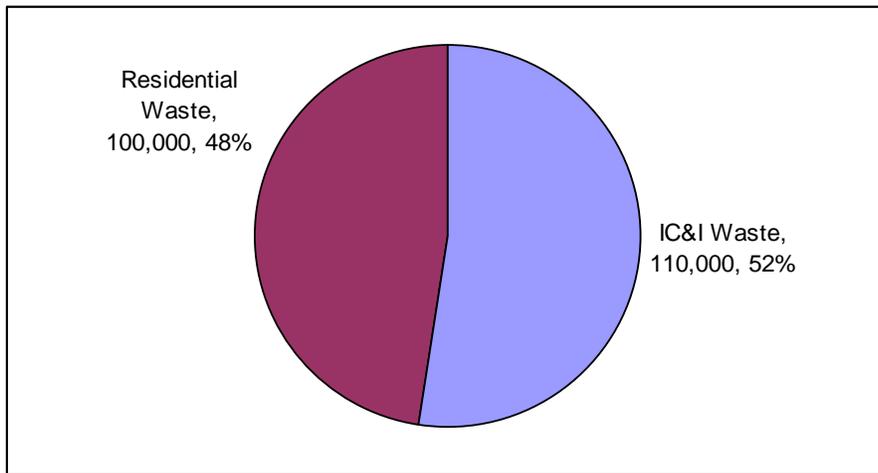
Simcoe County Facilities and Operations

The County is responsible for 4 active landfill sites, 4 transfer stations, 5 outdoor windrow leaf and yard waste composting facilities, and one small material recover facility (MRF). Simcoe County’s Waste Management program employs 52 employees to operate County facilities and provides the transport of materials.

Wastes Managed

Total residential waste generated in Simcoe County is approximately 100,000 tonnes and IC&I waste generated is approximately 110,000 tonnes. Figure 4.1 shows the proportions of residential and IC&I waste generated in Simcoe County.

Figure 4.1 - Waste Generation in Simcoe County

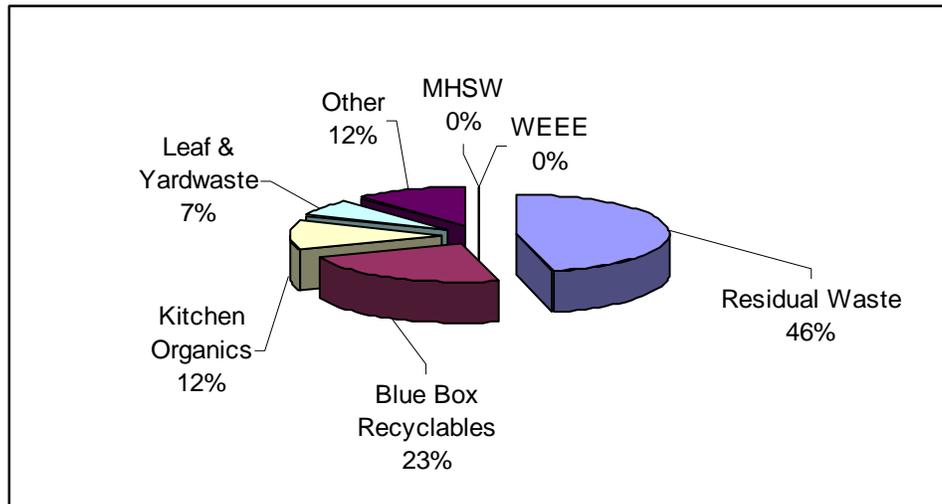


Source: County of Simcoe Solid Waste Management Strategy - Task E: Current System Performance and Waste Projections. Draft Technical Memo prepared by Stantec (Jan. 13, 2010).

Municipal Solid Waste

Simcoe County managed 121,411 tonnes of material through its waste management system in 2009, including 54,915 tonnes for disposal and 66,496 tonnes diverted. Figure 4.2 presents the composition of the waste stream handled by Simcoe County.

Figure 4.2 - Total Residential Waste Managed by Simcoe County in 2009



Source: County of Simcoe Solid Waste Management Strategy - Task E: Current System Performance and Waste Projections. Draft Technical Memo prepared by Stantec (Jan. 13, 2010).

A further breakdown into each waste stream and the tonnage collected in 2009 is as follows:

Table 4.2 - Waste Streams Managed by Simcoe County (2009)	
Materials	Tonnes
Blue Box Recyclables	23,166
Source Separated Organics	11,645
Leaf and Yard Waste	6,903
Municipal Hazardous or Special Waste	151
Waste Electrical and Electronic Equipment	312
Tires	346
Drywall	1,322
Shingles	2,701
Scrap Metal & White Goods	1,526
Wood and Brush	6,142
Other Diversion	81
Residual Waste (residential)	46,315

Source: County of Simcoe Solid Waste Management Strategy - Task D: Current System Description. Draft Technical Memo prepared by Stantec (Jan. 12, 2010).

All County waste is currently disposed of within the County boundaries, however recyclable and organics processing capacity is lacking within Simcoe, necessitating the export of materials for processing. Organic materials collected from the curbside organics program are transferred at the County transfer facilities and transported to Hamilton’s Central Composting Facility (CCF). The County signed a five-year agreement in September 2008 to send all of its organics to the CCF. Under that contract, the County is responsible for hauling its organics to the CCF, and the CCF is responsible for processing and disposal of residual waste, and marketing the compost. The CCF retains all profits from the sale of the compost.

Simcoe County’s one small MRF processes paper fibre solely from North Simcoe. Paper fibre from the remaining areas is sent to private fibre processing facilities (Canada Fibres, Paper Fibres, Continental) outside the County. All commingled containers collected are shipped to external MRFs in Bracebridge and Oshawa for processing (WSI and Durham Shred).

Additional materials collected at depots are processed and recycled by private sector businesses. These materials and the facilities that process them are as follows:

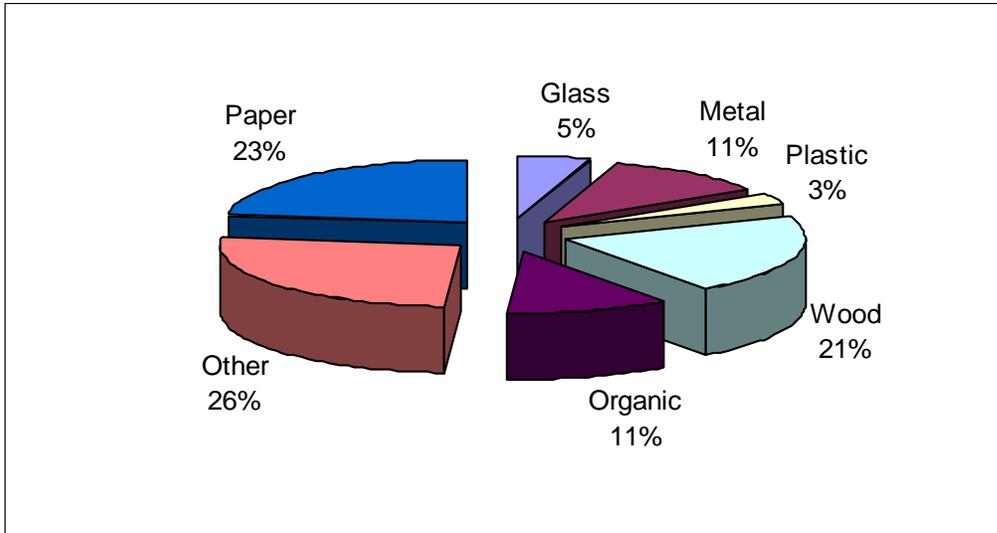
Table 4.3 - Processing Facilities for Additional Materials Collected by Simcoe County	
Materials	Destination
Drywall	New West Gypsum (Oakville)
Shingles	TRY Recycling (London)
WEEE, Phase 1	Ontario Electronic Stewardship (various locations)
WEEE, Phase 2	Global Electric Electronic Processing (Barrie)
HHW	Brendar Environmental (Bracebridge)
Wood Chips & Brush Chips	Gro Bark (Georgetown)
Tires	Ontario Tire Stewardship (various locations)
Metal, Wet Cell Batteries, Propane Tanks	All Ontario Recycling (Bracebridge)

Industrial, Commercial, and Institutional Waste in Simcoe County

IC&I waste is difficult to track since it is predominantly managed by private sector waste hauling and recycling companies. IC&I waste composition is not available for Simcoe County, therefore general Ontario IC&I waste composition, as prepared by the Ministry of the Environment, is used to generalize Simcoe’s IC&I waste. Ontario’s IC&I composition is presented in Figure 4.3, presented in averages. Restaurants and retail food

establishments generate more organic materials than do office or manufacturing establishments.

Figure 4.3 - IC&I waste composition in Ontario



Source: Ontario's 60% Waste Diversion Goal - A Discussion Paper (June 2004). Ministry of the Environment.

Based on the estimated 110,000 tonnes of IC&I waste in Simcoe and the estimated IC&I waste composition provided by the MOE, IC&I tonnages in Simcoe County are as follows:

Table 4.4 - Estimated IC&I Waste Streams in Simcoe County	
Materials	Tonnes
Other	28,600
Wood	23,100
Organic	12,100
Metal	12,100
Paper	2,530
Glass	550
Plastic	330

Private Waste Related Companies in Simcoe County

Numerous private waste-related companies (including transportation) operate in Simcoe County and the surrounding area. It is difficult to quantify the number of companies and their service areas. Simcoe County Economic Development is a newly established office

at the County and does not currently keep inventory or profile of the economic sectors for the County.

Based on a review of local listings, a list of waste-related businesses has been developed and is available in Appendix A. This list is not a comprehensive list of all businesses in Simcoe County.

Labour Flow Analysis for Simcoe County from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) presented in Table 4.5 showing the number of waste and resource-related jobs in each sector and the number of Simcoe residents employed in each sector. In most sectors Simcoe County has a significant net export of labour where Simcoe residents employed in those sectors work outside of Simcoe County.

Table 4.5 - Waste and Recovery Labour Flow Analysis - Simcoe County		
Industry (North American Industry Classification System) 2002	Jobs Within Simcoe	Labour Force Living in Simcoe
562 - Waste Management and Remediation Services	420	720
5621 - Waste Collection	90	180
5622 - Waste Treatment and Disposal	235	375
5629 - Remediation and Other Waste Management Services	90	165
322 - Paper Manufacturing	450	800
3221 - Pulp, Paper and Paperboard Mills	25	90
3222- Converted Paper Product Manufacturing	425	710
326 - Plastics and Rubber Products Manufacturing	2,315	2,900
3261 - Plastic Product Manufacturing	2,040	2,600
3262 - Rubber Product Manufacturing	275	300
327 - Non-Metallic Mineral Product Manufacturing	1,195	1,400
3271 - Clay Product and Refractory Manufacturing	30	40
3272 - Glass and Glass Product Manufacturing	615	605
3273 - Cement and Concrete Product Manufacturing	510	680
3274 - Lime and Gypsum Product Manufacturing	0	0
3279 - Other Non-Metallic Mineral Product Manufacturing	40	65
4181 - Recyclable Material Wholesaler-Distributors	370	470

Source: Rural Economic Development Data & Intelligence. Ministry of Agriculture, Food and Rural Affairs.

Municipal Hazardous or Special Waste (MHSW)

After MHSW materials are collected and prepared for shipment by municipal and commercial collection sites, they are managed by Stewardship Ontario. Stewardship Ontario also approves transporters and processors for the MHSW program. There are 29 approved MHSW processors throughout Ontario that each handle a variety of acceptable items under the program. Transporters and processors of MHSW approved¹⁰ by Stewardship Ontario in the Simcoe area include:

- Asured Transport (Barrie)
- Newalta (Barrie)
- Brendar Environmental (Bracebridge)

Waste Electrical and Electronic Equipment (WEEE)

Ontario Electronic Stewardship (OES) is responsible for the WEEE program, and it is similar to the MHSW program in that companies register with OES to manage wastes in the program. The program also partners with reusers and refurbishers, transporters/consolidators, and recyclers/processors.

Recyclers/processors currently approved under the program include:

- GEEP – Global Electric Electronic Processing (Barrie and Toronto)
- ADL Process Inc. (Toronto)
- Artex Environmental (Toronto)
- e-Cycle Solutions (Mississauga)
- FCM Recycling Inc. (Lavaltrie, QC)
- La Relance Outaouais (Gatineau, Québec)
- Sims Recycling Solutions (Brampton)
- Toronto Recycling Inc. (Richmond Hill)

Used Tires

The tire stewardship program is managed by Ontario Tire Stewardship (OTS) similar to the MSHW and WEEE programs. The OTS partners with collectors, haulers, and processors. The program is still in its infancy and has 27 registered processors in Ontario, Quebec, and the US as of January 2010. Ontario facilities include:

- A1 Blasting Mats (Sturgeon Falls)

¹⁰ Stewardship Ontario, MHSW Registered & Approve Transporters and Processors. (current to Feb. 8, 2010). Available at http://www.stewardshipontario.ca/mhsw/pdf/transporters_processors/approved_TP.pdf.

- Best Blasting Mats Inc. (Sturgeon Falls)
- Emterra Tire Recycling Ltd (Brampton)
- Ideal Rubber Industries (Brantford)
- Meagher Blasting Mats (Carrying Place)
- Moose Creek Tire Recycling Inc. (Moose Creek)
- National Rubber (Toronto)
- Perth Recycling Inc. (Brunner)
- Ridge Recycling (Chatham)
- Sun County Recycling Inc (Chatham)
- Tire King (London)
- Treadcraft Limited (Dunnville)
- Tri City Service Ltd. (Guelph)

Organics Processing Facilities

Currently there are no processing facilities in Simcoe County for kitchen/food scrap organics and all food scraps collected by Simcoe County in the Green Bin program are shipped to Hamilton.

Research and Development in Simcoe County

Current educational institutes in Simcoe County include Georgian College and Lakehead University. Georgian College campuses are located in Barrie, Orillia, and Owen Sound, with regional campuses in Collingwood, Midland, Bracebridge, and Orangeville. A new course at Georgian College called “Recycology” was introduced in 2009 with a goal to promote awareness of resource recovery.

Lakehead University is currently building a new campus in Orillia which will offer several environmental programs.

Currently there do not appear to be any programs or research regarding waste management, waste technologies, or waste resources in Simcoe County.

Nottawasaga Futures, in partnership with York University and the South Simcoe Economic Alliance is planning to open a new South Simcoe Green Transition Centre. The Centre will support innovative research and training and provide access to information on green community and business best practices.

5. SIMCOE COUNTY WASTE RELATED JOB POTENTIAL

The purpose of this section is to identify specific areas for new waste related jobs in Simcoe County that could be created by moving towards zero waste practices. Significant opportunity exists for the expansion of businesses or for the formation of new businesses to manage waste materials from both the residential and the IC&I sectors. A number of potential opportunities in the waste industry in Simcoe County have been identified based on the following:

- Evolving waste policies in Ontario
- Largest waste streams in Simcoe County
- Least processing/handling facilities available
- Successful implementation within other jurisdictions

The potential opportunities identified could be feasible in the short term in Simcoe County. It is important to note that the potential for the creation of jobs can be strengthened with an accompanying policy approach, such as the policies identified in the best practice review.

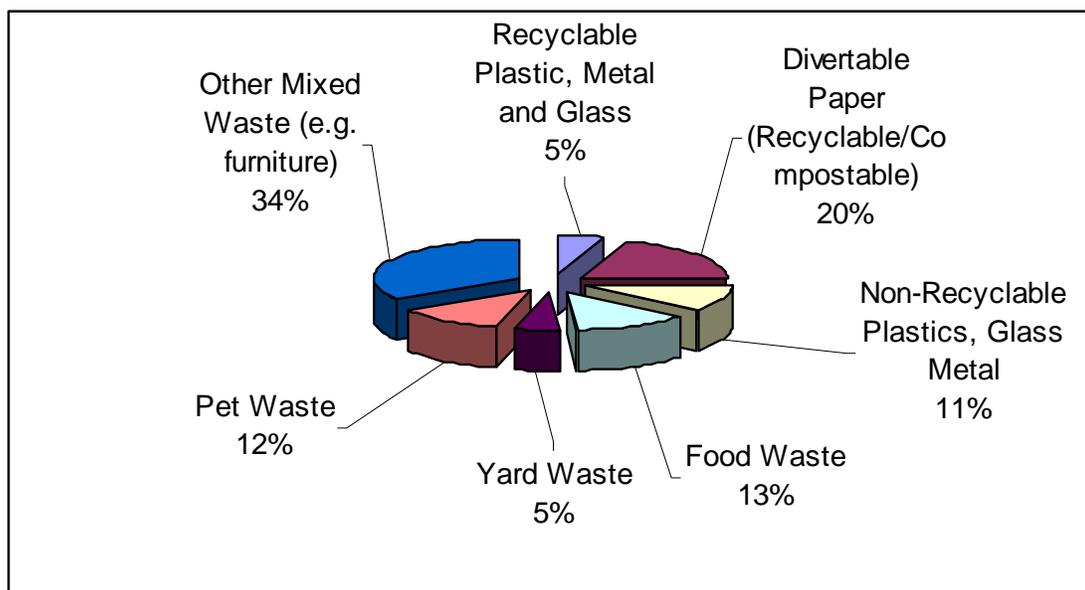
The following categories represent job potential in the Simcoe County waste industry:

- Organics Processing
- Construction and Demolition Recycling and Reuse, Deconstruction Services
- Reuse Retail Outlets
- Waste Electrical and Electronic Equipment (WEEE)
- Municipal Hazardous or Special Waste (MHSW)
- Used Tires
- Material Transportation

Waste Potential in Simcoe County

Despite initiatives to divert materials from final disposal, large quantities of resources continue to be disposed in landfill, most of which are captureable. Figure 5.1 shows the estimated composition of the residual residential waste in Simcoe County that went to landfill in 2009 and provides a good demonstration of how materials can leak through the collection system without supportive policies (e.g. mandatory programs).

Figure 5.1 - Composition of Residential Residual Waste Sent to Landfill in 2009



Source: County of Simcoe Solid Waste Management Strategy - Task E: Current System Performance and Waste Projections. Draft Technical Memo prepared by Stantec (Jan. 13, 2010).

Additionally, considering the remaining 90,000 tonnes of IC&I waste that Simcoe does not manage, significant quantities of IC&I waste resources present resource recovery potential.

These quantities of potentially valuable resources are being disposed of and offer opportunity for recovery. Capturing and reusing these resources is a long-term goal, however a number of these resources can be captured in the short-term as a positive step towards a zero waste objective. Businesses in Simcoe County are positioned to respond to the evolving EPR programs in Ontario and the potential changes resulting from the *Waste Diversion Act* review. Due to its close proximity to large supplies of materials in Southern Ontario and large markets for resources, Simcoe County is also positioned to be a leader in the resource recovery industry.

Job Potential in Simcoe County

Job potential within each category was reviewed by examining the quantities of waste currently being generated in Simcoe County, including both the residential and IC&I sectors. Businesses from Simcoe County and elsewhere were contacted for information about employment rates for typical operations, as well as their expectations about job creation as a result of zero waste policy approaches. Businesses also identified some of their associated barriers/challenges.

It should be noted that numerous factors can influence the number of jobs required for an operation, such as population, size of an operation, availability and predictability of inputs, and technologies, amongst others. This wider variety of factors mean no two operations are completely comparable, therefore a wide range of jobs is provided within each category. Numbers of jobs are based on typical operations and estimates can vary by +/-

50%. Additional down-stream job opportunities are also very likely to develop in the future.

Organics Processing

Simcoe County currently sends almost 12,000 tonnes of organics to Hamilton for processing and approximately an additional 6,000 tonnes are estimated to be going to landfill (see Figure 5.1). Additionally, an estimated 12,000 tonnes¹¹ of food waste exists within the IC&I sector; mainly from restaurants, grocery stores, and food production. With appropriate policies (e.g. material disposal restrictions, mandatory organics programs for residents and businesses), approximately 30,000 tonnes of food waste could be available for processing.

A typical larger organics processing facility could employ an approximate 1 FTE for the processing of every 10,000 tonnes of material and 0.5 FTE upper management positions for every 20,000 tonnes of organic materials. Critical to organics processing is a steady and predictable supply of organic material for processing.

An alternative to a large scale facility would be a decentralized system of composting operations that could operate on farms. These types of smaller-scale operations which can handle approximately 5000 tonnes of material per year can employ 3 -5 employees.

As confirmed within discussion with businesses, potential issues or challenges in establishing an organics processing facility within Simcoe County include:

- Steady supply of organics
- No competitive advantages/incentives for local operations
- IC&I organics availability
- Facility licensing

To best ensure the success of organics processing within Simcoe County, a number of policy approaches that have worked successfully in other areas would need to be applied. Potential policy approaches include:

- Mandatory residential participation in organics programs
- Disposal ban on organics or landfill taxes
- IC&I sector regulation
- Mandatory business participation
- Resource recovery zones or parks

Ontario municipalities that have organics facilities (e.g. Hamilton, Guelph, London) accept organic waste from other municipalities to reduce operating and capital costs.

¹¹ Based on MOE waste composition of 11% food waste in Ontario IC&I (see Figure 4.2) and 110,000 tonnes of IC&I waste in Simcoe County.

Considering municipal Source Separated Organics (SSO) feedstocks from Simcoe and surrounding areas, private sector processing facilities have a vast potential market.

The ban on the disposal of organics has been successful in Nova Scotia, enabling a steady supply of organic material which has led to the formation of 21 organics processing facilities. In addition, the requirement for businesses to participate in organic collection programs has been successfully implemented in Portland OR, Seattle WA, and Boulder CO, and has significantly increased the amount of organic materials captured from the waste stream, thereby providing a steady supply of organic materials for processing.

In Nova Scotia, the 21 composting facilities employ 74 FTE; an average of 3.5 FTE per facility. More employees can be employed by large organics processing facilities accepting organic materials from surrounding jurisdictions and operating other business functions associated with the finished compost product (e.g. landscaping). The Cedar Grove Composting facility in Seattle accepts organic material from surrounding areas and employs 250 people, including additional services such as contracting and landscaping. Currently, there is not enough organic processing capacity in the area, and several new facilities are also in the licensing phase that could employ similar numbers of employees.

Potential in Simcoe

Given the approximate 30,000 tonnes of organic waste available in Simcoe County as well as organic materials available from surrounding municipalities and businesses, a 75,000 tonne facility could be established to employ 6 to 8 FTE in processing and 3 to 4 FTE in upper management. Numerous spin-off employment opportunities could also be created within related businesses, such as agricultural products, residential and golf course turf products, wood recycling, and landscaping services.

Alternatively, six small scale facilities could employ 18-30 positions managing only the County's organic waste.

Total Potential Net New Employment: 8-30 positions + downstream employment

Types of Jobs: Processing, transportation, management, marketing

Construction and Demolition Recycling and Reuse, Deconstruction Services

Simcoe County is undergoing rapid development, and the population is expected to reach as estimated 667,000 (including Barrie and Orillia) by 2031¹² from a population of 422,204 in 2006¹³. As such, quantities of construction, renovation, and demolition (CRD) waste can be expected to increase accordingly. The Ministry of the Environment includes C&D materials (e.g. wood, rubble - masonry and concrete, shingles, drywall, metal, fixtures,

¹² Simcoe Area Growth Plan. (May 2008) Hemson Consulting.

¹³ Statistics Canada - 2006 Community Profile, Simcoe County, Ontario.

flooring) as materials that are proposed to be targeted for further diversion in the short term - two years¹⁴.

Significant potential exists to capture resources from construction and demolition through diversion programs. Opportunities include companies specializing in CRD waste separation and hauling, deconstruction, processing of materials, and resale of reusable products and processed products. Simcoe has already been successful with the drywall and shingles program; however there are no local facilities to handle these materials, so they have to be transported out of the County.

A number of salvage, construction and demolition companies exist in Simcoe County. Several of these companies have indicated that C&D diversion and new construction reuse requirements would increase their business and the number of required employees.

Typical deconstruction companies can range from small one-person operations to larger 25-30 employee operations. Deconstruction companies often resell salvage materials (e.g. bricks, dimensional lumber, flooring, boards, fixtures, firewood) on-site and from their yard. Resale operations can employ an additional 2-4 employees depending on the size of the operation and the quantity of material recovered.

The processing and separation of C&D materials also represents opportunity for job creation as no facilities currently exist in the Simcoe County area. A C&D waste processing facility in Halifax Regional District, a municipality comparable in size to Simcoe County, employs a total of 20 employees in processing and an additional 5 at their transfer facility, plus additional seasonal positions.

As confirmed within discussion with businesses, potential issues or challenges to establishing or expanding C&D recycling, reuse, and processing operations in Simcoe County include a steady, predictable supply of materials, and licensing to transport materials.

To facilitate the success of C&D recycling and reuse in Simcoe County, a number of policy approaches that have worked successfully in other areas could be applied. Potential policy approaches include:

- Disposal bans on recovered C&D materials
- C&D recycling requirement
- Green Development Standards (reuse of materials in new building)
- Economic development zones/incentives
- EPR (e.g. carpets)
- Resource recovery zones or parks

¹⁴ From Waste To Worth: The Role of Waste Diversion in the Green Economy - Minister's Report on the Waste Diversion Act 2002 Review (October 2009) MOE.

Numerous businesses and jobs have been created around construction and demolition recycling and reuse within many jurisdictions, and most notably, in response to C&D diversion policies. In Nova Scotia, building materials and construction and demolition businesses accounted for 79.5 FTE in 2006. Furthermore, the processing of C&D waste in the Australia Capital Territory in one newly opened operation employs 20 staff.

The deconstruction industry and material reuse stores have also been expanding. Numerous deconstruction companies and reuse stores have opened in Seattle in response to mandatory C&D recycling. The ReBuilding Center in Portland deconstructs around 50 buildings per year, with 300 daily visitors to their retail store.

Potential in Simcoe

Conservative estimates¹⁵ of C&D waste in Simcoe County indicate that approximately three larger salvage, reuse, and recycling operations, or a combination of several smaller ones, could be feasible. Based on three larger operations, 75 - 100 potential employment opportunities would exist, including deconstruction, recycling, and resale operations. A C&D processing and recycling facility can also employ 20-30 employees. Additional downstream job opportunities could include carpet recycling, shingle recycling, gypsum recycling, and other materials diverted and processed.

Total Potential Net New Employment: 95-130 positions + downstream employment

Types of Jobs: Deconstruction, processing, sorting, repair/refurbish, retail, management, transportation

Reuse Retail Outlets

Retail reuse outlets have been used in many jurisdictions, ranging from specializing in certain items to carrying a wide range of materials such as clothing, furniture, toys, books, electronics, building materials, etc. The Ministry of the Environment includes Bulky Items (e.g. furniture and mattresses) as materials that are proposed to be targeted for further diversion in the medium term - three/four years¹⁶ and represents an opportunity to expand reuse operations.

Many reuse stores have become increasingly more popular, especially those offering building material for sale. Urban Ore, a large reuse retailer in California employs 30 employees in the retail component of the reuse store, accepting, sorting, processing, and selling products. The company generated over \$600,000 per year selling reusable goods.

¹⁵ 42,000 tonnes of C&D waste in Simcoe County (based on 20% of Simcoe's total 210,000 tonnes of waste generated)

¹⁶ From Waste To Worth: The Role of Waste Diversion in the Green Economy - Minister's Report on the Waste Diversion Act 2002 Review (October 2009) MOE.

Reuse stores work very well in conjunction with C&D recycling programs that guarantee a steady supply of good quality products that offer customers a cheaper alternative to new products of similar or equal quality.

A number of reuse stores are currently located within Simcoe County. Depending on the size of the store, reuse stores can employ 2-5 employees.

Potential issues or challenges to expanding existing reuse stores or establishing new ones in Simcoe County include the continuous supply of good quality durable goods and a lack of resource recovery incentives.

To best ensure success of reuse outlets in Simcoe County a number of policy approaches that have worked successfully in other areas would need to be applied. Potential policy approaches include:

- Disposal bans on recovered C&D materials
- C&D recycling requirement
- Green Development Standards
- Economic development zones/incentives
- EPR (e.g. carpets)

Potential in Simcoe

If policies such as disposal bans were to be put in place, the quantities of reusable goods available for resale could be expected to increase. Existing stores (based on 5 existing stores) requiring 1-2 additional employees for storing additional items would create 5-10 additional positions. Impacts from disposal bans on durable goods could also require several more stores and create 5-10 additional positions.

Larger operations that include sorting, processing (cleaning and repairs), and selling products could employ up to 25-30 employees given incentives like economic development or resource recovery parks. Requirements for reused materials in new building would also support the market for used construction materials.

Total Potential Net New Employment: 35-50 positions

Types of Jobs: Retail, sorting, processing (repair, refurbish, cleaning), management, transportation

Waste Electrical and Electronic Equipment (WEEE)

As discussed above, the Ontario WEEE program is expanding to include more acceptable products (Phase 2). The Ministry of the Environment also includes a Phase 3 of WEEE

materials that are proposed to be targeted for further diversion in the short term to two years¹⁷.

A number of incentives are available for reuse and refurbishment operations, including the advertisement and promotion of the company or organization, the administration and payment for transportation, and the processing of residual waste costs.

Registered collection operators receive a financial incentive of \$165 per tonne of WEEE collected from residential and IC&I sources.

Opportunities are also available for recycling and primary processing companies to partner with the Ontario Electronics Stewardship to process materials collected under the program. There are currently only eight processors approved in Ontario.

A large electronics processing company currently operates in the Simcoe area, as well as number of smaller electronic reusers, refurbishers, and recyclers. Smaller companies can employ 2-7 employees, and the large facility currently employs approximately 175 employees. In general, employment levels depend on the size of operations and markets available. In Edmonton, the electronics processing facility employs 35 FTEs. British Columbia has also been very successful with EPR and the explosion of the electronic recycling industry. The total BC system employs 123 FTEs in administration, depots/warehousing, processing, and transportation.

With the expansion of the WEEE program in the near future, there could be larger quantities of electronic waste available for reuse and recycling. Policies such as restrictions on the disposal of electronic wastes is expected to further increase the quantities of electronic waste available for reuse and recycling and lead to further job creation.

Potential issues or challenges to expanding or establishing new electronics facilities in Simcoe County include:

- Steady and predictable supply of WEEE materials
- Requirement for residents to drop off WEEE waste at depots
- Licensing of facilities

To facilitate the success of electronics collection, reuse, and recycling in Simcoe County, a number of policy approaches that have worked successfully in other areas could be applied. Potential policy approaches include:

- Material bans on WEEE waste
- Mandatory recycling
- Curbside collection

¹⁷ From Waste To Worth: The Role of Waste Diversion in the Green Economy - Minister's Report on the Waste Diversion Act 2002 Review (October 2009) MOE.

- Economic development zones/incentives
- Resource recovery zones or parks

Potential in Simcoe

Considering the larger quantities of electronic waste that could be captured from disposal as the WEEE program expands, and if restrictions were to be placed on the disposal of electronic waste, job creation potential exists. Increased quantities of electronic waste captured from households and businesses could increase employment in existing large facilities by 20-40 positions. Several smaller processors could employ 2-7 employees each for a total of 10-35 positions (based on 5 new operations). Additional downstream job opportunities could include further processing and manufacturing from recovered materials, and the recycling of wood and cardboard associated with electronic waste processing.

Total Potential Net New Employment: 30-75 positions + downstream employment

Types of Jobs: Collection, sorting, processing, repair/refurbish, retail, management, transportation

Municipal Hazardous or Special Waste (MHSW)

The MHSW program in Ontario is being expanded as of July 1, 2010 to include 22 materials compared to the 9 materials currently accepted. Please see Appendix B for definitions of the designated materials.

The 22 Designated Materials are:

- Aerosols
- Antifreeze
- Batteries - Consumer-Type-Portable (single use dry cell)
- Batteries - Rechargeable
- Batteries - Industrial Stationary and Non-Lead Acid Motive
- Corrosives (includes irritants)
- Fertilizers
- Fire Extinguishers (portable)
- Flammables (includes solvents)
- Fluorescents (user removed)
- Fluorescents (embedded in designated EEE)
- Leachates
- Mercury Devices (includes measuring devices, switches and thermostats)
- Oil Containers
- Oil Filters
- Paint and Coatings

- Pesticides, Fungicides and/or Herbicides
- Pharmaceuticals
- Pressurized Containers
- Reactives
- Sharps and Syringes
- Toxics

Approved transporters and processors of MHSW receive payments from Stewardship Ontario for handling the materials through incentive payments or through payments based on established contracts to service approved collection sites. Payments are also reflective of the quantity of material converted to a value-added product through approved physical treatment processes (e.g. bulking of products). Incentive payments are also made for the processing of used oil and antifreeze containers.

Stewardship Ontario is currently soliciting information through a Request for Expressions of Interest (REOI) for service providers for the MHSW program. Services are required to provide the following:

- collection
- transport
- consolidation
- processing services
- associated logistics capabilities for MHSW

Potential also exists to reuse bulk products into marketable finished product. Boomerang, a Quebec-based company, has been successfully marketing their brand of used paint for several years. Hotz Environmental in Hamilton operates a paint recycling program collecting used paints and producing a good quality paint marketed to countries that need low cost paint. Depending on the size of operation, reuse paint processing facilities can employ 5 to 20 employees.

The consolidation plant in British Columbia employs 13 FTEs for the entire province. Smaller facilities in Simcoe County could employ 5-8 employees. Collection depots employ 1 to 2 employees and mobile collection units can also employ 1 to 2 employees.

Potential issues or challenges in expanding or establishing new MHSW facilities within Simcoe County include:

- Steady and predictable supply of materials
- Requirement for residents to drop off MHSW at depots
- Licensing of facilities

To best ensure success of MHSW collection, reuse, and processing in Simcoe County a number of policy approaches that have worked successfully in other areas would need to be applied. Potential policy approaches include:

- Material bans on MHSW waste
- Mandatory recycling
- Curbside collection
- Economic development zones/incentives
- Resource recovery zones or parks

Potential in Simcoe

As more designated materials would be collected in the MHSW program, more waste could be captured and processed into new materials. A smaller consolidation facility in Simcoe County could employ 5-8 employees. Collection depots employ 1 to 2 employees and mobile collection units can also employ 1 to 2 employees. If two new depots and one mobile collection unit were to be established, 3 to 6 positions could be created.

Additional downstream job opportunities could include further processing and manufacturing from recovered materials, such as paint and oil.

Total Potential Net New Employment: 5-15 positions + downstream employment

Types of Jobs: Collection, sorting, processing, chemists, transportation, management, marketing, R&D

Used Tires

The Used Tire Stewardship Program is aimed at recycling used tires and helping grow the Ontario-based tire recycling industry. In addition, it is aimed at driving investment in green industries and other markets for these products. The program will provide incentives for selling Tire Derived Products (TDPs). Currently, Rubber Product Manufacturing in Simcoe employs 275 people,¹⁸ and there are no tire processors approved by the Ontario Tire Stewardship in the Simcoe area. Along with incentives for TDPs, there is potential for the establishment of tire processors and the manufacturing of rubber products in Simcoe County.

Smaller crumb rubber processing facilities can employ 20-50 employees and supply the several rubber product manufacturing companies that operate in Simcoe County. Tire retreading operations can also employ 2-10 employees.

Potential issues or challenges to expanding or establishing new used tire facilities in Simcoe County include:

¹⁸ See Table 4.4 - Waste and Recovery Labour Flow Analysis - Simcoe County

- Steady and predictable supply of materials
- Licensing of facilities

To facilitate the success of tire collection, reuse, and processing within Simcoe County, a number of policy approaches that have worked successfully in other areas could be applied. Potential policy approaches include:

- Disposal restrictions
- Curbside collection
- Economic development zones/incentives
- Resource recovery zones or parks

Potential in Simcoe

With the introduction of the Tire Stewardship program, large quantities of tires would become available for processing and recycling. Through the TDP incentives program, a smaller crumb rubber facility in Simcoe County could employ 20-50 employees. Considering that Tire retreading operations can also employ 2-10 employees, 1-2 operations would create 2-20 jobs.

Additional downstream job opportunities could include the expansion of or new rubber product production.

Total Potential Net New Employment: 20-70 positions + downstream employment

Types of Jobs: Collection, processing, management, marketing, R&D

Material Transportation

All material recovery operations include a collection and transportation component, involving the collection of materials and their delivery to processors/warehouses, and the movement of refined resources to the market. All jurisdictions surveyed indicated that more material diversion resulted in the establishment of more material transportation companies, and therefore more jobs in transportation. In addition, as more resource recovery companies develop and diversion programs evolve, the need for transportation will increase.

After the implementation of waste management strategies, the number of haulers in Nova Scotia increased by 166 FTE over 10 years.

Potential issues or challenges for waste-related transportation within Simcoe County include:

- Access to rail and highways
- Licensing for transportation waste classes

To facilitate the success of waste-related transportation in Simcoe County, a number of policy approaches that have worked successfully in other areas could be applied to ensure a strong waste industry. Potential policy approaches that would benefit transportation include the establishment of resource recovery zones or parks, that serve to group resource recovery operations within close proximity.

Potential in Simcoe

Considering the number of transportation companies within Simcoe County and surrounding area, job creation would likely result from the expansion of existing companies. Conservative estimates concerning the number of new jobs in material transportation within Simcoe amount to 25-50 positions.

Total Potential Net New Employment: 25-50 positions

Types of Jobs: Driving, collection, logistics, warehousing, mechanical maintenance, management

Approaches to Job Creation in Simcoe County

The current resource recovery free-market system does not encourage the maximum possible capture of resources from disposal. For markets to capture resource materials, the market system must develop beyond a free-market system to a forced or encouraged-market system through the implementation of policies that support market development (e.g. disposal restrictions, mandatory programs, etc.). Stable and predictable markets are the key to attracting private investment in Simcoe County.

For a resource recovery operation to establish or remain in operation, the availability of markets is critical. A steady supply and critical mass of material is also required to ensure continuous operations. Many waste-related businesses that were contacted identified a guaranteed or strong supply of inputs to their process as the most critical element for a successful business. In addition, the successes of many of the jurisdictions surveyed were a direct result of the appropriate policies being put in place to ensure adequate and predictable inputs. Most businesses agreed that some sort of restriction on materials from disposal would significantly impact the amount of business they receive. For example, C&D recycling companies would see significant increases in the number of deconstruction jobs and the amounts of materials they could handle if C&D recycling were mandatory and appropriately supported by restrictions on disposal.

The potential resource recovery options presented above demonstrate a degree of policy support that strengthens the markets for those materials, and that enables the resource recovery businesses to be more viable. Many of the issues/barriers within Simcoe County can be addressed through further policy approaches, primarily to ensure a steady supply

of materials and strengthen the development of new and existing markets. Also, many of the policy approaches identified within other jurisdictions would accomplish this task.

Disposal Restrictions

Many of the jurisdictions surveyed have implemented landfill bans or other restrictions or disincentives for disposing of certain materials. These initiatives have assisted the development of strong markets for those materials. Disposal restrictions could include the restriction or ban of materials from landfill, the use of variable rate tipping fees, and waste taxes for the transportation of wastes to other jurisdictions for cheap disposal.

Disposal restrictions can strengthen the supply and predictability of materials, since materials can no longer be disposed of and as such, support the viability of new and existing businesses. Potential materials for restriction could include:

- Organics
- C&D waste materials
- Electronics
- Tires
- Hazardous wastes
- Reusable goods

Disposal restrictions can be effective for targeting both residential and the IC&I sector.

Mandatory Programs

Through the use of by-laws, mandatory diversion programs work in unison with disposal restrictions and effective curbside collection programs. Similar to disposal restrictions, mandating programs create a larger and more predictable supply of marketable materials.

While they fall outside of the municipal jurisdiction, mandatory programs and the appropriate enforcement of the IC&I sector would support larger contributions to resource recovery markets.

Market Development

A number of the jurisdictions reviewed in Section 2 utilized a variety of techniques to assist with market development and to facilitate the establishment of businesses. Techniques most commonly used include resource development zones or areas that facilitated the establishment of businesses by lessening their financial burden. These approaches can be used in Simcoe County to group resource recovery companies together with close access to manufacturing, transportation, and sufficient disposal options for residual wastes. Such incentives as relaxed zoning, brownfield Community Improvement Plan area tax incentives, or other economic development initiatives could support the development of new business.

Extended Producer Responsibility

Extended producer responsibility or stewardship programs have already been implemented to varying degrees in Ontario, and comprise an element of the Waste Diversion Act review. Although EPR programs operate at the provincial level, the effectiveness of EPR programs can be enhanced through local policy options that strengthen markets for those materials.

6. CONCLUSIONS

The findings of this report present a road map for zero waste job creation in Simcoe County and prepare the County for upcoming changes in the *Waste Diversion Act*. With strong leadership in waste management, Simcoe County could develop into a hub for waste management, and it could create up to 220 - 420 net new jobs. A breakdown of each category is as follows:

Category	Net New Jobs
Organics Processing	8 - 30
C&D	95 - 130
Reuse Retail	35 - 50
WEEE	30 - 75
MHSW	5 - 15
Used Tires	20 - 70
Transportation	25 - 50
Total	220 - 420

The greatest potential for job creation in the short-term lies in building upon the provincial EPR programs and capturing construction and demolition waste. There is also potential for further economic spin-offs and job creation in the medium to long-term.

To achieve the fullest potential in terms of waste diversion and job creation, policy must be developed to support stable and predictable materials markets. Simcoe County must show leadership in waste management by implementing disposal restriction policies and developing economic development incentives for waste-related business to form and expand (e.g. material recovery campuses). Other policies supporting leadership could include local procurement, for example, where the County could purchase paints from a Simcoe area paint-collecting reuse or recycling company, effectively closing the loop on these products.

Simcoe County should also be willing to accept materials from other jurisdictions in order to feed an expanding waste recovery hub and have appropriate disposal capacity for residual wastes.

Building upon existing and evolving EPR programs and strong leadership, Simcoe County could push ahead of other jurisdictions to take advantage of these programs and upcoming changes in the *Waste Diversion Act*. With an evolving provincial waste policy, the current moment is opportune in developing a strong waste management industry within the County, redefining the concept of

waste, and changing the yardstick for measuring success in solid waste management.

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