

# CONSTRUCTION AND DEMOLITION WASTE DIVERSION



**2016 Update**



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## 1. INTRODUCTION

Construction and demolition (C&D) waste results from construction, demolition and renovation activities in small and large-scale construction projects for the residential, commercial and industrial sectors. It is generally comprised of non-hazardous materials such as wood, concrete, asphalt, drywall, metal, roofing materials and cardboard.

Since The City first focused on C&D waste in 2007, the number of businesses that have undertaken recycling in this sector has risen considerably. At the same time, the amount of C&D waste recycled has increased, and the amount of recyclable material being disposed in landfill has declined.

This report provides an update on the progress made in C&D waste diversion in Calgary and future opportunities that may result in additional diversion.

## 2. BACKGROUND

On 2007 November 19, Council approved Calgary's Construction and Demolition Waste Strategy and Action Plan (UE2007-36). This plan included a series of actions to support C&D diversion opportunities, including increased tipping fees to encourage private sector recycling opportunities and a pilot program to collect source separated C&D materials at the Spyhill Waste Management Facility (WMF).

On 2013 May 1, the Multi-family, ICI and C&D Engagement Update Report (UCS2013-0035) provided an update on the C&D diversion plan. Subsequently, Waste & Recycling Services (WRS) added wood and drywall to the Designated Materials List (DML) and expanded the Spyhill collection pilot to full C&D collection programs at all three Calgary WMFs.

On 2014 April 23, Council approved the Industrial, Commercial and Institutional Waste Diversion Strategy (UCS2014-0259) which included the addition of cardboard, a common material in C&D waste, to the DML. To understand further diversion opportunities in the C&D sector WRS conducted a Waste Composition Study, which analyzed and compared changes to the C&D waste stream.

On 2015 December 7, Council approved the Waste Diversion Target Update (UCS2015-0835) including a new target of 40 per cent waste diversion in the C&D sector for 2025.

In 2015, WRS hired a consultant to prepare an updated State of Construction and Demolition Waste Diversion report, which provided current information on C&D waste diversion in Calgary and compared findings to the 2006 study.

Currently, there are recycling opportunities and markets for the most common C&D materials in the Calgary region (Table 1).

<b>Table 1: Markets for Recycled C&amp;D Material</b>	
<b>Material</b>	<b>Recycling Opportunity</b>
Clean Wood (untreated, unpainted)	Wood processed into woodchips and sawdust for applications in agriculture, for use in landscaping and as an amendment for compost.
Asphalt Shingles	Shingles used as an additive in new hot asphalt mix for roads.
Drywall	Drywall is processed with the gypsum being reused in manufacturing new “recycled content” drywall or used as a soil amendment. Paper backing is used for agricultural animal bedding.
Concrete, Masonry Blacks and Road Asphalt	Reused as aggregate in base layers for road construction, parking lots and as floor base for buildings. Road Asphalt is processed and added as an additive to new hot asphalt mix for roads.
Scrap Metal	Private metal recyclers are well established in Calgary, and collected metals are sold as commodities for the manufacture of many new items.
Cardboard	Cardboard is a highly recyclable material, and all cardboard is reused in manufacturing “recycled content” paper and packaging products.

### 3. CALGARY C&D WASTE CHARACTERISTICS

Based on provincial and federal waste generation data, waste generated by C&D activities accounts for approximately 20 per cent of municipal solid waste disposed in landfills. WRS’ data from its WMFs aligns with these estimates, as shown in Figure 1. The “State of C&D Waste Diversion in Calgary” report identified that in 2014, C&D waste disposed in Calgary landfills totaled more than 250,000 tonnes, of which 120,000 tonnes were disposed at The City’s WMFs.

The composition of C&D waste varies depending on the type of construction, demolition or renovation project. WRS has completed three C&D waste composition studies since 2005 to establish and compare baseline data that defines the quantity and composition of C&D waste disposed in The City’s WMFs.

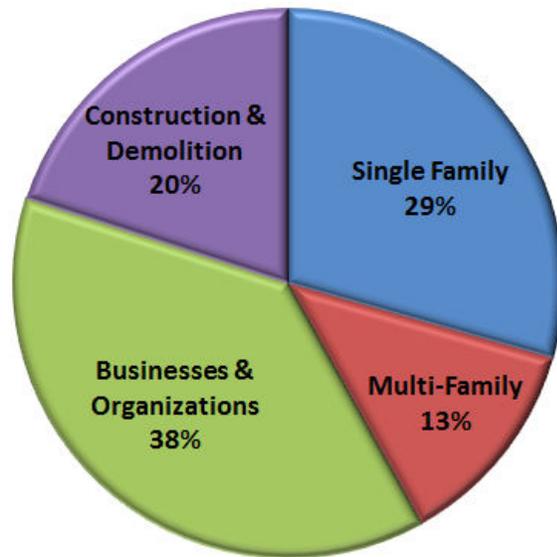


FIGURE 1: WASTE BY SECTOR (2014)

The total tonnage of C&D material (including aggregate) being recycled in Calgary increased 50 per cent from 2006 to 2014, while recycling of wood, drywall and asphalt shingles increased 850 per cent over the same period, with steady increases observed in 2008/2009. The most recent waste composition study in 2014 showed a decrease in the quantity of divertible material in the C&D waste stream, from 72 per cent in 2010 to 39 per cent in 2014 (Figure 2). The 28 per cent recyclable portion includes concrete, brick and masonry, asphalt, metal and drywall. The 11 per cent organic material is mostly wood. The remaining 61 per cent of the C&D waste stream was non-recyclable.

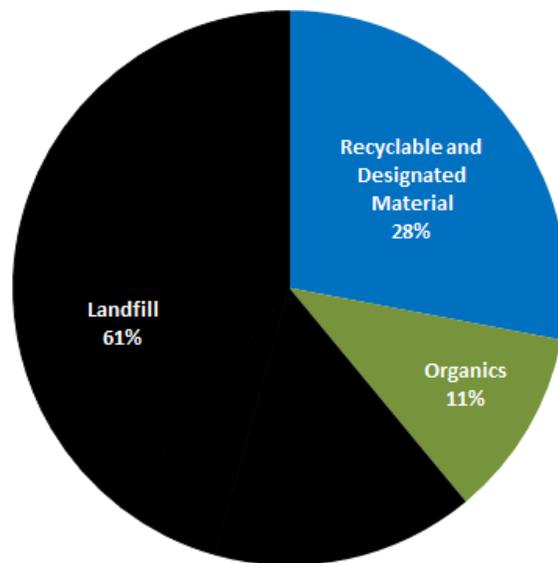


FIGURE 2: C&D WASTE COMPOSITION (2014)



## 4. SECTOR PROGRESS

C&D waste diversion is a collaborative effort between The City and the private sector. The City continues to implement policies and initiatives supporting diversion efforts and the private sector continues to take the lead by increasing the volume of C&D materials recycled.

### 4.1 CITY-LED DIVERSION

WRS has continued its original plan to support waste diversion in this sector with economic incentives by annual tipping fee increases. The basic tipping fee and Designated Material rates have had greater increases than the C&D Recycling rate to encourage recycling.

The DML originally included concrete, asphalt shingles, road asphalt, masonry brick and scrap metals. Clean wood and drywall were added to the list in 2013 and paper and cardboard were added in February 2016. For materials to be included on the DML they must be readily recyclable.

Also in 2013, WRS' C&D material drop-off pilot at Spyhill WMF became permanent and additional permanent drop-off locations at the East Calgary and Shepard WMFs were added. These three drop-offs continue to accept increasing volumes of clean wood, drywall and asphalt shingles at the reduced C&D Recycling Rate. In 2015, the three drop-offs accepted more than 17,500 tonnes of material that was collected and recycled by third-party contractors.

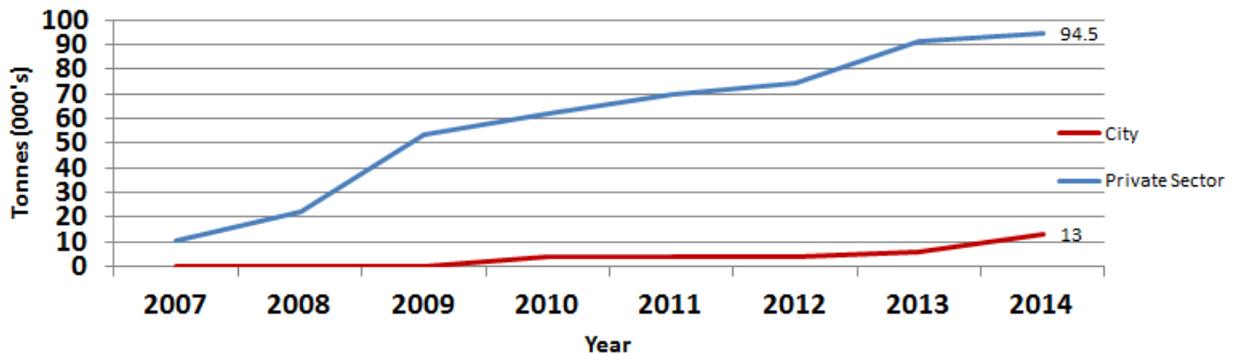
Other City of Calgary initiatives include:

- The Sustainable Building Policy was introduced and adopted by Council to “demonstrate The City of Calgary’s commitment to sustainable buildings, and to show leadership to the broader Calgary community as one of the drivers for transformation of the city towards a more sustainable urban form”. All City facilities in excess of 500 m<sup>2</sup> must now meet or exceed Gold level of the Leadership in Energy and Environmental Design (LEED®) rating system. The City of Calgary and its civic partners have achieved LEED® certification for 23 buildings, including eight LEED® buildings in 2013 and early 2014.
- Transportation (Roads) operates the Reclaimed Asphalt Pavement (RAP) program. The City of Calgary receives 60,000 – 70,000 tonnes of millings chips from road resurfacing projects annually.
- Finance and Supply includes requirements in the Standard General Conditions (2014) for all contracts. Section 4.35.8 Recycling and Waste Management, of this document states that contractors must identify how waste will be reduced and diverted from the landfill or recycled, and retain and submit copies of all records for materials disposed and recycled.

## 4.2 PRIVATE SECTOR INVOLVEMENT

City actions have encouraged private sector involvement in the diversion, collection and processing of recyclable materials from the C&D sector. Both the number of businesses providing services to this sector and the volume of material they are handling has increased, and in 2014, the private sector collected and processed at least seven times more wood, drywall and shingles than what was collected at City WMFs for recycling (Figure 3).

**FIGURE 3: WOOD, DRYWALL AND SHINGLE RECYCLING IN CALGARY**



### 4.2.1 REUSE

Several reuse opportunities focusing on selling salvaged building materials and refurbished home décor items now operate in Calgary. Others offer salvaged barn wood and beams from deconstruction projects, and at least one business focuses on building reuse by relocating homes and garages.

### 4.2.2 RECYCLING

There are more C&D material recycling businesses in Calgary than in previous years. Including the three City WMFs, there are now eight transfer stations, recyclers and processors that accept multiple C&D materials for recycling. An additional 29 recyclers accept specific materials (e.g., asphalt / concrete, cardboard, drywall, glass, metal, plastic and wood) for recycling.

In the past, most of these facilities were primarily located in SE Calgary. More facilities have opened in other quadrants of the city to accept source separated loads and others have increased their level of service to provide sorting of mixed loads.

With this increased number of recycling opportunities and increased diversion and recycling of C&D material, there has also been an increase in awareness, ease of access and convenience.

### 4.2.3 DISPOSAL

There are four options for landfill disposal of C&D materials within the City of Calgary. Three of those options are WMFs The City owns and operates. The fourth is a landfill owned and operated by ECCO Recycling & Energy Corporation that regularly receives more C&D material for disposal than all three City WMFs combined (Figure 4). This private sector company also receives mixed material C&D loads for recycling at their Material Recycling Facility.

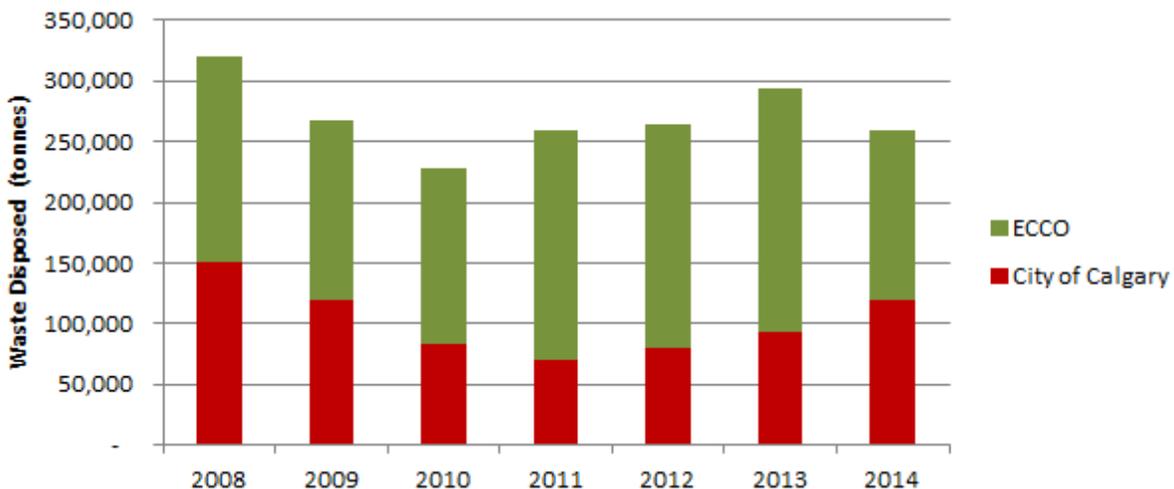


FIGURE 4: C&D DISPOSAL IN CALGARY

## 5. OPPORTUNITIES TO INCREASE C&D DIVERSION

To achieve the C&D diversion target for 2025 a further 25 per cent reduction in C&D waste is required. The 39 per cent of readily recyclable and compostable materials landfilled indicate that there are further opportunities for diversion.

### 5.1 MEASUREMENT AND REPORTING

WRS has already taken steps to improve measurement of designated materials at city-owned WMFs through the development and implementation of a Waste Load Inspection application. The application allows Waste Load Inspectors to easily identify and track levels of designated materials in waste loads. The application will generate data that will help inform the City of the changes in quantities of designated materials contained in loads destined for disposal.

To gain more detailed C&D waste data for program evaluation and policy development, WRS has initiated dialogue with the private haulers to gain voluntary reporting of disposal and diversion tonnages.



## 5.2 EDUCATION AND ENFORCEMENT

During a stakeholder engagement project initiated in 2012, stakeholders suggested that it is The City's role to educate and promote diversion opportunities. Recent interviews in 2015 indicated that awareness of C&D diversion for commercial projects has improved. However, there are still opportunities to educate residents, builders and general contractors regarding deconstruction and recycling options for C&D projects.

Industry stakeholders expressed continued support for the DML as a diversion tool. They also proposed WRS should increase enforcement measures to create a level playing field for all customers disposing material at City landfills. Recent development of the Waste Load Inspection application is now allowing Designated Material Inspectors to enforce the designated material requirements fairly, efficiently and effectively.

## 5.3 ENGAGEMENT

Through engagement with stakeholders and industry, WRS has been able to design and implement programs that provide efficient solutions for C&D waste diversion that suit industry needs. Stakeholders have had direct influence on program details such as timelines and the inclusion of certain materials in waste diversion programs.

Additionally, through the State of Construction and Demolition Waste Diversion in Calgary report, industry was engaged using an online survey and in person interviews that covered current practices, potential recycling, and reuse opportunities for demolition and deconstruction businesses. Industry members consulted include haulers, processors, and influencers on C&D projects such as architects and general contractors. WRS will continue to engage stakeholders when developing future diversion programs for the industry.

## 5.4 C&D WASTE DIVERSION POLICY

The State of Construction and Demolition Waste Diversion in Calgary update was underway when Council approved the revised waste diversion target of 70 per cent diversion by 2025. This revised target included a specific target of 40 per cent waste diversion from landfill by 2025 for the C&D sector. Opportunities to increase regulatory requirements specific to C&D waste disposal at City of Calgary facilities may be considered in the future if progress towards the C&D diversion target does not maintain the current momentum. However, stakeholder engagement has indicated the desire for a level playing field across the province for C&D regulations.

A province-wide deposit-refund program first proposed in 2009 had widespread support from recycling organizations, municipalities and industry. The stakeholders strongly supported the program because it would have created a level playing field for the industry across Alberta, including Calgary and surrounding municipalities. The program would have required builders to submit a financial deposit when applying for building or development permits and would have refunded deposits back to the builder depending on the percentage of C&D waste they diverted from landfill. In addition, a provincial deposit/refund system would allow better data collection on



diversion rates, performance measures, trends, gaps and opportunities. Ultimately, the provincial government never approved this program.

## 6. CONCLUSION

Increases in recycling of C&D material suggest that The City of Calgary's designated material disposal rate has had a positive influence on the diversion of C&D waste and on the development of the private sector C&D diversion industry in Calgary. The total tonnage of C&D material (including aggregate) being recycled in Calgary increased 50 per cent from 2006 to 2014, while recycling of wood, drywall and asphalt shingles increased 850 per cent over the same period, with steady increases observed in 2008/2009 and 2013 being attributed to designated material list additions and increased recycling options. However, to meet the 40 per cent diversion by 2025 target, further action is required.

## 7. NEXT STEPS

To make progress to the 2025 target, WRS will continue to encourage C&D waste diversion in Calgary, as outlined previously, by:

- Improving measurement and enforcement by increasing waste load audits at City landfills to ensure compliance with the DML;
- Developing a communications, education and engagement campaign to promote further diversion including potential recycling, and reuse opportunities for demolition and deconstruction businesses;
- Advocating for the provincial government to assume a leadership role in C&D waste diversion and to implement a deposit-refund program; and
- Continuing to research best practices to identify opportunities relevant to Calgary.

Future updates on diversion in the C&D sector will be presented to SPC on Utilities and Corporate Services in the annual Waste Diversion Update.