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Challenges and Possible Solutions to Achieving Higher Waste Diversion Rates for the IC&I and C&D Sectors in Manitoba

Introduction

This discussion paper has been prepared by the Green Action Centre (formerly Resource Conservation Manitoba or RCM) to support the City of Winnipeg's process for developing its Comprehensive Integrated Waste Management Plan (CIWMP). The focus of this discussion paper is on the challenges and solutions to diverting waste from the Industrial, Commercial & Institutional (IC&I) and Construction &Demolition (C&D) sectors for two reasons.

First, the waste from these sectors comprises a large proportion of the total waste going to landfills. The latest Waste Management Survey conducted by Statistics Canada (2006) shows that 55 per cent of all waste disposed of in Manitoba was from the non-residential sector and that the per cent of materials from the non-residential sector being diverted had declined from 26 per cent in 2000 to 13 per cent in 2006.[1] The City's own statistics show that, in 2009, the residential sector accounted for 230,916 tonnes (72%) of waste going to the Brady landfill with the IC&I and other municipalities accounting for approximately 88,000 tonnes (28%) of materials going to the Brady Landfill. The City believes that it has lost share of commercial waste, so percentages of IC&I and C&D waste are expected to be much higher at the private landfills in the Capital Region.[2]

Second, the City has direct responsibility for collecting waste from only the residential sector and has set a waste diversion target of 50 per cent for only this sector.[3] Thus, the major thrust of the planning process will be on how to increase the residential waste diversion rate. However, a comprehensive and integrated waste management plan, by definition, should cover all waste streams. Accordingly, due consideration has to be given to how to increase the level of waste diversion from the IC&I and C&D sectors to meet both City and Provincial waste reduction objectives.

[1] See, www.statcan.gc.ca/pub/16f0023x/2006001/5212379-eng.htm
[2] Sources include the City's residential garbage report and slide 9 of the City's presentation to the Brady Landfill Put or Pay Consultation Information Session.
[3] The terms of reference for the RFP for the CIWMP include an analysis of all waste streams and consideration of how they can be handled.

Current System for Handling Waste from the IC&I and C&D Sectors

From conversations with the City of Winnipeg waste managers, private waste haulers and MRF operators, we understand the system for handling waste from the IC&I and C&D waste streams to consist of the following:

1. IC&I institutions contract with private waste haulers to either pick up their waste for hauling to landfills and/or truck to MRFs for processing. Waste haulers were silent on what they charged their customers for hauling waste to the landfills. They indicated that the MRFs charged $60/tonne for processing commingled waste and that this cost is higher than the cost of hauling waste to the landfill.

2. The types of materials collected from the IC&I sector include cardboard packaging, office paper, #1&2 and #3to7 plastics, shrink wrap and metals. IC&I materials not handled by the MRFs include plastic bags, Styrofoam, #3 to 7 plastics, glass and organics.

3. Most IC&I waste is landfilled. Several waste haulers estimated they divert about 10 per cent of their materials to MRFs. (The 2006 Waste Management Survey estimated 13%). The diversion rate depends on the type of material. There is one local firm picking up organics from the IC&I sector and converting it into compost.

4. Most C&D waste is landfilled. However, the private initiative (Woodanchor) for diverting elm, oak and basswood trees from the landfill arose as a result of the City requiring alternate uses for tree waste. Concrete and asphalt, if it contains no rebar, is used as road base. Some shingles are being recycled but no gypsum drywall and mixed loads.

5. There are very few local firms that convert the materials handled by MRFs into new products.[4] As a result, almost all diverted materials are shipped to distant markets – in Canada, the U.S. and abroad (largely China). Rail is not used for shipping because the rail companies charge siding fees for the time the car sits in the yard and at its destination point and they aren't accommodating with providing rail cars when needed. As a result, everything is shipped by truck in typical 20- to 22-tonne loads.

Challenges to Diverting Waste from the IC&I and C&D Sectors

The challenges are all about the economics of collecting, processing and shipping the materials.

At the point of collection, most customers elect to landfill their waste material because the waste hauler charges a lower price to landfill than to take to a MRF for processing. There are some customers who willingly pay the higher price for recycling but they are in a minority. A key reason for the low cost of landfilling IC&I waste is the low tipping fees charged by the landfills.

[4] The exceptions are Gerdau Ameristeel and Xpotential

And, with the presence of three landfills in close proximity to Winnipeg, there is competition that works to keep landfill tipping fees low. Other collection barriers include the time it takes to train staff to sort materials and the extra containers required to divert recycling from garbage and organics. With customers who experience high staff turnover, sorting is a barrier. MRFs have moved to accepting commingled bins which avoids the need to sort but increases their tipping fee over sorted bins.

At the point of processing materials, the economics are chiefly about the price which MRFs can get for the materials they ship to processing companies. The recession that hit in late 2008 caused a dramatic drop in the price of products. Since then, the prices have rebounded. For example, one MRF had to pay $50/tonne to the end-processor to accept #1&2 plastics in 2008. Now, it gets $200/tonne for them. Similarly, another processor stopped accepting cardboard and paper when the recession hit. So, it's not only about the prices of these commodities but the fluctuation in the market prices and being able to sustain a profitable operation across these periods of fluctuations in market prices. In addition, for some waste materials there is simply no market for the materials; e.g. glass.

The profitability of a MRF operation also has to do with processing and shipping costs. One MRF respondent indicated that it costs $32/tonne for baling and between $25 and $34/tonne for shipping and thus has to sell the product for between $57 and $66/tonne just to cover these costs. If materials are commingled, then the processing/baling costs are higher. However, there are technologies for reducing sorting costs such as optical scanners which can distinguish between the several grades of plastics. But the initial capital cost of acquiring these is high.
Another factor affecting processing and shipping costs is the volume of materials collected. Without a sufficient volume of materials, the unit cost of collection, processing and shipping becomes too high to be profitable.

Possible Solutions to Increasing Diversion Rates for IC&I and C&D Materials

Raising Diversion Rates at the Point of Collection
If it becomes more expensive for IC&I and C&D customers to have their material landfilled than sent to MRFs, they will switch to diversion. To do that, either the cost to the waste hauler to landfill materials has to increase and/or the tipping fee charged by the MRF to the waste hauler has to fall.

There are two solutions to increasing diversion rates at the point of collection. One is more draconian and involves banning those materials from landfills that have product stewardship programs in place for recycling materials, including used oil and tires, packaging and, in the near future, household hazardous wastes and electronics. The other is higher landfill tipping fees.

Landfill Bans
Nova Scotia has successfully used landfill bans to increase its diversion rates since the mid-1990s. A report prepared for the City of Ottawa in 2007 listed landfill bans as a further stage in the implementation of a comprehensive waste management strategy; and, the October 2009 report released by the Ontario Ministry of Environment recommended banning designated

materials from disposal sites after waste diversion plans are in place and markets exist for those materials.

It is not clear if the City of Winnipeg has the legal authority to ban materials from the Brady Road landfill. However, even if it does, such a ban would not be effective in diverting IC&I and C&D waste because waste haulers could simply take the banned materials to the other two landfills in the Capital Region. Hence, at least a Capital Region, but preferably a province-wide ban is required to create a level playing field. The Province of Manitoba could institute such a ban by amending the *Waste Disposal Grounds Regulation* of the Environment Act by including a schedule which sets out the banned materials that are currently included in Clause 2 – Designation of Material – of each of the provincial stewardship regulations. Organics should also be included in the list of banned materials.

Higher Landfill Tipping Fees

Short of banning materials from the landfills, the City could establish higher tipping fees to make it cheaper for the waste hauler to truck the materials to MRFs. Several respondents thought the landfill tipping fees would have to be in the order of $75 to $100/tonne to induce IC&I customers to use the MRFs. However, if the City acted alone in raising its tipping fees, waste haulers would then have an incentive to use the other two landfills in the Capital Region. Hence, at least a Capital Region-wide increase in tipping fees has to occur to avoid competition between landfills. To achieve this, the Province could increase its recently-introduced Waste Reduction and Recycling Support (WRARS) levy from its current $10/tonne to a level necessary to ensure waste materials are sent to MRFs for processing. The additional revenue raised from the higher WRARS levy could be used to fund infrastructure improvements to the processing of waste materials at the MRFs, encourage the development of local industries for processing waste materials into new products and promote improvements in the shipping of waste materials to distant markets. These developments then could give MRFs the financial room to lower their tipping fees and thus make waste diversion more affordable by the IC&I and C&D customers.

<u>Improving the Economics of Processing and Shipping Recyclables</u>

While the Green Action Centre is not familiar with the technologies used by local MRFs in processing and shipping the waste materials they receive, there are likely emerging technologies that could be adopted that would lower processing costs and/or raise the prices paid by end-users for the waste materials. One type of improvement would focus on achieving a high level of purity of the waste product because of the much higher prices obtained. For example, uncontaminated plastic bags from supermarkets fetch $400 to $500/tonne; whereas, comingled plastic gets only $20/tonne. One MRF operator talked about an optical scanner used by one of its operations in eastern Canada that allowed it to sort the different grades of plastic and thus achieve high levels of purity in the waste material. Another type of improvement would be that of pre-processing materials into dense packages that result in lower shipping costs. For example, a U.S. company melted plastics into bales that were then shipped for end-use processing, resulting in lower shipping costs due to higher volumes of pre-processed waste material being shipped per load and possibly higher prices.

In regards to shipping the waste materials to distant end-users, one can ask whether there are improvements that can be achieved. MRF operators pointed out the shortcomings of using rail.

However, the Green Action Centre wonders if a collective effort at shipping materials by the several MRFs would provide the railways with an incentive to do business with them. Alternatively, are there more economical configurations of truck hauling that could be used?

Finally, the Green Action Centre sees the local processing of waste materials as the best solution, from an environmental standpoint, because it avoids the greenhouse gases emitted by transporting these materials vast distances. Therefore, on a material-by-material basis, the Province could commission feasibility studies into the end-use processing of the key materials currently being collected from both the residential and non-residential sectors including, cardboard, newsprint, office paper, #1&2 plastics, #3 to 7 plastics, wood, concrete and asphalt, shingles, gypsum drywall, organic waste.

Summary

Waste diversion rates are extremely low in the IC&I and C&D sectors due largely to inadequate financial incentives facing customers, waste haulers and MRF operators and fluctuating demand and prices for the materials. Customers pay less for landfilling than recycling because of low tipping fees and the absence of landfill bans. Landfill bans would force them to send their materials to MRFs and higher landfill tipping fees would make it cheaper for them to do so. MRF operators face fluctuating demand and prices for the materials they collect, which they attempt to offset by changes in the tipping fees they charge. However, to the extent that they can institute processes which increase the purity of the materials they ship and densify their shipments, they can increase their profit margins and thus have room to lower their tipping fees to induce more people to provide them with waste materials.

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Questions for Discussion

1. Do you agree that either landfill bans and/or higher landfill tipping fees are required to induce IC&I and C&D customers to divert their waste from landfills"?

    1.A. If yes, which of the two instruments do you prefer and do other things have to be in place in order for these tools to work?

    1.B If yes, do you agree that these policies have to be introduced province-wide?

    1.D If no, what measures are required to induce IC&I and C&D customers to divert their waste?

2. What role can MRFs or other recyclers play in persuading IC&I and C&D customers to send their waste materials to them?

3. What kind of technologies are available to MRFs for increasing the profitability of their operations?

4. Can improvements be realized in the shipping of materials to distant customers that reduce GHG emissions?

5. What kind of potential is there in Winnipeg for the local processing of the following materials:
    - Cardboard;
    - Newsprint;
    - Office Paper;
    - #1 &2 plastics;
    - #3 to 7 plastics;
    - Styrofoam;
    - Metals;
    - Aluminum;
    - Glass;
    - Organics;
    - Shingles;
    - Concrete & asphalt;
    - Drywall