



WASTE MANAGEMENT UTILITY

2012 - 2014 Business Plan

Table of Contents

1. Introduction
2. Strategic Framework
3. Strategic Direction
4. Core Services
5. Challenges
6. Key Initiatives
7. Budget
8. Appendix A – Revised C & D Waste Recycling Business Case

Cover Photo: Volunteers sorting donations at the Reuse Centre

1. INTRODUCTION

The City of Edmonton through the Waste Management Utility is a leader in sustainable urban waste solutions and delivers waste management services in close alignment with Council's 30-year vision. The City's integrated, sustainable system contributes most directly to City Council's 10-year strategic goal, Preserve and Sustain Edmonton's environment. The utility also contributes to City Council's goal to diversify Edmonton's economy. With a strong focus on innovation, the Branch has attracted new green businesses to the City such as Global Electric and Electronic Processing (GEEP), Greys Paper Recycling Industries LP, and Enerkem Alberta Biofuels.

The Way We Green, Edmonton's long term environmental plan, addresses Edmonton's sustainability challenges through 12 goals, including waste management. The plan was created with extensive public input and identifies 2 major goals for waste:

- High rates of landfill diversion for non-residential waste
- Continual reduction of waste generated by Edmontonians on a per capita basis.

The consistent delivery of responsive collection and processing services and a commitment to customer engagement have entrenched the Waste Management Utility as a highly respected service provider and community leader. The Branch's partnership with the community is reflected in the 5,000 volunteer hours contributed each year by residents, and the high rates of voluntary participation in waste reduction, reuse and recycling.

2. STRATEGIC FRAMEWORK

Vision

To be a customer-driven world leader in sustainable and innovative waste management.

Mission










To provide waste management services for the City of Edmonton with due regard to the needs of residents, the preservation of natural resources, the protection of the environment and the financial capabilities of the City.

30-year Waste Management Strategic Plan

Edmonton's 30-year Waste Management Strategic Plan, first approved in 1994, continues to serve as a framework for the City's waste management system. The plan has taken Edmonton's waste management system from one that was largely focused on burying waste in landfill, to today's highly integrated, sustainable system that can divert 60% of residential waste from landfill and is focused on resource recovery.

Strategic Roadmap

The Waste Management Utility's strategic directions align with the City Council's 30-year vision. The table below lists the City's 10-year goals and corresponding outcomes and measures pertaining to waste management services.

	10-Year Goals	Outcomes	Measures
30-Year Vision	Preserve & Sustain Edmonton's Environment 	Programs are supported by citizen participation and research partnerships 	<ul style="list-style-type: none"> Percentage of homeowners recycling
		Impact on the environment from waste and drainage system discharge is reduced 	<ul style="list-style-type: none"> Percentage diversion of residential waste from landfill
		Leadership is demonstrated in reducing impacts on the environment 	<ul style="list-style-type: none"> Percentage of waste management collection fleet converted to biofuel Tonnes of non-residential waste diverted from landfill Volume of biofuel produced from Edmonton's waste stream
	Improve Edmonton's Livability 	Services are safe and accessible to all citizens 	<ul style="list-style-type: none"> Number of users of Eco Stations and Big Bin Events
		Public health is maintained 	<ul style="list-style-type: none"> Number of missed collection stops per 10,000
	Diversify Edmonton's Economy 	Economic development is influenced through business activities 	<ul style="list-style-type: none"> Tonnes of non-residential waste recycled through closed loop initiative for office paper

3. STRATEGIC DIRECTION

This 3-year business plan identifies key priority initiatives that contribute to one or more of the Utility's five strategic goals.

1. Deliver efficient, environmentally sound collection services.	2. Process waste to recover resources and increase landfill diversion rates for both residential and non-residential waste.	3. Provide responsive services that meet the changing needs of our customers.	4. Maintain our leadership status focusing on innovation and attracting green businesses.	5. Engage the citizens of Edmonton and facilitate their full participation in waste reduction, reuse and recycling.
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During the next three years, a key priority for the Utility will be to continue to effectively manage the transition to an integrated system that is focused on processing waste to recover value and minimize hauling to a distant landfill. This transition includes the completion of some key facilities such as the Northeast Eco Station, final stage of the Integrated Processing and Transfer Facility (IPTF), and the start of operations at the Edmonton Biofuels Facility.

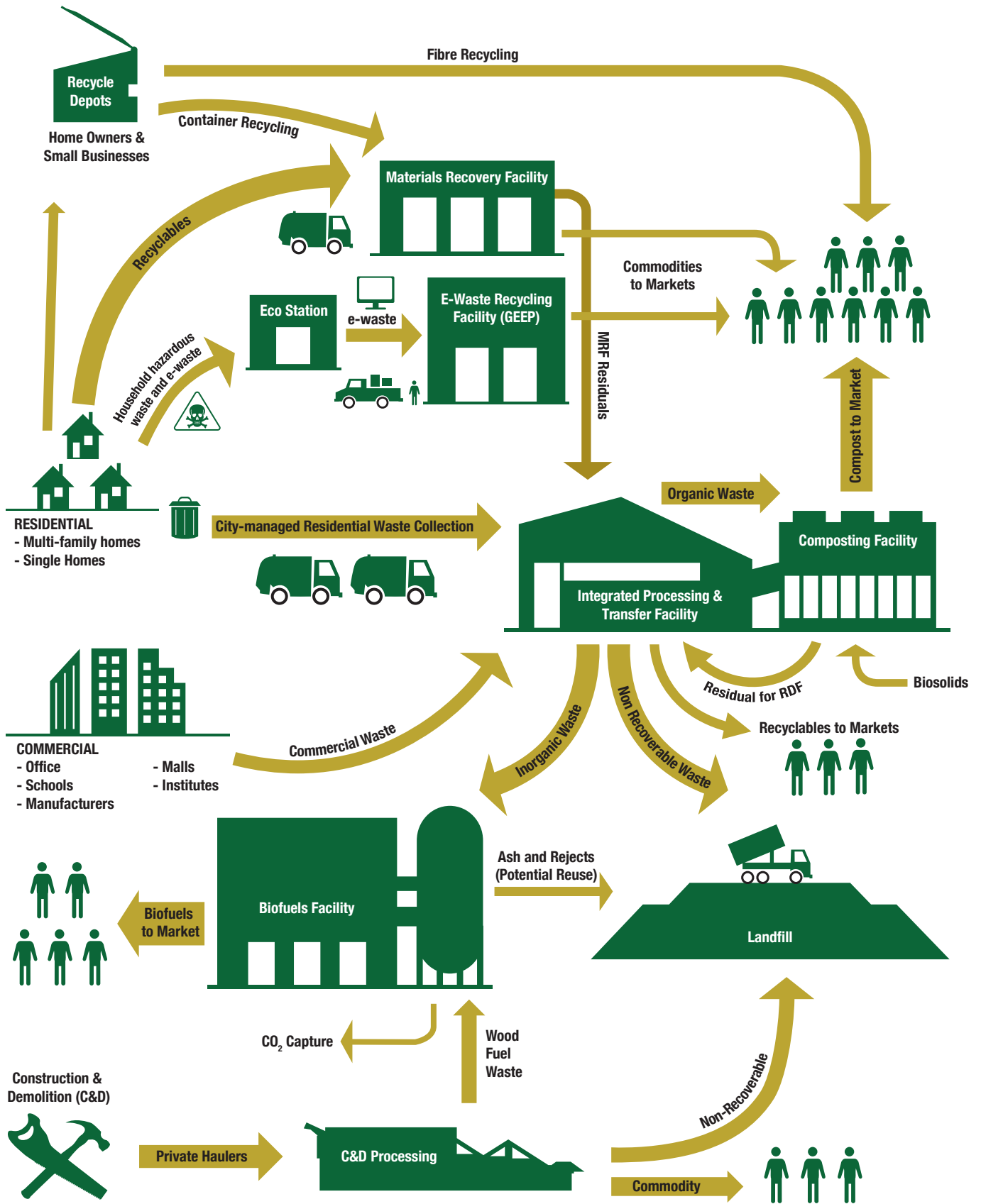
The diagram on the following page, Integrated Waste Management System, illustrates the fully integrated waste management system and shows that components of the system should be considered as a total system in determining the efficacy and efficiency of residential waste management in Edmonton and not in isolation.

The 2012 - 2014 Business Plan ensures that the Utility can provide the core services that meet the needs of its customers. Additionally, this Business Plan reflects two new items.

- The move to year-round weekly collection services at the same budget as the existing collection services; in addition to providing a more convenient and easier to understand servicing schedule, this move would reduce the rate of increase in future collection costs. The experience of the City of Calgary in this regard provides additional confidence for this change.
- The Waste Management Utility Fiscal Policy pending approval by City Council in 2011; this was used to guide the financing of the 2012 -2014 Business Plan and will ensure the long term sustainability of the Utility. A key goal within the policy is to achieve a balanced budget by 2012. This is achieved in this Business Plan. Provision of a return to the City over the planning period will require a commitment to utility rate increases not contemplated in this Business Plan.

A new monthly utility rate for residents who produce low volumes of waste is currently being evaluated and will be included in the 2012-2014 Business Plan following review and approval by the Utility Committee and City Council.

Integrated Waste Management System



4. CORE SERVICES

The services to be delivered over the business planning period 2012 to 2014 are all approved services that form the core services delivered by the Waste Management Utility. Over this planning period two approved additions to the core services will come on line, the Northeast Eco Station to meet the needs of residents living in Northeast Edmonton and the Edmonton Biofuels Facility.

The core services are delivered under two interrelated programs, Collection Services, and Processing and Disposal Services.

Collection Services

The Waste Management Utility is responsible for providing all collection and drop-off services to the residential sector. To a lesser extent, the utility also provides non-residential collection services to influence recycling in this sector. The Branch meets these responsibilities through integrated collection programs including:

Direct Collection Programs

- Collection of residential refuse and recyclables from approximately 324,000 single and multi-family homes.
- Assisted Waste collection for 180 residents with mobility restrictions.
- Contracted collection services for non-residential customers.
- Collection of recyclable material from City facilities.

Drop-off Programs

- Operation of 3 Eco Stations with the 4th, Northeast Eco Station, now in the siting and pre-design phase.
- Operation of 20 Neighbourhood Recycling Depots accessible 24/7 for a convenient drop-off service for recyclable materials from residents and small businesses.
- Twelve annual community Big Bin events for receiving residential large, bulky items.

Litter Management Programs

- Provision of services on behalf of Capital City Clean Up initiative and on a cost-recovery basis.
- Servicing of 1500 litter containers (located mostly in Business Revitalization Zones)
- Total Look of Clean Pilot Program to clean alleys in Rice Howard Way and Old Strathcona.

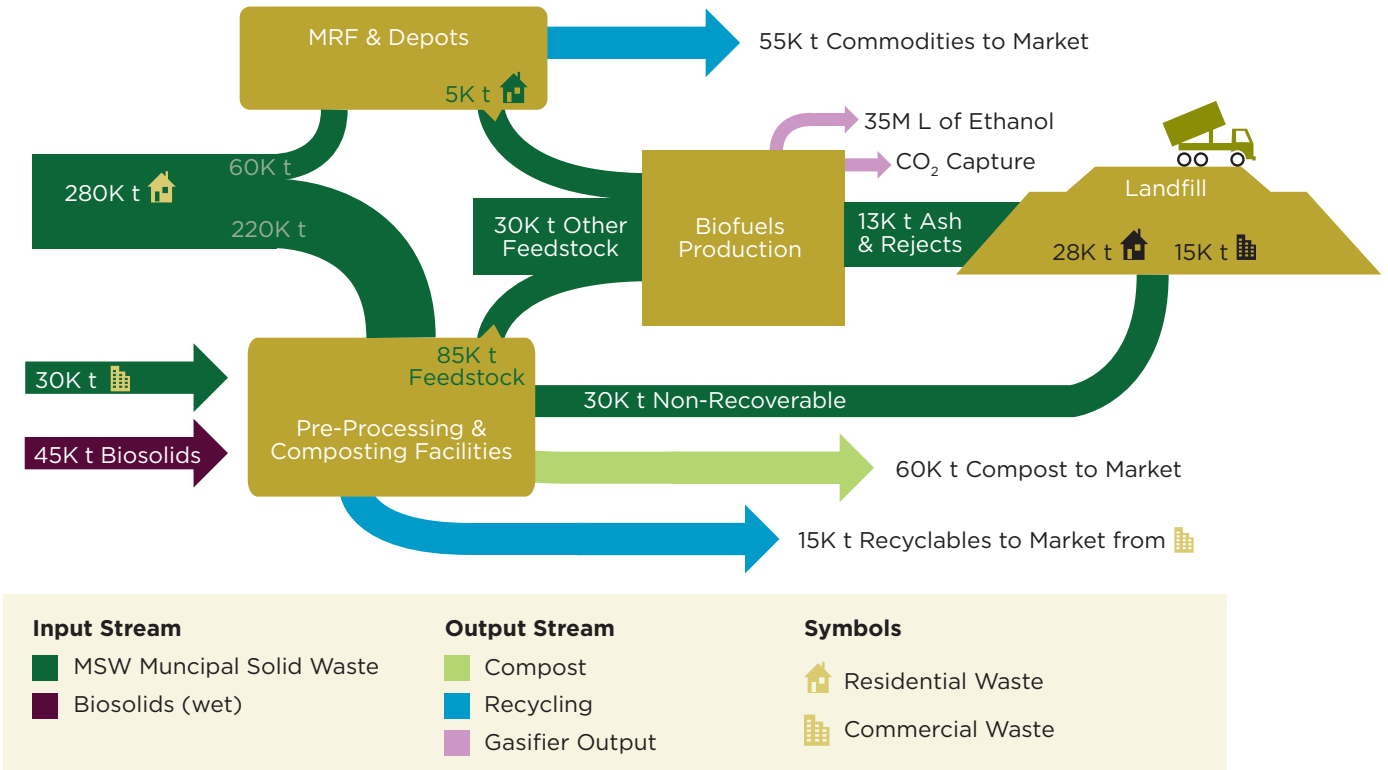
The garbage and recyclables collected are processed at facilities located at the Edmonton Waste Management Centre.

Processing and Disposal Services

The Edmonton Waste Management Centre (EWMC) is a fully integrated waste management site where the focus is to process waste streams into reusable and marketable products. Waste that cannot be recovered or converted into feedstock for the Composting and Biofuels Facilities is disposed at landfills. The City has a long term contract with the Beaver Regional Waste Management Services Commission for use of its landfill at Ryley and an agreement to access capacity at the private West Edmonton Landfill until 2012 when it is expected to close.

The EWMC plays a significant role in diverting waste from landfill, up to 60% of the residential stream in the short term and up to 90% in 2013 with availability of the Biofuels Facility. The mechanism of diversion is illustrated in the waste flow diagram on the following page.

90% Diversion of Residential Waste Stream



Facilities and operations at the EWMC are either owned by the City and operated by City and/or contracted staff, or owned and operated by third-parties.

- The Edmonton Composting facility which is the anchor or the organics diversion program.
- The Materials Recovery Facility, where Blue Bin and Blue Bag material is processed for marketing.
- The Integrated Processing and Transfer Facility (IPTF), where material is pre-processed to provide optimal feedstock for the Composting Facility. In 2012, non-compostable and non-recyclable waste will be prepared here for the Biofuels Facility.
- The Construction and Demolition Waste Processing Operation, with processing of mixed loads planned to start fall 2011.
- The Research and Development Facility, where the internationally recognized Edmonton Waste Management Centre of Excellence is based and where the Centre and the Branch conduct research that can be applied to City operations.
- The Advanced Energy Research Facility, funded by Alberta Innovates Energy and Environment Solutions and operated in conjunction with Enerkem Alberta Biofuels, that will enable research and demonstration of improvements to the processing of waste to biofuels.
- The Leachate Treatment Plant where leachate from the Clover Bar Landfill is treated.
- The GEEP Facility, owned and operated by Global Electronics and Electric Processors, where electronic and electrical waste products from Alberta and beyond are recycled.
- The Greys Recycling Facility to be completed in 2011 for producing new paper from recovered paper and paving bricks incorporating recycled glass.
- Edmonton Biofuels Facility to be completed in 2012 for converting waste to methanol or ethanol.
- The Homeowner Drop-Off Facility which supplements the Integrated Processing and Transfer Facility in providing safe and convenient drop off by homeowners and small haulers of waste, recyclables and hazardous waste.
- Clover Bar Landfill closure and environmental systems operations.

5. CHALLENGES

Over the Business Plan period 2012 to 2014, the Utility will need to adjust or react to impacts beyond its control.

- The continued contracting of operations will require new tenders for 50% of the single family sector and smaller multi-family collection contracts, and for operation of the Materials Recovery Facility and the Edmonton Composting Facility. The Business Plan reflects reasonable cost increases but a significant increase in industrial activity in the Edmonton Region could produce tender results beyond assumptions made in the Plan.
- The decision by Alberta Environment not to proceed with legislation to mandate the recycling of commingled construction and demolition waste (notwithstanding the support of all major stakeholders) and the approval of a new dry disposal site in the County of Parkland, will reduce the projection for the volumes of commingled construction and demolition waste arriving at the Edmonton Waste Management Centre. The revenues now expected from processing this waste stream will not be as high as previously anticipated. A revised business case is included as Appendix A reflecting revised waste projections.
- International market forces dictate the commodity pricing for recyclable materials in North America. The Business Plan includes revenue from recyclable material based on current industry projections. From time to time the accuracy of these projections proves to be unreliable.
- Currently, the Waste Management Utility has limited influence on the increase or decrease in the amount of commercial waste tipped at the Edmonton Waste Management Centre from year to year. Business Plan cost estimates include projections of commercial waste amounts that must reflect considered impacts of industry influences such as the closure of the privately-owned West Edmonton Landfill expected during 2012, and alternative disposal options available to private haulers.
- The Waste Management Utility has provided biosolids processing services to Drainage Services at preferential legacy fees that were agreed to by TransAlta, the original owners of the Edmonton Composting Facility, to attract a waste stream to the facility that would be beneficial in generating suitable biomass for reclamation of coal pits. These fees do not recover the full cost of biosolids processing by the Waste Management Utility. With the conversion of Waste Management to a full utility now complete and biosolids processing systems optimized, full cost recovery from Drainage Services for biosolids processing can now be pursued. Processing fees charged to Drainage Services need to increase from \$234 per dry tonne in 2011 to \$449 per dry tonne to reflect full cost recovery. Recognizing that this will translate to an increase in the recovery from Drainage Services in the order of \$9.5 million if implemented in one year, negotiations are underway for a staged increase in fees over the Business Plan period to ensure full cost recovery by 2014. Also, recognizing that Drainage Services needs to first present resulting impact of negotiations on their utility rates to Utility Committee, the costing in the Waste Management Business Plan does not include full cost recovery for processing of biosolids. It is anticipated that the 2012 budget of the Waste Management Utility will recommend an increase in biosolids processing fees towards full cost recovery pending the direction of the Utility Committee.

6. KEY INITIATIVES

Key initiatives in keeping with the strategic goals of the Utility that are being evaluated or implemented in the 2012 -2014 Business Plan are presented in the following table.

Strategic Goal	Initiative	Timing
1. Deliver efficient collection services focused on environmental protection	Alternate Fuel Source: use ethanol produced at the Edmonton Biofuels Facility to fuel waste collection vehicles. Pending commercial availability of European technology in Edmonton and subsequent pilot, replacement collection vehicles purchased in 2012 onwards will be equipped to run on biofuel.	2012 - 2014
	Route Optimization Project: adopt computer aided tactical planning tool to ensure collection routes are efficiently managed in spite of geographic expansion, traffic congestion and increasing regulations.	2012 - 2014
	Waste collection service delivery: continue to deliver waste collection service on an equal split between civic staff and contractors to provide a comparator and to maintain a competitive environment.	2012 - 2014
	Continue trend to reduce lost time incidents: continued Branch-wide implementation of Behaviour Based Safety and Early Intervention initiatives to at least sustain the 62% reduction in lost time incidents achieved in 2010.	2012 - 2014
2. Process waste to recover resources and minimize landfilling	Mixed Construction & Demolition Waste Recycling: continue to operate a commingled construction and demolition waste recycling operation to recover reusable material now landfilled.	2012 - 2014
	Commercial Waste Management Services: continue to establish a presence in the non-residential sector for collection and processing of refuse and recyclables to influence recycling activities in this sector.	2012 - 2014
3. Provide responsive services that meet the changing needs of our customers	Customer satisfaction: continue to deliver high levels of customer satisfaction, achieving 4 or less missed collections per 10,000 collection stops.	2012 - 2014
	Year-round weekly collection: provide weekly collection of waste and recyclables, enhancing convenience for residents and ensuring future collection productivity and efficiency.	2013 - 2014
	Northeast Eco Station: develop a 4th Eco Station to serve residents of north and northeast Edmonton. Anticipated opening 2013.	2012 - 2014
4. Maintain our leadership status by focusing on innovation and attracting green businesses	Edmonton Biofuels Facility: built and operated by Enerkem Alberta Biofuels, planned commissioning of this facility is 2012 and full production 2013.	2013 - 2014
	Closed Loop Recycling: a partnership with Greys Paper Recycling Industries LP to produce paper products from recycled paper and bricks using recycled glass. Facility will be operational in 2012 and will create 100 jobs.	2012 - 2014
5. Engage the citizens of Edmonton and facilitate their full participation in waste reduction, reuse and recycling	Foster Waste Reduction: provide education and engagement programs with the support of volunteers to encourage waste reduction among residents, a highly efficient contributor to achieving landfill diversion targets since waste is not set out for collection and processing but reused on site (e.g. grasscycling).	2012 - 2014

7. BUDGET AND FINANCIAL IMPACT OF BUSINESS PLAN

The budget and financial impact of the business plan is presented in the following tables in terms of both operating and capital costs and the indicators defined through the Utility Fiscal Policy.

In preparing the budgets supporting the business plan, the Waste Management Utility reflected the services and processes needed to support its mission, values and strategic initiatives. The estimates are based on past experience and current experience for the first four months of 2011. As capital work is completed on the facilities at the Edmonton Waste Management Centre, and other input costs such as contracts are determined over the next few months, the Utility will have better information to draw on in finalizing its 2012 budget in the second quarter of this year. Details on the projected 2011 costs and the impact on the 2012 estimates will be included in the formal rate filing recommending the 2012 rate increase when the 2012 budget is brought forward.

Operations and Maintenance Cost Estimates

Operations and maintenance cost estimates considered the best estimates to date on personnel, contracted services and fleet charges, as well as the impact on other cost requirements.

Cost increases beyond the corporate inflation guideline of 2.65% in Collection Services are driven by expected increases in contracted services upon retendering. A new contract for single family collection is required effective January 1, 2013 and contract renewals in multi-family collection occur periodically throughout the duration of the Business Plan. The allowances made will be further verified for the 2012 budget.

The Processing and Disposal cost estimates for the Business Plan period reflect a considered impact of the closure of the privately-owned West Edmonton Landfill which is expected during 2012. There is some sensitivity and risk to the estimates of tonnages brought to the site by private haulers because of their access to alternative disposal either directly owned or owned by third parties. These market conditions have been reflected in anticipated 2012 volumes coming to the Edmonton Waste Management Centre and resulting cost estimates for both haul of refuse to the Ryley Landfill and disposal.

The Processing and Disposal cost estimates for 2012 and subsequent years also reflect planned increases related to completion of Phase 3 of the Integrated Processing and Transfer Facility, as well as the fees for the Edmonton Biofuels Facility. Waste is processed in Phase 3 of the Integrated Processing and Transfer Facility into a feedstock for use in the Edmonton Biofuels Facility.

The Business Plan costing for 2012 includes increases in EPCOR billing services, and the Utility's in-house central support functions at inflationary levels. The allocation of Shared Services costs assumes continued phase in of the full allocation, and includes an increase of \$1 million from 2011.

Non-residential (commercial) Tipping Fees

Commercial waste revenue projections reflect anticipated increased service fees and full cost recovery by 2014. Revenue projections are also based on waste quantities to the Edmonton Waste Management Centre that reflect industry influences. Tipping fees at the Edmonton Waste Management Centre for commercial waste are planned to increase from \$68 per tonne in 2011 to \$75 per tonne in 2012, \$80 per tonne in 2013 and \$82 per tonne in 2014.

The transition to full cost recovery in 2014 is a reasonable approach for two reasons. First, the non-residential sector subsidized the residential sector up to 2011. This occurred since the financial reserve used to stabilize the monthly residential user fee was funded primarily from landfill tipping fees paid by the non-residential sector. Second, unlike the residential sector, the non-residential sector did not receive a property tax benefit when the Waste Management Utility was established and tax levy funding discontinued.

Impact of Capital Projects on the Business Plan Costing

The impact of capital projects is reflected in depreciation and interest expenses. In 2011 the major capital work put into service includes process and electrical equipment at the Advanced Energy Research Facility, site development for the Construction & Demolition Waste Facility, vehicle acquisitions, and other minor equipment acquisitions. Borrowings planned for 2011 include funding construction of Phase 3 of the Integrated Processing and Transfer Facility, land acquisitions at the Waste Management Centre and for the NE Eco Station, the C&D facility, and initial expansion of the operations / vehicle storage facility at Kennedale Integrated Yard. These capital impacts will have a half year impact in 2011 and a full year impact in 2012.

In 2012 capital work expected to be put into service, with a half year impact on depreciation, includes Phase 3 of the Integrated Processing and Transfer Facility, the Kennedale facility, vehicle and equipment acquisition, and upgrades to Edmonton Waste Management Centre facilities. Borrowings in 2012 are planned for the Kennedale facility, the NE Eco Station, and facility and infrastructure upgrades at Edmonton Waste Management Centre. With completion of the Integrated Processing and Transfer Facility and other facilities currently in progress, after 2012 the Waste Management Utility's capital plan reduces. New facilities will include the NE Eco Station and the NW Eco Station planned for completion 2019. Other capital work will focus on upgrading and expanding existing facilities to ensure sustainability and improvement of processes, and to meet growth. Vehicle and equipment support to both the collection and processing operations is assumed throughout the plan.

Financial Implications of Business Plan

The costing of the Waste Management Business Plan for the next 5 years is presented in the following table. This will be extended to 10 years during development of the 2012 Budget.

Based on the first four months of operations, the Utility's preliminary 2011 Forecast indicates that \$4.8 million will be required from Retained Earnings. This is \$1.4 million higher than planned, primarily as a result of lower Program Revenues. Administration is working to manage this shortfall over the remaining eight months to minimize the financial impacts to the Utility. 2011 represents the final year as part of the Landfill Closure Implementation Plan whereby funding from Retained Earnings will be used for operational purposes.

While the 2012 Forecast does not include a Return on Rate Base, it does eliminate the \$3,400 planned shortfall. A modest Return on Rate Base will start in 2013 and is expected to reach the minimum target of 4% by 2016.

There have been significant capital investments in recent years in the Integrated Processing and Transfer Facility and other infrastructure at the Edmonton Waste Management Centre to implement Council's decision regarding a waste management strategy that focuses on waste diversion rather than a landfill operation. Capital investments increased from less than \$10 million annually before 2008 to an estimated \$50 million annually for the years 2008-2012. After 2012, the capital requirements of this new service delivery are expected to be completed and the annual requirement will stabilize in the range of \$20 million annually. As a result, the Debt Coverage Ratio will be below the policy target of 1.3 until 2014. While improving annually, the Debt to Net Assets Ratio will not reach target over the next 5 years as this is still a relatively new utility.

Over the next four years, the Utility will also be challenged if cash that were set aside for Landfill Post-Closure Care were not available to the Utility. This is needed as a funding source for its planned capital investment. Since there is no immediate need for cash expenses from the Landfill Post-Closure Care, part of the cash will be used for this purpose. The Cash Balance will return to a positive position and continues to improve by 2015.

A preliminary costing of the Business Plan indicates that customer rates will need to increase by \$2.51 per month in 2012, followed by increases in the \$2 range per month annually for the following 3 years. By then, the financial impacts of interest expense, depreciation expense, and full shared services and corporate overhead allocation will be reflected in the rates and future increases will be close to inflationary levels.

The detailed budget for 2012 will include rate filing documents. The following presents preliminary financial information for the Utility.

Waste Management Utility

	Actual		Approved Budget	Forecast	Forecast				
	2009	2010	2011	2011	2012	2013	2014	2015	2016
Financial Indicators:									
Fair and Reasonable Return Return on Rate Base	-2.6%	-4.0%	-1.4%	-2.0%	0.0%	0.7%	2.0%	3.4%	4.0%
<i>Draft Target: Between 4% and 10%, while balancing between goals, rates and bottom line</i>									
Impact of Customer Rate Monthly Billing Increase	8.6%	12.3%	5.0%	5.0%	8.0%	6.4%	6.0%	6.0%	4.0%
	\$ 2.10	\$ 3.26	\$ 1.49	\$ 1.49	\$ 2.51	\$ 2.17	\$ 2.16	\$ 2.29	\$ 1.63
Rates Sufficient to Meet Expenses Implementation Plan - Retained Earnings Net Income	\$ (5,246)	\$ (8,500)	\$ (3,400)	\$ (4,800)	\$ 0	\$ 2,066	\$ 5,799	\$ 10,352	\$ 12,597
<i>Draft Target: Positive Net Income</i>									
Financing of Capital Investments Debt Coverage Ratio Debt to Net Assets Ratio	0.9	0.8	1.0	0.9	1.1	1.2	1.3	1.4	1.4
	96%	90%	87%	87%	85%	84%	82%	81%	79%
<i>Draft Target: Debt Coverage Ratio - not less than 1.3 // Debt to Net Assets Ratio - less than 60%</i>									
Cash Balance Landfill Closure Cash Held on Behalf of Third Parties Cash Available to Utility	\$ 21,015	\$ 20,042	\$ 19,104	\$ 19,104	\$ 18,339	\$ 17,363	\$ 16,325	\$ 15,784	\$ 15,228
	\$ 16,589	\$ 10,254	\$ -	\$ 2,854	\$ -	\$ -	\$ -	\$ -	\$ -
	30,969	10,736	(5,278)	(5,557)	(7,204)	(6,008)	(2,140)	3,684	12,833
	\$ 68,573	\$ 41,032	\$ 13,826	\$ 16,401	\$ 11,135	\$ 11,355	\$ 14,185	\$ 19,468	\$ 28,061
Planned Capital Expenditures Capital to be financed by Retained Earnings	\$ 55,476	\$ 33,282	\$ 75,225	\$ 66,357	\$ 35,787	\$ 23,155	\$ 18,823	\$ 33,407	\$ 24,989
	\$ 49,295	\$ 10,693	\$ 8,210	\$ 5,629	\$ 5,372	\$ 4,117	\$ 3,960	\$ 5,576	\$ 4,568
Long Range Plans Pro-forma Information	5 Years	5 Years	5 Years	5 Years	5 Years	5 Years	5 Years	5 Years	5 Years
<i>Draft Target: 10-year financial planning horizon</i>									

Pro-Forma Income Statement:									
Revenues									
Rate Revenue	\$ 85,491	\$ 97,916	\$104,143	\$104,143	\$114,361	\$123,726	\$133,351	\$143,717	\$152,009
Non-Rate Revenues									
Program Revenue (including investment earnings)	\$ 20,698	\$ 19,818	\$ 23,090	\$ 21,990	\$ 25,134	\$ 27,876	\$ 29,925	\$ 31,000	\$ 32,104
Grant payment for Biofuels Facility (offsetting expense)	6,600	-	13,400	11,400	2,000	-	-	-	-
Sub-total	27,298	19,818	36,490	33,390	27,134	27,876	29,925	31,000	32,104
Total Revenues	\$112,789	\$117,735	\$140,633	\$137,533	\$141,495	\$151,602	\$163,276	\$174,717	\$184,112
Operating Expenses									
Operating & Maintenance	\$ 98,178	\$107,445	\$112,645	\$113,580	\$118,567	\$127,206	\$135,530	\$141,637	\$146,744
Depreciation	12,040	14,867	15,240	15,871	17,521	18,670	18,796	19,592	21,553
Interest	7,777	9,341	11,021	10,552	11,807	12,241	12,214	12,397	12,680
Sub-total	\$117,994	\$131,653	\$138,906	\$140,003	\$147,895	\$158,117	\$166,539	\$173,625	\$180,977
Grant payment for Biofuels Facility (offsetting revenue)	6,600	-	13,400	11,400	2,000	-	-	-	-
Biosolids Revenue	(6,560)	(5,418)	(6,335)	(7,132)	(6,462)	(6,591)	(6,723)	(6,857)	(6,994)
Recovery for City Litter Collection	-	-	(1,938)	(1,938)	(1,938)	(1,990)	(2,340)	(2,403)	(2,467)
Net Expenses	\$118,034	\$126,235	\$144,033	\$142,333	\$141,495	\$149,536	\$157,477	\$164,365	\$171,515
Net Income (loss)	\$ (5,246)	\$ (8,500)	\$ (3,400)	\$ (4,800)	\$ 0	\$ 2,066	\$ 5,799	\$ 10,352	\$ 12,597

APPENDIX A - UPDATED Business Case Analysis

Expanded C&D Processing Operations

Project/Activity Description and Background

This is a new activity to process mixed construction and demolition (C&D) waste, recovering/recycling as much as possible and sending as little as possible to landfill. It is being undertaken both to create new revenue and to further advance the diversion of non-residential waste from landfill.

This processing operation is not to be confused with the handling of source segregated loads of C&D waste originating from both residential and non-residential properties. The Waste Management Branch has been providing this service for many years, pre-dating its conversion to a utility operation, and it is not a part of this analysis. A mixed C&D waste processing operation requires a relatively large work area to deal with the volumes of material and the equipment required to handle it. At the Edmonton Waste Management Centre (EWMC) there are few developable areas left. However, there is about 5 Ha of land immediately south of the existing small C&D receiving area that is undeveloped. It has been considered essentially un-developable for most purposes, as it is underlain by several meters of rubble debris landfilled there after the 1987 tornado. However, this parcel represents a suitable lowest cost option to site an expanded C&D operation. Factors taken into consideration:

- For the past decade, the area has been used to stockpile soil ultimately now used in landfill covering. That “pre-loading” will have significantly consolidated the underlying soil and debris, lessening the risk of significant settlement going forward.
- The proposed C&D operation’s greatest requirement is a large “yard” area with a sturdy base and solid surface so that material can be piled and equipment can manoeuvre without rutting or mixing of base soils with the material. That can be accomplished by compacting recycled concrete aggregate on the area. This kind of relatively flexible paving can simply be re-graded as required if settlement occurs.
- One of the products of the recycling operation will be more crushed concrete aggregate, which will be a low-cost source of material to fill and re-grade any settled areas over the years.

The existing EWMC scaling system will serve to weigh incoming and outgoing material, making further use of an existing asset with no further investment. The mechanized process line, with screens and density separators, along with manual sort stations will be acquired and installed in a building. Important to the operation will be versatile heavy equipment in the form of loaders and grapples to not only move material around, but do the first level of coarse separation. Roll-off bins and bin trucks would be used to contain various materials and move them about the site and to markets. Much of the required equipment is already in the EWMC fleet and can be partially allocated to the new operation with new equipment being acquired only when volumes and revenues warrant. From the outset, an additional tracked grapple will be acquired as will a small tracked skid- steer loader.

Operationally, this concept calls for overall site management to be by the City with City forces. As recently approved by Utilities Committee, the collaboration with not-for-profit employer Quality One Training and Support will be expanded to provide the manual labour for the sort line. Crushing of concrete and rubble into aggregate will be contracted, with the operator paying the City for the coarse rubble and then crushing and marketing it for a profit. Alternatively, the Branch may choose to pay for the crushing and retain the produced aggregate for on-site use. Either way, the product represents value to the City.

The concept is based on a facility capable of processing up to 100,000 tpy on a single shift operations basis. The site would be open to accept material at least 6 days a week, possibly 7 during peak season. Actual processing will take place only as quantities require. In this way variable costs will be minimized when volumes are low.

Four significant revenue commodities expected would be concrete/asphalt rubble, wood, cardboard and metal. The wood would be ground to chips, using the grinder the Waste Management Branch already owns, for use in the composting operations or as feedstock for the Edmonton Biofuels Facility. Cardboard and Metals would be marketed to brokers. In the financial analysis, the value of the wood is attributed as the expected cost of buying a similar quality of wood chips from other sources for composting operations.

It is expected that there will be a growing market for this service over the long term even without legislation because:

- Landfill capacity within the City's boundaries will be exhausted with the pending closure of the West Edmonton Landfill in 2012.
- There is rising interest by owners and architects to meet "green" standards such as LEED®.
- There can be a financial incentive as, with landfill capacity declining, disposal rates are rising, leaving room for this service to potentially be offered at a cost slightly below disposal rates and still be profitable. The ability to do so could be limited if market values of the produced commodities sink too low. The Branch will monitor market conditions and adjust rates to maximize financial return.

Analysis Methodology

For this analysis a spreadsheet model was constructed that enables evaluation of program economics (annual return) based on different combinations of variables. Variables include:

- Volume of material received
- Fraction of material received that can be recovered and diverted from landfill
- Market value of materials
- Tip fees that are charged.

By running the model with different combinations of these inputs, an understanding of the degree to which each influences profitability was gained, and thus an understanding of risk and potential reward.

Estimated capital and operating costs as indicated in the current business plan were used in the modeling of financial viability.

The base case for this analysis is "do nothing". That is, no major C&D processing operation is developed and there is no effort to attract mixed C&D waste to the EWMC. In this scenario, experience of over 30 years has shown that some C&D waste would still arrive at the IPTF. It would be treated as any other commercial waste - transfer hauled and landfilled at the prevailing full tip fee. No diversion from landfill would occur.

Key assumptions include:

- A stable construction and demolition industry, leading to typical ranges of material volumes as seen historically - in the range of 250,000 to 300,000 tonnes per year in the region.
- The current operators of the remaining Class III landfills west of Edmonton continue to operate, competing for business for at least the next five to seven years. This is considered in projecting the volumes expected at the new facility. Volume projections are based on volumes of C&D material currently arriving at the EWMC, and anticipating a growing uptake of the opportunity being offered to achieve "green" objectives of project owners and contractors.
- No other major new players offering similar services.
- Electrical energy costs 7 cents per kilowatt-hour.
- Diesel fuel costs \$1 per litre.

NOTE - The original business case analysis for this project was completed in early 2009, at which time the Province of Alberta was approaching the culmination of a planning and stakeholder input process that was expected to result in new legislation requiring developers and owners in Alberta to recycle a significant fraction of the debris from their projects. Unexpectedly, the Province has since moved away from that path, and for the purposes of this updated business case analysis it is assumed that no new legislation will come into effect within the planning period. Should legislation ultimately be enacted, it can be expected that the uptake of services offered at this new facility will be significantly greater, as will the business benefits.

Results

Capital Cost

As approved with the capital budget program, the project budget is \$4.3M.

Some initial site preparation was done in 2010. The contract was also awarded for the supply and installation of the main processing line, with foundation and fabrication work now underway. The key mobile equipment was acquired. As of May 2011, it is expected the project capital budget will be met.

Based on current borrowing rates and a borrowing term of 15 years, to match the expected asset life, the annual cost of debt (interest) and depreciation will be \$373,000 and will decrease annually as the debt is repaid.

Operating Costs

Operating costs for the mixed waste recycling process are estimated at \$1.6M per year in 2011 dollars. This is for a full year of operation 5 days a week, 52 days a year, which, at the manufacturer's rated capacity, would process up to 85,000 tonnes. The system will not be commissioned until September of 2011, so the revised budget projection for 2011 is pro-rated to \$500,000. Conservatively, the budget for 2012 through 2014 is based on full year operation, though it is anticipated that volumes will ramp up from 65,000t in 2012 to 85,000 in 2014. Given the external variables that can influence the tonnage, this approach ensures adequate budgets should higher tonnages be received in the growth phase. If probable lower tonnages arrive, operating costs will be below budget.

Besides the costs of operating the processing system, there will be costs associated with the haul and disposal of incoming material that cannot be recovered for re-use through the process. Operating facilities were visited and discussions held with owners, operators and equipment vendors. Based on information gathered, processing systems generally divert between 50% and 65% of the incoming materials. Affecting this diversion efficiency are variables such as the nature of the regional waste stream, system efficiency, and the availability of markets or uses for the various materials. For this analysis, a conservative 30% recovery is assumed for 2011 (partial year) and 50% for subsequent years.

Based on these recovery ratios and the projected tonnages, the cost of hauling and disposing of non-recoverable material ranges from \$1.6 million in 2011 to \$2.8 million in 2014. It is important to understand that, while costs of the processing operations will rise and fall to some degree based on the relative tonnages processed, the costs of haul and disposal are 100% variable. That is, with lower tonnages costs will drop in direct proportion to the reduction in volume. Similarly, with higher tonnages, they will go up in proportion, but so will revenues and material value, resulting in higher than projected net profit.

Revenues and Material Value

There are two main sources of value in the new C&D recycling program:

- Tipping fees paid by users.
- The value of recovered materials, which may take the form of an actual revenue if the material is sold, or reduce costs if the material is retained and used within City operations.

The largest revenue source is tipping fees. Based on planned rates and projected tonnages, the tipping fee income would range from \$2.5M in 2011 to \$5.7M in 2014.

The main materials of value will be wood, concrete and asphalt, cardboard and metals. The Branch has internal uses for wood as a bulking and carbon amendment to the biosolids composting operations. The existing source separated C&D recycling program produces a significant portion of the Branch's annual needs, but not all, so chipped wood is purchased each year to make up the difference. All of the wood recovered in the new operation will be used to reduce that need. Concrete and asphalt will be crushed for use as aggregate either at the EWMC or for other City capital works. Metals and cardboard will be marketed. Other materials such as plastics, rubber, carpet/underlay will be recovered and further processed as a Biofuels Facility feedstock starting in 2012. Clean drywall will be recovered and added to produce compost for the agronomic benefit the gypsum adds, but no net value is attributed to that addition.

For the purposes of the current business plan, no net revenue from external marketing of recovered materials is included in the projected budgets. The internalized value of the recovered materials is, however, reflected in the composting operating budget and, and in the capital budget for aggregates.

Projected tip fee revenues and material values, based on projected tonnages and recovery efficiencies, are as follows:

	2011	2012	2013	2014
Tipping Fees	\$ 2,475	\$ 3,900	\$ 4,875	\$ 5,670
Materials value	\$ 203	\$ 488	\$ 563	\$ 638
Total revenue and materials value	\$ 2,678	\$ 4,388	\$ 5,438	\$ 6,307

Note that the tipping fee revenue indicated in the budget includes revenue from the source separated C&D recycling program as well. Figures presented here are just those anticipated for the new MIXED C&D process. Also, the materials values shown here are reflected in the Utility's Operating Budget as reduced net operating costs in other programs, since most of the materials of value will be used within those programs.

Profit

Based on projected volumes, process efficiencies and material values and costs, the financial results for the phase-in over the term of this business plan are as follows:

	2011	2012	2013	2014
Total costs	\$ 2,459	\$ 3,954	\$ 4,503	\$ 4,887
Total revenue and material value	\$ 2,678	\$ 4,388	\$ 5,438	\$ 6,307
Net value of activity (profit)	\$ 218	\$ 433	\$ 935	\$ 1,420

To reiterate, these projections are for the NEW mixed C&D processing operation of the overall C&D program at the EWMC.

Sensitivity Analysis

Given the many external influences and unknowns that could affect project profitability, a sensitivity analysis has been completed to better define the risks and the opportunity that this initiative represents.

Effect of Tip Fee Charged

Refer to Chart 1. With an achieved diversion rate of 50%, a cost of residual disposal of \$65/t, and an average product sale value of \$15/t:

- A low tip fee of \$55 per tonne would require a throughput of about 70,000 tonnes to begin returning profit
- A moderate tip fee of \$65 per tonne, the planned fee for 2013, tonnages over about 52,000 per year would show a profit, with the target tonnage of 85,000 producing a profit of about \$1.3M.
- At a high tip fee of \$75 per tonne, a profit would be seen even at 45,000 tonnes, with potential for as much as \$2.2M at the target tonnage of 85,000

Effect of Product Value

Refer to Chart 2. With a recovery rate of 50%, disposal cost of \$65 per tonne, and a tip fee of \$65 per tonne:

- It would require about 60,000 tonnes of throughput to break even at an average product value of \$5 per tonne.
- It would take about 52,000 tonnes to break even at a value of \$15 per tonne - the expected value.
- The program would break even at 45,000 tonnes at a material value of \$25 per tonne.

Also, it should be noted that the difference in net revenue between the highest and lowest product values is relatively small. At 65,000t throughput, a \$5 product value returns revenue of \$200,000, while a \$25 value returns \$850,000.

Effect of Disposal Fee

Refer to Chart 3. In this analysis, disposal fee is the cost of hauling and disposing of residual material that cannot be recycled.

With a recovery rate of 50%, tip fee of \$65, and average material revenue of \$15:

- At a disposal cost of \$45/t, profit potential ranges from \$200k at 45,000 tonnes per year, to \$2.2M at 85,000 tonnes.
- At a disposal cost of \$55 per tonne, there would be a loss of about \$250k at 45,000 tonnes per year, and a profit of up to \$1.3M at 85,000.
- At a disposal cost of \$85 per tonne, at 45,000t annual loss would be about \$700k, while at 85,000 tonnes, the profit would be about \$500k

Effect of Diversion Rate

Refer to Chart 4. At a disposal fee of \$65, a tip fee of \$65, and a material value of \$15:

- At only 40% recovery, there would be a loss of about \$600k at 45,000 tonnes per year throughput; a profit of about \$600k at 85,000 tonnes.
- At 50% recovery, there would be a loss of about \$250k at 45,000t and a profit of \$1.3M at 85,000 tonnes.
- At 65% recovery, there would be a profit of \$300k at 45,000t, and a profit of almost \$2.4M at 85,000 tonnes.

Worst, Best and Budgeted Scenarios

Refer to Chart 5. Chart 5 compares the worst outcomes, in terms of the different variables plotted, with the results of the best outcomes and the budgeted outcomes. The budgeted outcomes represent the most probable case.

- As indicated, if the recovery rate only reaches 40%, disposal fees rise to \$85/t, the market supports tip fee of only \$55/t, and the net value of recovered materials is only \$5/t, then the project would lose between \$1.5M and \$2.0M per year at any annual tonnage.
- For the Best Case, recovery rate reaches 65%, disposal fees reduce to \$45/t, tip fee of \$75/t is possible, and net product value reaches \$25/t, then the project could earn at least \$1.3M per year. As a further best outcome, if the tonnage reached 120,000 tonnes per year, the project could earn up to \$6M per year.
- As budgeted, the project is expected to produce a net return of approximately \$1.8M per year at 65,000 tonnes throughput and would produce a positive return even at tonnages slightly above 45,000 tonnes per year.

The Budgeted Case is most probable for several reasons:

- A recovery rate of 50% is expected to be conservatively achievable since most of the recoverable materials can be used at the Edmonton Waste Management Centre..
- The disposal cost of \$58/t reflects experience to date in cost of haul plus the actual contracted landfill rate for 2014.
- Tip fees of \$67 per tonne in 2014, versus \$55 per tonne today, will still be attractive to customers against landfill costs that will rise more steeply between now and 2014.
- Average product value of \$15 per tonne is conservative based on current product values.
- The budgeted tonnage of 65,000 per year represents an achievable growth from the 43,000 tonnes that was seen in 2010. Marketing efforts will be stepped up once the new system is operational. In addition, the Edmonton Region economy is trending upwards.

Summary Conclusions

- 1. As would be expected, profit potential is closely tied to the tip fee** that is charged. To maximize profit, the Branch will assess what the market will bear, the competitive environment, and try to set a rate that optimizes uptake of the service against the per-unit profit margin. The tip fee figures in the current business plan are \$55/t in 2011, rising to \$65 by 2013 and then at rate of inflation after that. Given the current market, the Branch believes these rates are optimal. However, over the next five to seven years it is expected that the West Edmonton Landfill and two construction and demolition disposal sites just west of Edmonton will close. This will drive a rising trend in landfill disposal costs. So in the longer term, with little competing low cost competition, rates for C&D waste disposal will approach parity with the cost of MSW landfill disposal. The Branch's current business plan raises MSW rates at the EWMC to \$80 by 2013.
- 2. Value of recovered materials is important but not a major influencer** of profit potential. This is a positive, as the Branch would have little influence over these values, beyond making efforts to produce best possible quality. Also, a positive in this case is that the Branch itself is the market for clean wood materials, a major fraction of the expected recoveries, and the City is also its own market for recycled aggregate.
- 3. Disposal fee (for non-recoverable material) is a significant driver** of profitability. As the Branch has a long term contract for disposal service at the Beaver Regional Waste Management Services Commission, our disposal costs are known and fixed. The cost of transfer and disposal of MSW, as of 2011, is about \$65/t. It may be possible to haul C&D residual at a lower cost due to its higher density, but the business plan is currently based on the same cost as MSW. The Branch believes that there are opportunities to negotiate lower costs with the existing construction and demolition waste landfills in the area, though that would only be viable until they close, expected in five years.
- 4. An important factor is the rate of recovery of materials.** Consider that, if the Branch were to charge a \$65/t fee to receive material for processing, and had to pay a \$65/t cost to dispose of non-recovered material, every tonne that is not recovered represents a net cost to the Branch equal to the cost of the processing operations. Profit is only made on the tonnes recovered. Based on literature and discussion with industry players, recovery of 60% is generally achievable. With no operating experience and given the variability of waste streams from community to community, a more conservative figure of 50% has been used to develop the costs for the business plan. That is the base case that has been used when this variable is "fixed" to analyse effects of other variables. Diversion rates as high as 70% could be achievable with an efficient operation, depending on the particular incoming load make-up.
- 5.** The budgeted project performance takes into account experience to date as well as performance expectations supported by research. It balances the potential for negative movement of some variables with positive movement of others.

Other Potential Benefits

- Reduces City's environmental footprint, aligns with Council environmental objectives in progress toward zero waste.
- As with most initiatives to reduce waste, there may be an opportunity to quantify and market GHG emission reductions – further study required.
- Potential economic development benefits - New stream of recyclables may foster development of local processing industry – jobs, taxes, etc.
- Social benefits – new employment opportunities, both skilled and labour.
- Enhances ability to provide regional services and improve regional cooperation – a goal of the City and of the Province. The need for improved C&D waste management services is a regional one.
- Aligns the City's programs with the Province's objectives in increased diversion from landfill, including the particular focus on C&D. Could lead to increased financial and other support from the Province in this area.
- Advancement of the City's reputation and position as a leader in this field.

Risks

Tonnage not sufficient to turn a profit - This project was originally conceived and committed to when the Province of Alberta was moving steadily towards planned legislation to compel owners and contractors to recycle a portion of their project waste. For its own reasons, the Province has shelved that program. For that reason, the volume risk is now seen as the biggest risk factor. The current business plan reflects a reduction in the volume expectations, which reduces operating costs and revenues.

The Province's decision aside, other factors influencing the volume processed would be economic slowdown and existing or new lower cost competition for the same material. The Branch did not begin tracking mixed C&D waste flow into the EWMC until 2010. In 2010 the Branch tracked 43,000 tonnes at the EWMC. In 2011, to the end of April, 15,000 tonnes was received - this in the winter months when little construction is underway. The Branch is confident that the forecast tonnages can be realized with some effort to market the service and given the current upward economic trend. If lower tonnages are seen, operating hours will be cut back to reduce expense.

No markets for recovered material - If there were no markets, there would be no point in recovering materials and so they would have to be landfilled, reducing the effective diversion rate, increasing disposal costs and reducing profitability. The City has little control over external markets, but is fortunate in that a high percentage of the recovered material (wood and concrete) will be used within the City's own operations, while other materials with little market potential can and will be used as feedstock for the Biofuels Facility - an opportunity that most other processors do not have.

Process Productivity Below Expectations - The vendor of the equipment responded to a tender with specific throughput expectations. The Branch spoke with customers who were pleased with the equipment performance. If production is lower than expected, the process would have to run more hours to achieve the planned throughput, which would drive up operating costs. In that case, the vendor would be approached and process optimization pursued to de-bottleneck and manage costs.

Increasing costs of residual disposal - The cost analysis has been done on the basis of the disposal fees within the 20 year contract the City holds with Beaver Regional Waste Services Commission. The contract is binding and the Commission has landfill capacity to continue operations well beyond the 20 year term. The Branch actually sees an opportunity, at least in the short term, to dispose of C&D residual material at the existing C&D disposal landfills in the area. The Branch is already pursuing this option.

Recommendation

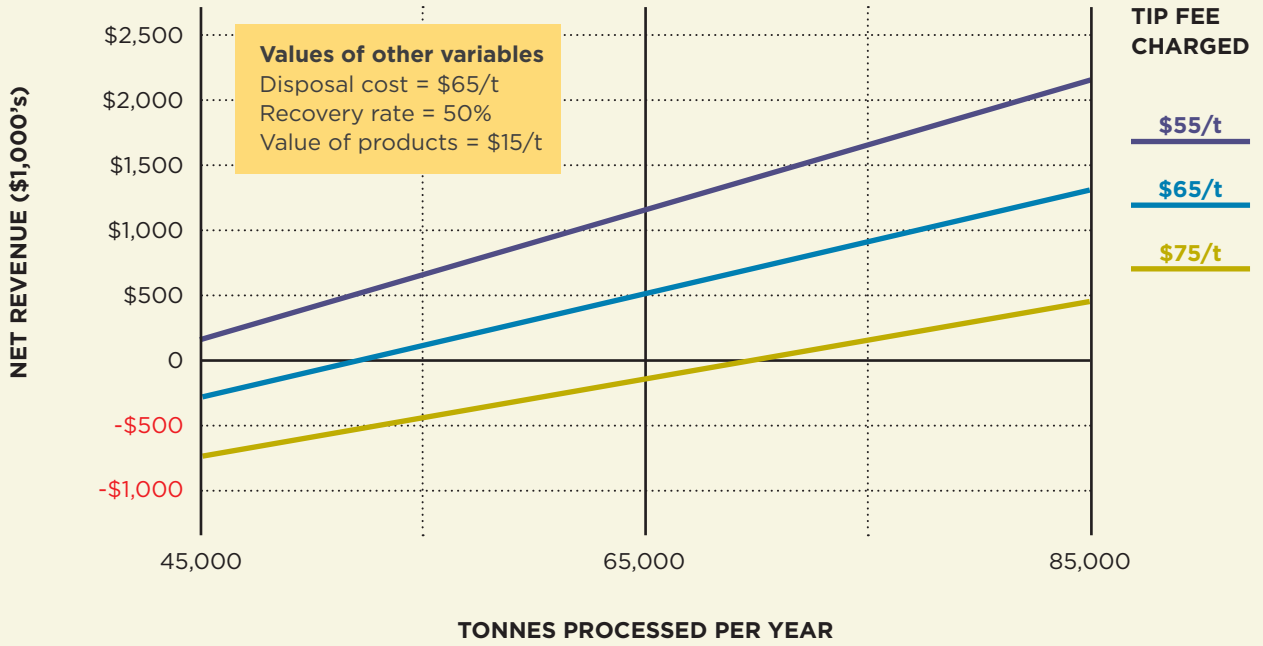
The foregoing business case analysis to establish a mixed C&D waste processing operation is still strong, despite the demise of the planned legislation. The expense and revenue figures included in the analysis take into account the loss of contemplated beneficial legislation and anticipate a moderate rate of return in the early years, growing to more substantial amounts as waste management costs rise in the region and low cost options disappear.

References

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2. Construction, Renovation and Demolition (CRD) Waste Characterization Study, Prepared for: ALBERTA CONSTRUCTION, RENOVATION, AND DEMOLITION (CRD) WASTE ADVISORY COMMITTEE, CH2M Gore and Storrie Ltd., December 2000
3. Construction, Renovation and Demolition Wastes Market Profile Report, A report prepared for the use of the Alberta Construction and Demolition Waste Reduction Advisory Committee

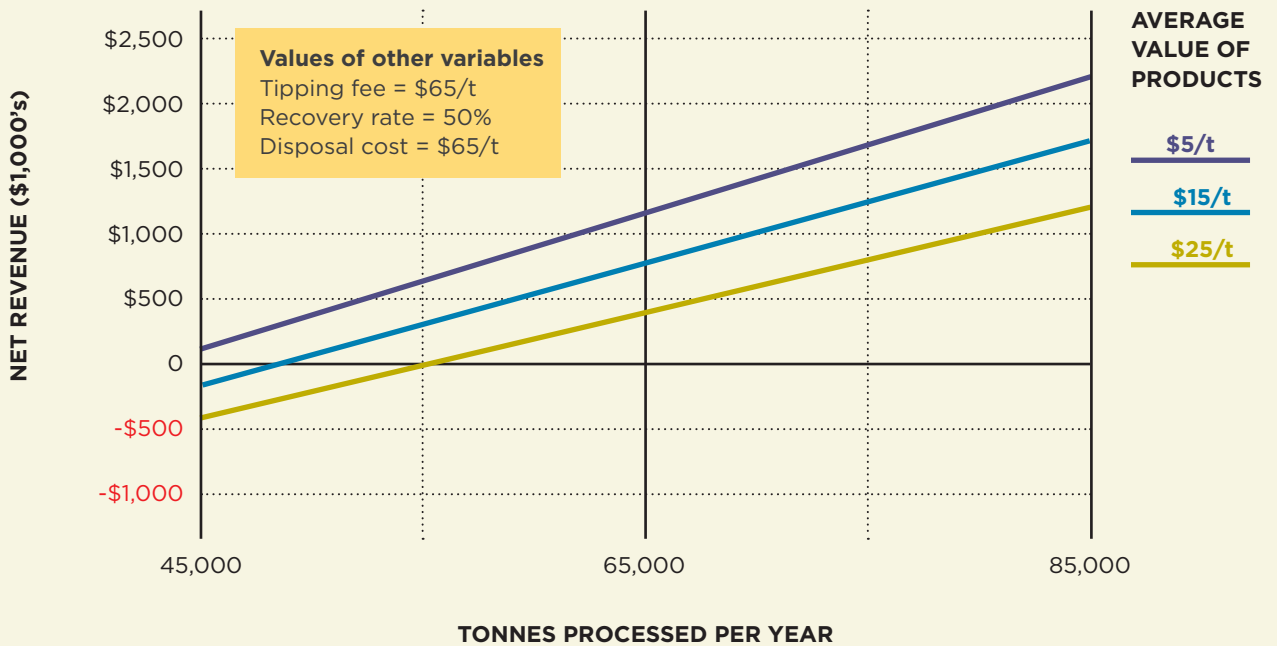
Effect of Changing Tip Fee

at various annual tonnages



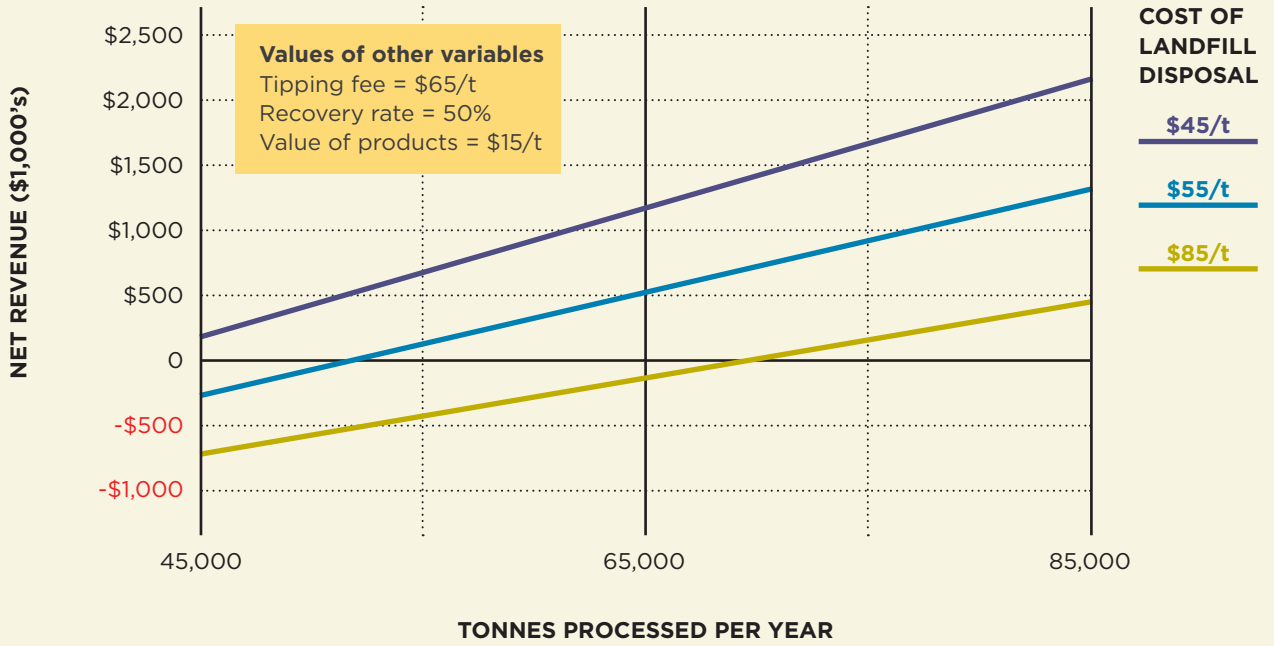
Effect of Changing Value of Products

at various annual tonnages



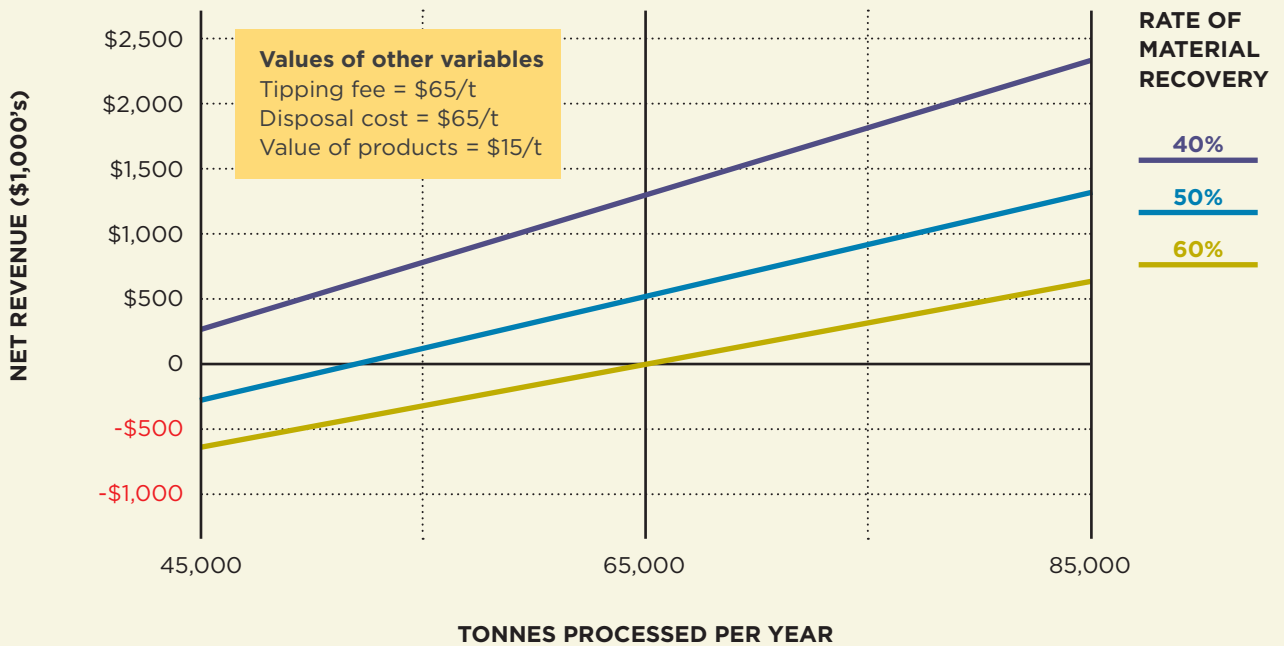
Effect of Changing Cost of Landfill Disposal

at various annual tonnages

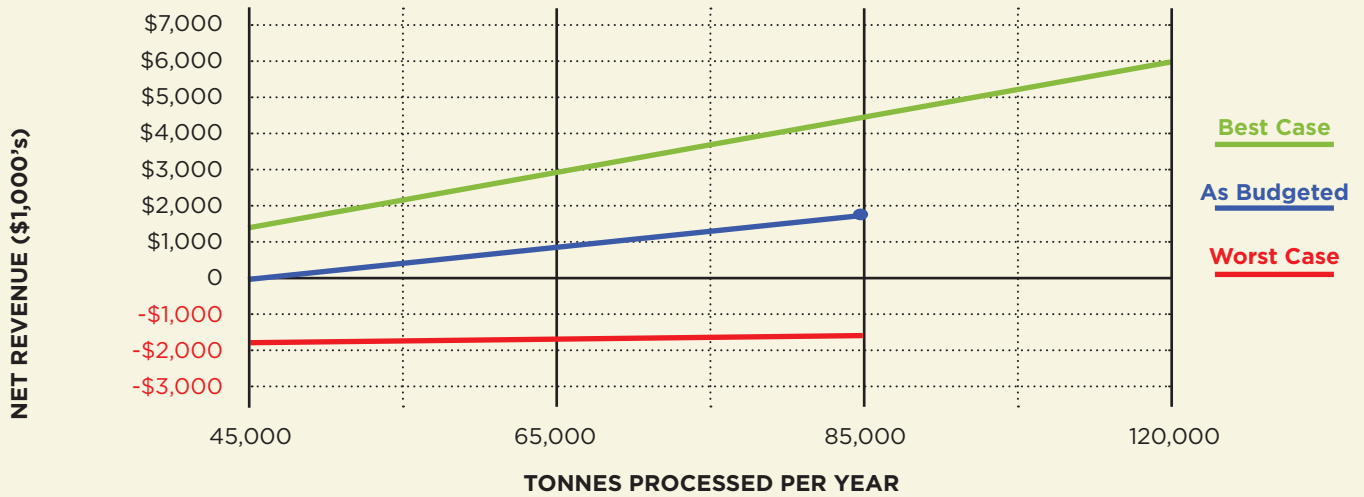


Effect of Changing Rate of Material Recovery

at various annual tonnages



Worst, Best and Budgeted Scenarios



Worst case:

Recovery rate = 40%
 Disposal fee = \$85/t
 Tipping fee = \$55/t
 Product value = \$5/t

Best case:

Recovery rate = 65%
 Disposal fee = \$45/t
 Tipping fee = \$75/t
 Product value = \$25/t

As Budgeted:

Recovery rate = 50%
 Disposal fee = \$58/t
 Tipping fee = \$67/t