

WASTE MANAGEMENT STRATEGY

Background Report 2012-2022

Sustainable, Cost Effective Solid Waste Management

City of Medicine Hat
Environmental Utilities Department

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BACKGROUND REPORT 2012-2022 WASTE MANAGEMENT STRATEGY

“Sustainable Cost Effective Solid Waste Management”

A. PURPOSE

The purpose of this report is to provide background information to the Medicine Hat 2012 – 2022 Waste Management Strategy.

B. WASTE MANAGEMENT STRATEGY PRINCIPLES

A waste management strategy should be built upon accepted principles. This strategy is based on three principles including the Industry R's; the Triple Bottom Line and the Diversion versus Cost proposed theme of Reasonable Diversion at Reasonable Cost.

B.1 INDUSTRY R'S

The most common and advocated national and provincial industry principles include Reduce, Reuse, Recycle, Recovery, Dispose in that order of pursuit. The City *Waste Diversion Education Program* has been promoting these principles for many years. The City's current waste diversion programs are based on these principles (except for Recovery). This 2012 - 2022 Waste Management Strategy is based on the continued use of the Industry R's Principle.

B.2 TRIPLE BOTTOM LINE

The second principle is based on the industry concept of a balance of environment, social and cost factors. This balance is referred to as the Triple Bottom Line. It recognizes that a strategy's long term sustainability is influenced by these three factors operating in a balanced fashion. This 2012 - 2022 Waste Management Strategy is based on the use of the Triple Bottom Line Principle.

B.3 DIVERSION VERSUS COST

There are two approaches to waste diversion which all communities must ultimately choose between. One is “Diversion at all Cost” while the second approach is a balanced approach which is “Reasonable Diversion at Reasonable Cost”. The *2005 Medicine Hat Resident Satisfaction Survey* suggested that this community was not supportive of additional waste diversion costs for additional services. Also, the Corporation's mission statement guideline emphasizes service delivery in an “affordable manner”. There seemed to be a general satisfaction with the current model and cost. Therefore, this *2012 - 2022 Waste Management Strategy* is based on the Reasonable Diversion at Reasonable Cost Principle.

C. CURRENT SERVICES AND PAST STRATEGIES

The Solid Waste Utility is part of the Environmental Utilities Department whose purpose is identified in the Business Plan as follows:

The Environmental Utilities Department mission is to provide safe, reliable and effective water, sewer, solid waste and recyclables handling and associated services to our customers in a responsible fiscal manner while providing an appropriate financial return to the City.

This aligns with the Corporation's mission statement in that the department provides a valued essential service to the community in an affordable manner.

The Solid Waste Utility offers services and programs in three key areas as follows:

1. Waste collection services for the residential sector and for the commercial sector.
2. Landfill disposal services for residential, commercial and local industrial sectors.
3. Waste diversion program including depot recycling, materials processing, compost services and participation in provincial waste diversion programs.

The 2012 - 2022 Waste Management Strategy proposes 23 specific strategies in each of these functional areas. It also proposes a review of five specific topics in 2017 to determine if conditions have changed, to suggest that these topics be pursued as new strategies.

The City of Medicine Hat has been actively involved in improving waste management services, waste diversion initiatives and optimizing landfill management since 1997. The City participates in federal, provincial, industry and local initiatives and has been able to extend the life of the landfill through successful diversion initiatives and landfill management improvements. The City Solid Waste Utility maintains competitive rates and services and is in a financially healthy state. The Solid Waste Utility maintains a financial strategy to ensure that it achieves an annual Revenue to Cost Ratio of 1. This strategy has contributed to a sustainable utility. The *2005 Resident Satisfaction Survey* included valuable indicators of this community's perspective on many local issues including waste management and cost management.

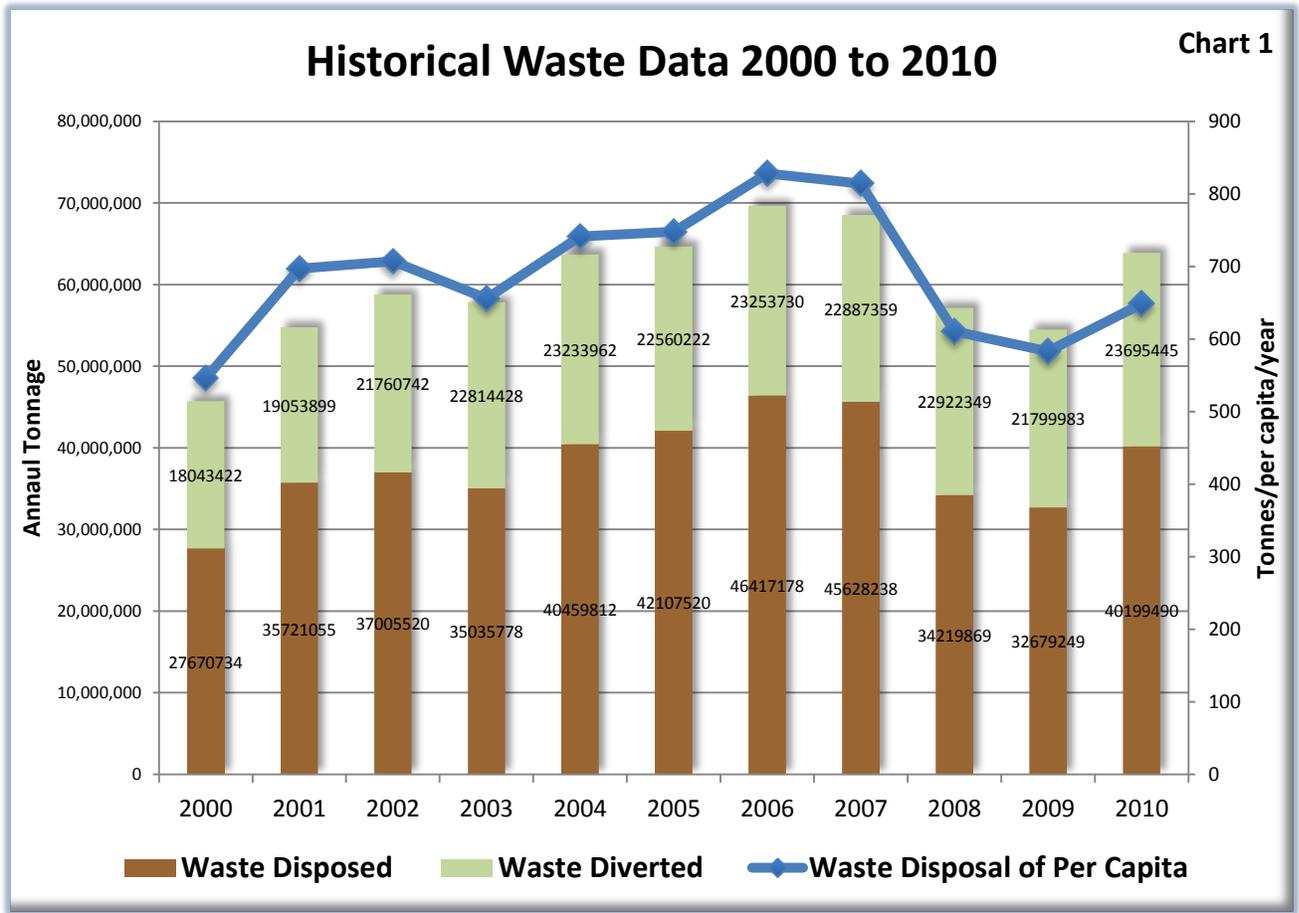
The 2012 - 2022 Waste Management Strategy builds on the successes and momentum of the past decade and a half. It considers the community's feedback on costs and benefits of additional services. The theme of this strategy is Sustainable Cost Effective Solid Waste Management.

Strategy:

Continue with the Revenue to Cost Ratio of 1 funding strategy for financial sustainability.

D. COMMUNITY WASTE STATISTICS

The success of past initiatives can be seen on Chart 1 which summarizes diversion and disposal trends from 2000 to 2010. The bottom bar in brown shows waste buried at the City Landfill for each year while the upper green bar shows the waste diverted through programs involving the City. The blue line shows the waste buried per capita each year to account for population growth.



This chart indicates that during favorable economic conditions, our community generates more waste, some of which is recycled and some which is not recycled. This makes sense since a strong economy generates increased disposal income for residents and businesses, and more purchasing and commercial activities that generate more waste. This is particularly evident during the sudden and dramatic recession in 2008 and 2009. Ultimately the data from the past 10 years reflects a strong diversion practice in Medicine Hat with an average annual diversion rate of 36%.

D.1 DIVERSION AND DISPOSAL TRENDS

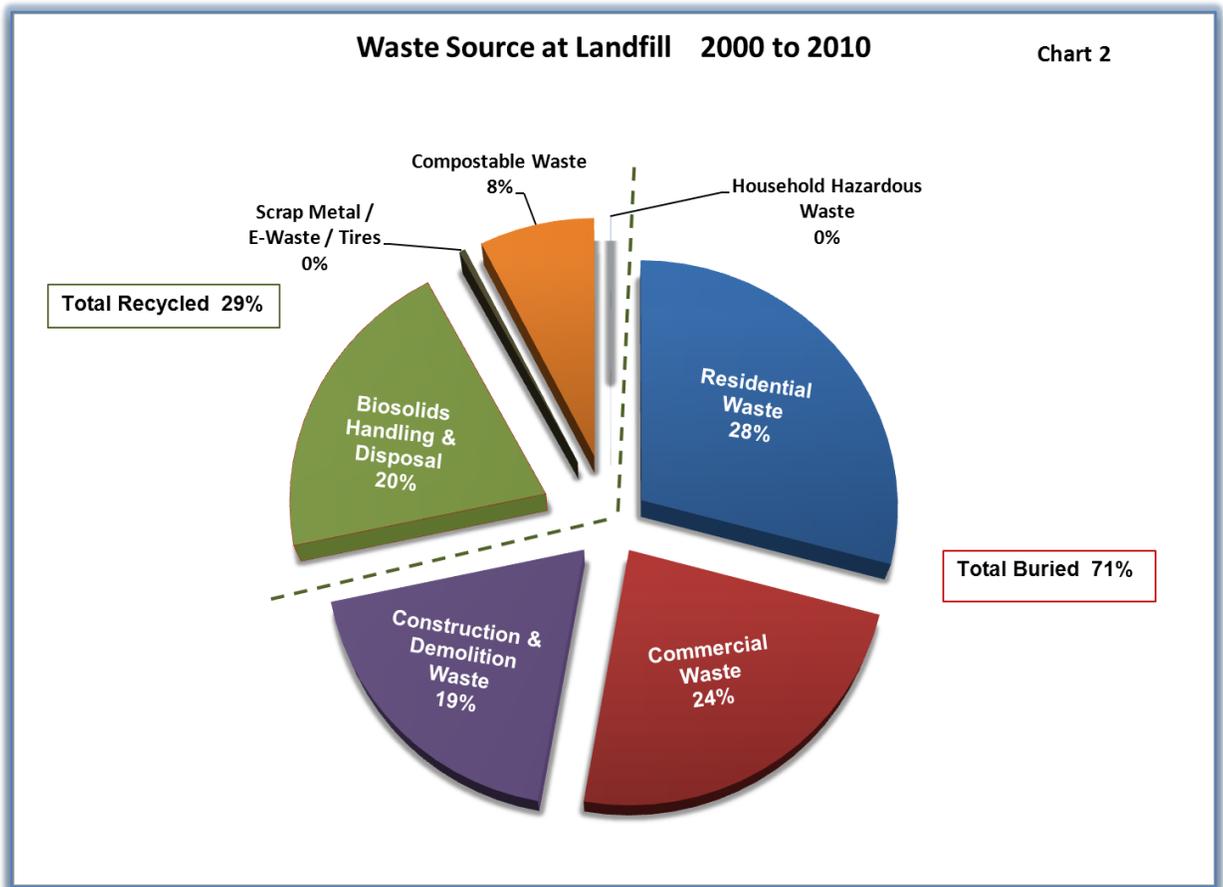
The key to developing potential future initiatives starts by considering the waste streams summarized in Chart 2. This chart shows the waste managed at the City Landfill over the past decade. It indicates that the landfill diverts 29% of the waste that it manages. The buried waste consists of 28% Residential Waste, 24% Commercial Waste and 19% Construction and Demolition (C&D) Waste. These categories present opportunities for strategic focus.

Each of the waste sectors in Chart 2 has a different customer base. The residential sector has 19,939 customer accounts while the commercial sector has around 1,575 customer accounts and the C&D sector has about 495 customers. Each of the waste sectors in Chart 2 also has a different waste characterization and residual market value. The residential sector waste contains a wide variety of waste material including paper, cardboard, plastics, metals, glass, organics and non-recyclable waste.

Collecting this waste from 19,939 accounts and separating them for further processing would involve the greatest effort and cost. The commercial sector contains less variety of material tending toward a greater percentage in paper and cardboard which has lower collection and processing costs as well as higher market value after processing.

The C&D sector has less variety of material tending toward wood products which can be recycled into the City’s composting program and other material that is recyclable or re-usable as alternate daily cover in the landfill. This sector has the least collection costs and strong recyclable potential. Diversion strategies should first seek to divert material that can be easily removed from the waste stream in an economical manner and that have the greatest return on investment potential for similar tonnages diverted.

D.2 WASTE MANAGED AT CITY LANDFILL



Based on waste characterization studies conducted at the landfill during 2009 and 2010, Chart 3 shows the potential waste diversion from the three sectors. This indicates that generally each sector offers similar waste tonnage diversion. When the diversion potential from each sector as shown in Chart 3 is considered against the cost and effort to collect the waste material for recycling based on the number of accounts required to work with, it becomes clearer that the greater diversion potential for the least cost is primarily in the C&D sector followed by the Commercial Sector with the least benefit from the Residential sector as shown in Chart 4.

This analysis leads to a strong conclusion that strategically the best diversion outcome for financial investment is primarily with diverting C&D waste. The Province recognizes this potential and is currently working on a strategy to make gains in C&D diversion across the province. The 2012-2022 Waste Diversion Strategy recognizes that the City should review the provincial strategy when it is finalized for positive diversion opportunities. From preliminary discussions, local C&D generators have expressed an interest in discussing diversion opportunities.

D.3 POTENTIAL WASTE DIVERSION

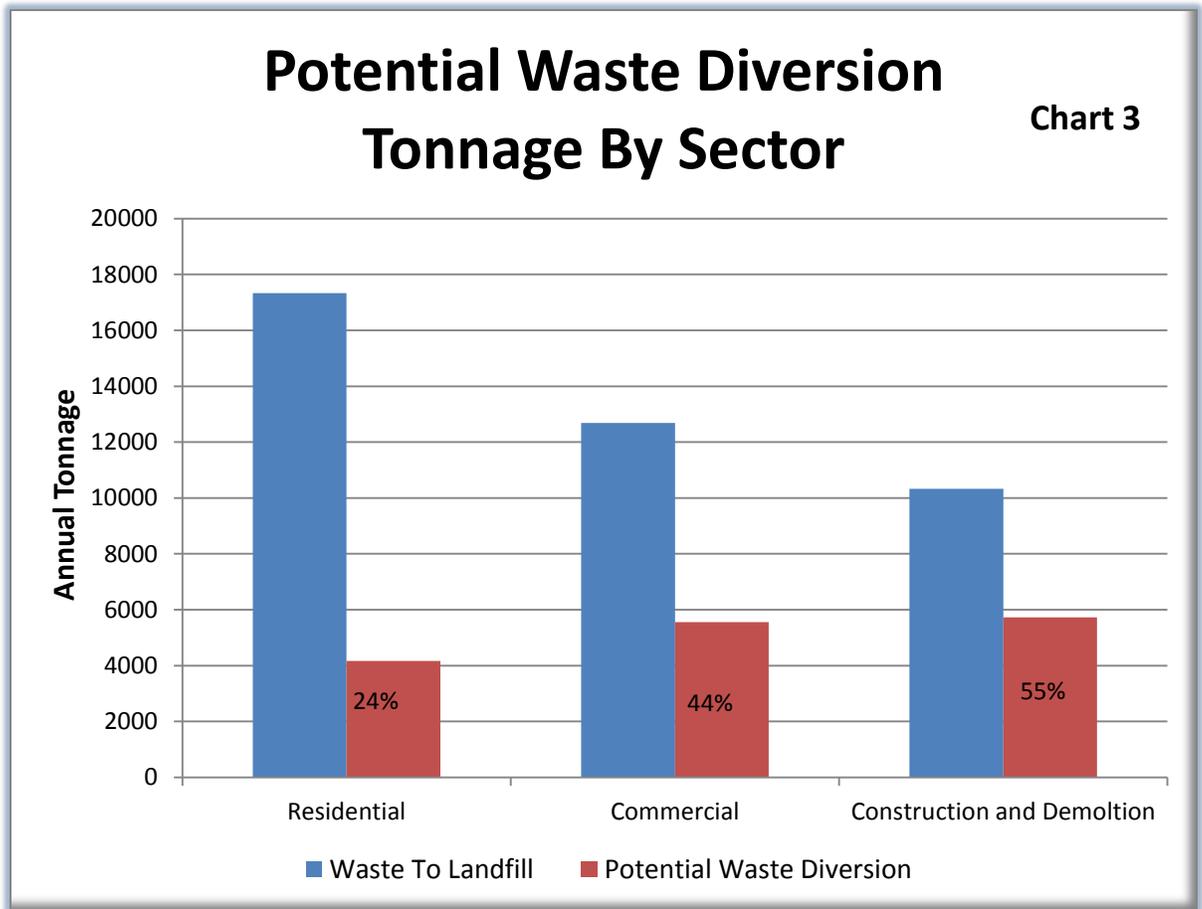
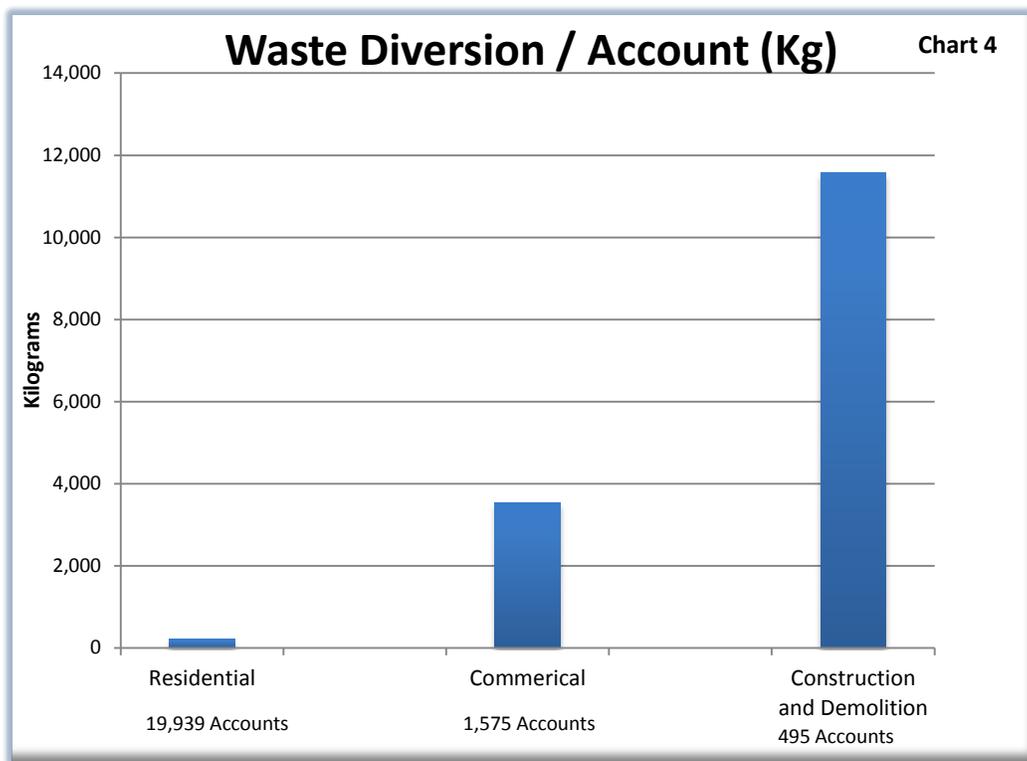


Chart 4 also indicates that attention should be focused on the Commercial sector. The City and some private sector service providers offer commercial sector diversion opportunities. The data indicates that there is much more that can be done to facilitate business diversion opportunities. The 2012-2022 Waste Diversion Strategy responds to the Commercial sector potential with a specific City strategy for Commercial sector diversion.



The City currently offers a mature residential sector recycling opportunity through its successful depot system while a number of private sector service providers offer an enhanced service through curbside collection on a fee for services arrangement for those who desire and are willing to pay for it. Recognizing that a City mandated residential sector curbside program will be the most costly sector to target for generally similar gains compared to the C&D sector and the Commercial sector, the 2012-2022 Waste Diversion Strategy focuses strategic attention initially on the more economic and simpler C&D and Commercial sectors while proposing to revisit Residential sector curbside collection in 2017 to determine if conditions and community willingness to pay improve. In summary, the 2012 - 2022 Waste Management Strategy focuses on optimizing the cost-benefit balance to extend the life of the landfill at a reasonable cost.

E. RESIDENTIAL WASTE COLLECTION SERVICE

The residential waste collection operation is a service provided by City staff and equipment to approximately 20,000 accounts. It includes weekly collection of domestic waste in accordance with Bylaw 1805. Prior to 2009, this service was a manual collection service which was experiencing a long standing concern of worker injuries and problematic operational sustainability. During the lengthy period of the hot economy it was very difficult to secure the labor needed to operate a manual collection system. The City collection service was in serious jeopardy of not being able to sustain full operations on a number of occasions. In 2008, a strategic decision was made to convert to an automated cart collection service to address worker injuries and service sustainability. Many Canadian communities experienced similar challenges and undertook similar strategic decisions.

Worker injuries and vehicles accidents have dropped significantly as a result of the use of the automated cart system. Customer feedback on the automated cart collection system includes a very positive response to this service.

The viability of the residential collection service is much more stable and secure now than it was under the manual collection system. Other benefits include litter reduction and productivity improvements.

The automated cart collection service includes a separate yard waste collection service, also by using special automated collection carts, in support of the City's yard waste compost collection and diversion service which was first offered to residents in 1997.

Strategy:

Continue with the automated cart collection system as the sustainable residential garbage collection service

Strategy:

Continue offering residents an automated yard waste collection service on an as requested basis with the current single monthly fee structure to finance both the domestic service and the yard waste collection service. Expand the partnership with Medicine Hat College, Grasslands Naturalist Society and other local agencies to increase public education for on-site yard waste management including xeriscaping, grasscycling, composting and mulching.

F. COMMERCIAL WASTE COLLECTION SERVICE

Commercial waste collection in Medicine Hat is a service offered by large, small and custom hauling service providers including the City Solid Waste Utility. The City serves over 1,000 locations. The service providers offer various choices in bin sizes, collection frequencies and front load, side load or rear load access configurations. The customer selects the service provider based on need, cost, site constraints and service quality.

There are currently limited development standards to influence the aesthetic quality of commercial waste set out practices. Improvements in this area would be beneficial. The downtown core continues to have a legacy challenge with space in rear lanes for commercial bins. The new residential automated cart system presents a strategic opportunity for a new service concept to address the downtown rear lane issue.

Strategy:

Establish a minimum standard in the Municipal Servicing Standards Manual that provides for an effective layout and screening standard for commercial waste collection.

Strategy:

Initiate public consultation with downtown businesses to explore the use of the automated cart collection system to replace or supplement the current 1.5/3 yard rectangular bin system on a customer by customer basis as a more efficient and space saving system for downtown core customers.

G. LANDFILL OPERATIONS

The City Landfill has been in operation since 1969. Unlike most landfills in which a large disposal cell is excavated into the ground, lined with an impermeable layer, then filled with discarded material before being covered and capped with soil, the City Landfill is filling a coulee. Landfill airspace is consumed when material is buried.



Prior to 1996, the licensing authority for landfills in Alberta was the Health Authority. In 1996, regulatory responsibility was transferred to Alberta Environment with significantly more stringent environmental and operating standards. The City Landfill was the first major Class 2 (domestic) landfill in southern Alberta licensed in 2001 under the new regulatory structure and standards.

These standards involve extensive requirements in a number of areas including stormwater management, ground water monitoring, litter control, record keeping and staff qualifications. In 2004, the landfill west face was capped and partially closed to improve drainage control, storm water runoff quality, litter control, appearance and to reduce long term closure costs. Landfill operations in the past decade have evolved considerably in regulatory requirements, technology, customer expectations and diversity. The technical knowledge and management skills required to successfully operate a landfill have grown considerably in the past decade.

G.1 LANDFILL LIFE SPAN

The Landfill life span is estimated to be about 20 years with current diversion initiatives and management practices. Initiatives that result in reduced airspace consumption will extend the landfill life. Although 20 years appears to be a long way into the future, in terms of the time it takes to locate, evaluate, consult with the public, license and develop a new landfill, this is not a long time. It is in the best interests of the community to initiate a strategy for the search and evaluation for a new or expanded landfill site with an initial study to determine the expandability potential of the existing site.

Strategy:

Initiate a study to determine the expandability potential of the existing landfill site for additional capacity of at least 20 years, and if, not successful, actively review potential new landfill sites.

G.2 NON-TRADITIONAL REVENUES

The Solid Waste Utility initiated strategic operations at the landfill through creative and financially beneficial partnerships for the disposal of non-hazardous industrial wastes (2000), frac sand recycling (2002) and clay slurry processing operations (2004). These non-traditional operations have resulted in significant revenues that are the basis of a strong working capital position in the Solid Waste Utility. The financial gains from these operations have historically been used as Solid Waste Utility general revenue.

Strategy:

Continue to offer the non-hazardous industrial cell service and invest in future cells as demand requires.

G.3 LANDFILL GAS MANAGEMENT

A current question most landfill operators face today is the potential for extraction of landfill gas for small scale, local power generation. This is a strategic question for the City Landfill.

Strategy:

Fund and conduct a landfill gas study to determine the cost and potential for gas harvesting.

G.4 LANDFILL SOIL MANAGEMENT

There is a major strategic concern about the lack of adequate soil material on site for daily cover requirements and for eventual closure. The Solid Waste Utility has been examining options and it is reviewing Alternate Daily Cover (ADC) technology appropriate for use at the landfill. The use of ADC technology has the same practical benefit as a significant, low cost waste diversion program in that it reduces the consumption of air space, thereby extending the life span of the landfill.

Strategy:

Select a system and procure supporting equipment for an alternate daily cover system at the landfill to reduce the use of limited on site soil and reduce airspace consumption.

G.5 LANDFILL TIPPING FEE MANAGEMENT

There is a major strategic concern about the low tipping fees compared to the Alberta market average. The 2011 tipping fee is \$29.65 per tonne compared to the Alberta average of \$71.30 per tonne. The disparity is directly related to the existence of two other landfills in the region. The City landfill tipping fee should be strategically set with consideration to local market share as it moves toward a market price.

Strategy:

Pursue market tipping fees through a gradual incremental approach to retaining a market share of revenues. Consider a differential fee structure to encourage diversion and beneficial re-use.

G.6 REGIONAL LANDFILL MANAGEMENT

The City of Medicine Hat, Town of Redcliff and Cypress County have indicated a desire to review the opportunities for regionalization of solid waste disposal operations under a regional service provider in the mutually adopted 2010 Inter-municipal Development Plan.

Strategy:

Review opportunities for regionalization of solid waste disposal operations with the Town of Redcliff and Cypress County.

H. WASTE DIVERSION PROGRAMS

H.1 WASTE DIVERSION INITIATIVES

The waste diversion program in Medicine Hat is a multi-faceted partnership that incorporates federal, provincial, City, industry, charities and local private sector initiatives as well as benefits from national public interest and positive attitudes toward more responsible management of wastes. These initiatives are summarized in Table 1.

Table 1 – Waste Diversion Initiatives

| Federal, Industry and Local Initiatives | Provincial Initiatives | City Initiatives |
|--|---|--|
| <ul style="list-style-type: none">• Used Oil, Filter and Container Recycling Program• Compact Florescent Light Bulb Program• Cell phone recycling program• Printer ink recycling• Battery Recycling Program• Clothing and furniture recycling programs operated by non-profit organizations | <ul style="list-style-type: none">• Beverage Container Recycling Program• Tire Recycling• Electronic Waste Recycling• Paint Stewardship Program• Household Hazardous Waste Disposal• Construction & Demolition Waste Recycling Program | <ul style="list-style-type: none">• Community Residential Recycling Program• Yard Waste Collection and Composting Program• Biosolids Compost Program• Tree and Wood Recycling Program• Commercial Fiber (paper and cardboard) Collection Program• Metals Recycling• Clean Fill Re-use Program• Construction Rubble Re-use Program |

H.2 WASTE MANAGEMENT PROMOTION AND EDUCATION

The waste diversion program in Medicine Hat has used a voluntary participation approach. Social awareness has increased over the years. The City's promotion and education program has supplemented and enhanced the numerous federal, provincial and industry programs over the years. The Solid Waste Utility's ongoing educational efforts actively promote waste diversion programs through an extensive communication and education program. A wide-array of communication approaches are used as summarized in Table 2.

The Solid Waste Utility uses the City's website to provide a one-stop location for residents and businesses to find information on waste reduction, recycling programs and organics management activities.

Some of the notable features include:

Links to Waste Diversion and Residential Collection Calendar information for download.

- Instructional information on automated residential collection programs.
- Information on how to divert hazardous solid waste (HSW), compact fluorescent lights and waste electronics, etc.
- A guide to backyard composting as well as information on grasscycling and leaf mulching.

Table 2 – Education and Promotion Initiatives

| Education Initiatives | Promotion Initiatives | Awareness Initiatives |
|--|---|---|
| <ul style="list-style-type: none"> • Business Program Assistance and waste audits | <ul style="list-style-type: none"> • Media (TV, Radio, Newsprint) Advertising and Outreach | <ul style="list-style-type: none"> • Recycling Hotline |
| <ul style="list-style-type: none"> • School presentations | <ul style="list-style-type: none"> • Local Media Outlets | <ul style="list-style-type: none"> • Landfill Tours |
| <ul style="list-style-type: none"> • Community Group Workshops | <ul style="list-style-type: none"> • Xeriscape Demonstration Garden | <ul style="list-style-type: none"> • Materials Recycling Facility Tours |
| <ul style="list-style-type: none"> • Educational Videos Library | <ul style="list-style-type: none"> • Trade Shows/Special Events | <ul style="list-style-type: none"> • Backyard Composters and Compost Giveaways |
| <ul style="list-style-type: none"> • Brochures and Literature handouts | <ul style="list-style-type: none"> • Mailers, Signs and Flyers | <ul style="list-style-type: none"> • Website Information |
| <ul style="list-style-type: none"> • Composting Workshop | <ul style="list-style-type: none"> • Annual Waste Management Calendar | <ul style="list-style-type: none"> • Communities in Bloom program |
| <ul style="list-style-type: none"> • HAT Smart Program | | <ul style="list-style-type: none"> • Urban Recreation Advisory and Environment Board |
| | | <ul style="list-style-type: none"> • Grasslands Naturalists |
| | | <ul style="list-style-type: none"> • Horticultural Society |

H.3 GOVERNMENT, SOCIAL AND PRIVATE SECTOR INVOLVEMENT

Waste management awareness has evolved significantly over the past decade at the national, provincial and local levels and through growing industry participation. As a result, waste management is no longer a local community management issue. Government and industry initiatives such as Extended Producer Responsibility are responding to the Industry R's Principle through reduced packaging and promoting reuse of cloth bags over plastic bags, cell phone recycling, ink cartridge recycling, compact fluorescent bulb recycling and eye glasses recycling. Provincial initiatives have promoted recycle principles with various programs such as tire, E-waste and paint recycling programs. The private sector is increasing involvement with corporate policies on recycling in which large retail chains have cardboard recycling programs through back haul shipments independent of local municipal programs. Locally many charitable organizations have reuse and recycle initiatives in clothing and furniture programs while local entrepreneurs and small businesses are providing waste and recycling collection services to businesses and residents.

The strong higher level government, industry and local private sector attitudes, enthusiasm and support for waste management highlights the growing social element in the Triple Bottom Line Principle. The 2012 – 2016 Waste Management Strategy works in harmony with the existing strong social and private sector initiatives.

Strategy:

Evaluate Provincial and other waste diversion initiatives based on the Industry R's, the Triple Bottom Line and with the "Reasonable diversion at reasonable cost" balanced approach.

H.4 CURRENT MEDICINE HAT RESIDENTIAL RECYCLING PROGRAM

The Community Recycling Program started in 1997 and consists of a service to residents, businesses and institutions. The residential service consists of four conveniently located unmanned drop-off depots that accept all forms of fiber (paper, cardboard, newsprint, etc.); all plastics; tin and glass. The City collects the diverted waste from the depots and processes the material for market at the materials recycling facility (MRF). This collection and processing operation is a City owned and operated program implemented by contract to a third party. There are a number of service providers who collect recycled material from over 500 customer accounts on a fee for collection basis. This private curbside collection service is available for those residents who are interested in paying for and receiving an enhanced level of service. This service model, which encourages local economic development interests and business growth opportunities including entrepreneurial, fair competition and Community of Choice values, is a strong example of a successful social partnership within the Triple Bottom Line Principle. The Solid Waste Utility can initiate public consultation with these private sector curbside collection service providers to enhance communication and discuss further community and business opportunities.

H.5 FUTURE RESIDENTIAL RECYCLING PROGRAM ISSUES

The residential drop-off collection program has enjoyed tremendous success in our community. There are three significant issues which are relevant to the future of this service.

H.5.1 RECYCLING COLLECTION PROGRAM CHANGE

There is a strategic question of whether to convert the Residential Recycling Program to a Curbside Collection system or to remain with the Depot Collection system. The answer to this question also determines the investment concept and cost of the new MRF and its equipment as well as future Operation and Maintenance costs. Since the City offers a drop-off depot service, the major question of a curbside collection service is whether the community is willing to pay the significant additional cost for a much higher level of convenient service or not based on the added diversion benefit. A high level cost analysis of this question and diversion potential is presented in Annex 1. This analysis provides an order of magnitude cost for a curbside collection program regardless of whether the program was implemented by City resources and staff or whether the service was contracted out to private sector firms on behalf of the City. Either implementation model will result in increase rates to all residential accounts on their Utility Bill. The key findings include:

There are at least five small businesses that offer residential curbside collection service on a fee for service basis at \$15-\$40 per month range depending on the level of service.

The cost from the analysis for a city wide curbside collection program is expensive. Each of the 20,000 residential customer accounts would be billed an additional \$12.90 to \$15.15 per month. The 2005 Resident Satisfaction Survey suggests that the community is not willing to pay more for enhanced services. It seems that the community's preference at this time to remain with the Drop Off Depot Collection System since the Curbside Collection System would lead to significant program costs in which the community as a whole is unwilling to pay while those residents who are prepared to pay for personal curbside collection service can do so with any of the small businesses that offer this service.

Strategy:

Defer consideration of a City sponsored residential curbside collection model service until after 2017 due to excessive cost for the service benefit and identify opportunities available for private curbside collection services from existing small businesses.

H.5.2 DROP-OFF DEPOT EXPANSION

In consideration of the advantage of continuing with the drop-off depot system, the second issue is finding a suitable location for additional drop-off depots to enhance service levels in a cost effective manner.

Strategy:

Pursue the development of additional drop-off depots.

H.5.3 MATERIALS RECYCLING FACILITY (MRF) EXPANSION

The third issue is taking action on a larger capacity MRF. Natural growth and community support for recycling has been demonstrating the need for an expanded processing facility. The size and configuration of the facility is based on the pre-sorted depot collection system model. A curbside collection style MRF is a much larger facility in size, operating complexity and cost to enable a significantly larger sorting operation than a depot collection model MRF. In consideration of the advantage of continuing with the drop-off depot system, planning for a MRF expansion based on a depot collection system can proceed.

Strategy:

Expand the MRF capacity based on a drop-off depot collection model.

H.6 INDUSTRIAL COMMERCIAL INSTITUTION (ICI) RECYCLING PROGRAM

The City and other waste collection service providers also offer a cardboard recycling collection service to businesses and institutions on a fee for service arrangement. The Solid Waste Utility service includes a limited number of customers collected through the commercial bins service as well as customers who make fee for service arrangements through the City's third party contract depot collection and MRF service provider. There is opportunity for expansion of the City fee for service to the business and institutional sector.

Strategy:

Initiate public consultation with businesses to expand the current Solid Waste Utility fiber diversion service and revenue stream.

H.7 CONSTRUCTION AND DEMOLITION (C&D) WASTE DIVERSION

C&D waste diversion occurs to a limited extent. The landfill offers segregated drop-off piles for metals, compostable wood and fiber (paper and cardboard). There is significant potential for more C&D waste diversion. The provincial government has initiated a study to capture more C&D waste and is working with local construction associations to promote more cooperation from the building industry. The City should consider a C&D diversion strategy.

Strategy:

Initiate public consultation with construction sector to develop a strategy to increase C&D waste diversion.

H.8 COMPOST PROGRAM

The City started producing compost in 1997. The Compost Facility is co-located with the City Landfill. This City program has been recognized by Alberta Environment and the Canadian Compost Council as a strong example of a successful municipal composting program with frequent referrals to the City for advice and experience. The City composts biosolids, yard waste, trees and clean wood feedstock.

H.8.1 BIOSOLIDS COMPOST

In 1996, the City was required to find an alternate method of disposal of its Waste Water Treatment Plant biosolids residual as burial in the landfill was no longer an accepted practice. It was determined that the most cost effective strategic option was to compost this material for beneficial re-use. The City has been composting biosolids since 2001. This composting program has been the largest and most successful City waste diversion program. The City has composted biosolids for another community in the past and should consider expanding this to other communities as an additional revenue source.

Strategy:

Expand the biosolids compost service to other communities on a fee for service arrangement as determined by demand.

H.8.2 FOOD WASTE COLLECTION AND COMPOST PROGRAM

With a successful and stable biosolids and yard waste compost program, it is appropriate to consider whether to strategically pursue a food waste collection and compost program or not. A high level analysis of this question was conducted and is presented in Annex 2. The key findings include:

- The diversion potential is difficult to determine without a comprehensive survey of food services establishments including their interest and willingness to pay for the service.
- The capital and operating costs will be significant.
- The conclusion is that a commercial/institutional food waste collection and composting program will be costly for the limited diversion potential.

Strategy:

Defer consideration of a City sponsored food waste collection and composting program until after 2017 due to excessive cost for the service benefit and continue to monitor technological improvement, investment costs and operations costs for future consideration.

H.9 PLASTIC BAG BAN

City Council has raised the question of whether it should initiate a Bylaw to ban the retail use of single use plastic bags. The City's recycling program has included collection and processing of plastic film including plastic retail bags since the program began in 1997. It is a widely used service. However, it is also recognized that litter from plastic bags exists to a degree. A few communities in Canada have passed bylaws banning the use of plastic bags. The Provincial government is working with major national retail industry associations to develop options to reduce the number of plastic bags given out at the point of sale. The government is working with industry to seek a 50% or greater reduction in the number of plastic bags they distribute to their customers. Retail vendors have grown in their sensitivity to these issues and have taken concrete steps to increase education with their customers and in offering alternatives including incentives to avoid the use of plastic bags. Retail customers do rely on bags for carrying out their purchases. Many have changed habits for more environmentally friendly re-useable bags. This appears to be a growing trend.

Although a bylaw ban may appear to contribute toward a reduction in the resources used in the manufacture of plastic bags and the reduced litter potential, consideration should also be given to potential public concerns about the added inconvenience such an absolute ban could create on consumers as well as the perception of interference with the retail industry. Since the Provincial government is working with the retail industry on this issue, there appears to be merit in allowing the government and retail industry a fair opportunity to advance their education and incentives to result in a decrease in the use of plastic bags.

Strategy:

Monitor the effectiveness of government and industry strategies for the reduction of single use plastic bags while encouraging private retail services to continue their education initiatives and incentives.

H.10 ECO CENTER

For over 13 years, the City has operated a Household Hazardous Waste center at the landfill where residents have the opportunity to dispose of their household hazardous waste. The Household Hazardous Waste Center operates during landfill hours which are seven days per week during the spring to fall season and six days per week in the winter. Over the years, new initiatives have expanded residential diversion opportunities at the landfill to include metals, E-waste, paint, oil and filter, batteries, cell phones, tires, clean wood, yard waste and trees. The landfill has evolved into an Eco Center where residents can divert numerous household hazardous and non-hazardous wastes. A review of establishing a new manned Eco Center Collection facility in the city compared to remaining with the status quo landfill facility was conducted. Due to the safety and environmental nature of handling these products, an Eco Center Collection facility must have immediate access to trained and knowledgeable operation staff to properly handle, process, package and ship the products for further processing. The current service is a low cost operation to the community because it is co-located at the City Landfill/Compost facility which takes advantage of trained operations staff that can handle the material as a minor adjunct to their larger landfill and compost activities.



A duplicate facility inside the city will require significant capital investment and new significant operating costs. There would be no revenue associated with this service. The increase in diversion potential is limited. The gain that an in-city facility would provide is convenience and minor travel savings since the existing Eco Center at the City Landfill is only 3.5 km from city Limits. However, the capital and operating cost for this minor gain in diversion would be proportionately enormous. Therefore, it is more reasonable to remain with the Eco Center service at the existing landfill facility since a new manned facility in the City would lead to significant program costs and be inconsistent with the Reasonable Diversion at Reasonable Cost Principle (see Annex 3 analysis).

Strategy:

Defer consideration for an ECO Center in the city due to cost while continuing to encourage residents to take advantage of the flexible hours of operation available with the current Eco Center at the landfill.

H.11 OTHER WASTE MANAGEMENT INITIATIVES

There are initiatives that enable the community to participate in recycling choices including opportunities to recycle, donate for reuse, or properly dispose of a wide variety of items whether working or not. There are also various Swap Center methods available to promote unwanted items such as free online advertising (examples: Craigslist, Freecycle or Kijiji), and neighbourhood or community garage sales. (The internet offers numerous websites and information that lists environmental programs, activities and initiatives across the country) Locally many charitable organizations have reuse and recycle initiatives in clothing and furniture programs that include both drop-off services and curbside collection services. The Habitat for Humanity ReStores runs a building supply stores that accepts and resells quality new and used building materials. They generate funds to support Habitat's building programs, while reducing the amount of used materials that are disposed of at landfills.

Strategy:

Continue to encourage charitable and private sector initiatives to enhance their existing services in conjunction with their social program objectives.

I. STRENGTHS, WEAKNESS, OPPORTUNITIES AND THREATS

The City waste management program is a very diverse and successful program which has seen numerous changes since 1996 in the regulatory field, the waste diversion area, technology and business opportunities. A SWOT (Strength, Weakness, Opportunities, Threat) assessment is summarized in Table 3.

Table 3 – SWOT Summary

| Strength | Weakness | Opportunity | Threat |
|---|---|---|--|
| Charitable and Private Sector waste services and programs | Landfill Cover Shortfall | Commercial Fiber Service Expansion | Curbside Collection and Processing Costs |
| Biosolids and Yard Waste Compost Programs | MRF Size Limitation | Compost Marketing Strategy | Finding Future Drop Off Depot Locations |
| Local Energy Sector Revenue stream for non-hazardous industrial waste | Shortfall in Solid Waste Management Staff Resources | Automated Carts for Downtown Businesses | Food Waste Composting Costs |
| Successful Residential Collection Service | | Carbon Credits Program | Economy/manpower limitations |
| Strong Working Capital | | LF Gas Potential | New Landfill Site |
| Successful Drop Off Depot Recycling Service | | Alternate Daily Cover System | |
| 20 Year Landfill Life | | | |

I.1 WASTE TO ENERGY

A DRAMATIC STRATEGIC ALTERNATIVE TO WASTE MANAGEMENT

Although recycling, composting and the many other diversion activities common in communities are growing in diversity and magnitude, there is the emerging question of whether municipal waste should be incinerated and converted to gas with the resultant captured energy converted into electrical power. There are Waste to Energy proponents advocating this strategy. Three such entrepreneurs have approached the City to discuss this option. The City review determined that the capital investment and annual operating costs were far too significant for the size of our community. The critical waste mass for a viable high technology thermal generation plant is not available in a community the size of ours. Even if Waste to Energy was financially feasible, that strategy would fundamentally conflict with our current philosophy of recycling and re-use. This means that we would either continue with the current recycling model or abandon that model in favor of Waste to Energy. Before major investments are made in conventional waste management initiatives, the Waste to Energy question must be strategically addressed. An option to undertake a comprehensive assessment of a Waste to Energy model involving accepting waste from many other communities in Alberta and other provinces order to generate the required critical waste mass is beyond the scope of this report.

The 2012 – 2022 Waste Management Strategy does not advocate the Waste to Energy alternative for the City. As the Waste to Energy technology gains more widespread and proven support among Canadian communities of our size range, a future Medicine Hat Waste Management Strategy may give greater consideration to this alternative.

Strategy:

Postpone a Waste to Energy model for waste management to a future strategic period while monitoring the technology and conversion trends by other Canadian municipalities for future consideration.

J. MEDICINE HAT 2012 – 2022 WASTE MANAGEMENT STRATEGY

A review of the current strengths, issues and opportunities has resulted in the development of 23 strategies. The 2012 - 2022 Waste Management Strategy builds on the successes and momentum of the past decade and a half. It considers the community’s feedback on costs and benefits of additional services. The theme of this strategy is Sustainable Cost Effective Solid Waste Management. The 2012 - 2022 Waste Management Strategy also focuses on optimizing the cost-benefit balance to extend the life of the landfill at a reasonable cost and it works in harmony with the existing strong social and private sector initiatives. The 2012 – 2022 Waste Management Strategy includes the following 23 strategies:

| WASTE MANAGEMENT MODEL STRATEGIES | | | |
|--|---|-------------|------------------------------------|
| Strategy Number | Strategy Concept | Cost | Schedule |
| 1. Financial Revenue to Cost Ratio of 1 Strategy | Continue with the Revenue to Cost Ratio of 1 funding strategy for financial sustainability. | Nil | Annual Budget |
| 2. Waste to Energy | Postpone a Waste to Energy model for waste management to a future strategic period while monitoring the technology and conversion trends by other Canadian municipalities for future consideration. | Nil | Monitoring On going Review 2017 |
| 3. Waste Diversion Initiatives | Evaluate Provincial and other waste diversion initiatives based on the Industry R’s, the Triple Bottom Line and with the “Reasonable diversion at reasonable cost” balanced approach. | Nil | On going |

SOLID WASTE COLLECTION STRATEGIES

| Strategy Number | Strategy Concept | Cost | Schedule |
|--|---|---|---|
| 4. Residential Garbage Collection | Continue with the automated cart collection system as the sustainable residential garbage collection service. | Existing Operating Budget | On going |
| 5. Residential Yard Waste Collection | Continue offering residents an automated yard waste collection service on an as requested basis with the current single monthly fee structure to finance both the domestic service and the yard waste collection service. Expand the partnership with Medicine Hat College, Grasslands Naturalist Society and other local agencies to increase public education for on-site yard waste management including xeriscaping, grasscycling, composting and mulching. | Existing Operating Budget Budget for additional carts, trucks and operators as required. | Immediately for the as requested service Budget for resources as demand dictates Service offered annually |
| 6. Commercial Collection Development Standard | Establish a minimum standard in the Municipal Servicing Standards Manual that provides for an effective layout and screening standard for commercial waste collection. | Nil | As per MSSM Update Project Schedule |
| 7. Downtown Core Commercial Waste Collection Service | Initiate public consultation with downtown businesses to explore the use of the automated cart collection system to replace or supplement the current 1.5/3 yard rectangular bin system on a customer by customer basis as a more efficient and space saving system for downtown core customers. | Additional Automated Truck (\$275,000) and Operator (\$65,000) | Budget for vehicle and operator as demand dictates |

LANDFILL STRATEGIES

| Strategy Number | Strategy Concept | Cost | Schedule |
|-------------------------------------|---|-------------------------------------|---|
| 8. Landfill Expansion Study | Initiate a study to determine the expandability potential of the existing landfill site for additional capacity of at least 20 years, and if, not successful, actively review potential new landfill sites. | Included in existing Capital Budget | Expandability Study 2012-2015 |
| 9. Non-Hazardous Industrial Service | Continue to offer the non-hazardous industrial cell service and invest in future cells as demand requires. | Included in existing Capital Budget | Construct when Cell #4 is required |
| 10. Landfill Gas Study | Fund and conduct a landfill gas study to determine the cost and potential for gas harvesting. | Consultant (\$150,000) | 2012 Budget 2012-2014 Study Period |
| 11. Alternate Daily Cover | Select a system and procure supporting equipment for an alternate daily cover system at the landfill to reduce the use of limited on site soil and reduce airspace consumption. | Included in existing Capital Budget | 2012-2013 Phase In Equipment |
| 12. Pursue Market Tipping Fees | Pursue market tipping fees through a gradual incremental approach to retaining a market share of revenues. Consider a differential fee structure to encourage diversion and beneficial re-use. | Nil | Annually |
| 13. Regional Landfill | Review opportunities for regionalization of solid waste disposal services with the Town of Redcliff and Cypress County. | TBD | After Landfill Expansion Study is completed |

COMPOST STRATEGIES

| Strategy Number | Strategy Concept | Cost | Schedule |
|--|--|---|-----------------------------------|
| 14. Expand Biosolids Compost Service | Expand the biosolids compost service to other communities on a fee for service arrangement as determined by demand. | Incrementally minor compared to revenue | As determined by demand |
| 15. Food Waste Collection and Composting | Defer consideration of a City sponsored food waste collection and composting program until after 2017 due to excessive cost for the service benefit and continue to monitor technological improvement, investment costs and operations costs for future consideration. | Nil | Monitoring Ongoing Review 2017 |

WASTE DIVERSION STRATEGIES

| Strategy Number | Strategy Concept | Cost | Schedule |
|--|--|--|--|
| 16. C&D Waste Diversion | Initiate public consultation with construction sector to develop a strategy to increase C&D waste diversion. | TBD | 2013 |
| 17. Expand Commercial Sector Fiber Diversion | Initiate public consultation with businesses to expand the current Solid Waste Utility fiber diversion service and revenue stream. | Additional Truck (\$275,000) and Operator (\$65,000) | Budget for vehicle and operator as demand dictates |
| 18. Residential Curbside Collection Service | Defer consideration of a City sponsored residential curbside collection model service until after 2017 due to excessive cost for the service benefit and identify the opportunities available for private curbside collection services from existing small businesses. | Nil | Review 2017 |
| 19. Expand the Drop-Off Depot Service | Pursue the development of additional drop-off depots. | Depot 5 is in existing Capital budget. Identify a Depot 6 in a future Capital budget | Depot 5 - 2012 Design 2013 Construction Depot 6 2014 Design 2015 Construction |
| 20. Materials Recycling Facility Expansion | Expand the MRF capacity based on a drop-off depot collection model. | Included in Existing Budget | 2012 Design 2013 – 2015 Construction |
| 21. Plastic Bag Ban Bylaw | Monitor the effectiveness of government and industry strategies for the reduction of single use plastic bags while encouraging private retail services to continue their education initiatives and incentives. | Nil | Ongoing Review 2017 |
| 22. Eco Center | Defer consideration for an ECO Center in the City due to cost while continuing to encourage residents to take advantage of the flexible hours of operation available with the current Eco Center at the landfill. | Nil | Ongoing Review 2017 |
| 23. Other Waste Management Initiatives | Continue to encourage charitable and private sector initiatives to enhance their existing services in conjunction with their social program objectives | Nil | Ongoing |

K. 2012-2022 WASTE MANAGEMENT STRATEGY – 2017 CHECK STOP

The 2012 - 2022 Waste Management Strategy builds on the successes and momentum of the past decade and a half. Some of these strategies are based on conclusions that conditions or timing is not supportive for action in the 2012-2016 timeframe. The City should revisit several initiatives in the 2017 timeframe to determine if conditions, technology, costs or advantages have changed to suggest greater pursuit.

The Waste Management Strategies that should be revisited in 2017 included the following five strategies:

| Strategy Number | Strategy Concept |
|--|--|
| A. Waste to Energy | Consider if conversion trends by other Canadian municipalities suggests that Waste to Energy technology is a viable strategic consideration for Medicine Hat. |
| B. Food Waste Collection and Composting | Consider if technological improvement, investment costs and operations costs have improved to suggest that food waste collection and composting is a viable strategic consideration for Medicine Hat. |
| C. Residential Curbside Collection Service | Consider if investment and operating costs, diversion potential and community willingness to pay has improved to suggest that a City sponsored residential curbside collection model service is a viable strategic consideration for Medicine Hat. |
| D. Eco Center | Consider if investment costs, operations costs, diversion potential and community willingness to pay has improved to suggest that an ECO Center in the City is a viable strategic consideration for Medicine Hat. |
| E. Plastic Bag Ban Bylaw | Review the effectiveness of government and industry strategies for the reduction of single use plastic bags to determine if a City Plastic Bag Ban Bylaw is a viable strategic consideration for Medicine Hat. |



L. ANNEXES - SPECIFIC INITIATIVES ANALYSIS

| | |
|--|---------|
| Annex 1 - Recycling Collection Program Change Analysis | page 24 |
| Annex 2 - HHW/ECO Center Analysis | page 27 |
| Annex 3 - Food Waste Collection and Compost Program Analysis | page 29 |

ANNEX 1 - Recycling Collection Program Change Analysis

A business analysis was conducted to determine the cost and benefit of a residential curbside collection program compared to the current depot collection system and the pursuit of diversion opportunities in the ICI and C&D sectors. The high level estimates of revenue and costs were estimated for four scenario options as follows:

- A. Current Depot system expanded to 6 depots with needed MRF improvements (3-5 year horizon) and with current very limited ICI/C&D sector diversion programs
- B. Current Depot system expanded to 6 depots with expanded MRF for long term residential sector needs and with aggressive ICI/C&D sector diversion programs
- C. New Residential Curbside system with current limited ICI/C&D sectors diversion programs
- D. New Residential Curbside system with aggressive ICI/C&D sector diversion programs

These options allow for a high level analysis of the order of magnitude impact on residential sector recycling fees.

| | Scenario | | | |
|---|---------------|---------------|---------------|---------------|
| | A | B | C | D |
| Capital – Facility/Equipment | \$2,205,000 | \$9,210,000 | \$12,910,000 | \$12,910,000 |
| Capital – Fleet | \$305,000 | \$665,000 | \$2,500,000 | \$2,745,000 |
| Annual Operating | | | | |
| Labour | \$196,000 | \$375,000 | \$1,454,000 | \$1,545,000 |
| Operations/Maintenance | \$1,689,000 | \$2,022,000 | \$2,995,000 | \$3,130,000 |
| Debt Servicing | \$192,000 | \$793,000 | \$1,160,000 | \$1,160,000 |
| Commodity Revenue | \$661,000 | \$787,000 | \$898,000 | \$1,024,000 |
| ICI Service Fee Revenue | \$12,000 | \$567,000 | \$12,000 | \$567,000 |
| Net Income (Required rate Revenue) | (\$1,404,000) | (\$1,836,000) | (\$4,699,000) | (\$4,244,000) |
| Diversion (with 5 years of growth) (tonnes) | 8,000 | 9,500 | 10,900 | 12,400 |
| Annual Residential Rate | \$57.50 | \$65.70 | \$212.60 | \$187 |
| Monthly Residential Rate | \$4.80 | \$5.50 | \$17.75 | \$15.50 |

ANALYSIS:

The above high level estimates were prepared by estimating diversion based on a landfill load audit conducted in 2010 and by estimating costs for each option once a high level definition of capital investments and resources were determined. The costs would apply whether the option was implemented by city owned resources and staff or by contracting out the service to a private sector company to undertake the work on behalf of the City. A “reality check” of the results was then conducted by comparing the outcome to high level industry benchmarks and information from other communities to determine whether the above outcomes rates seem reasonable from the experience of other communities and industry information. The “reality check” review suggests that the above outcomes are reasonable numbers for high level estimates at the strategic review stage.

The current recycling and composting fee charged to residential accounts (households) is \$3.50 per household per month which is \$42.50 per household per year. The recycling component is

approximately \$31 or \$2.60 per household per month. The current program diverts approximately 6,500 tonnes per year.

1. Option A indicates that the current model (depot system) and current limited ICI sector diversion requires investment to increase capacity of the MRF to get through the next 3-5 years at most before a larger expansion is required. This needed minimum strategy will lead to a rate increase for the recycling component from the \$2.60 range to the \$4.80 range.
2. If the City were to pursue more aggressive diversion, there are two long term models for residential collection which includes continuing with the depot system or converting to a curbside system. There is also the question of pursuing the ICI/C&D sectors.
3. Option B provides an order of magnitude cost and rate impact of the residential depot collection system with an aggressive diversion in the ICI/C&D sector. This would suggest that the monthly recycling fee would increase from the \$4.80 range to the \$5.50 range.
4. Options C and D provide orders of magnitude for a residential curbside collection system. Option D indicates that with aggressive diversion on the ICI/C&D sector the rate would increase from the \$4.80 range to the \$15.50 range while without aggressive ICI/C&D diversion the curbside rate would increase from the \$4.80 range to the \$17.75 range.
5. The most viable path to a residential curbside collection system that minimizes impact to the rate payer and takes advantage of spreading investment and operating costs over other sectors is to initially remain with the depot model and initiate aggressive diversion in the ICI/C&D sector by expanding the MRF and resources as outlined in Option B and the resultant rate of approximately \$5.50. As the diversion in the ICI/C&D sector matures with stable revenues and diversion, the City can consider converting to residential curbside with additional investment in equipment and resources (Option D) and the resultant rate of approximately \$15.50. Without the benefit of the ICI/C&D sector to offset program costs, a residential curbside collection program would have a high rate of approximately \$17.75 per household per month.

Therefore, the above business analysis suggests that financially it is more desirable for the City to pursue the ICI/C&D diversion opportunities first and allow that program to mature before implementing a residential curbside program (whether by city resources or by contracting out the service). Since there are a number of small businesses that currently offer residential curbside collection service for a fee, the residential households that desire curbside collection have ample opportunity to receive the curbside service. A City decision to convert to a residential curbside service would likely result in these small businesses losing their clientele who would have no further need for the customer service. The scope of a city wide residential curbside service would also be beyond the capital means of any small business investing in the equipment necessary to offer the city this service under contract. Therefore, the contracting out model would only be possible by a significantly larger firm with greater financial resources to upfront capital costs which they later recover from the city through imposed rates on all residential accounts.

In addition to the above financial review, a review of the community's readiness to pay significant increased monthly rates for increased services was undertaken. The independent source of this view was The 2005 City (of Medicine Hat) Residents Satisfaction Survey on City services. This survey, conducted by the Corporate Communications Department through an independent consultant survey company, considered, among many other issues and services, what the community's views might be on residential curbside collection recycling including paying additional fees for an enhanced service. Data from the three Survey questions offers views as follows:

Consideration A – Is curbside recycling a significant issue to the community as a whole?

The Survey included the question

“What would you say is the most important issue facing the community of Medicine Hat today?”

Twenty five issues were identified by the respondents including “*Better recycling/curbside recycling*”. One percent of the respondents identified “*Better recycling/curbside recycling*” as the most important issue. There were five other issues also at the bottom of the list also with 1% outcome. (Final Report page 56)

The Survey included the question

“What would you say would make Medicine Hat a better place to live?”

Twenty Seven issues were identified by the respondents including “*Better recycling program*”. The percentage of respondents who identified “*Better recycling program*” was 1%. There were nine other issues at the bottom of the list also with 1%. (Final Report page 7)

Consideration B – Is the community prepared to pay for a new curbside recycling service?

The Survey explored taxpayers’ views on tax strategies.

“Taxpayers were asked to think about City of Medicine Hat services over the next five years and which of three strategies they would most likely support. Almost half of all respondents (44%) supported an inflationary tax increase to maintain the current level of services from the City. Respondents were less likely to support a tax increase, above inflation, to enhance the level of service (13%). Fewer respondents supported cutting services to maintain the current tax level (9%) or cutting services to reduce taxes (4%).” (Final Report page 50)

If the 2005 Medicine Hat Community Survey remains representative of current community views on how significant an issue curbside recycling is and how willing the community is to pay for it, there appears to be reluctance by the community as a whole to pursue and pay additional fees for an enhanced residential curbside recycling service.

CONCLUSION:

The current depot system is a more cost effective solution and consistent with the principle Reasonable Diversion at Reasonable Cost.

RECOMMENDATION:

It is recommended that greater initial consideration be given to the pursuit of diversion opportunities in the ICI/C&D sector as an initial strategy and defer consideration of a City sponsored residential curbside collection model service until 2017 due to excessive cost for the service benefit while promoting the use of existing small business private curbside collection services.

ANNEX 2 - Food Waste Collection and Compost Program Analysis

CONCEPT A – Commercial Sector Only: This concept consists of a food waste collection and composting service to restaurants and institutions. It is assumed that 2000 tonnes can be diverted from 170 generators. The composting methodology is an in vessel thermophilic digester system located at the current Compost Facility.

| | | |
|---|----------------|---------------|
| Capital Cost: | | |
| Digester and Equipment | | \$1,310,000 |
| Vehicles | | \$635,000 |
| Operating Cost | | |
| Labour | | \$306,000 |
| Operations and Maintenance | | \$502,000 |
| Annual Debt Servicing | | \$163,000 |
| Revenue from Produced Compost | | \$63,000 |
| Net Income | | (\$908,000) |
| Net Cost per tonne of raw diverted material | | \$454 |
| Net Cost per Commercial Generator | Annual \$5,400 | Monthly \$450 |

CONCEPT B – Commercial and Curbside Residential Sectors: This concept consists of a food waste collection and composting service to restaurants and institutions as well as a residential curbside food waste collection service. It is assumed that 2000 tonnes can be diverted from 170 generators and 2100 tonnes can be diverted from 20,000 residential accounts. The composting methodology is an in vessel thermophilic digester system located at the current Compost Facility.

| | | |
|--|----------------|----------------|
| Capital Cost: | | |
| Digester and Equipment | | \$5,830,000 |
| Vehicles | | \$1,900,000 |
| Operating Cost: | | |
| Labour | | \$1,168,000 |
| Operations and Maintenance | | \$1,032,500 |
| Annual Debt Servicing | | \$617,000 |
| Revenue from Produced Compost | | \$199,000 |
| Net Income | | (\$2,618,000) |
| Net Cost per tonne of raw diverted material (Commercial and Residential) | | \$638 |
| Net Cost per Commercial Generator | Annual \$5,400 | Monthly \$450 |
| Net Cost per Residential Account | Annual \$85.50 | Monthly \$7.10 |

Benefit: Diversion of approximately 4,100 tonnes/year of food waste.



ANALYSIS:

The cost to the commercial sector is significant. It is highly questionable if the commercial sector would participate with the above monthly fees needed to cover the cost of collection and composting. A similar concern extends to the residential sector. Therefore, it appears with the current technology and cost that the amount of food waste generated is a relatively small amount and at a high cost. This suggests that other diversion opportunities should be pursued before this opportunity and considers a review in 2017 to determine if conditions such as technology and costs have improved to make this consideration more viable.

CONCLUSION:

The cost of a food waste collection and composting program is too costly for the benefit it achieves in diversion at this time.

RECOMMENDATION:

Defer consideration of a City sponsored food waste collection and composting program until after 2017 due to excessive cost for the service benefit and continue to monitor technological improvement, investment costs and operations costs for future consideration.

ANNEX 3 - HHW/Eco Center Analysis

CONCEPT:

The City offers a manned Eco Center at the City Landfill 3.5 km outside the City limits that accepts residential Household Hazardous Waste, E-waste, batteries, paint, oil, metals, cell phones, tires, clean wood, yard waste, etc. dropped off by the user. A manned facility inside the city would require capital investment and new operating costs as follows:

| | | |
|---------------------------------|----------------------------|-------------|
| Capital Cost: | | |
| | Structure and Equipment | \$2,295,000 |
| | Vehicles | \$540,000 |
| Operating Cost: | | |
| | Labour | \$531,000 |
| | Operations and Maintenance | \$267,000 |
| | Annual Debt Servicing | \$188,000 |
| Revenue from Collected Material | | Nil |
| Net Income | | (\$986,000) |
| Cost per Residential Account | Annual | \$49.50 |
| | Monthly | \$4.10 |

Benefit: The benefit of establishing a facility inside the city is add convenience to residents who would save 5-10 minutes of driving time to an in city facility over the slightly longer drive to the landfill site. The amount of increased diversion will likely be negligible.

ANALYSIS:

A duplicate facility inside the city will require capital investment and new significant operating costs. There would be no revenue associated with this service. The increase in diversion potential is limited. The gain that an in city facility would provide is convenience and minor travel savings since the existing Eco Center and the City landfill is only 3.5 km from city Limits.

CONCLUSION:

The cost-benefit of creating a duplicate Eco Center inside the city is significantly unfavorable.

RECOMMENDATION:

Defer consideration for an HHW/ECO Center in the city due to cost while continuing to encourage residents to take advantage of the existing landfill location , which will continue to be enhanced to improve services and evolving waste diversion programs.