Waste Management Strategy

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Town of Canmore
Waste Management Strategy
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1.0 Direction

The 2011 Town of Canmore Business Plan included the following action:

"Develop a comprehensive Town of Canmore waste management strategy and identify the role the Waste Management Commission plays"

2.0 Purpose

The purpose of this strategy is to coordinate future key waste management initiatives for the Town of Canmore and identify the role of the Bow Valley Waste Management Commission in these initiatives.

3.0 Review of Waste Streams

Waste costs time and money for its collection, transportation and disposal. Waste is typically buried in the ground in landfill sites. Depending on the composition, all waste will degrade over time and generate methane gas (CH_4), an airborne greenhouse gas that has been proven to be 21 times more harmful than CO_2 as a greenhouse gas (GHG). When combined with emissions produced by the hauling of the Town's waste to Calgary area landfills, it is prudent from an environmental perspective to consider local or regional solutions for managing the Town of Canmore's various waste streams.

The Town of Canmore waste streams include those from the residential sector, commercial sector, construction and demolition sector and biosolids from waste water treatment plant operations. The following is an overview of the four waste streams:

3.1 Residential Sector

The Town collects waste from the residential waste sector and delivers it to a Town owned Waste Transfer Station where it is compacted into a large transport truck for long-haul transfer. In 2010, a total of 3,111 Tonnes of residential waste was collected and hauled out of town for disposal. The Town participates in a regional contract with a private company for the transportation and disposal of residential waste. In 2011, the contract price was $87.04/Tonne for the transport and disposal of residential waste to the BFI landfill in Calgary. This cost is projected to increase by at least 46% by 2013, due to the closure of the BFI landfill, and assuming that our residential waste continues to be transported and disposed of at a City of Calgary owned landfill.

Table 1 - 2010–2014 Cost / Tonne

Year	Transport	Disposal	Total $ / Tonne	% Increase
2010			$84.04	20%
2011		N/A	$87.04	4%
2012			$89.65	3%
2013	$30	$102	$132.00	46%
2014	$35	$107	$142.00	8%

3.2 Commercial Sector

The commercial waste sector is managed by individual commercial property or business owners. Service is provided by two private haulers who direct haul waste to Calgary area landfills. The cost of commercial waste disposal is also projected to increase by at least 40% (as per Table 1).

Since 2008, the private haulers have been required to disclose the annual tonnage of waste collected in Canmore. The annual generation has averaged 3,000 Tonnes but there are no sub-sector details to determine changes in waste generation occurring between the Bow Valley Trail or downtown areas, for example.

3.3 Construction & Demolition Sector

Construction and demolition (C&D) waste collection is managed by the development industry. Collection and transport is provided by various private haulers who take the waste to the regional landfill site. The Bow Valley Waste Management Commission (Commission) manages the C&D landfill operation and sets the tipping rates at the regional landfill site. Rates have historically kept pace with those set by the City of Calgary. To encourage diversion and recycling of C&D waste, the Commission has differential rates for sorted ($95/Tonne) and unsorted loads ($180/Tonne).

The C&D sector is sensitive to the economy and as a result the annual tonnage has fluctuated over the past five years (see Table 2):

Table 2 - Canmore C&D Waste Landfilled

Year	Tonnes / Year*	% Change
2006	7,641	41%
2007	7,419	-3%
2008	6,209	-16%
2009	13,428	116%
2010	2,308	-83%

* Generated in the Town of Canmore only.

3.4 Biosolids

Biosolids (or sewage sludge) is produced at the Wastewater Treatment Plant from wastewater generated from kitchens sinks, washing machines and toilets. The plant, through a variety of mechanical and biological processes, produces two end products: treated water (to be returned to the Bow River) and biosolids, the accumulated solids that have been removed from the waste water stream. The management of biosolids is regulated by Alberta Environment by way of the Town's Approval to Operate. More details are included under the Biosolids Management Strategy below.

4.0 Bow Valley Waste Management Commission

The Town of Canmore has been a member of the Bow Valley Waste Management Commission (Commission) since its establishment in early 1998. The following key details highlight governance and funding aspects of the Commission that were considered important in developing a Town of Canmore Waste Management Strategy.

4.1 Governance:

The Bow Valley Waste Management Commission (Commission) is governed by a Board made up of equal representation from three member municipalities:

1. Town of Canmore
2. Town of Banff
3. Municipal District of Bighorn

The Board has the responsibility to govern based on what is best for managing waste at the regional level. They have authority to apply for Provincial funding, set rates for regional facilities and determine operational models for each regional facility.

4.2 Waste Management Assistance Plan:

The Commission holds the funding from the Province through the Waste Management Assistance Program (WMAP). The last correspondence from the Province regarding the WMAP agreement identified $1,643,400 (or 75%) of an East Regional Transfer Station costing $2,200,000. This would require the Commission or a member municipality to cover the remaining 25% or $550,000. As of January 2012, the Commission is holding an estimated $1.95M ($1,643,000 plus a balance of over $300K in accumulated interest). The Commission must seek Provincial approval to utilize the accumulated interest portion of the funds for an appropriate project.

The current WMAP agreement is scheduled to expire on December 31, 2012. If the funds are not used by the agreement deadline the Province may request the unspent monies be returned. While it is not guaranteed, the Commission has been successful in the past with requests for extensions to the WMAP deadline.

The WMAP agreement includes several conditions summarized below:

1. $0.75: The WMAP provides up to 75% funding with the balance provided by the Commission or the benefitting member municipality or municipalities.
2. Interest: Unspent monies are to be held in an interest bearing account and interest earned can be added to the principal amount.
3. Acceptable projects: The Province must approve the projects and can include fixed equipment (no rolling stock such as collection trucks) or buildings.
4. Replacement Reserve: Once the project is purchased or constructed, a restricted replacement reserve is created and a repayment schedule begins for 100% of the project costs.
5. There is an 8 year replacement schedule for equipment and 40 year replacement schedule for a building.
6. Once the repayment schedule is complete, the reserve funds are intended for a complete or partial replacement of the capital asset.
7. Capital items can be disposed of only after 10 years and with provincial approval.

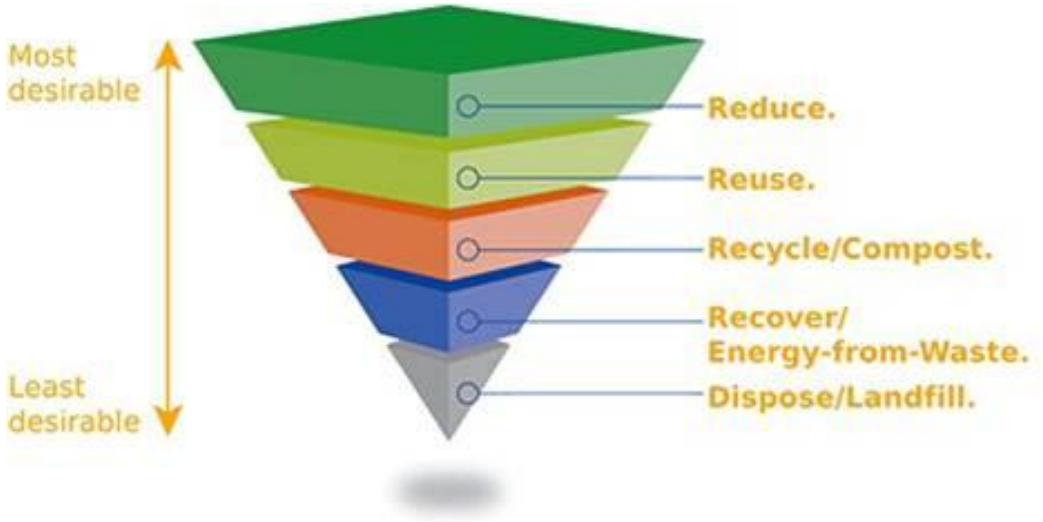
5.0 Waste Management Strategy

The Town of Canmore's Waste Management Strategy has the following overall objective:

To be a leader in waste management in Canada by providing secure, environmentally sustainable, and economical waste management services. This will be done by establishing programs and services focused on minimizing the generation of waste, providing waste management services to the community at a competitive cost, and utilizing local and regional services when possible and practical to minimize the impact of processing practices on the environment.

The waste hierarchy is used to provide a guide for how to extract the maximum practical benefits from products and to generate the minimum amount of waste.

Waste Hierarchy



5.1 Waste Management Priorities

The following is a list of 5 strategic initiatives for the Town of Canmore in order of priority. High priorities are deemed short or immediate term initiatives with the balance of initiatives identified as either medium or long term strategic initiatives:

No.	Strategic Initiative	Priority	Timeline
1.	Waste Transfer Station	High	Short Term
2.	Materials Recycling Facility	High	Short Term
3.	Biosolids Management	Med	Medium Term
4.	Organic Waste Management	Med	Medium Term
5.	Energy from Waste	Med	long Term

The waste management strategic priorities listed above each have historic and operational details that in the interests of clarity and brevity are not included in this strategy document. The sections below are therefore necessarily high level and intended to provide pertinent strategic information to assist in charting the future of waste management in Canmore.

5.2 Waste Transfer Station

Background:

Despite the efforts to reduce and eliminate the amount of waste generated in the community, a waste transfer station is an inevitable necessity in the community into the future, regardless of other options. A priority for the Town of Canmore is the need to address the location of the current Waste Transfer Station. The Waste Transfer Station is located adjacent to a residential area. Since 2000, Council has made a commitment to work with the community and the Commission to relocate the facility.

The challenge has been securing an appropriate site for a new facility. The Town of Canmore reviewed several locations within its corporate limits with little success. Issues range from setback requirements to site access. However in 2010, the Town was successful in securing access to a site on the Wastewater Treatment Plant lands.

Discussion:

A new East Regional Waste Transfer Station will address two important issues. It would meet the commitment made by Council to the adjacent neighbourhood and finally utilize the $1.95M available through the WMAP.

Table 3 – Waste Transfer Station Site Challenge and Benefit Comparison

	Town of Canmore Wastewater Treatment Plant
Benefits	• Close proximity to center of waste generation • Regional leadership – Town would host regional waste infrastructure • Site is secure • Site does not require additional EIS
Challenges	• Site is located within a habitat patch • No public access permitted to site • Increased construction costs due to the flat nature of the site and to build out of the Bow River flood zone

Commission Role:

The Commission has $1.95M in funds that could be used for an East Regional Waste Transfer Station to be located at the WWTP. It's important to note that these funds are only available for regional infrastructure and would not be transferable to the Town for a Canmore only solution. Conditions of the WMAP require the Commission to own the facility and to determine who should operate it. It is recommended that the Town propose to operate the regional facility under contract with the Commission. Rational for the Town to operate the regional facility include:

1. the Town will be the major customer;
2. the regional facility will be located within Canmore; and
3. the regional facility will be located within provincial lands leased by the Town of Canmore.

It is also prudent that the Town design and build the facility to ensure flexibility within the design to accommodate any future changes in how waste is managed, including Energy from Waste technologies (see Section 5.6). The Commission will be responsible to set the tipping rates at the facility.

Recommendation:

It is recommended that the Town request from the Commission the balance of the Waste Management Assistance Plan funds for an East Regional Waste Transfer Station and;

It is recommended that the Town formally offer to locate an East Regional Waste Transfer Station at the Town of Canmore's Wastewater Treatment Plant.

It is also recommended that the Town propose to the Commission that the Town operate, design and build the facility. The site is secure and sustainable, allows for minimal transport of waste from waste containers, and the involvement of the Commission ensures funding support and reasonable control of long term tipping fees.

Financial Implications:

An East Regional Waste Transfer Station has a proposed budget of $2,600,000. The WMAP funds with accrued interest are projected to be $1,950,000. This leaves a balance of $650,000 to be funded from the Town and the MD, the regional members who will utilize the facility. The member funding split is estimated based on waste generated (in the Bow valley) and equates to a 92% ($598,000) and 8% ($52,000) cost share between the Town and the MD respectively.

Table 4 – Waste Transfer Station – Capital Budget

Year	Utility Reserve	Debenture	WMAP	MD of Bighorn	Total
2012	$200,000	$145,000	$1,125,000	$30,000	$1,500,000
2013	$0	$253,000	$825,000	$22,000	$1,100,000
Total	$200,000	$398,000	$1,950,000	$52,000	**$2,600,000**

Town of Canmore funding is split between the Solid Waste Services reserve and debenture. The impact to the rate payer, as determined by the Solid Waste Services Rate Model is a 5% increase to utility rates in 2012 and 8% in years 2013 to 2014.

5.3 Materials Recycling Facility

Background:

The Town's current Materials Recycling Facility (MRF) shares a space within the existing Waste Transfer Station. The Waste Transfer Station was constructed in the early 1980s on provincially owned lands and was originally designed to transfer waste only. Over the years, and in an effort to provide community recycling opportunities, it was expanded to include a conveyor/baler system and storage bunkers for recyclable materials. The facility cannot expand any further to accommodate the addition of more recyclable materials. The community wide implementation of the Enhanced Recycling Program (ERP) has been delayed for this reason until December 2011, when Council approved proceeding with the community wide roll-out of the ERP for 2012-2013.

Discussion:

Discussion on a Materials Recycling Facility must first review the details associated with the Enhanced Recycling Program (ERP). The ERP is driving the need for a larger capacity MRF to manage the projected increase in recyclable materials. The ERP will make recycling more convenient by reducing the number of household recycling streams from six to three and locating the tri-stream recycling containers within all neighbourhoods. The three new streams include:

1. Mixed Paper: Cardboard, boxboard, newsprint, magazines and office paper;
2. Mixed Containers: Small household metal (such as food cans) and mixed household plastics; and
3. Mixed Glass: Clear and coloured glass.

Phase I of the ERP was rolled out in July 2011 to a single neighbourhood. The results of Phase I are preliminary as the program started mid-year, not long enough for a full year over year comparison. However initial results for the Eagle Terrace neighbourhood are favourable and steadily improving. The following details summarize the program results to date:

Table 5. Eagle Terrace Enhanced Recycling Program - Monthly Details (in Tonnes)

2011	Recycling	Waste	Total	% Diverted
September	2.24	12.19	14.43	15.5%
October	1.85	11.16	13.01	14.2%
November	3.31	10.54	13.85	23.9%
December	3.78	9.63	13.41	28.2%

The results above do not reflect the incremental increase in the overall recycling rate for the Eagle Terrace because it is assumed that the residents to some degree were already recycling at one of the three depots. The program benefits include improved convenience – plus no requirement to drive to a depot. This assumption is projected for the balance of the community once the program is completely rolled out.

In 2012, the Town will pay $89.65/Tonne to transfer and bury waste in a landfill site. This is expected to increase to $132/Tonne and $142/Tonne in 2013 and 2014 respectively. This is an external cost and does not include the internal labour and resources required to collect waste from the animal proof garbage bins and transfer at the Waste Transfer Station. Table 6 illustrates the potential net savings in

external costs for waste disposal over the next three years with the various incremental increases in community recycling rates:

Table 6. 2012-2014 Reduction in Disposal Costs

Reduction in Disposal Costs				
Percent Diverted	**2012**	**2013**	**2014**	**3 Year Accumulative Savings**
5%	$14,000	$20,500	$22,000	$56,500
10%	$28,000	$41,000	$44,000	$113,000
20%	$56,000	$82,000	$88,000	$226,000
30%	$84,000	$123,000	$132,000	$339,000

* Calculation assumes waste generated remains at 3,111 Tonnes/year (2010 tonnage of residential waste)

The net increase in recyclable materials generated during Phase I of the ERP is manageable with the Town's current operations. Mixed Paper continues to be baled for end markets at the existing Town facility and Mixed Glass is hauled to LaFarge to be used as an aggregate. Mixed Containers require sorting with specialized sorting equipment to separate the metal and plastics. They are currently being processed at the West Regional Materials Recycling Facility located in Banff.

Phase II, a community wide implementation of the ERP was approved in the 2012 capital budget. Full community roll out will add another 74 tri-stream recycling containers throughout the community over the next 1.5 years (i.e. complete by mid-2013). As these new recycling containers are installed, there will be added demand on the existing infrastructure to manage the increase in recyclable materials.

A cost benefit analysis has determined it is more cost effective to manage the Mixed Paper and Mixed Containers within Canmore by either redeveloping the current Boulder Crescent site or developing a Materials Recycling Facility at the Waste Water Treatment site to include the reuse of the existing baler/conveyor system and the installation of a new sorting line (see Table 7 below). Use of the West Regional Materials Recycling Facility located in Banff is costing $250/load. Use is expected to increase from once/week to 3-4 times/week or from $13,000 to $45,000/year as the community wide program rolls out.

Redevelopment of the current site would include the installation of a sorting line, the rearrangement of storage bunkers and minor modification work to the roof line of the existing Waste Transfer Station/Materials Recycling Facility building to ensure adequate interior ceiling height. This is estimated to cost $500,000.

Alternatively, there is opportunity to increase the size of the proposed East Regional Waste Transfer Station at the Wastewater Treatment Plant site to include a recyclable materials processing area. The net increase of a larger footprint / building plus the sort line equipment is estimated to cost $1,000,000. The table below summarizes the figures and includes a return on investment.

Table 7. MRF Site Comparison and Return on Investment	Materials Recycling Facility		
	Haul to West Regional Facility in Banff	Town of Canmore Current Site	Town of Canmore WWTP Site
Annual Operating Cost	$45,000	*See note below	
Capital Cost	$0	$500,000	$1,000,000
Return on Investment (ROI)	N/A	12 years	23 years

* Operating cost difference would be negligible due to reduced operator time in transporting to the Town of Banff.

Mixed Paper, estimated at 950 Tonnes or 70% of the net new recyclable materials, will require a larger space to store and process the product for end market. The Town already has the necessary equipment to process mixed paper (i.e. baler/conveyor system) that was purchased with WMAP funds in 2004 for $125,000. The WMAP conditions (i.e. 100% repayment of the asset into a reserve account) will end in 2012 and there is opportunity to request the funds (principal and accumulated interest) from the Commission to replace all or part of the baler/conveyor system.

During a Town Hall meeting (March 2010) to discuss expanding the operations at the Boulder Recycling Depot, members of the community adjacent to the depot expressed a desire to have both the recycling operations and the waste transfer operations cease. Main community concerns regarding the recycling operations were noise and traffic in and out of the facility during the evenings and weekends. With the full roll-out of the Enhanced Recycling Program, recycling containers will be installed in every residential community in Canmore. Once this occurs, Administration proposes to limit the hours of the recycling depot to regular working hours (7:30AM to 5:00PM daily) to mitigate noise and traffic in the evenings. It is anticipated that the day time traffic will be reduced to include only Town operations, commercial recycling haulers and from time to time large residential recyclers (i.e. moving boxes).

The collection of specialty recyclable items such as yard waste, bicycle tires, used oil products, automotive batteries and fluorescent light bulbs must occur in a location that is both accessible and convenient to be successful. If the Materials Recycling Facility remains or moves, there would still be a requirement to continue using the 115 Boulder Crescent location for the collection of specialty items unless an alternative site can be secured.

In summary, there are three options for increasing MRF capacity and they include:

- Redevelop current location to be a Town of Canmore Materials Recycling Facility;
- Increase the size of the proposed East Regional Waste Transfer Station at the Wastewater Treatment Plant site to include a MRF area; or
- Negotiate a long term deal to continue hauling to the West Regional Materials Recycling Facility.

Table 8 – Materials Recycling Facility Site Comparison

	115 Boulder Crescent (Current Location)	**Wastewater Treatment Plant (New Location)**
Benefits	• Community recognition as the 'recycling depot' for items such as yard waste, electronic waste and used oil • Less expensive to redevelop existing site • Permitted use – AENV does not have a 300 meter setback for a MRF	• Supports the sentiment expressed at a Town Hall in March 2010

Challenges	• Adjacent neighbourhood concerns for the MRF operations remain	• More expensive to build new • More vehicle traffic and noise may have an impact on wildlife • Site access challenge for commercial customers and large recycling haulers • If a public recycling depot remains at the current location, there will be in an increase in operational expenses to transfer materials (i.e. cardboard) to new location for processing

Commission Role:

It is assumed that all $1.95M in remaining WMAP funds will be used to construct an East Regional Waste Transfer Station. The Commission cannot host the facility on Commissioned owned property (i.e. regional landfill site). Unless additional funds can be secured via the Commission or authority to host the facility is obtained, it is not necessary to identify the MRF as a regional facility. This allows the Town to own and operate an MRF.

Recommendation:

It is recommended that the Town relocate the Materials Recycling Facility to the Wastewater Treatment Plant. And that the collection of specialty recyclable items such as yard waste, bicycle tires, used oil products, automotive batteries, fluorescent light bulbs and electronics will remain at 115 Boulder Crescent.

Financial Implications:

A Town of Canmore Materials Recycling Facility has a proposed capital budget of $1,000,000.

The funding source is proposed to be 100% debenture. The impact to the rate payer, as determined by the Solid Waste Services Rate Model is a 5% increase in recycling rates in 2012, a 30% increase in 2013 (mostly due to community wide implementation of the ERP) and a steady 5%/annum increase in 2014 and subsequent years.

5.4 Biosolids Management

Background:

In 1996, when the Wastewater Treatment Plant was commissioned, the Town of Canmore delivered its biosolids to Continental Lime (now Graymont) (in Exshaw) to be used as reclamation material. Due to on-site storage and handling issues, Continental Lime advised the Town that they could no longer accept biosolids at their site.

In response, the Town constructed a large fenced 80 m x 80 m asphalt pad at the Wastewater Treatment Plant and initiated an on-site composting program that combined biosolids with a recipe of various wood products to achieve a Class A compost for resale. The operation was located outdoors, less than

500 meters from a residential area and without air handling capabilities. Due to odour complaints, the composting operation ended in 2001.

In the past 10 years, the Town has sent its biosolids to several composting facilities within Alberta including the City of Medicine Hat, the Bowden Correctional Facility and the Clean It Green It Facility in Edmonton. In each case, the Town was given short notice to terminate the agreement with one to six months to secure another agreement. The Town is currently transporting its biosolids to a composting facility near Penhold, Alberta at an expense of $478,000/annum (2011 actual). The Town is need of a long term biosolids management solution that is secure, sustainable and economical.

Discussion:

To minimize transportation costs, it is most beneficial to site a biosolids management facility adjacent to the point of generation (i.e. the WWTP). There is space to construct such a facility adjacent to the WWTP.

A technology to manage biosolids must produce a marketable end product and not allow odours to leave the site. Technologies exist that produce either a Class A compost or fertilizer. The Town is aware of the historical challenges facing the Town of Banff and their difficulty in finding an end market for their Class A compost. Therefore it's prudent to also investigate technologies that produce a marketable fertilizer.

Issues around odours can be addressed by enclosing the technology in a facility and utilizing appropriate air handling technologies (i.e. air scrubbers or bio-filters).

The Town of Banff is currently in negotiations with a proponent for a technology to process its biosolids into a marketable fertilizer. The agreement places the responsibility of securing end markets with the proponent. It would be beneficial to join the negotiations with Banff and review the notion of siting the technology in Canmore.

Commission Role:

Again, it is assumed that all $1.95M in remaining WMAP funds will be used to construct an East Regional Waste Transfer Station. Additionally, biosolids management is not included in the Commission's vision and there is no support from the Commission to host the facility on Commission owned property (i.e. regional landfill site). Unless additional funds can be secured via the Commission or an agreement to host the facility is obtained, it is not necessary to identify the biosolids management facility as a Commission facility.

Recommendation:

It is recommended that the Town, jointly with the Town of Banff, investigate siting a biosolids management facility at the Wastewater Treatment Plant in Canmore and investigate a technology to produce a marketable end product.

Financial Implications:

The Town spent $478,000 (or $160/Tonne) in 2011 to manage biosolids, however the Town recently secured a one year contract to the same composting facility at a cost of $115/Tonne or $345,000. Given

the reduction in costs, the recommendation is that the Town only consider a local solution if there is a positive business case and a reduction in risk and carbon footprint. This will occur through the Town's discussion with the Town of Banff and the biosolids management technology proponent.

5.5 Organic Waste Management

Background:

The Town of Canmore does not have a formal Source Separation Organic (SSO) program to divert organic material such as kitchen scraps from the municipal waste stream. Similar to waste transfer and biosolids, a SSO program has not been developed because of challenges related to securing a location within the Town's corporate limits or at the Commission's property (i.e. regional landfill site). In addition, there are other challenges related to collecting SSO through the animal proof bin system.

A typical municipal waste stream in Alberta comprises up to 25% organic waste material. The Town's residential sector generated 3,111 Tonnes of waste in 2010. Therefore it is estimated that over 750 Tonnes of organic waste material was sent to landfill. The Town will be charged $89.04/Tonne in 2012 to transport and bury municipal waste. An organic diversion program achieving 80% diversion could result in an annual savings of landfill disposal costs up to $56,000.

Discussion:

To proceed with a SSO diversion initiative, a collection program for organic waste material must be developed. To be successful, a collection system would have to be both animal proof and 'as convenient' as the current residential animal proof waste disposal program. The program should also consider waste generated within the commercial sector, namely restaurants.

An informal SSO program does exist and includes the use of food waste disposers (or garburators). A food waste disposer has the advantage of managing organic waste materials at the source (i.e. kitchen) and shifting the conveyance from an above ground animal proof container program to an underground sewer system that is already in place. At present, the WWTP is managing the volume of organic waste materials generated from food waste disposers entering the sewer system. However if a full community roll out should occur it must include an evaluation of the WWTP to ensure it can successfully manage the increased solids loading.

The Town has little detail on the exact number of food waste disposer units in place or the frequency of use as they are located in private homes. Responsibility and management for building plumbing rests with third-party permitting agencies, an area that the Town does not currently manage as it does with the Building Code and building inspections.

There are two possible directions for managing Source Separated Organics: Container Collection System or Food Disposer System. The following are high level details of each option:

Container Collection System: This system would have occupants of a household or commercial / businesses collect, store and deliver SSO to an organic waste container. The containers could be located at a centralized depot or adjacent to each residential or commercial waste container. The capital cost for a separate residential collection system, similar to the approved Enhanced Recycling Program is approx. $1,000,000. This will require a utility rate increase of 30% or $21/year/account in 2013. Most

of the capital costs associated with the processing equipment is included in the Biosolids Management Strategy with the exception of the pre-blending equipment, an unknown cost at this time.

Food Disposer System: This system would require a food disposer unit to be installed in each household and commercial kitchen. As mentioned, the Town cannot currently require or enforce the installation of food disposers unless the Town chooses to manage the permitting of building plumbing. This would address new units but there is still a need to install food disposers in existing residential and commercial units. This could be encouraged through a rebate program, similar to the Water Conservation Rebate Program introduced in 2004. The capital costs estimated for a residential sized food disposer unit is $500/unit, for the unit, electrical and plumbing installation.

Table 9. Container Collection System versus Food Waste Disposer System:

	Container Collection System	**Food Waste Disposer System**
Benefits	• Visible to the community • Measurable	• Managed at source • Utilizes existing underground infrastructure • Additional containers and the use of collection vehicles not required
Challenges	• Requires additional containers and the use of collection vehicles • Requires on-site processing option (combined with biosolids)	• Not easily measurable • Not enforceable • Uncertainty about the WWTP capacity

Commission Role:

Similar to the Biosolids Management Strategy, there is no expectation that the Commission would play a major role. There may be opportunity and benefit to utilize the Commission's "Towards Zero Waste" expertise to develop a promotion and education program.

Recommendation:

In summary, there is insufficient data to suggest a recommendation for one system over another. However it is recommended that the Town complete more investigative work to determine which system is most suitable for the Town. This would include collecting more community details on food waste disposers and its impact on the WWTP and more detailed capital costs associated with an 'on-street' collection system to determine the return on investment of any new program in relation to existing costs.

Financial Implications: To Be Determined

5.6 Energy from Waste

Background:

The cost of landfilling waste will continue to increase annually and the option of landfill as a waste disposal method remains a long term non-sustainable solution. The industry accepted waste hierarchy clearly states the following order of priority:

1. Reduce
2. Reuse
3. Recycle
4. Recover (energy)
5. Landfill

The Town of Canmore completed an Energy from Waste study in 2011. The purpose of the study was to determine the feasibility and cost-benefit of thermally treating its waste stream, including biosolids. Highlights of the report include:

- Recommended technology for the thermal treatment of 20,000 Tonnes is gasification;
- Gasification is a newer technology that is scalable, is available and proven in Europe;
- End products include CO_2, H_20, fly ash and bottom ash;
- To be financially viable the facility would need to include all waste feedstocks from neighbouring municipalities;
- Biosolids can be included as a feedstock (may require pre-drying from 15% to 60% solid);
- Net savings of 261 KgCO_2e / Tonne or a reduction of 48,770 Tonnes of CO_2e over 20 years;
- A tipping rate of $100/Tonne is recommended; and
- A tipping rate of $115/Tonne (with 25% grant funding) would achieve a 20 year ROI.

The Commission is a member of the Southern Alberta Energy from Waste Alliance (SAEWA) which also completed a similar study but on a much larger scale with the inclusion of 58 rural municipalities in southern Alberta. The results of the study were released on October 14, 2011. Highlights of the report include:

- Recommended technology for the thermal treatment of 360,000 Tonnes is a mass burn incinerator;
- Mass burn incineration is the oldest and therefore most proven technology;
- Facility location is recommended to be within Vulcan County; and
- Cost including transportation (from the Bow Valley) and treatment is estimated at $57/Tonne (2011 value).

The Province of Alberta currently has two thermal treatment facilities in operation, one in Swan Hills and one in Lacombe. The City of Edmonton is scheduled to commission a gasification facility in 2012. The County of Red Deer has also entered into an agreement to construct a thermal treatment facility.

Thermal treatment facilities must adhere to stringent Provincial requirements including air quality emissions. It is estimated that the time required for the necessary approvals, securing of funds and construction for either a local or regional thermal treatment facility is at least five years.

The Energy from Waste scenario included biosolids as a feedstock and the reduction in biosolids expenses produced an overall positive business case. Expending capital monies for a different biosolids management option will reduce the financial benefit of an Energy from Waste facility in the future.

Commission Role:

It is not expected that the Commission play a major role in any future Town of Canmore Energy from Waste program. The Commission does not have access to grant funds or the interest in hosting the facility on Commission owned property (i.e. regional landfill site). The Commission is currently

participating in the southern Alberta initiative to evaluate Energy from Waste. The Town will continue to be informed of this initiative via the Commission.

Recommendation:

It is recommended that the Town continues its participation, via the Commission, with the Southern Alberta Energy from Waste Alliance.

It is recommended that the design for the East Regional Waste Transfer Station at the Wastewater Treatment Plant consider the possible future inclusion of Energy from Waste Technology.

It is recommended that the Town approaches the neighbouring municipalities to determine interest and likelihood of entering into a 20 year agreement to receive all the Municipal Solid Waste in the Bow Valley.

Financial Implications: To be Determined

6.0 Summary

The Waste Management Strategy is intended to serve as a guiding document for the Town of Canmore on waste management matters either independently or with Commission support. Each recommendation will likely require multiple steps and regular discussion and direction from Council.

Table 10. Summary of Recommendations:

No.	Recommendation	Priority	Timeline
1.	Waste Transfer Station	High	Short
• That the Town request from the Commission the balance of the Waste Management Assistance Plan funds for an East Regional Waste Transfer Station; • That the Town formally offer to locate an East Regional Waste Transfer Station at the Town of Canmore's Wastewater Treatment Plant; and • That the Town propose to the Commission that the Town operate, design and build the facility.			
2.	Materials Recycling Facility	High	Short
• That the Town relocate the Materials Recycling Facility to the Wastewater Treatment Plant. • That the collection of specialty recyclable items such as yard waste, bicycle tires, used oil products, automotive batteries, fluorescent light bulbs and electronics will remain at 115 Boulder Crescent.			
3.	Biosolids Management	Medium	Medium
• That the Town, jointly with the Town of Banff, investigate siting a biosolids management facility at the Wastewater Treatment Plant in Canmore and investigate a technology to produce a marketable end product.			
4.	Organic Waste Management	Medium	Medium
• That the Town complete more investigative work to determine which Source Separated Organics system is most suitable for the Town.			
5.	Energy from Waste	Medium	Long
• That the Town continues its participation, via the Commission, with the Southern Alberta Energy from Waste Alliance; • That the design for the East Regional Waste Transfer Station at the Wastewater Treatment Plant consider the possible future inclusion of Energy from Waste Technology; and • That the Town approaches the neighbouring municipalities to determine interest and likelihood of entering into a 20 year agreement to receive all the Municipal Solid Waste in the Bow Valley.			