



CITY OF ST. ALBERT ADMINISTRATIVE BACKGROUNDER

TITLE: Zero Waste Process

On January 13, 2017 Councillor Hughes provided notice in accordance with Section 23 of Procedure Bylaw 35/2009 that she intended to bring forward the proposed motion below.

In order for Council to debate the motion, the motion must be formally moved.

PROPOSED MOTION(S):

That Administration prepare a report for Council's review before the end of Q3 of 2017 of the potential feasibility, land requirements, estimated capital and operating costs, social and environmental and economic benefits, and risks of implementing a zero waste process and ancillary processes and infrastructure in St. Albert to manage its solid waste, similar to what is being implemented in the Wood Buffalo region.

BACKGROUND:

Conventional solid waste management practices are a growing concern in municipalities. Disposal of waste in landfills creates long term environmental liabilities, consumes valuable land that could be used for better purposes and generates greenhouse gases as waste decomposes. Economically, traditional waste management practices continue to become less viable with increasing land, goods, services, equipment and labor costs. Increasing costs result in increasing utility rates to the consumer for cost recovery.

Current waste management practices have evolved to divert as much of the waste streams as possible from landfilling through the use of the "4Rs" (reduce, reuse, recycle and recover), however these methods have reached their practical limit such that further investment in, and operational costs of, conventional diversion programs and technologies does not provide viable recovery of value in commodities.

The City of St. Albert has achieved a commendable waste diversion rate of 65% over the past 4 years with a current goal of 75% by 2020. Achieving this target, while possible, will be difficult with an increasing cost per incremental unit of waste diverted.

With these limitations realized, both the private and public sectors have initiated studies, and in some cases undertaken pilot projects and/or commercialized “waste-to-energy” or “waste-to-fuel” technologies. Some examples include:

- The City of Edmonton has recently completed a commercial scale waste to biofuels facility, projected to enable it to divert 90% of solid waste from landfills:
https://www.edmonton.ca/programs_services/garbage_waste/biofuels-facility.aspx (Attachment 1)
- Metro Vancouver currently has waste to energy and has chosen to upgrade current technology while it investigates new technologies and timelines:
<http://www.metrovancouver.org/media-room/media-releases/solid-waste/427/metro-vancouver-discontinues-current-waste-to-energy-procurement-process> (Attachment 2)
- The Regional Municipality of Wood Buffalo is undertaking a waste to energy project targeting nearly 100% diversion:
<http://www.choosewoodbuffalo.ca/life-in-rmwb/sustainability/> (Attachment 3)
- The inherent value in waste to energy in providing incremental value over conventional waste management practices has been realized by the private sector: <http://www.wastedive.com/news/waste-management-quantifies-energy-value-in-trash/20828/> (Attachment 4)

The business case for “zero waste” technology is based on a “triple bottom line” approach to sustainability with economic, social and environmental pillars, considering both tangible and intangible benefits.

Socio-Economically, “zero waste”:

- shifts traditional waste management from a deficit position, requiring cost recovery from consumers, to that of a surplus position, resulting in reduced charges, or additional value for the same rates, to rate payers (Attachment 5).
- can increase recycling by individual residents while also providing a more convenient method,
- provides additional opportunities for local businesses (diversification for existing businesses and new start-ups), educational institutions and social profit groups
- provides opportunity for local economical, organic, low carbon footprint produce consistent with the City of St. Albert’s brand as the Botanical Arts City and regional initiatives: <http://edition.pagesuite-professional.co.uk//launch.aspx?eid=77e79044-03a5-4922-b7d0-e7c45bb86ff3> (Attachment 6)

Environmentally, significant greenhouse gas emission reductions are realized through the conversion of solid waste into “green” heat and electricity (or alternatively biofuels) and carbon dioxide over traditional landfilling practices which results in the production of methane (approximately 21 times more impactful to climate change than carbon dioxide) from the decomposition of waste. An example

of the carbon footprint reduction in making local produce from zero waste heat and electricity, compared to importing produce, in Wood Buffalo, is shown in Attachment 7. The “carbon credits” generated can be used as offsets towards a municipality becoming carbon neutral, can be sold in the marketplace to generate revenue, or combined to realize partial benefits for each aspect.

An example of a zero waste process, generating green heat and electricity which can be used in aquaponics or district energy applications is shown in Attachment 8. Such a process can be undertaken entirely by the City or in partnership with other parties. The Net Present Value of this process, over the life-cycle of the project is expected to provide a better financial model than conventional waste management practices. However, should a collaborative approach be undertaken with the private sector and institutional, social profit and governmental agencies, the zero waste process can be expanded and integrated with other activities to provide compounding benefits to all parties as shown in Attachment 9. Local partnership opportunities already exist, Administration has had recent discussions with the Resource Recovery Centre, an initiative between Alberta Innovates Technology Futures, the University of Alberta and local developers on synergies between the two parties. The Resource Recovery Centre, located north of the St. Albert boundary is undertaking to process blackwater and municipal sewage and treat it via various processes to produce fertilizer, reclaimed water and combined heat and electricity. The inputs, processes and outputs of their project may be compatible with the zero waste process and further work will be undertaken with this group to investigate joint opportunities if the motion is passed by Council.

It is important to note that sustainability initiatives are most successful if local advantages, opportunities and potential partners are leveraged. Specifically in the area of climate change, it is a global issue best addressed locally by areas or regions on these principles as outlined in the following Scientific American article – All Climate is Local <https://www.scientificamerican.com/article/all-climate-is-local/> (Attachment 10), summarized: “In some ways, cities may be in a better position than nations to do something about climate change.”

The scope of the study is clearly defined in the motion, however Administration would consider both the zero waste process as an independent process (Attachment 8) and as part of an integrated model (Attachment 9). The study can be completed for the most part with existing resources within Administration, however limited third party services would be required to complete the cost-benefit analyses and to determine Net Present Values of various options for Council’s consideration. The cost to undertake, based on a similar scope this author has had completed elsewhere, is estimated at \$20,000 to \$25,000 and approved funds are not currently available.

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