



Comment on Energy Recovery for Electronics, Paint and Tires (Other Thermal-based Technologies Included) July 2017

Energy recovery is defined as the direct combustion of a material as fuel to produce energy (a positive BTU contribution, as opposed to “incineration” which is the use of a fuel to burn or thermally destroy a waste material or negative BTU contribution).

Energy recovery is outside the scope of the Incentive Program Requirements that are approved by Alberta Recycling’s Board of Directors for the recycling of end-of-life computer equipment and TV’s, latex paint and paint containers, and tires (designated materials).

If Albertans or Alberta businesses determine that their old computer, can of paint or tires have reached the end of their useful life and they want to recycle these items, they have the option of dropping them off at over 450 registered municipal collection sites throughout the province. From there, the items are collected into Alberta’s Electronics, Paint and Tire Recycling Program where they will be recycled by companies registered with Alberta Recycling. The products cannot be resold in their original state but must be processed into a final recycled state.

However, Alberta Recycling occasionally receives questions and proposals from companies regarding how the program relates to energy recovery activities for designated material. Following is the organization’s position for each program regarding these enquiries.

Position on Energy Recovery

Alberta Recycling’s Board of Directors has determined that it may evaluate proposals regarding energy recovery on a case-by-case basis, with consideration for circumstances unique to each program. For completeness, the Board has addressed several thermal-based technologies within this Position Statement (below).

Electronics

The material generated from electronics recycling that has encountered the most challenges in finding consistent, viable markets is ‘lower value’ plastic. This plastic, commonly used to make the rigid housing and base pieces for electronics, is made up of co-mingled resins which can make it difficult to recycle. Therefore the use of lower value plastics in the energy recovery process will be considered for review upon confirmation that there is a limited recycling market for it.

Paint

Energy recovery or ‘fuel-blending’ is an accepted process for the processing of eligible oil-based paints, but only by downstream processors approved through the Program.

Tires

With the general success of the Tire Recycling Program, demand for recycled material produced under the program (tire-derived aggregate, mulch, and crumb) meets or exceeds the available supply. Energy recovery proposals will be considered if there are an excess number of tires causing stockpiles of tires over an extended period of time.

Position on Other Thermal-based Technologies

Alberta Recycling's Board of Directors has determined that it may evaluate proposals regarding thermal-based technologies on a case-by-case basis, with consideration for circumstances unique to each program.

There are other thermal-based technologies for which Alberta Recycling receives requests related to funding. For the most part, these requests are based on pyrolysis technologies whereby a hydrocarbon undergoes anaerobic combustion (absence of oxygen). This is also described as gasification or thermal destruction in a vacuum.

Rather than burning the material directly as a fuel, these processes break the material down into its component materials (similar to "cracking" in the oil industry). In the case of rubber tires, the resulting components are:

- a) a low grade form of carbon "char", which can be refined into carbon black;
- b) a combination of lower grade gas and oil, which can be used as is or refined into a higher grade synthetic fuel or bio-fuel; and
- c) steel, which can be recycled.

Similarly, the plastics in electronic products, plastic paint buckets, and oil-based paint could be processed through these technologies.

Typically, the primary purpose of the process is to recover the oil and gas, although there have been proposals where the primary purpose is production of carbon black, with the fuel being a by-product. Usually, the gas and sometimes oil are used as fuel to run the system itself.