

Recover

Definition

Recovery involves utilizing the embodied energy in waste materials to produce needed heat or electricity.

Why Recover?

Recovery, also known as “waste-to-energy” (WTE), is a residuals disposal option. It is not an alternative to waste prevention, reuse or recycling. Instead it is an interim measure to deal with material left over after the other R’s are implemented. The long-term goal of zero-waste is to eliminate residuals from the waste stream through better product design and improved markets for recycled materials as well as reuse and reduction.

WTE facilities are common in Europe where space for landfills is at a premium. There, WTE goes hand in hand with strong recycling programs and targets. Two of the biggest users of WTE, the Netherlands and Germany have diversion to recycling rates of 66% and 65% respectively.

According to the Recycling Council of Alberta (RCA), the benefits of WTE include the potential to:

- Reduce waste material 90% by volume and 70-75% by weight;
- Produce 450-500 KWH of electricity per tonne of waste process;
- Reduce greenhouse gas emissions compared to landfills depending on the technologies involved and the waste composition; and
- Generate less water contaminants than landfills.

However RCA also points out that WTE facilities are associated potential drawbacks:

- They generally cost more than landfills or recycling programs;
- Generate more air contaminants compared to landfills. Though through utilization of state of art technology these emissions are far lower than they were historically;
- Landfills are still required to deal with residual ash;
- New and emerging technologies such as plasma gasification are generally not yet commercially available or proven on a full scale.

Municipalities interested in pursuing WTE options need to consider a number of factors:

- Generally, larger facilities are less costly on a per tonne basis. Any municipalities considering thermal treatment should consider partnering with neighbouring municipalities in order to build a large facility and obtain cost savings through economies of scale.
- There are many companies aggressively marketing new technologies. Municipalities should directly contact communities that have used the technologies to determine the real costs and benefits.
- Many WTE companies require guaranteed feedstock volumes. As recycling and composting systems advance and additional product stewardship programs are implemented volumes of waste may actually go down. Municipalities need to be cautious to avoid becoming contractually obligated to provide a minimum volume of waste that exceeds overall waste generation after the other R’s are implemented.

Examples and Resources

Municipality	Example
Provincial	
City of Edmonton	<p>Waste to Bio-Fuel Facility</p> <p>Construction has started on the world’s first industrial scale municipal waste-to-biofuels facility. The \$80 million Edmonton Waste-to-Biofuels Facility will be built, owned and operated by Enerkem Alberta Biofuels. It will convert 100,000 tonnes of municipal solid waste that cannot be recycled or composted into 36 million litres of biofuels annually and help reduce Alberta’s carbon dioxide (CO₂) footprint by six million tonnes over the next 25 years—the equivalent of removing 42,000 cars off the road every year.</p> <p>Click here for more information</p>
National	
Metro Vancouver	<p>Waste-To-Energy Facility</p> <p>The Waste-to-Energy Facility (WTEF) is located in the commercial/industrial area of south Burnaby. It receives waste from Burnaby, New Westminister, and the North Shore and is responsible for processing 25 per cent of the region’s waste.</p> <p>Each year the WTEF turns 285,000 tonnes of garbage into steam and electricity. The steam is sold to a paper recycling facility, while the electricity is sold to BC Hydro is enough to power 15,000 homes. It adheres to Strict regulations and environmental monitoring. The Solid Waste Association of North America (SWANA) recognizes it as one of the best facilities on the continent.</p> <p>Despite the success of the facility, Metro Vancouver’s commitment is to diverting waste from disposal in the first place. After achieving world-class rates of diversion, a growing population means that tonnes of waste still need to be managed and the region feels that WTEF is the most responsible option.</p> <p>Click here for more information</p>
Region of Peel	<p>Energy from Waste (EFW)</p> <p>Peel processes half of the residential waste left over after recycling into energy at the Algonquin Power EFW facility. The other half goes to the Landfill.</p> <p>With the limited landfill space in Ontario, the Region feels EFW provides an effective and environmentally responsible solution to managing residuals while also producing energy.</p> <p>Click here for more information</p>

Other Organizations	Resources
Provincial	
Alberta Finance and Enterprise	<p>Assessment Toolkit</p> <p>To assist communities in assessing possible projects, Alberta Finance and Enterprise</p>

	<p>has developed the <i>Renewable Energy Toolkit for Economic Development</i>. Although not directly geared to WTE, it contains relevant information as it is designed to facilitate a better understanding of the basics of energy, to assist communities in beginning due diligence processes, and to provide basic guidance for screening various projects.</p> <p>Click here for more information</p>
Recycling Council of Alberta	<p>Expertise for Councillors</p> <p>The Recycling Council of Alberta has developed a presentation on the role and impact of waste-to-energy options in municipal waste management systems. This presentation is particularly suited to politicians (i.e., municipal councils) who may be interested in waste-to-energy alternatives, but have little technical background on the implications of this technology. The RCA is offering this presentation to municipalities in the interests of education and open dialogue about the future of waste management in Alberta. The presentation is anticipated to take about one hour, depending on questions and discussion. Those interested in hosting a presentation should contact the RCA at 403.843.6563 or info@recycle.ab.ca.</p> <p>Click here for more information</p>
Southern Alberta Energy from Waste Association (SEAWA)	<p>Association</p> <p>SEAWA is a coalition of waste management jurisdictions committed to researching and recommending for implementation technological applications for recovering energy from waste materials, and reducing reliance on landfills.</p> <p>Click here for more information</p>
University of Alberta	<p>Biorefining Research Network</p> <p>Based out of the University of Alberta, the Biorefining Conversions Network (BCN) is an organization working to support provincial research communities in the areas of biorefining and biomass conversion technologies. By striving to form strong partnerships between academia and industry, the BCN promotes research programs that are structured towards achieving commercializable outcomes.</p> <p>Click here for more information</p>
National	
Canadian Energy From Waste Coalition	<p>Coalition</p> <p>The Canadian Energy-From-Waste Coalition (CEFWC) represents industry, associations, and other stakeholders committed to the promotion, adoption, and implementation of energy-from-waste (EFW) technology for the management of residual materials within the context of an integrated solid waste management system. Recognizing that EFW solutions are compatible with proactive recycling and other diversion efforts, the coalition seeks to promote the merits of the thermal treatment of waste to recover energy and garner support for waste derived fuels.</p> <p>Click here for more information</p>
Federation of Canadian Municipalities	<p>Funding for thermal treatment!</p> <p>FCM's Green Municipal Fund accepts applications for the capital costs of thermal treatment processes where the municipality has achieved a waste diversion rate of at least 50% prior to undertaking the thermal treatment project .</p>

	Click here for more information
International	
Confederation of European Waste To Energy Plants (CEWEP)	<p>European Leaders CEWEP (Confederation of European Waste-to-Energy Plants) represents about 90% or 363 Waste-to-Energy Plants from 17 European Countries and the United States. The plants represented by CEWEP are operated both by municipalities and private companies. CEWEP emphasizes that its members annually treat the roughly 59 million tonnes of household and similar waste that remains <i>after</i> waste prevention, reuse and recycling.</p> <p>Click here for more information</p>
Energy Recovery Council	<p>US Council The ERC is a US trade organization representing the waste-to-energy industry and communities that own waste-to-energy facilities. Current ERC members own and operate 69 of the 86 modern waste-to-energy facilities in the US.</p> <p>Click here for more information</p>
Solid Waste Association of North America (SWANA)	<p>WTE Division SWANA's WTE Division provides industry professionals with the information and professional contacts they need to improve their plant operations while encouraging innovation to enhance waste-to-energy's role as a viable option for solid waste management and an expanded source for clean, reliable and renewable power.</p> <p>Click here for more information</p>
Waste to Energy + Recycling	<p>Conference Waste to Energy hosts an International Exhibition and Conference for Energy and Materials Recovery from Waste and Biomass. The Next Convention to be held June 5-6 2013.</p> <p>Click here for more information</p>

Works Cited

Recycling Council of Alberta and Municipal Waste Integration Network. (2006). *Municipal Solid Waste Options: Integrating Organics Management and Residual Treatment/Disposal*.