

As the Metro Vancouver public consultation process regarding the Draft Integrated Solid Waste and Resource Management Plan (DISWRMP) comes to a close, I would like to highlight some of the benefits of energy-from-waste (EFW) technologies that may be proposed for the region.

These systems have been adopted by some of the world's most progressive jurisdictions due to their capacity to provide a safe, renewable solution to intractable problems related to waste management and local energy generation.

General

- » Numerous studies on modern EFW operations in the U.S. and Europe have shown them to be environmentally sound, cost-effective, and safe for employees and local residents. Around the world, approximately 800 plants lessen reliance on fossil fuel power plants that release carbon dioxide, while providing reliable, economical solid waste services to municipalities with no adverse health or environmental impacts.

Climate Change

- » Modern EFW facilities offer proven net-benefits in terms of greenhouse gases. Stringent emission control systems meet or exceed all regulatory requirements wherever they operate.
- » In Metro Vancouver, although the existing energy recovery facility produces over 100,000 tonnes a year of carbon dioxide, this amount represents only 0.6% of the total GHG emissions in the Lower Fraser Valley airshed, and virtually all of it would be produced anyway from fossil fuels in other facilities used to generate the steam and power being produced at this facility.
- » Eighty-seven (87) US EFW plants prevent the release of 40 million metric tonnes of greenhouse gases in the form of carbon dioxide equivalents that otherwise would be released into the atmosphere on an annual basis. Annual reporting by the Energy Recovery Council (ERC) to the U.S. Department of Energy's Voluntary Reporting of Greenhouse Gases Program confirms that EFW also prevents the release into the atmosphere each year of nearly 24,000 tons of nitrogen oxides and 2.6 million tons of volatile organic compounds.
- » The Global Roundtable on Climate Change (GROCC) has identified EFW as a means of reducing carbon dioxide emissions from the electric generating sector. The breadth of support for the GROCC position is evidenced by those that have signed the joint statement, including Dr. James Hansen of the NASA Goddard Institute for Space Studies and David Hawkins of the Natural Resources Defense Council's Climate Center, as well as entities as diverse as General Electric, Florida Power and Light, and Environmental Defense.
- » Even with aggressive +60% diversion programs in place, approximately 55-65% of the waste stream is biogenic, a significant portion of the EFW feedstock is both a renewable source of energy and does not contribute to greenhouse gases.

Recycling

- » Far from competing with recycling, EFW is part of an integrated approach to solid waste management that includes recycling as a core component.
- » According to a recent case study commissioned by the Canadian Plastics Industry Association, in the period from 1995 through to 2007, during which time the Burnaby facility has been in operation, the recycling rate in Metro Vancouver increased from about 40% to 55%.
- » The new EFW facility in Edmonton, Alberta will increase that city's recycling rate by approximately one third.
- » US communities with EFW plants recycle about 33% of their waste, whereas the national average is 28%. European data consistently shows that countries with high EFW implementation have a correspondingly higher level of recycling (while also generating less waste and producing more clean electricity than Canadians).
- » The excellent recycling record of communities can be attributed to several factors. Many facilities provide drop-off locations for recyclable materials, including computers, white goods, and other unwanted products. In addition, many EFW plants, including Burnaby, employ ferrous and non-ferrous metal recovery programs on-site.
- » Increased recycling does not significantly affect the calorific value of waste. Experience in the U.S. and Europe shows that the removal of low calorific value recyclables (such as yard waste, food waste, metal, and glass) and high calorific value material (such as paper and plastics) offset each other, causing the heating value of the residual waste to remain about the same. There is sufficient contaminated paper and other combustible material left in the waste after recycling to provide sufficient energy for recovery.
- » Audit data from the Greater Toronto Area (GTA) municipalities achieving +60% diversion through aggressive blue box and green bin programs indicates that the energy value of the residual waste has increased by 5% to 10% compared to the residual waste from municipalities with less aggressive diversion programs.
- » Although unlikely, a reduction in the calorific value of the waste due to recycling would not result in the need to install additional boilers to an EFW facility to produce the same amount of energy. In fact, the opposite is true, as operators would simply process more waste per hour through the boiler to produce the same amount of energy.

Health and Safety

- » EFW facilities, like all other workplaces, must meet tough health and safety standards. The industry takes tremendous pride in its implementation of programs that go beyond what is required by law. More than 45 US EFW plants have won distinguished awards for health and safety.
- » EFW plants track, record, and store up to 1,200 data points of information every second of the day to ensure that plant inputs/outputs are kept within clearly defined operating parameters established by government regulators.

Toxins and Dioxins

- » Test results from EFW facilities across North America, including Burnaby, demonstrate that emissions of dioxins are well below government regulations.
- » In Metro Vancouver, the contribution of the Burnaby plant emissions to the total Lower Fraser Valley airshed for regulated materials is measured in fractions of a per cent. Modern facilities, like Burnaby, operate in carefully controlled combustion conditions in order to limit the amount of dioxins and furans. The concentration of these compounds in the exit gases is carefully monitored. Environment Canada considers the Limit of Qualification for dioxins and furans to be 32 picograms/cubic metre. Because measurement of these compounds from the Burnaby plant are considerably below this value - typically two (2) picograms/cubic metre – Environment Canada records the dioxin and furan emissions from this plant as zero in the National Pollutant Release Inventory.
- » New EFW will have less than a 1% impact on the Lower Fraser Valley airshed, whereas open burning has an impact of approximately 16%, while transportation and industry contribute over 30% over the pollutants in the area. Therefore, it would seem that the best and easiest way to improve air quality in the Lower Fraser Valley would be to prohibit open burning, a common practice on farms and orchards.
- » Elsewhere, the amount of dioxin emitted by a single modern mass-burn EFW plant is barely detectable by the most sophisticated scientific detection equipment, and is well below health-based air emissions standards. In 2002, the EPA estimated that the total annual dioxin emission rate from all EFW facilities in the U.S. was less than 12 grams compared to a toxic equivalent of 550 grams emitted by backyard barrel burning. Much larger quantities of dioxin are produced every day by both manmade sources, such as diesel trucks and wood burning stoves, and natural sources, such as forest fires and volcanoes.
- » The emissions of other substances from EFW plants are also well below health-based standards. Furthermore, the amount of toxic substances in the waste stream are significantly declining, as, for instance, the use of mercury in U.S. manufacturing processes dropped by almost 90% between 1980 and 2000.
- » Some critics seek to malign the technology with fearmongering, by making inaccurate claims about toxic emissions; however, elements such as dioxins and furans are undetectable in most modern plants, and in any event are emitted in far greater amounts by transportation systems, and even open burning, which is quite common on farms and orchards. Any issues related to mercury are primarily related to product content, the consequences of which are not unique to EFW. In fact, due to pollution control equipment, which typically amounts to 80% of the cost of an EFW system, this element is managed in the safest possible manner relative to all other options.

Process By-Products

- » EFW reduces waste volumes by 90%, resulting in an ash residue, which, once metals are removed, passes the most rigorous testing to ensure it is non-hazardous and safe for disposal and reuse. Field tests show that the levels of metals present in EFW ash leachate are close to drinking water standards and far lower than government toxicity criteria. This ash residue, which resembles

wet cement, is then re-used as landfill roadbed material, daily and final landfill cover, road aggregate, asphalt-mixture, and even in the construction of artificial reefs and cement blocks.

Costs

- » The cost of a new, proven-technology EFW facility is comparable to a similarly sized oil, coal, or natural gas power plant.
- » Documented experience in the U.S. shows that the cost of using an EFW facility for solid waste disposal is often comparable to traditional landfills and less expensive than standardized (Class 1) landfills. In Germany, where stabilized landfills are used, there are 58 operating EFW facilities.
- » It is unfair to compare the cost of landfill today with the cost of the first tonne of waste going into an EFW facility. The more important issue is the life-cycle cost of an EFW facility and its potential over a 20 or 30 year timeframe. For instance, the Greater Vancouver Regional District plant is entirely self-funded, and as a result of the EFW facility revenue return to the GVRD, tipping fees have actually dropped since 1988.

Capacity Expansion

- » Almost 100 new plants are planned for construction in Europe by 2012, increasing required capacity by 13 million tonnes.
- » The most recently developed US EFW unit became operational in 2007 in Lee County, Florida. Another plant expansion was completed in Hillsborough County, Florida early in 2009.
- » New projects were approved recently in Frederick County and Harford County, Maryland. Other projects at various stages of development – all of which will exceed stringent air emission standards – are progressing in Hawaii, California, British Columbia, and Ontario.

Award Winning Infrastructure

- » Since its inception in 1986-87, the Burnaby energy recovery facility has undergone several capital expansions to improve the technology and output. Over the years, the facility has been recognized on several fronts. In 2003, the Association of Professional Engineers and Geoscientists of BC presented the first annual Sustainability Award, in part for the installation of the facility's turbo generators. In 2004, the facility won a Power Smart Excellence Award for Energy Efficiency from BC Hydro, the Federation of Canadian Municipalities Sustainable Community Award (in the energy category), and the American Society of Mechanical Engineers Best Large Waste-to-Energy Facility Award.

Quality of Life

- » Mercer Consulting and The Economist magazine each year rank the world's most liveable cities, and from a combined listing of their choices it is clear that nine (9) of the thirteen (13) most attractive international cities utilize EFW technologies to manage a significant portion of their waste. Metro Vancouver is one of them.

The Canadian Energy-From-Waste Coalition (CEFWC) represents industry, associations, and other stakeholders committed to sustainable environmental policies. We stand for 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.

As the EFW debate evolves through the Metro Vancouver consultation and governance processes, please note that I'd be more than happy to provide you with additional detail in the form of an expanded presentation. Of course, I'm always available to answer any questions or concerns you may have.

Please feel free to contact me at your convenience at (416) 763-0815, or via e-mail at jpfoden@presterjohn.ca.

Thank you for your consideration.

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