

GREENEST CITY SCHOLARS PROGRAM - 2014 PROJECT

Project title

Examining the current state of anaerobic digestion facilities around the world, and determining the enabling and encumbering factors for establishing such a facility in an urban setting in conjunction with an organic diversion program

Greenest City goal(s) supported

- Zero Waste - Goal: To create zero waste
2020 Target: Reduce solid waste going to the landfill or incinerator by 50% from 2008 levels.
- Climate Leadership - Goal: Eliminate dependence on fossil fuels.
2020 Target: Reduce community-based greenhouse gas emissions by 33% from 2007 levels.

Project context, scope, and value to City

Vancouver City Council resolved to not support waste incineration / combustion, but offer conditional support for “conversion technologies, referring to a wide array of state of the art technologies capable of converting unrecyclable solid waste into useful products, such as green fuels and renewable energy, in an environmentally beneficial way. These technologies may be thermal, chemical, biological, mechanical, or a combination of processes and technologies, but do not include incineration (waste combustion)”. The City is also at the forefront of Neighbourhood Energy system development, with a Greenest City priority action to build new neighbourhood-scale renewable energy systems to heat buildings.

This Greenest City Scholar project would examine:

- Research and document information¹ about operational facilities around the world that employ anaerobic digestion waste conversion technologies at various scales for municipal solid waste management.
- Flag other ‘state-of-the-art’ (e.g. not yet commercialized) technologies that recover energy from municipal solid waste.
- Conduct a similar inventory of operational facilities that employ both materials recovery at the front end, and anaerobic digestion and energy reuse (co-located facilities only).
- For a selection of facilities, document the siting exercise that occurred, including the challenges of siting such a facility; and the design, consultation, or other strategies that were used to enable development within an urban context.
- Using research findings, provide recommendations with respect to the City’s current waste streams and potential amenability for energy conversion (e.g. Is

¹ Information to include: location (focus on urban facilities); size; energy generated (if applicable) and how it is reused (if applicable); fuel source; residuals management strategy; greenhouse gas implications; performance to date; capital vs operational costs; challenges and solutions.

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the current food scraps program in alignment for anaerobic digestion technology or would further sorting would be required?)

In addition to the above research project, the Scholar will play a lead role in the coordination of a regional workshop of neighbourhood energy providers on a current topic related to neighbourhood energy. This will be an opportunity for the scholar to meet and work with leaders in neighbourhood energy design and implementation from across the region, while helping to further inter-municipal information sharing.

How this research will help Vancouver become the greenest city?

“Keep recyclables out of landfills and incinerators” and “Help to bring new neighbourhood-scale renewable energy systems online” are two of the key strategies in Vancouver’s Greenest City Action Plan. The Scholar’s work will identify whether or not energy recovery from waste through anaerobic digestion waste conversion technologies could support the City’s neighbourhood energy and solid waste management priorities, while also providing recommendations in terms of actions the City could pursue.

Deliverables

- Final report summarizing research findings and recommendations.
- PowerPoint presentation to key staff at COV (and possibly Metro Vancouver)
- Coordinate delivery of above-mentioned workshop with meeting minutes.

Mentor department

Engineering Services

Candidate skill set/background

- Excellent research, writing and interpersonal skills
- Background in engineering, planning, or environmental sciences would be beneficial, in addition to a cross-disciplinary interest in sustainability.
- Familiarity with neighbourhood energy is preferred.
- Experience conducting stakeholder engagement activities and interviews preferred.