metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

SEWAGE AND WASTE: HEAT RECOVERY

Effective Date: June 23, 2017 (revised July 29, 2022)

Approved By: GVS&DD Board

Policy No. UT-008

PURPOSE

To encourage beneficial use of waste heat from Metro Vancouver's liquid waste and solid waste systems, and maximize greenhouse gas emission reductions by using the heat to displace fossil fuel use.

DEFINITIONS

"Waste heat" is excess heat that is available from GVS&DD operations, including but not limited to heat from untreated sewage, treated effluent, and municipal solid waste processing.

"Heat user" is a third party interested in accessing excess heat from GVS&DD's liquid waste or solid waste systems. A heat user may be a member jurisdiction or other entity.

POLICY

Metro Vancouver is committed to pursuing strategies and actions that mitigate climate change. Waste heat recovery projects that displace the use of fossil fuels result in a reduction in regional greenhouse gas emissions. Recovering waste heat from the liquid waste and solid waste systems contribute to GVS&DD's *Integrated Liquid Waste and Resource Management Plan* and *Integrated Solid Waste and Resource Management Plan* goals of using waste as a resource.

This policy enables expedient access to waste heat where technically and financially feasible, while ensuring that GVS&DD is able to convey and process wastewater and municipal solid waste and meet all service objectives. This policy applies to situations where external parties request waste heat from GVS&DD's liquid waste or solid waste systems and to situations where GVS&DD offers waste heat to interested external parties.

LIQUID WASTE COLLECTION SYSTEM PROJECTS

Allocation of Waste Heat

GVS&DD will allocate access to untreated sewage for heat recovery on a first-come first-served basis in response to requests by interested heat users, provided the proposed heat recovery project will not adversely impact GVS&DD services or other established heat recovery projects, as determined by GVS&DD review. If an established heat recovery project that is already in place or approved for development by GVS&DD could be impacted by a proposed new heat recovery project, the established project's heating and/or cooling requirements will have priority. Private entities requesting access to waste heat must provide a letter of support from the host member jurisdiction demonstrating support and cooperation including allowance for works within municipal rights of way. Projects that access heat from municipal sewers do not require GVS&DD approval.

Ownership and Responsibilities

GVS&DD owns a sewerage system and is responsible for sewage in its liquid waste system, including any associated resources such as heat. The boundaries of responsibility for heat recovery equipment and infrastructure will be defined in a contract between GVS&DD and the heat user. GVS&DD will in all situations own and be responsible for the portion of the tie-in up to and including a shut-off valve on both the diversion and return lines, and may also own and maintain additional supporting infrastructure. GVS&DD will consider an in-line heat recovery system built directly in a GVS&DD sewer if the system will not impair GVS&DD operations.

Cost Recovery

GVS&DD will charge the heat user for all costs incurred to establish and maintain access to sewage. The value of sewage will be assessed using business case processes, including consideration of nominal value of sewage, and incorporated into sewage access contracts. GVS&DD may consider capital investment in heat recovery projects accessing sewage from GVS&DD infrastructure. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

All maintenance and operating costs borne by GVS&DD from GVS&DD infrastructure will be recovered from heat users.

LIQUID WASTE TREATMENT PLANT AND OUTFALL PROJECTS

Allocation of Waste Heat

When GVS&DD identifies waste heat opportunities in wastewater treatment plants and effluent outfalls, GVS&DD will follow competitive processes in offering available waste heat to potential heat users, to ensure fairness and transparency.

Ownership and Responsibilities

The boundaries of responsibility for heat recovery equipment and infrastructure are primarily tied to property ownership and will be defined in a contract between GVS&DD and the heat user. GVS&DD will own and be responsible for waste heat recovery equipment and related infrastructure installed within its wastewater treatment plants and effluent outfalls, except in cases where ownership by an external party is deemed preferable to the GVS&DD.

Cost Recovery

Heat recovery projects within wastewater treatment plants and effluent outfalls will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

SOLID WASTE PROJECTS - WASTE-TO-ENERGY FACILITY

Ownership and Responsibilities

The GVS&DD is developing a district energy system to distribute heat from the Waste-to-Energy Facility. GVS&DD expects to deliver heat to local distribution systems including River District in Vancouver and various developments in Burnaby and potentially New Westminster. GVS&DD expects to own and operate an energy centre at the Waste-to-Energy Facility, and potentially large scale distribution piping delivering heat to the local distribution systems as well.

Allocation of Heat

Heat will be allocated to potential users on a first-come first served basis considering proximity to heat distribution infrastructure and expected heat user load. Modelling of potential heat demand has demonstrated that there is sufficient waste heat available from the Waste-to-Energy Facility to connect River District, Metrotown, Edmonds, and downtown New Westminster.

Cost Recovery

The Waste-to-Energy Facility District Energy system will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. Anticipated lost revenue resulting from any reduction in electricity sales revenue will be included in any business case. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

ALL PROJECTS

Environmental Attributes

Benefits associated with avoided greenhouse gas emissions (such as carbon credits) and the costs of administering those benefits will be allocated on a case-by-case basis, in accordance with the costs and risks incurred by the parties involved in developing the heat recovery project. If a project does not create carbon credits, credits will not be allocated.

GVS&DD will negotiate carbon credit allocation with each project participant (including host member jurisdiction) on a case-by-case basis, based on one or more of (1) contributions to the project that can be financially valued (excluding contributions paid as part of GVS&DD liquid waste disposal fees and levies or solid waste tipping fees) and (2) contributions to the project that cannot be financially valued. GVS&DD credits allocated to the project participants will be subject to approval by the GVS&DD Board as part of any agreement with the parties.

Carbon credits from GVS&DD waste heat recovery projects that have been allocated to GVS&DD as a project proponent will be retained by GVS&DD, up to the amount needed for GVS&DD to be carbon neutral in a given year. If GVS&DD achieves carbon neutrality in a given year, excess carbon credits will be transferred to member jurisdictions. The distribution of excess carbon credits among member jurisdictions will be calculated based on BC Stats population estimates for the previous year. Calculated excess carbon credit distributions less than one tonne will not be transferred.

Life Cycle Cost Analysis Parameters

In determining the quantity of avoided greenhouse gas emissions, GVS&DD will compare greenhouse gas emissions based on Provincial regulatory requirements to greenhouse gas emissions based on the proposed sewer heat or Waste-to-Energy Facility district energy system. On this basis, greenhouse gas emission reductions for a project will be calculated by comparing the emissions following implementation of the project to the emissions assuming building heat and hot water were provided using the lowest cost alternative based on Provincial regulatory requirements – currently natural gas.

GVS&DD's will invest in projects based on the difference between the life cycle project revenues and combination of capital and operational costs of a waste heat recovery project. The investment will be the lower of the value of the avoided greenhouse gas emissions based on Metro Vancouver's *Carbon Price Policy* or the amount required for the end-user of the heat's costs to not exceed their costs using the least expensive option under Provincial regulations – currently natural gas.