

LIQUID WASTE HEAT RECOVERY

Effective Date: June 23, 2017

Approved By: GVS&DD Board

PURPOSE

To enable beneficial use of waste heat and associated greenhouse gas emission reductions from Metro Vancouver's liquid waste system by external parties.

DEFINITIONS

"Waste heat" is excess heat that is available from GVS&DD operations, including but not limited to heat from untreated sewage, treated effluent, equipment or processes.

"Heat user" is a third party interested in accessing excess heat from GVS&DD's liquid waste system. A heat user may be a member municipality 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 system contributes to GVS&DD's *Integrated Liquid Waste and Resource Management Plan* goal 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 treat wastewater and meet all service objectives. This policy applies to situations where external parties request waste heat from GVS&DD's liquid waste system and to situations where GVS&DD offers waste heat to interested external parties.

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 municipality 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 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 the portion of the tie-in up to and including a shut-off valve on both the diversion and return lines. 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.

Environmental Attributes

Benefits associated with greenhouse gas reductions (such as carbon offset 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.

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 will recover the costs incurred in providing waste heat to external parties over the life of the project. GVS&DD does not seek to profit from the provision of heat. 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.

Environmental Attributes

Benefits associated with greenhouse gas reductions (such as carbon offset 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.

CARBON PRICE

Effective Date: June 23, 2017

Approved By: MVRD Board

PURPOSE

To establish a price on Applicable Greenhouse Gas (GHG) Emissions, and to enable the value of those GHG emissions to be incorporated into Life Cycle Cost Analyses for Metro Vancouver projects or initiatives.

The objectives of the *Carbon Price Policy* are to:

- Incorporate consideration of climate change mitigation (i.e., GHG emissions reduction) into options analyses for all Metro Vancouver projects or initiatives; and
- Provide a mechanism to reduce financial risk of increased operating costs associated with rising external carbon taxes over the lifetime of a Metro Vancouver project or initiative.

DEFINITIONS

“Applicable Greenhouse Gas (GHG) Emissions” are GHG emissions associated with Metro Vancouver projects or initiatives, in particular GHG emissions related to energy use and utility processes, and GHG emissions reductions (or avoided GHG emissions) related to ecological carbon storage/sequestration.

“Carbon dioxide equivalent (CO₂e)” is the common metric used to quantify and compare different types of GHG emissions, and is expressed in tonnes.

“Carbon Price” is the total dollar value (including any provincial and federal carbon taxes) assigned by Metro Vancouver to one tonne of CO₂e.

“Life Cycle Cost Analysis” is the process to establish the net present value of all costs and revenues associated with a Metro Vancouver project or initiative over its expected life.

POLICY

When undertaking options analysis for a Metro Vancouver project or initiative, the Carbon Price will be used to calculate the value (expressed as a cost) of Applicable GHG Emissions associated with each option. This value will be included in the Life Cycle Cost Analysis for each option.

Carbon Price

Metro Vancouver will use a total Carbon Price (inclusive of any applicable external carbon taxes) of \$150 per tonne of CO₂e in Life Cycle Cost Analyses.

Financial Services, in coordination with the Air Quality and Climate Change Division, will develop and annually review a *Carbon Price Schedule*. This *Carbon Price Schedule* will provide the incremental cost per unit of purchased energy (e.g., litres of gasoline, GJ of natural gas), as well as the cost per unit of other Applicable GHGs (e.g., tonne of fugitive methane). The carbon price will be adjusted to account for any changes to provincial and federal carbon taxes, to ensure that the total carbon price per tonne of Applicable GHGs is constant at \$150 per tonne of CO₂e.

Application

This policy applies to all options analyses that use Life Cycle Cost Analysis for Metro Vancouver projects or initiatives, including (but not limited to):

- Planning, design, procurement, construction, operation, maintenance, and decommissioning (where applicable) of facilities, vehicles, and equipment owned or operated by Metro Vancouver or by third parties on Metro Vancouver's behalf;
- Acquisition of park land, where protection of the land by Metro Vancouver results in quantifiable GHG emissions reductions compared to business as usual; and
- Management of process emissions from Metro Vancouver facilities.

The Carbon Price will be used to calculate the value of Applicable GHG Emissions associated with:

- Energy purchased by Metro Vancouver or by third parties on Metro Vancouver's behalf for the operation of utilities, fleet, and facilities (including natural gas, liquid petroleum products, propane, and electricity);
- Fugitive methane and nitrous oxide emissions released from wastewater treatment processes and municipal solid waste management processes;
- Avoided GHG emissions due to the displacement of fossil fuels with energy recovered from Metro Vancouver facilities;
- Avoided GHG emissions attributable to the protection and/or restoration of park land such as forests and bogs; and
- Other sources related to Metro Vancouver's activities.

Related Document:

Carbon Price Schedule (22496514)