Sample Hot Water Pumps

Metro Vancouver's Approach to Sewage Heat Recovery

POLICY AND PROCEDURES

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For Mas DEP– 08 December, 2023

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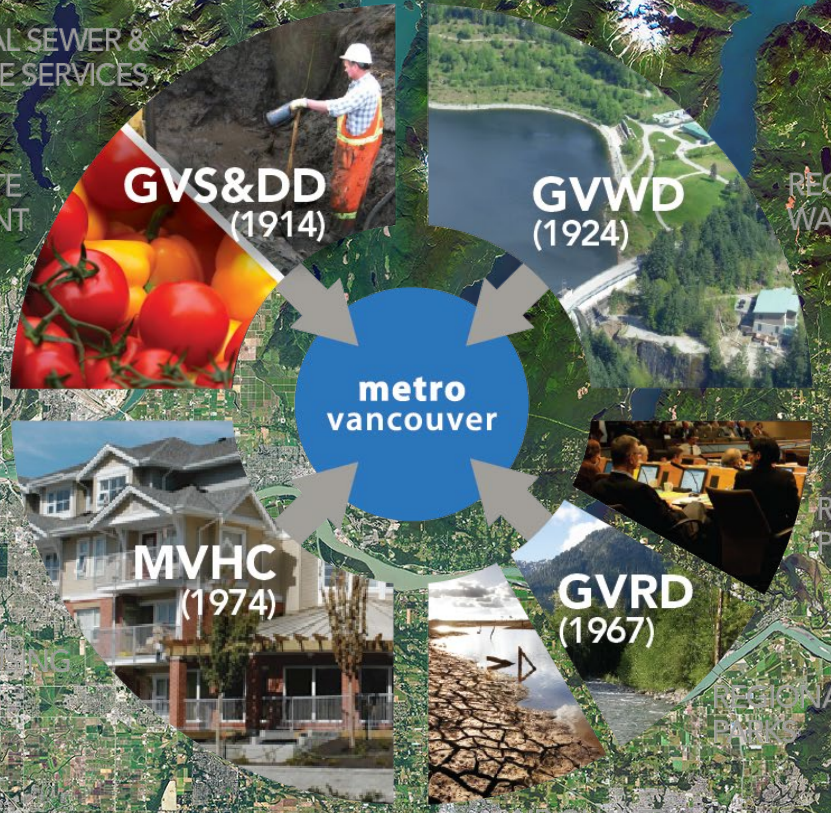
metrovancouver

AGENDA

- Who is Metro Vancouver
- What is sewage heat recovery?
- Why do we do it?
- Where does it work?
- How do we do it?
- Current projects

Metro Vancouver

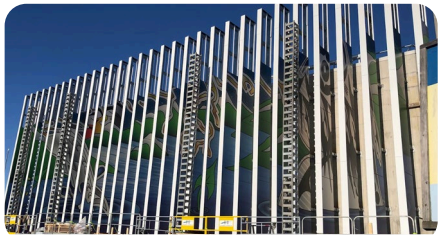


MISSION

A federation that collaboratively plans for and delivers regional-scale services

Deliver Core Services

Attain the highest possible levels of excellence in meeting our service delivery responsibilities.



Plan for the Future

Develop and use an integrated system of plans to manage all activities within Metro Vancouver's legislated scope of authority towards the achievement of a sustainable region.

Act as a Regional Forum

Build and facilitate collaborative processes, including those that engage citizens, to achieve a robust partnership that works together for a sustainable region.

Metro Vancouver Wastewater Treatment System

Sewer heat

Stock Sewer Image

DRIVERS FOR WASTE HEAT RECOVERY

- Liquid Waste Plan

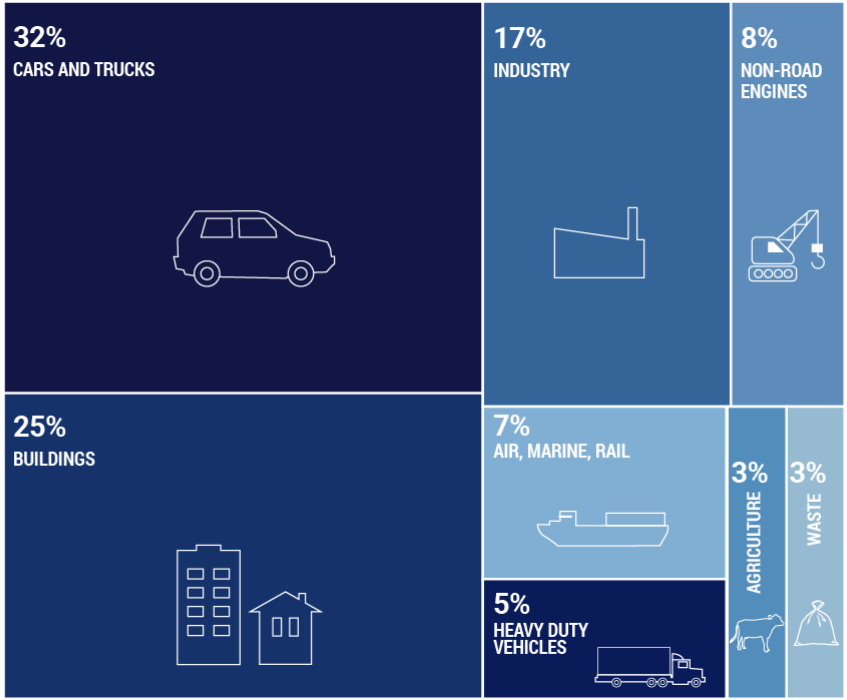
Goal 2: Use liquid waste as a resource

- Board Strategic Plan

"Explore energy, resource recovery, water reuse, and greenhouse gas reduction opportunities, and implement options where feasible"

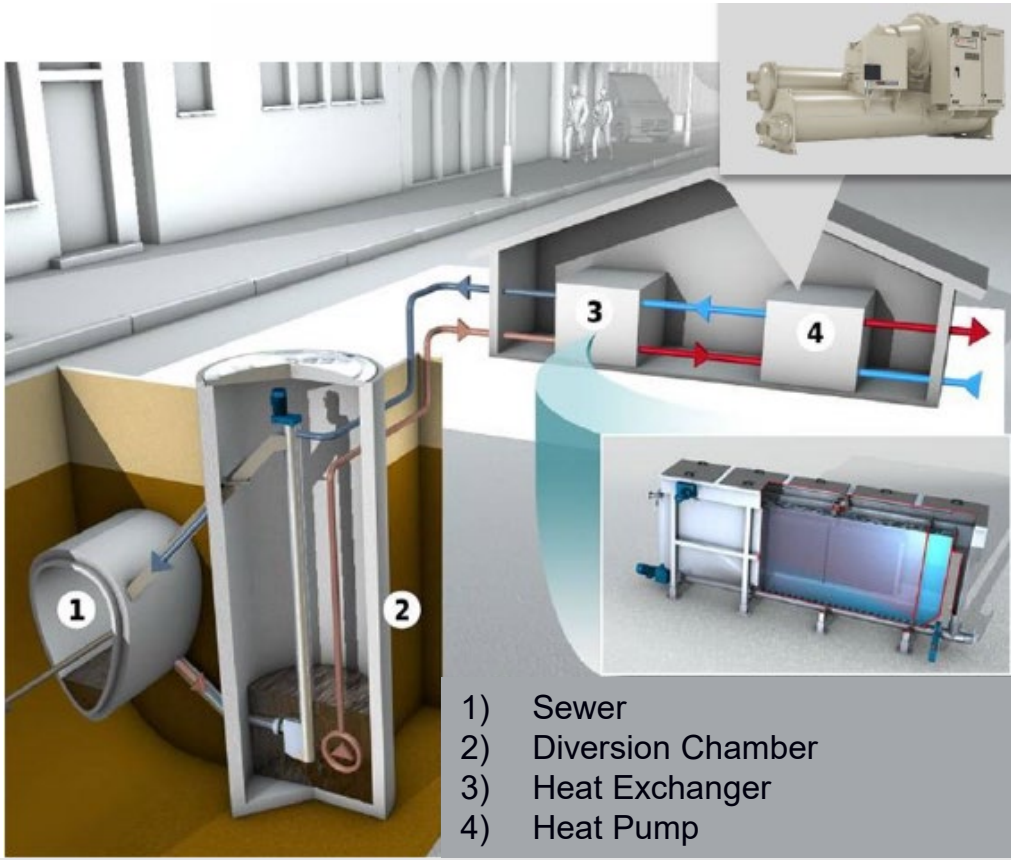
- Climate 2050

Sets regional greenhouse gas emission reduction targets



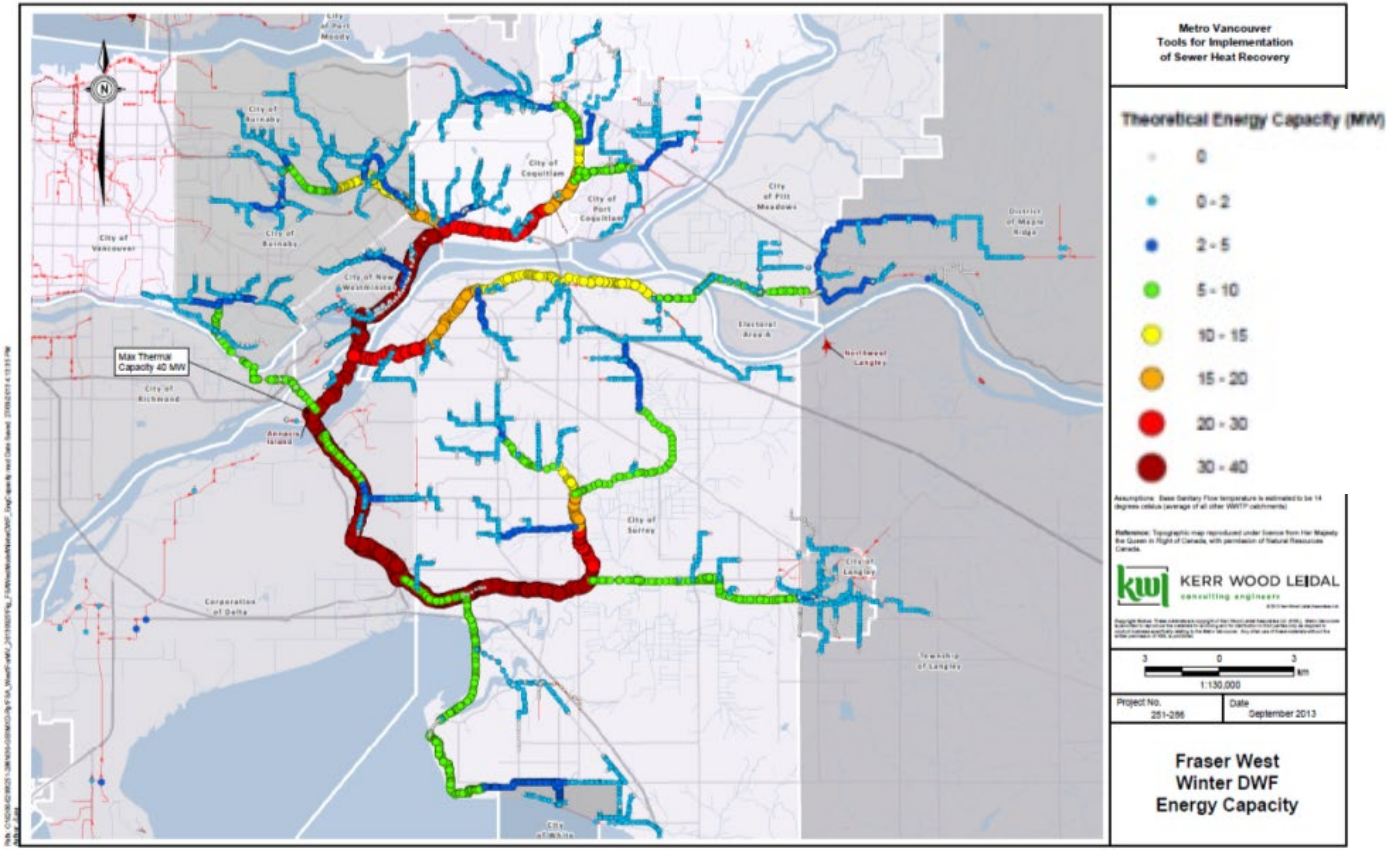
WHAT IS SEWAGE HEAT RECOVERY

- Low carbon energy source
- Energy source and sink
- Consistent and predictable

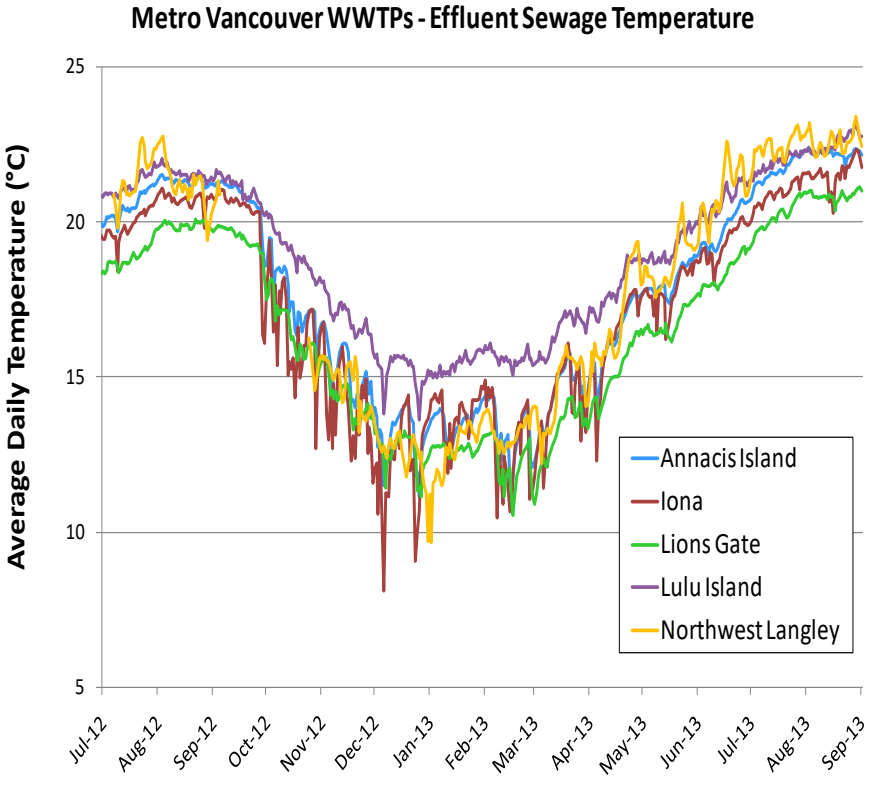


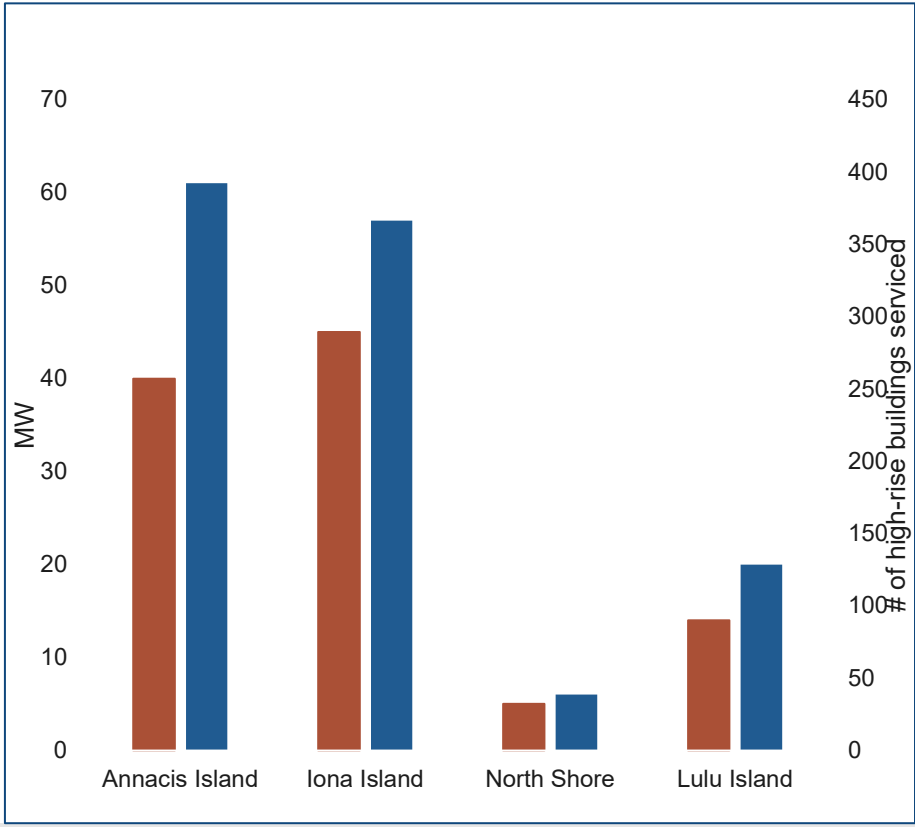
1) Sewer
2) Diversion Chamber
3) Heat Exchanger
4) Heat Pump

FRASER SEWERAGE AREA



SEWER HEAT: CURRENT AND FUTURE CAPACITY





Policy

Annacis Island WWTP

SEWAGE & WASTE: HEAT RECOVERY POLICY SUMMARY

1. GVS&DD's role
2. Allocation of heat
3. Sewer heat users
4. Financial conditions
5. Operating costs
6. Boundaries of responsibility
7. Project Approval Criteria
8. GHG Benefits and Costs

HEAT RECOVERY PROJECT RISK MANAGEMENT

- MV financial risks:
  - Capital costs
  - Operational and maintenance costs
  - Decommissioning costs
- MV O&M risks:
  - Existing down stream SHR impacts
  - Collection system impacts
  - WWTP impacts

SEWAGE ACCESS AGREEMENT

Key Terms

1. GVS&DD's Responsibilities
2. Proponents Responsibilities
3. Capital and Operating Costs
4. Boundaries of Responsibility
5. Proximal Works
6. GHG Benefits
7. Fees/ Charges
8. Contract Length

Collaborative Approach

City of New Westminster

Collaborative Sewer Heat Recovery Project Development Protocol

Collaborating agency:

Metro Vancouver:

STAGE 1: Preliminary Screening

STAGE 2: Concept Investigation

STAGE 3: Design

OPTIONAL STAGE 3b: Capital Investment

STAGE 4: Agreement

STAGE 5: Construction

Collaborative Sewer Heat Recovery Project Development Protocol

Collaborating agency:

Metro Vancouver:

STAGE 1: Preliminary Screening:

Request information on sewage flow and temperature that could service a particular development.

At nearby location: Provide data, or add new sensors to gather and provide data

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Develop design drawings and work plan for connections to MV infrastructure

Review and provide revisions to proposed design and work plan.

OPTIONAL STAGE 3b: Capital Funding

STAGE 4: Agreement

Establish contract based on operational specifications (and TOR, if Option 3b included)

STAGE 5: Construction

Collaborative Sewer Heat Recovery Project Development Protocol

Collaborating agency:

Metro Vancouver:

STAGE 1: Preliminary Screening:

Request information on sewage flow and temperature that could service a particular development.

At nearby location: Provide data, or add new sensors to gather and provide data

STAGE 2: Concept Investigation:

Use life cycle analysis, determine if sewage heat extraction is preferred energy source

Submit letter requesting access to sewage for energy purposes.

Acknowledge receipt of request.

STAGE 4: Agreement

Establish contract based on operational specifications (and TOR, if Option 3b included)

STAGE 5: Construction

Collaborative Sewer Heat Recovery Project Development Protocol

Collaborating agency:	Metro Vancouver:
STAGE 1: Preliminary Screening:	
Request information on sewage flow and temperature that could service a particular development.	At nearby location: Provide data, or add new sensors to gather and provide data
STAGE 2: Concept Investigation:	
Using life cycle analysis, determine if sewage h… is preferred energy source among options available	
STAGE 3: Design:	
Provide data on estimated temperature reduction	Review potential impacts on wastewater treatment process.
Develop design drawings and work plan for connections to MV	Review and provide revisions to proposed design and work plan.
OPTIONAL STAGE 3b: Capital Funding	
STAGE 4: Agreement	
Establish contract based on operational specifications (and TOR, if Option 3b included)	
STAGE 5: Construction	

Collaborative Sewer Heat Recovery Project Development Protocol

Collaborating agency:	Metro Vancouver:
STAGE 1: Preliminary Screening:	
Request information on sewage flow and temperature that could service a particular development.	At nearby location: Provide data, or add new sensors to gather and provide data
STAGE 2: Concept Investigation:	
Using life cycle analysis, determine if sewage heat extraction is preferred energy source among options available.	
Submit letter requesting access to sewage for energy purposes.	Acknowledge receipt of request.
STAGE 3: Detailed Investigation:	
Provide data on estimated temperature reduction at extraction location.	Review potential impacts on wastewater treatment process. If acceptable, inform agency and inform senior management of intent to proceed.
Develop design drawings and work plan for connections to MV infrastructure	Review and provide revisions to proposed design and work plan.

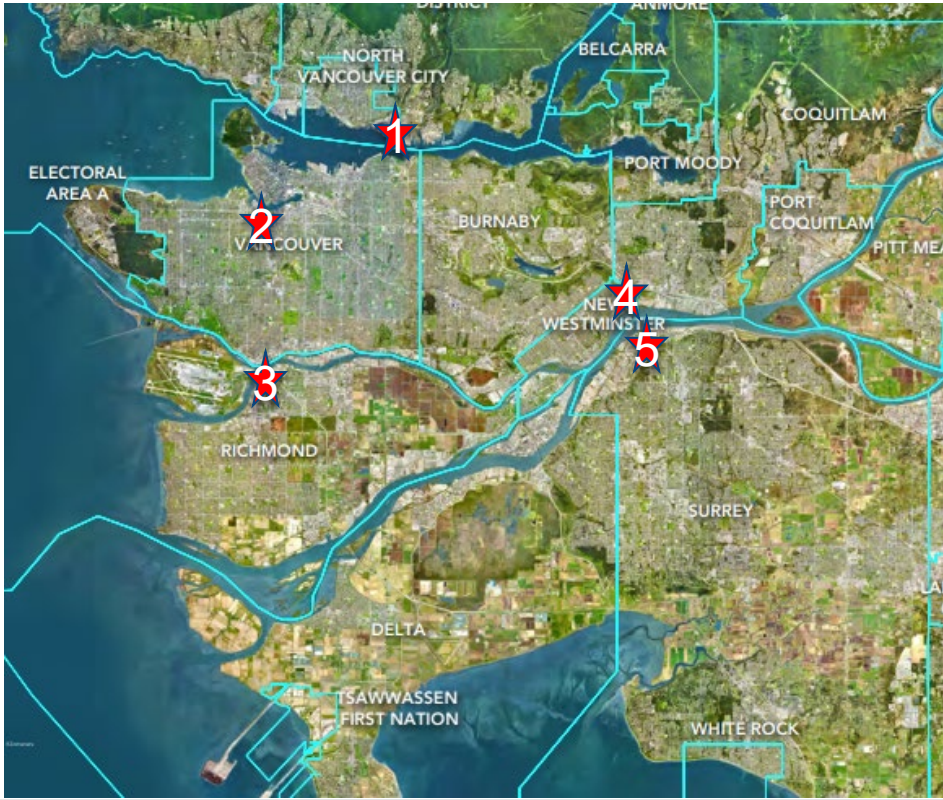
STAGE 4: Agreement

Establish contract based on operational specifications (and TOR, if Option 3b included)

STAGE 5: Construction

NEAR-TERM PROGRAM IMPLEMENTATION

Active Projects	Regional GHG Reduction (tonnes/year)
1) Lonsdale Energy Corporation	6,700 + 7,600
2) Sen̓áḵw	4,600
3) Lulu Island Energy Company	6,800
4) Sapperton District	5,700
5) Surrey City Centre (Phase 1)	9,700
Total	**34,300**



Vancouver Skyline

Thank you!

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