5.1

Annacis Island Wastewater Treatment Plant

Draft Liquid Waste 2023-2027 Capital Plan

Peter Navratil

General Manager, Liquid Waste Services

Liquid Waste Committee, July 13, 2022

53034853

Liquid Waste Committee

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CUSTOMER LEVEL OF SERVICE OBJECTIVES

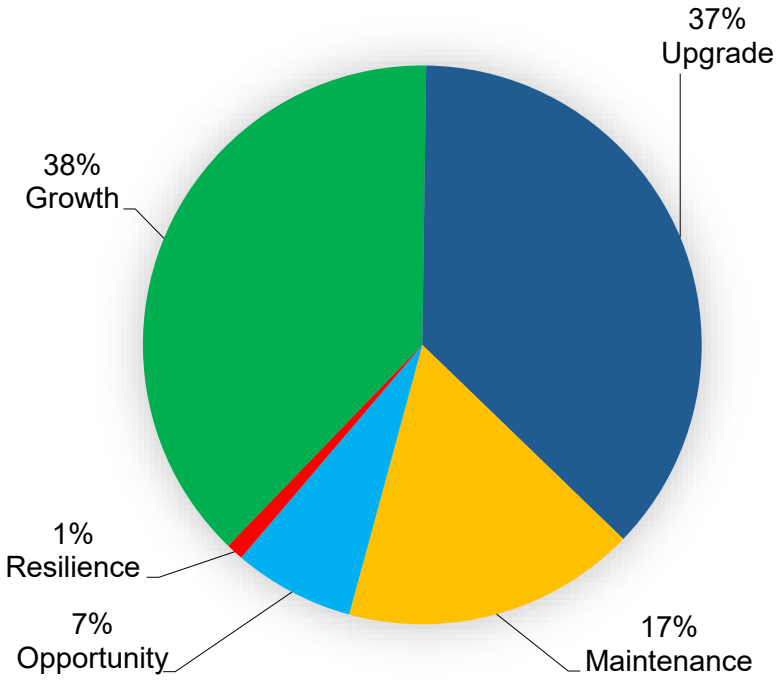
Liquid Waste

1. Eliminate discharges from the sewer system
2. Ensure that authorized wastewater treatment plant discharges meet regulatory requirements
3. Improve environmental stewardship (nutrient recovery, energy use, greenhouse gas and odour emissions)
4. Minimize timeline to recover from a major event (seismic, power interruption, and climate change)

CAPITAL PLAN DRIVERS

Liquid Waste

Driver	Outcome	% 2023-2027 Capital Plan
Growth	Accommodate population and economic growth	38%
Upgrade	Provide enhanced levels of service (e.g. secondary treatment) or achieve a level of service	37%
Maintenance	Maintain assets in a state of good repair	17%
Opportunity	Reduce life-cycle cost of services, progress Board strategic goals	7%
Resilience	Endure impacts resulting from seismic events and climate change	1%



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HIGHEST VALUE, RISK, AND CONSEQUENCE PROJECTS

KEY PROJECTS AND CHANGES – GROWTH

Annacis Island WWTP Digesters, Delta

Burnaby Lake North Interceptor
750-2100 mm – 6 km

Stoney Creek Sanitary Trunk Sewer
750 mm – 4 km

Annacis Island WWTP Digester No.5

South Surrey Interceptor Twinning
3000 mm – 2 km

KEY PROJECTS AND CHANGES – UPGRADES

Highbury Air Management Facility, Vancouver

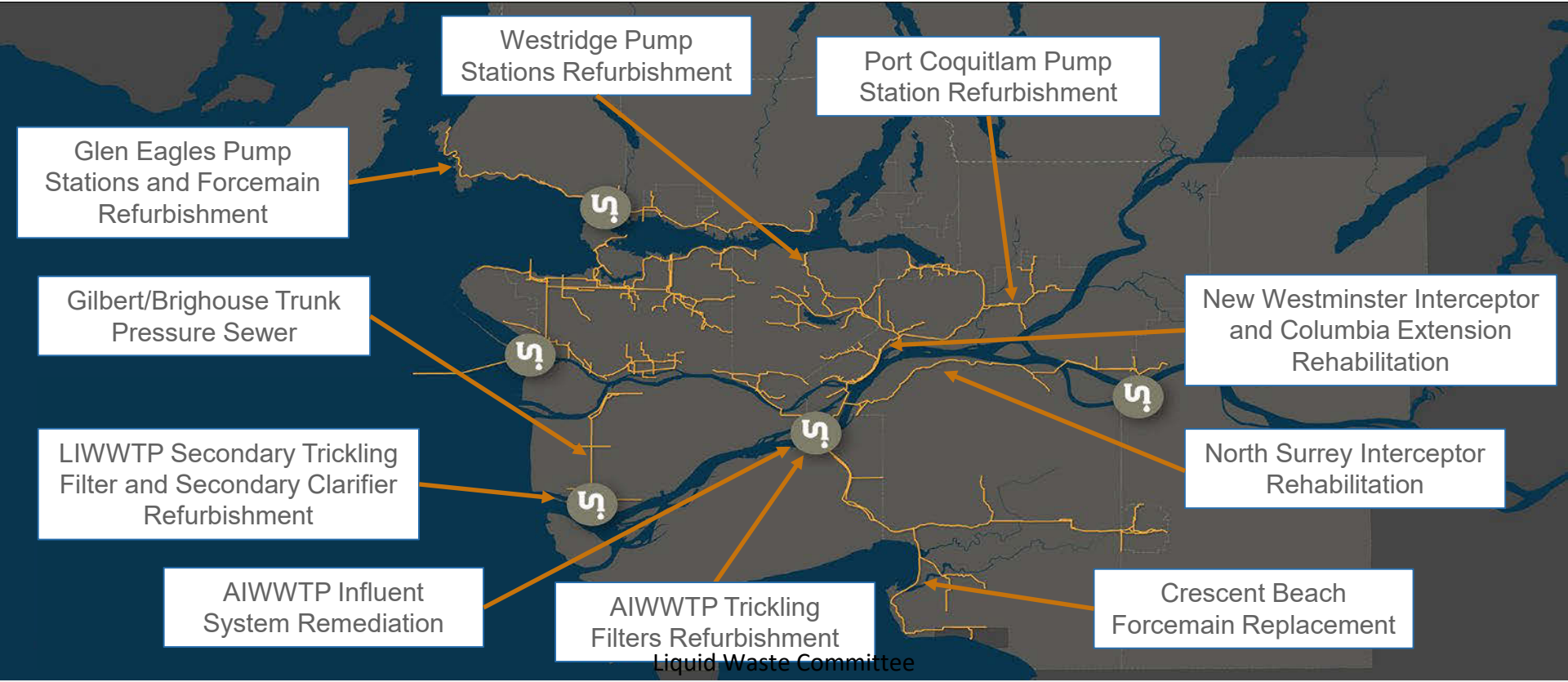
North Surrey Interceptor Flow Management

North Surrey Interceptor Odour Control

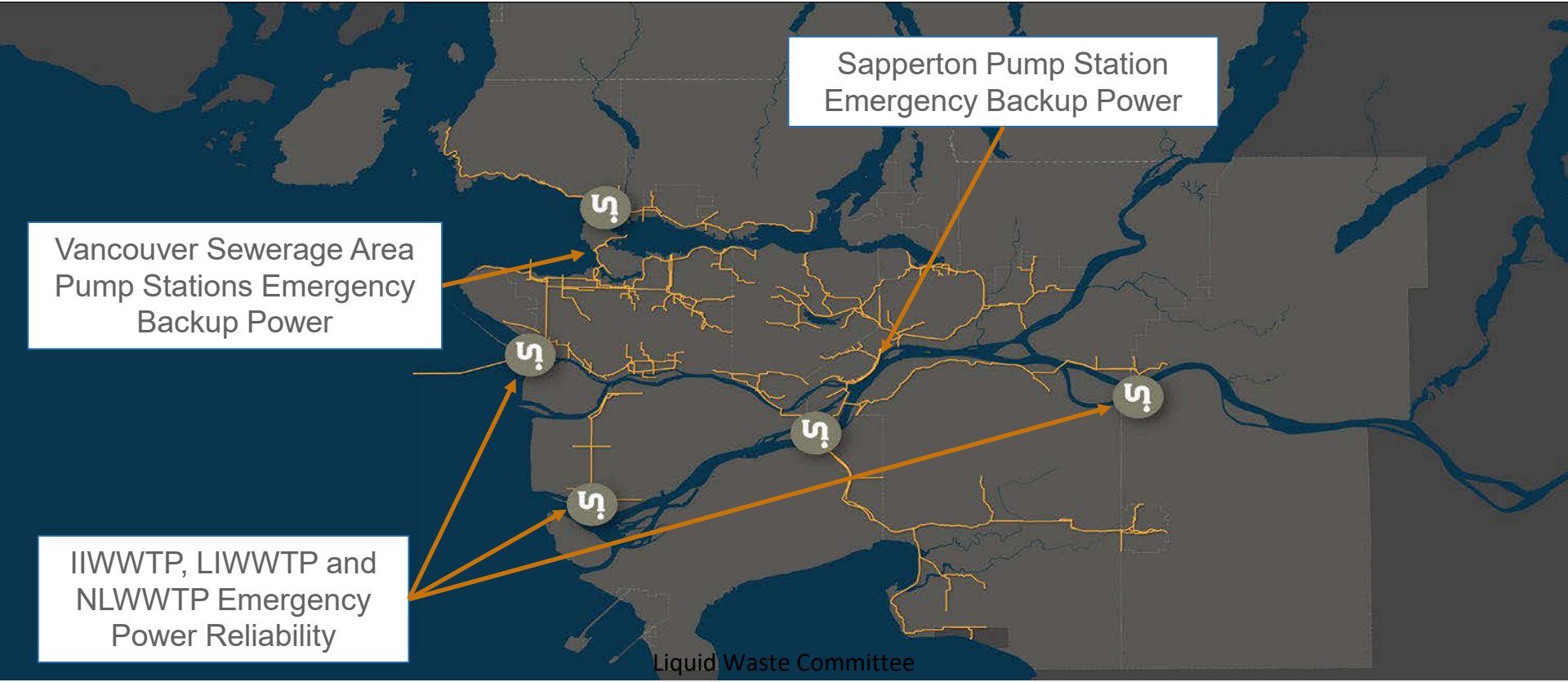
Ocean Park Trunk Sewer Air Management Facility

New CSO Management Gates New Westminster Interceptor

KEY PROJECTS AND CHANGES – MAINTENANCE



KEY PROJECTS AND CHANGES – RESILIENCE



KEY PROJECTS AND CHANGES – OPPORTUNITY

Lulu Island WWTP Renewable Natural Gas Facility, Richmond

Hydrothermal Processing Pilot

Municipal District Energy Partnerships

Lulu Island WWTP Pilot Digestion Optimization Facility

Lulu Island WWTP Effluent Heat Recovery

Biosolids Dryer

LIQUID WASTE

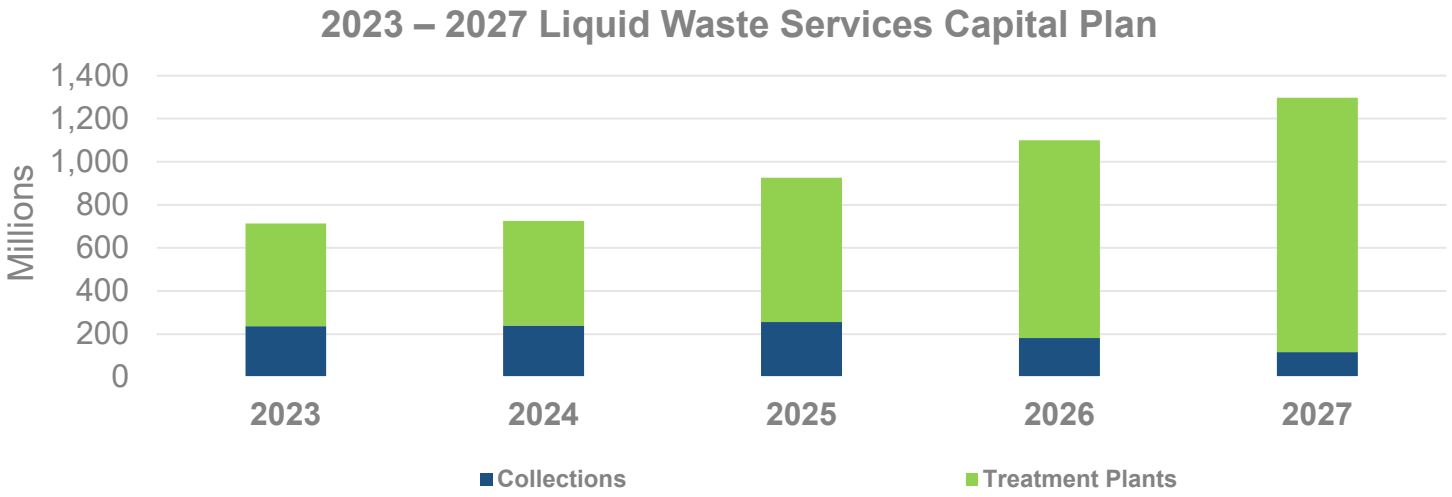
2023-2027 CAPITAL PLAN EXPENDITURES

Overview:

- 2023-2027 Capital Plan: $4.8B
- 2023 Cash Flow: $713.9M

Drivers:

- Tertiary Treatment Upgrade (NSWWTP / IIWWTP)
- FSA Treatment Expansions (AIWWTP / NLWWTP)
- Maintenance



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PROPOSED CAPITAL PLAN CHANGES

($ Millions)

Prior Cycle Cash flow 2022-2026	Cash flow 2022	Adjustments to 2023-2026 Capital Plan					Cash flow 2027	Draft Capital Plan 2023-2027
		Carry-Forward	Net Deferrals	Cost Adjustments	New Scope	Total		
$4,628	(780)	243	(867)	111	130	(384)	1,298	$4,762

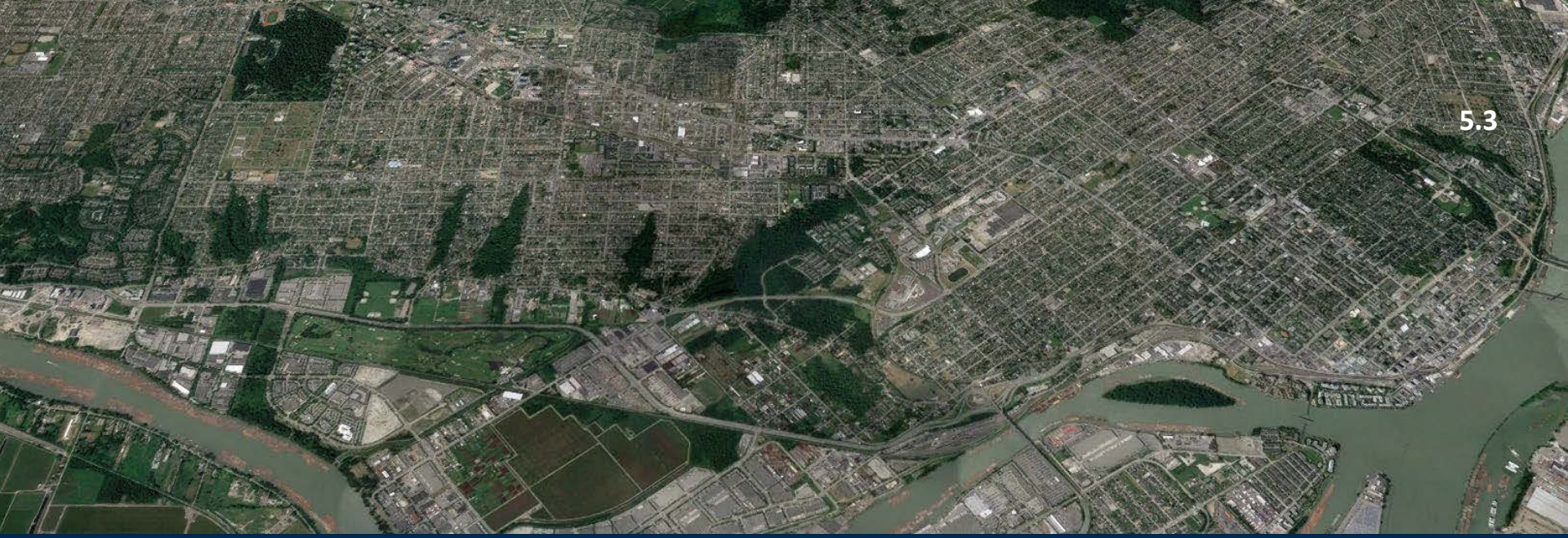
NEXT STEPS

- Consider Committee comments on the 2023-2027 Capital Plan
- Present revised 2023-2027 Capital Plan and 2023 Operating and Capital Budgets for Committee and Board consideration in October

Burrard Inlet - Burnaby

Fraser River – Northwest Langley Wastewater Treatment Plant

Thank you



Aerial photo of the Metro Vancouver region

Sewage and Waste: Heat Recovery Policy

Jeff Carmichael, Ph.D.
Division Manager, Business Development, LWS

Paul Henderson, P.Eng.
General Manager, Solid Waste Services

Liquid Waste Committee – July 13, 2022

Zero Waste Committee, June 15, 2022

Liquid Waste Committee

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PURPOSE OF POLICY

- Encourage waste heat use from Metro Vancouver's liquid waste and solid waste systems to maximize GHG emissions reductions by displacing fossil fuels
- Support Metro Vancouver’s goal of a carbon neutral region by 2050

RECOVERY OPPORTUNITIES

Liquid Waste System

- Heat and hot water for up to 100,000 homes
- Reduce greenhouse gas emissions up to 250,000 tonnes/year

Waste-to-Energy Facility

- Triples energy recovery efficiency compared to electricity generation alone
- Heat and hot water for up to 30,000 homes
- Reduce greenhouse gas emissions up to 45,000 tonnes/year

POLICY UPDATES

- Add Waste-to-Energy Facility
- Invest a maximum of $150 per tonne of GHG emission reduction (Metro Vancouver's Carbon Price Policy) limited by the cost to consumers not going below the price of natural gas
- Emission reduction based on Provincial regulatory requirements – support projects in communities with green building policies

ENVIRONMENTAL ATTRIBUTES

- Carbon credit allocation between GVS&DD and a host jurisdiction negotiated between parties and subject to Board approval
- GVS&DD credits will be used to achieve GVS&DD carbon neutrality with any surplus allocated amongst members based on population

EXAMPLE: SEWER HEAT RECOVERY PROJECTS

Negotiated capital investment

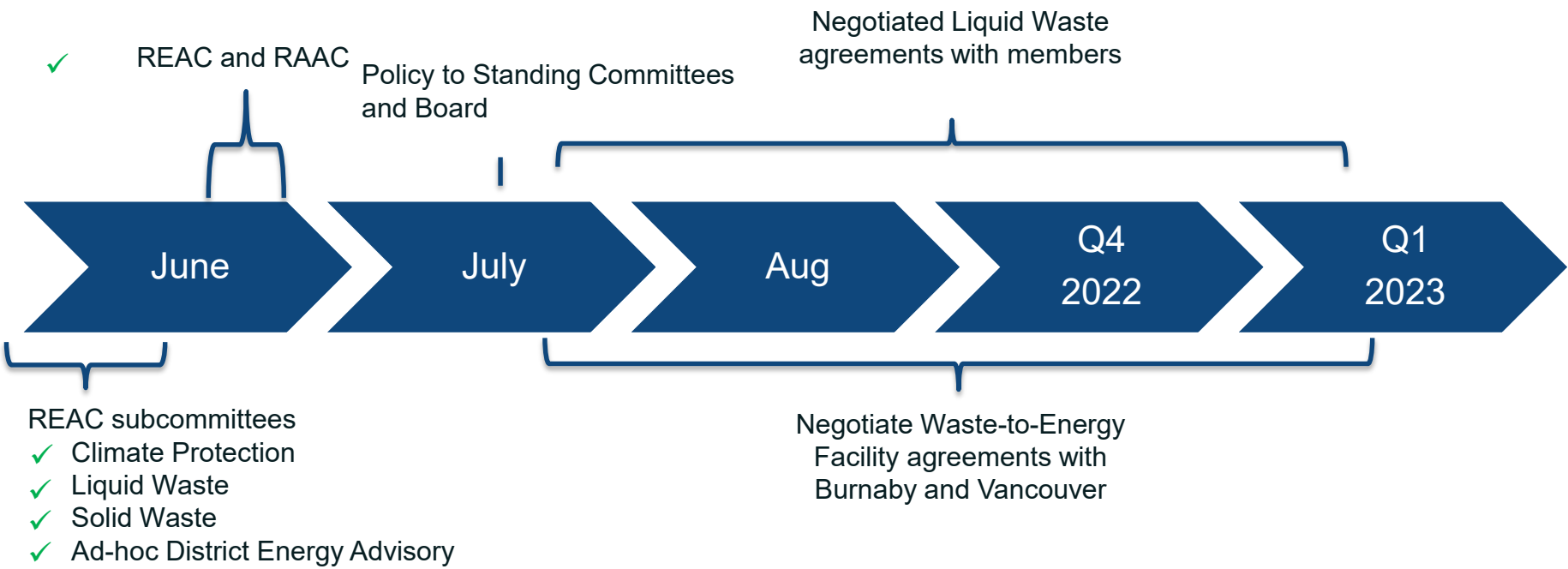
- Investment capped by Carbon Price Policy
- Heat users pay operating and maintenance costs
- Facilitates agreements in Vancouver, Burnaby, and other municipalities with low carbon building policies

EXAMPLE: WASTE-TO-ENERGY FACILITY BURNABY

Price to end user matching natural gas with investment capped by Carbon Price Policy

Supports rapid build-out/connection of Burnaby system

STATUS AND NEXT STEPS



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Waste-to-Energy Facility

Thank you

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Annacis Island Wastewater Treatment Plant

Proposed Capital Investment

SURREY CITY CENTRE SEWER HEAT RECOVERY PROJECT

Jeff Carmichael
DIVISION MANAGER, BUSINESS DEVELOPMENT
LIQUID WASTE SERVICES

Liquid Waste Committee – July 13, 2022
53803890

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OPPORTUNITY TO ACT ON CLIMATE CHANGE

- Climate 2050 GHG neutral goal
- Corporate GHG neutrality goal
- Integrated Liquid Waste and Resource Management Plan
- Other plans:
  - Waste Heat Recovery Policy
  - Carbon Pricing Policy
  - Energy Management Policy
  - Sustainable Infrastructure Policy

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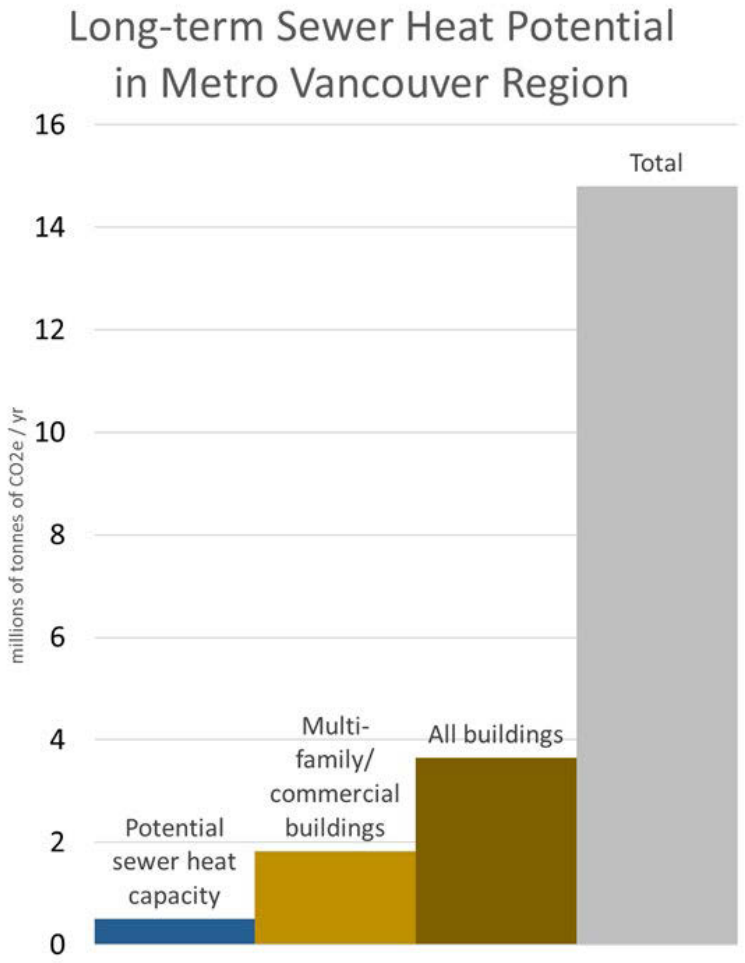
SEWER HEAT OPPORTUNITIES

- Energy-rich, reliable local source of renewable energy
- Potential for significant regional GHG reductions
- High startup costs hinder implementation
- Capital investments will accelerate development of municipal sewer heat-sourced district energy systems

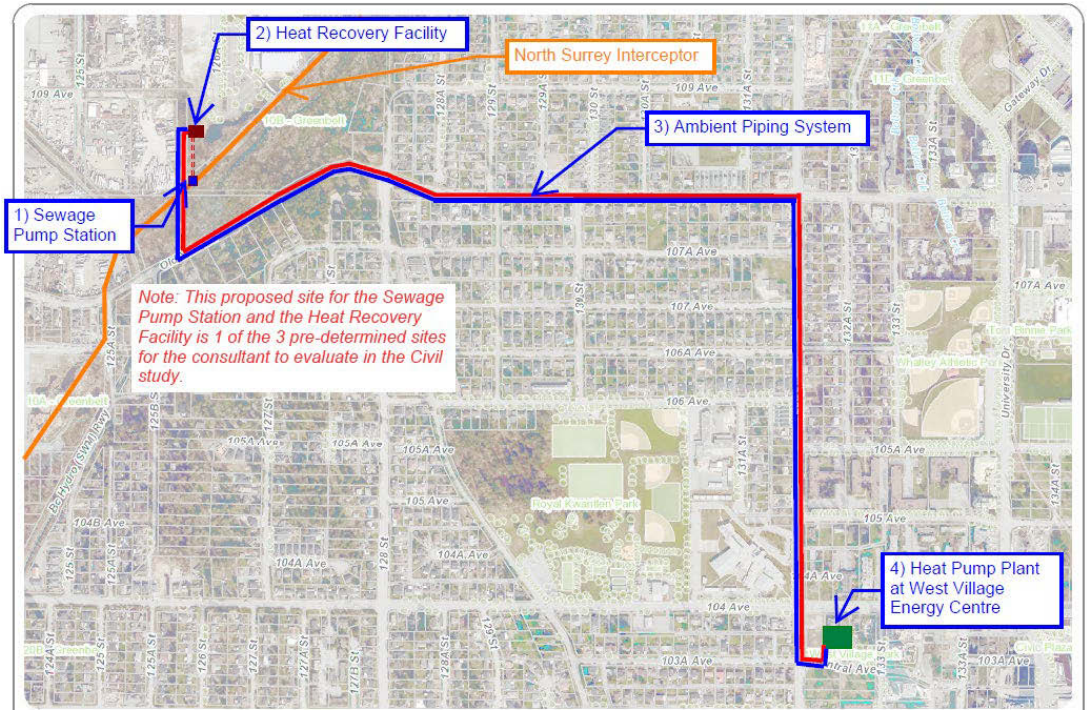


SURREY CITY CENTRE SEWER HEAT RECOVERY PROJECT

Heat recovered from North Surrey Interceptor for use in Central Surrey

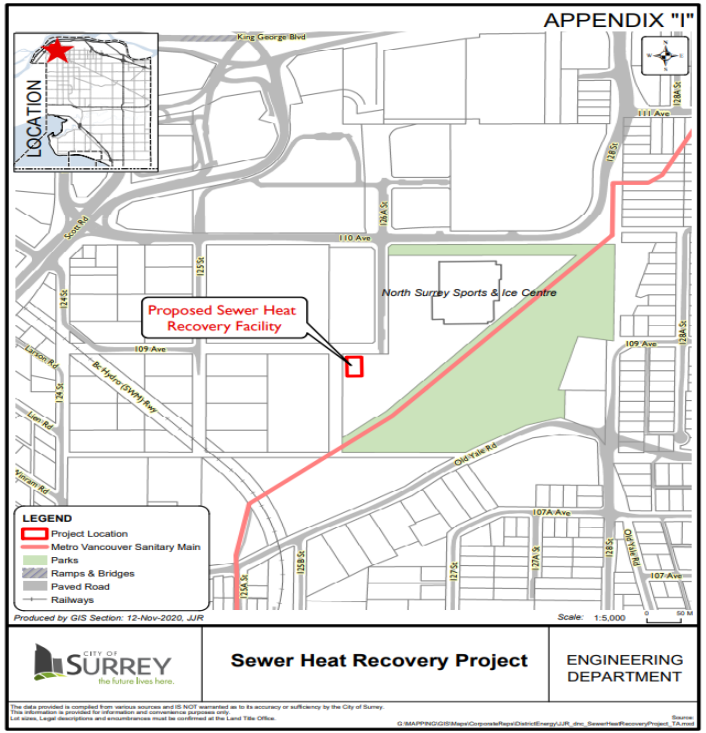
Estimated total project cost $151 million

GVS&DD portion of costs capped at $19 million



SEWER HEAT RECOVERY COMPONENT

- 6 megawatt sewer heat project
- Investment cap ($19M) set based on GHG reductions, valued per Carbon Price Policy
- GVS&DD operating and maintenance costs recovered from Surrey
- 300,000 tons of lifetime GHG reductions
- GHG credits allocated as per Waste Heat Recovery Policy
- Benefits exceed costs over life of project



Thank you. Questions?

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Together we make our region strong