2021-2025 Financial Plan Overview

Jerry W. Dobrovolny
COMMISSIONER/CHIEF ADMINISTRATIVE OFFICER

Dean Rear
GENERAL MANAGER, FINANCIAL SERVICES/CHIEF FINANCIAL OFFICER

Liquid Waste Committee – October 15, 2020
Reflecting Feedback

• Observing 2020 Budget Process
  o Strengths
  o Opportunities for Improvement
Strengths

- Strong financial position
- Process includes multiple layers of scrutiny
- Board Strategic Plan and 5 Year Financial Plan
  - Provides foundation

Liquid Waste Committee
Opportunities for Improvement

- Overall picture of the budget at the Committee level
- Earlier direction from the Board
- Greater input and transparency around decision making
- Increased understanding of evolving municipal challenges
Board Direction from June Workshop

Short-term Relief for Households
   Leverage supported tools to create a short-term action plan
   (1-3 years)

Maintain current goals and objectives
   Continue work on strategic and long-range plans

Realize New Opportunities
   Partner on projects to increase affordable housing
   Reduce GHGs
   Help drive economic recovery
Realizing New Opportunities

• Expanding affordable rental housing through strategic redevelopment and partnerships
  o 7-8 projects over 5 years (750-900 units)
• Waste-to-Energy District Energy
  o Up to 70,000 tonnes of GHG reductions per year
• Project delivery – maximizing local benefits
Toolbox

Continuous Improvement

Capital Plan Deferrals

Demand Side Management

Reduce Pay-as-you-go

Increase Debt Amortization Term

Asset Management Plans
- Minimize asset failure risks and impact to customers
- Optimize lifecycle value
- Meet asset performance targets

Financial Management Policy
- 15 Year Amortization Period
- Pay-as-you-go to ensure <40% debt servicing cost

Liquid Waste Committee
Continuous Improvement

• Opportunities for continuous improvement
  o Find efficiencies
  o Improve service
• Annacis Cogen Expansion: $1.5M savings in 2020
• Identified 2021 opportunities:
  o Region-Wide Multi-Assessment Archeological Permits
  o COVID Claims Management on over 50 projects
Project Review

• Review of over 300 capital projects
  o Numerous adjustments to workplans and schedules
• Leveraging conservation efforts to defer growth-related infrastructure projects (demand side management)
Project Review

Capital Plan Deferrals

- Capital plan includes deferring key phases of the Coquitlam Water Supply project
- Unique opportunity to significantly increase water conservation efforts to achieve long-term per capita reductions
Capital Plan Requirements

Infrastructure Resilience

- Aging Infrastructure
- Climate Change Adaptation
Financial Tools

- Financial tools used to provide short-term relief:
  - Changing amortization period to 30 years for the next 2 years
  - Eased pay-as-you-go funding for next 3 years
## Budget Adjustments

<table>
<thead>
<tr>
<th>Prior Projection for 2021 Budget</th>
<th>Proposed 2021 Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$967.5 M</strong></td>
<td><strong>$939.5 M</strong></td>
</tr>
<tr>
<td>$42 Increase for the average household in 2021 (Water: $7, Liquid Waste: $26, Solid Waste: $3, MVRD: $6)</td>
<td>$17 Increase for the average household in 2021 (Water: $2, Liquid Waste: $8, Solid Waste: $0, MVRD: $7)</td>
</tr>
<tr>
<td>$602 Average annual costs for all Metro Vancouver services</td>
<td>$577 Average annual costs for all Metro Vancouver services</td>
</tr>
</tbody>
</table>
## Overall Household Impact 2021-2025

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
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</thead>
<tbody>
<tr>
<td>Water District</td>
<td>$172</td>
<td>$174</td>
<td>$178</td>
<td>$182</td>
<td>$197</td>
<td>$217</td>
</tr>
<tr>
<td>Liquid Waste</td>
<td>$264</td>
<td>$272</td>
<td>$289</td>
<td>$310</td>
<td>$344</td>
<td>$385</td>
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<tr>
<td>Solid Waste</td>
<td>$61</td>
<td>$61</td>
<td>$63</td>
<td>$65</td>
<td>$67</td>
<td>$70</td>
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<tr>
<td>Regional District</td>
<td>$63</td>
<td>$70</td>
<td>$73</td>
<td>$77</td>
<td>$81</td>
<td>$82</td>
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<tr>
<td><strong>Total Household Impact</strong></td>
<td><strong>$560</strong></td>
<td><strong>$577</strong></td>
<td><strong>$603</strong></td>
<td><strong>$634</strong></td>
<td><strong>$689</strong></td>
<td><strong>$754</strong></td>
</tr>
<tr>
<td>% Change</td>
<td>3.2%</td>
<td>4.2%</td>
<td>5.2%</td>
<td>8.8%</td>
<td>9.4%</td>
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<tr>
<td><strong>Prior Year Forecast</strong></td>
<td><strong>$602</strong></td>
<td><strong>$655</strong></td>
<td><strong>$708</strong></td>
<td><strong>$755</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prior Year % Change</strong></td>
<td>7.4%</td>
<td>9.0%</td>
<td>8.0%</td>
<td>6.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Long-term Impact

Long-term Household Impacts of Financial Levers

No Financial Levers | With Financial Levers

Liquid Waste Committee
• 2022 Budget Cycle will continue to prioritize:
  o Continuous improvement to realize cost savings and efficiency gains, including delivery mechanisms for capital projects
  o Exploring alternatives to building new infrastructure i.e. demand side management strategies
  o Sound fiscal management
  o Understanding of municipal challenges
  o Early direction from Boards and Committees
Financial Plan Overview
Overview:

- 2020 Operating Budget: $894.3M
- 2021 Operating Budget: $939.5M (5.1%)
- $28M less than previously projected for 2021

Drivers:

- Increase in Operations averages 2.2% over 5 years
- Debt servicing reflective of the capital program, but favorable rates and 30 year amortization in 2021/22
- Easing Contribution to Capital in 2021/22/23 - Refocusing in 2024/25
Overview:
- Primary funding sources - water sales, sewer levy, tipping fees, rents, MVRD requisition
- Expecting relative stability for primary sources
- Continued focus on alternate sources

Drivers:
- Assumed Water DCC revenue received and applied starting in 2023
- Assumed partner funding for upcoming major capital projects, reduces pressure on levies/rates
- Assume return to the Financial Management Policy in 2024/25
Overview:
• 2020 Capital Budget: $1.41B
• 2021 Capital Budget: $1.52B
• Increase: $110.0M (7.8%)

Drivers:
• Capital project in progress carried forward
• Reviewed for deferrals and savings
• Project risks and scope provisions
LIQUID WASTE OVERVIEW
Liquid Waste over the next 5 years

Advanced treatment for North Shore and Vancouver Sewerage Areas
Expansion of key infrastructure in the Fraser Sewerage Area in response to growth
Source control actions to manage flows and Compounds of Environmental Concern
Maintain infrastructure to continue meeting the service expectations of the region
## PERFORMANCE METRICS

<table>
<thead>
<tr>
<th>Customer Level of Service Objective</th>
<th>KPI Metric</th>
<th>Current Performance</th>
<th>Expected Performance by 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminate Discharges from the Sewer System</td>
<td>Sanitary Sewage Overflow (SSO) events (#)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combined Sewage Overflow (CSO) volume (ML)</td>
<td>31,500</td>
<td></td>
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<tr>
<td></td>
<td>Rainfall derived inflow and infiltration (RDII) (ML)</td>
<td>35,300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilities not meeting basic service or regulation in next 10 years (%)</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Protect Public Health and the Environment - Authorized WWTP Discharges</td>
<td>Duration of events not in compliance with operational certificates &amp; WSER (hrs)</td>
<td>15.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recreational water quality (% of tests not meeting criteria)</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Improve Environmental Stewardship</td>
<td>Biosolids beneficially used (%)</td>
<td>94.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total energy use (GJ/ML Treated)</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GHG emissions (does not include credits) (kg of CO2 / ML treated)</td>
<td>14.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Odour complaints (#)</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Minimize Timeline to Recover from a Major Event</td>
<td>Targeted assets resilient to seismic event (%)</td>
<td>New metric</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Targeted assets resilient to power outage event (%)</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Targeted assets resilient to climate change event (%)</td>
<td>New metric</td>
<td></td>
</tr>
</tbody>
</table>
PERFORMANCE METRICS
Sanitary Sewerage Overflow Events

Dry
Wet <1:5 year return period
Wet >1:5 year return period
Projection

# Events


PERFORMANCE METRICS
Assets not Meeting Capacity or Regulation within 10 Years

Liquid Waste Committee
PERFORMANCE METRICS

Biosolids Annual Production / Stockpile Volume

Annual Production / Stockpile Volume (wet tonnes)

Iona Island Dewatering
North Shore Tertiary
Iona Island Tertiary

Total Production  Iona Stockpile

Liquid Waste Committee
## CONTINUOUS IMPROVEMENT

Liquid Waste Services Financial Plan

<table>
<thead>
<tr>
<th>Initiative</th>
<th>2021 Savings</th>
<th>GHG Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biosolids – Fraser Valley Aggregates Gravel Pits Reclamation</td>
<td>$1,700,000</td>
<td>2,300 t / year</td>
</tr>
<tr>
<td>AIWWTP Cogeneration System Expansion - Energy Reduction</td>
<td>$1,500,000</td>
<td>250 t / year</td>
</tr>
<tr>
<td>LIWWTP Green Biomethane Facility</td>
<td>$860,000</td>
<td>2,200 t / year</td>
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<tr>
<td>In-House Engineering and Design for Capital Projects</td>
<td>$500,000</td>
<td>-</td>
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<tr>
<td>O&amp;M Operations Reviews</td>
<td>$360,000</td>
<td>-</td>
</tr>
<tr>
<td>Increased Analytical Testing Capacity and Lab Efficiency</td>
<td>$45,000</td>
<td>-</td>
</tr>
</tbody>
</table>
## OPERATING EXPENDITURES – OTHER REDUCTIONS

### Liquid Waste Services Financial Plan

<table>
<thead>
<tr>
<th>Operating Program / Activity</th>
<th>2021 Budget Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWTP Contract Services (Digester Cleaning, Small Projects)</td>
<td>$715,000</td>
</tr>
<tr>
<td>Linear System Inspections</td>
<td>$410,000</td>
</tr>
<tr>
<td>Employee Training (travel component)</td>
<td>$250,000</td>
</tr>
<tr>
<td>WWTP Facilities Upkeep</td>
<td>$210,000</td>
</tr>
<tr>
<td>WWTP Optimization of Chemical and Utilities</td>
<td>$140,000</td>
</tr>
<tr>
<td>Linear System Performance Monitoring</td>
<td>$120,000</td>
</tr>
</tbody>
</table>
BUDGET OVERVIEW
Liquid Waste Services Financial Plan

2021 Operating Budget Breakdown - Liquid Waste Services

2021 MV Budget, $939.5M
Liquid Waste Services, $353.4M

- Policy Planning and Analysis
- Engineering Design and Construction
- Communication and Outreach
- Allocation of Project Delivery
- Management Systems and Utility Services
- Operations and Maintenance
- Environmental Management and Quality Control
- Environmental Regulation and Enforcement
- Debt Service
- Administration and Department Support
- Allocation of Centralized Support
- Contribution to Capital
## OPERATING EXPENDITURES – DRIVERS FOR CHANGE

Liquid Waste Services Financial Plan

<table>
<thead>
<tr>
<th>Driver</th>
<th>2021 Budget Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Plan (Debt Service Increase / Contribution to Capital Decrease)</td>
<td>$12,000,000 increase</td>
</tr>
<tr>
<td>IIWWTP Biosolids Stockpile / Sludge Lagoon Decommissioning</td>
<td>$4,000,000 increase</td>
</tr>
<tr>
<td>MoE Wastewater Treatment Plant Fee Increase</td>
<td>$2,500,000 increase</td>
</tr>
<tr>
<td>AIWWTP Stage 5 Liquid Stream Commencement of Operations</td>
<td>$1,300,000 increase</td>
</tr>
<tr>
<td>IIWWTP Dewatering Facility Commencement of Operations</td>
<td>$1,100,000 increase</td>
</tr>
</tbody>
</table>
Overview:
2020 Operating Budget: $330.2M
2021 Operating Budget: $353.4M
7.0% increase

Drivers for Change:
Capital Plan
Iona Biosolids Stockpile / Lagoons
MoE Permit Increases
Operation of New Infrastructure

Operating Expenditures
Liquid Waste Services Financial Plan

2021 – 2025 Liquid Waste Services Financial Plan

- Operating Programs
- Debt Services
- Contribution to Capital
- Household Impact

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Liquid Waste Services Financial Plan

2021 – 2025 Liquid Waste Services Financial Plan

- Operating Programs
- Debt Services
- Contribution to Capital
- Household Impact
Overview:
2020 Operating Budget: $330.2M
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7.0% increase

Drivers for Change:
Growth Projects (DCC Funding)
Sale of Renewable Natural Gas
Future Sewer Heat Opportunities

2021 – 2025 Liquid Waste Services Financial Plan
## OPERATING HIGHLIGHTS
### Liquid Waste Services Financial Plan

<table>
<thead>
<tr>
<th>Budget Year</th>
<th>Initiative</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>Annacis Island WWTP Stage 5, Iona Island WWTP Dewatering, Lulu Island WWTP Green Biomethane</td>
<td>Liquid Stream commissioning and handover, Facility commissioning and handover, Facility handover and sale of Biomethane</td>
</tr>
<tr>
<td>2022</td>
<td>Development Cost Charges (DCCs) Hydrothermal Liquefaction</td>
<td>Update of DCC rates, Commencement of biocrude production</td>
</tr>
<tr>
<td>2023</td>
<td>Liquid Waste Management Plan</td>
<td>Completion of update of LWMP</td>
</tr>
<tr>
<td>2024</td>
<td>North Shore WWTP, Iona Island WWTP</td>
<td>Facility commissioning and handover, Biosolids stockpile removal complete</td>
</tr>
</tbody>
</table>
Liquid Waste Services Financial Plan

Capital Program Review

- Line-by-line review
  - 19 projects adjusted for budget management
  - $150,000,000 capital costs deferred in 2021-2023

- Deferred: Biosolids Dryer - 2 years

- Large Projects managed by Project Delivery Department
  - Specialized expertise in management of complex projects
  - 3 of 124 Projects transferred representing 55% of total capital spend
Overview:
2020 Capital Budget: $883.4M
2021 Capital Budget: $934.5M
5.8% increase

Drivers for Change:
Tertiary Treatment Upgrades (NSWWTP / IIWWTP)
FSA Treatment Expansions (AIWWTP / NLWWTP)
GHG Mitigation Opportunities

2021 – 2025 Liquid Waste Services Capital Plan

- Growth
- Maintenance
- Resilience
- Upgrade
- Wastewater Treatment Capital
- Opportunity
Overview:
2020 Capital Budget: $883.4M
2021 Capital Budget: $934.5M
5.8% increase

Drivers for Change:
Growing Reliance on Debt Servicing vs. Pay-As-You-Go
DCC Rates update
Project Dependent External Funding

2021 – 2025 Liquid Waste Services Capital Plan

- New External Borrowing
- Contribution to Capital
- Development Cost Charges
- Reserves
- External Funding - Interagency

Liquid Waste Committee
### CAPITAL PROGRAM HIGHLIGHTS

Liquid Waste Services Financial Plan

<table>
<thead>
<tr>
<th>Budget Year</th>
<th>Capital Project</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>Sapperton Pump Station</td>
<td>Facility commissioning and handover</td>
</tr>
<tr>
<td></td>
<td>Iona Island WWTP Dewatering</td>
<td>Facility commissioning and handover</td>
</tr>
<tr>
<td>2022</td>
<td>North Shore WWTP</td>
<td>Conveyance pump station and pipeline completed</td>
</tr>
<tr>
<td></td>
<td>Burnaby Lake North Interceptor</td>
<td>Winston Section completed</td>
</tr>
<tr>
<td>2023</td>
<td>Annacis Island WWTP</td>
<td>Trickling Filters media replacement completed</td>
</tr>
<tr>
<td>2024</td>
<td>Annacis Island WWTP Outfall</td>
<td>Facility commissioning and handover</td>
</tr>
<tr>
<td></td>
<td>Golden Ears Forcemain</td>
<td>Forcemain and river crossing completed</td>
</tr>
<tr>
<td>2025</td>
<td>North Surrey Interceptor</td>
<td>Odour control system commissioning and handover</td>
</tr>
</tbody>
</table>
# LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenditures</strong> ($ Millions)</td>
<td>$330.2</td>
<td>$353.4</td>
<td>$379.4</td>
<td>$414.5</td>
<td>$470.3</td>
<td>$543.2</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>7.0%</td>
<td>7.4%</td>
<td>9.3%</td>
<td>13.5%</td>
<td>15.5%</td>
</tr>
<tr>
<td><strong>Liquid Waste Levy</strong> ($ Millions)</td>
<td>$274.2</td>
<td>$288.2</td>
<td>$311.0</td>
<td>$339.6</td>
<td>$383.9</td>
<td>$437.0</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>5.1%</td>
<td>7.9%</td>
<td>9.2%</td>
<td>13.0%</td>
<td>13.8%</td>
</tr>
<tr>
<td><strong>Total Capital Expenditures</strong> ($ Millions)</td>
<td>$883.4</td>
<td>$934.5</td>
<td>$692.9</td>
<td>$741.1</td>
<td>$924.5</td>
<td>$912.2</td>
</tr>
<tr>
<td><strong>Household Impact ($)</strong></td>
<td>$264</td>
<td>$272</td>
<td>$289</td>
<td>$310</td>
<td>$344</td>
<td>$385</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td>3.1%</td>
<td>6.0%</td>
<td>7.2%</td>
<td>11.1%</td>
<td>11.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Prior Cycle Household Impact Change (%)</strong></td>
<td>9.6%</td>
<td>11.4%</td>
<td>9.1%</td>
<td>5.9%</td>
<td>N/A</td>
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### LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY - VSA

<table>
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<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenditures ($ Millions)</strong></td>
<td>$99.2</td>
<td>$104.6</td>
<td>$111.0</td>
<td>$115.9</td>
<td>$126.1</td>
<td>$140.6</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>5.5%</td>
<td>6.1%</td>
<td>4.4%</td>
<td>8.8%</td>
<td>11.4%</td>
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<tr>
<td><strong>VSA Liquid Waste Levy ($ Millions)</strong></td>
<td>$85.4</td>
<td>$90.1</td>
<td>$97.8</td>
<td>$102.9</td>
<td>$115.8</td>
<td>$130.4</td>
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<tr>
<td><strong>% Change</strong></td>
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<td>5.4%</td>
<td>8.6%</td>
<td>5.3%</td>
<td>12.5%</td>
<td>12.6%</td>
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<tr>
<td><strong>Total Capital Expenditures ($ Millions)</strong></td>
<td>$89.5</td>
<td>$65.2</td>
<td>$91.2</td>
<td>$120.7</td>
<td>$218.1</td>
<td>$330.5</td>
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<tr>
<td><strong>Household Impact ($)</strong></td>
<td>$308</td>
<td>$320</td>
<td>$343</td>
<td>$355</td>
<td>$394</td>
<td>$437</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>3.9%</td>
<td>7.1%</td>
<td>3.7%</td>
<td>10.8%</td>
<td>11.0%</td>
</tr>
<tr>
<td><strong>Prior Cycle Household Impact Change (%)</strong></td>
<td>6.8%</td>
<td>6.4%</td>
<td>5.2%</td>
<td>3.1%</td>
<td>N/A</td>
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# LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY - NSSA

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<th>2023</th>
<th>2024</th>
<th>2025</th>
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<tbody>
<tr>
<td><strong>Total Expenditures ($ Millions)</strong></td>
<td>$28.6</td>
<td>$31.4</td>
<td>$35.3</td>
<td>$40.5</td>
<td>$47.8</td>
<td>$55.6</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>9.7%</td>
<td>12.4%</td>
<td>14.9%</td>
<td>17.9%</td>
<td>16.3%</td>
</tr>
<tr>
<td><strong>NSSA Liquid Waste Levy ($ Millions)</strong></td>
<td>$26.1</td>
<td>$28.6</td>
<td>$32.5</td>
<td>$37.4</td>
<td>$44.9</td>
<td>$52.7</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td></td>
<td>9.8%</td>
<td>13.4%</td>
<td>15.3%</td>
<td>20.0%</td>
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<tr>
<td><strong>Total Capital Expenditures ($ Millions)</strong></td>
<td>$347.3</td>
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<td><strong>Household Impact ($)</strong></td>
<td>$339</td>
<td>$368</td>
<td>$412</td>
<td>$469</td>
<td>$557</td>
<td>$646</td>
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<td><strong>% Change</strong></td>
<td></td>
<td>8.5%</td>
<td>12.1%</td>
<td>13.8%</td>
<td>18.6%</td>
<td>16.0%</td>
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<tr>
<td><strong>Prior Cycle Household Impact Change (%)</strong></td>
<td>10.8%</td>
<td>16.8%</td>
<td>11.6%</td>
<td>12.8%</td>
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</tr>
<tr>
<td>LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY - LIWSA</td>
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<tr>
<td><strong>Total Expenditures ($ Millions)</strong></td>
<td></td>
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<tr>
<td>2020  $27.4</td>
<td>2021  $28.9</td>
<td>2022  $30.2</td>
<td>2023  $32.8</td>
<td>2024  $35.5</td>
<td>2025  $40.4</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
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</tr>
<tr>
<td>5.4%</td>
<td>4.4%</td>
<td>8.7%</td>
<td>8.4%</td>
<td>13.8%</td>
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<tr>
<td><strong>LIWSA Liquid Waste Levy ($ Millions)</strong></td>
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<tr>
<td>2020  $24.7</td>
<td>2021  $25.6</td>
<td>2022  $26.9</td>
<td>2023  $29.2</td>
<td>2024  $32.0</td>
<td>2025  $36.9</td>
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<tr>
<td><strong>% Change</strong></td>
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<tr>
<td>3.8%</td>
<td>5.0%</td>
<td>8.5%</td>
<td>9.7%</td>
<td>15.3%</td>
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<tr>
<td><strong>Total Capital Expenditures ($ Millions)</strong></td>
<td></td>
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<tr>
<td>2020  $37.7</td>
<td>2021  $55.7</td>
<td>2022  $45.9</td>
<td>2023  $6.9</td>
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<td>2025  $11.3</td>
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<tr>
<td><strong>Household Impact ($)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2020  $242</td>
<td>2021  $247</td>
<td>2022  $254</td>
<td>2023  $271</td>
<td>2024  $293</td>
<td>2025  $333</td>
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<tr>
<td><strong>% Change</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.9%</td>
<td>3.2%</td>
<td>6.7%</td>
<td>8.0%</td>
<td>13.5%</td>
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</tr>
<tr>
<td><strong>Prior Cycle Household Impact Change (%)</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2020  11.6%</td>
<td>2021  12.6%</td>
<td>2022  9.4%</td>
<td>2023  6.6%</td>
<td>2024  N/A</td>
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Liquid Waste Committee
# LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY - FSA

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
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<tbody>
<tr>
<td><strong>Total Expenditures ($ Millions)</strong></td>
<td>$172.8</td>
<td>$186.2</td>
<td>$200.7</td>
<td>$223.0</td>
<td>$258.6</td>
<td>$304.3</td>
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<td>7.8%</td>
<td>7.8%</td>
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<td>15.9%</td>
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<tr>
<td><strong>FSA Liquid Waste Levy ($ Millions)</strong></td>
<td>$135.9</td>
<td>$141.7</td>
<td>$151.7</td>
<td>$167.9</td>
<td>$189.0</td>
<td>$214.7</td>
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<td><strong>% Change</strong></td>
<td>4.3%</td>
<td>7.1%</td>
<td>10.6%</td>
<td>12.6%</td>
<td>13.6%</td>
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<tr>
<td><strong>Total Capital Expenditures ($ Millions)</strong></td>
<td>$408.9</td>
<td>$409.2</td>
<td>$440.8</td>
<td>$465.8</td>
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<td>$560.8</td>
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<td><strong>Household Impact ($)</strong></td>
<td>$235</td>
<td>$239</td>
<td>$250</td>
<td>$271</td>
<td>$299</td>
<td>$332</td>
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<tr>
<td><strong>% Change</strong></td>
<td>2.0%</td>
<td>4.7%</td>
<td>8.3%</td>
<td>10.2%</td>
<td>11.3%</td>
<td></td>
</tr>
<tr>
<td><strong>Prior Cycle Household Impact Change (%)</strong></td>
<td>11.2%</td>
<td>13.0%</td>
<td>11.0%</td>
<td>5.9%</td>
<td>N/A</td>
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### LIQUID WASTE SERVICES FINANCIAL PLAN SUMMARY - DRAINAGE

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<tr>
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<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenditures ($ Millions)</strong></td>
<td>$2.2</td>
<td>$2.3</td>
<td>$2.2</td>
<td>$2.3</td>
<td>$2.3</td>
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<tr>
<td><strong>% Change</strong></td>
<td>2.6%</td>
<td>(2.4%)</td>
<td>1.0%</td>
<td>2.1%</td>
<td>1.7%</td>
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<tr>
<td><strong>Drainage Liquid Waste Levy ($ Millions)</strong></td>
<td>$2.1</td>
<td>$2.2</td>
<td>$2.1</td>
<td>$2.2</td>
<td>$2.2</td>
<td>$2.3</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td>4.4%</td>
<td>(2.4%)</td>
<td>1.0%</td>
<td>2.2%</td>
<td>1.8%</td>
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</tr>
<tr>
<td><strong>Total Capital Expenditures ($ Millions)</strong></td>
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<td>$0.0</td>
<td>$0.0</td>
<td>$0.4</td>
<td>$0.6</td>
<td>$0.6</td>
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</table>
PROJECT DELIVERY

Delivery of highest-value, highest-risk and complex Liquid Waste and Water infrastructure valued at $3.9B over 2021-2025:

• Iona Island WWTP Program
• North Shore WWTP Project
• Northwest Langley WWTP Projects
• Coquitlam Water Supply Project
• Annacis Water Supply Tunnel
• Second Narrows Water Crossing

Organization-wide Asset Management

Enhanced project delivery and training support for all departments
CAPITAL BUDGET MANAGED BY PROJECT DELIVERY

Capital Budget Dollars (in Millions)

- 2021: 46% Other Capital, 54% Project Delivery Capital
- 2022: 42% Other Capital, 58% Project Delivery Capital
- 2023: 48% Other Capital, 52% Project Delivery Capital
- 2024: 56% Other Capital, 44% Project Delivery Capital
- 2025: 67% Other Capital, 33% Project Delivery Capital
MAJOR PROJECT TIMELINE

1990  2000  2010  2020  2030

Iona Island WWTP Upgrade
North Shore WWTP Upgrade
Annacis WWTP Stage 5 Expansion
Northwest Langley WWTP Expansion
Second Narrows Water Supply Tunnel
Annacis Water Supply Tunnel
Cambie Richmond Water Supply Tunnel
Stanley Park Water Supply Tunnel
Coquitlam Water Main
Coquitlam Lake Water Supply

2021-2025 BUDGET

Original Completion Date

Liquid Waste Committee
NORTH SHORE WWTP & CONVEYANCE

REGULATORY COMPLIANCE

Benefits
- Supports 19,000 Jobs
- Protects marine environment
- Anticipates future regulatory changes
- Enhances energy and resource recovery

2021-2025 Cashflow
$686 million

Construction began – 2017
Completion - 2024
IONA ISLAND WWTP PROGRAM

REGULATORY COMPLIANCE

Benefits
- Supports 36,000 Jobs
- First Nations cooperation
- Enhances seismic and climate resiliency
- Parkland and aquatic habitat enhancement

$2021-2025 Cashflow
$750 million

Schedule to be reviewed
### NORTHWEST LANGLEY WWTP PROJECTS

**Golden Ears Pump Station – Indigenous Art Rendering**

#### ACCOMMODATE GROWTH

<table>
<thead>
<tr>
<th>Benefits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Supports 24,000 Jobs</td>
<td></td>
</tr>
<tr>
<td>• Accommodates growth in North-East</td>
<td></td>
</tr>
<tr>
<td>• Protects marine environment</td>
<td></td>
</tr>
</tbody>
</table>

- **2021-2025 Cashflow**
  - $1.05 billion

- **Construction**
  - Began – 2018
  - Completion – 2027
Grant Funding Application for Effluent Heat
FOR RENEWABLE NATURAL GAS PROJECT AT LIWWTP

Jeff Carmichael
DIVISION MANAGER, BUSINESS DEVELOPMENT, LIQUID WASTE SERVICES

Liquid Waste Committee - October 15, 2020
Overview of Effluent Heat for Renewable Natural Gas Project at Lulu Island Wastewater Treatment Plant

**Purpose:**
To generate revenue and reduce regional greenhouse gas emissions

**Method:**
Extract heat from treated sewage, freeing up additional renewable natural gas for sale to FortisBC

**Advantage:**
This add-on project leverages existing assets and FortisBC contract to create additional revenues and further reduces GHG emissions

**Intent to pursue grant funding**
Project Overview: Current Biogas Cleanup System

- Cleanup system under construction now
- Projected to be operational in Q1 2021
Project Overview: Proposed Add-on System

Sewage Sludge → Anaerobic Digesters → Biogas → Boilers

Heat for buildings and digesters

Heat Exchanger(s)

More

Less

Cleanup System

More RNG $ → FortisBC Pipeline

Project capital cost: $10 M
Lulu Island WWTP biogas cleanup project: GHG reduction of 2,600 tonnes per year

Effluent heat for RNG project: Additional reduction of 1,000 tonnes per year

Potential applications at other plants
Project Business Case

Finances and Greenhouse Gas Estimates

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Average annual revenue</td>
<td>$411,000</td>
</tr>
<tr>
<td>Annual regional GHG reductions</td>
<td>1,000 tonnes CO$_2$e</td>
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<tr>
<td>Average annual GHG reduction benefits</td>
<td>$150,000</td>
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</table>

- Intent to request CleanBC Communities grant for $3.926 million
- 15 year payback with grant
- Also negotiating with FortisBC for improved sales price
- Board support required for grant application
Thank you