CITY OF VANCOUVER

REPORT

Report Date: November 1, 2022
Contact: Mark Schwark
Contact No.: 604.871.6721
RTS No.: 15148
VanRIMS No.: 08-2000-25
Meeting Date: November 29, 2022
Submit comments to Council

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: 2023 Annual Review of Water Rates and Water Works By-law Amendments

RECOMMENDATION

A. THAT Council approve, in principle, the proposed amendments to the Water Works By-law, generally as set out in this report and as listed in Appendix A, including the establishment of the 2023 rates and fees.

B. THAT Council approve, in principle, amendments to add a permit allowing the operation of once-through cooling equipment to end of product life, as set out in this report and in Appendix C.

C. THAT Council instruct the Director of Legal Services to bring forward for enactment the necessary amendments to the Water Works By-law, generally as set out in Appendix B.

REPORT SUMMARY

This report seeks Council approval of the recommended 2023 rates and fees for water service, which incorporates a 3.0% increase for single family flat rates and metered rates; 10.0% increase for Water Flat Rate Connection Fees for Single and Two Family dwellings; 3.3% for all other Water Flat Rate Connection Fees; and varied changes for all other Water Utility User Rates. These increases support full cost recovery for water services as well as investing in a program that will reduce future financing costs. Key factors driving the cost increases are general cost increases (3.3%) and in the case of connections, the increase is to keep pace with higher than average cost increases that are taking place in the market for materials and equipment particularly.

This report also seeks Council approval of amendments and to identify certain provisions to operate once-through cooling equipment to end of product life with a permit.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

Water user and water connection fees are reviewed annually by Council to establish the following year's rates.

On December 13, 2011, Council adopted the 2011-2014 Greenest City Clean Water Work Plan including By-law revisions requiring residential water metering for all new single family and duplex properties.

On December 13, 2011, Council approved transition from a uniform volumetric rate for commercial and residential metered customers to a seasonal rate consisting of two different rates for low and high seasons.

On November 27, 2012, Council approved the establishment of a peak and off-peak seasonal rate structure for all remaining metered properties.

On April 12, 2017, Council approved By-law amendments to expand the prohibition of non-recirculating uses of drinking water in support of the Greenest City Action Plan.

On December 10, 2019, Council adopted the recommendation to change the dates that set the peak season and off peak season water rates, to match the water restriction periods set out in the Drinking Water Conservation By-law.

CITY MANAGER'S COMMENTS

The City Manager recommends the foregoing.

REPORT

Background/Context

The City's Water Utility monitors and protects potable water quality, maintains infrastructure in a good state of repair, ensures adequate water supply for drinking and fire protection, manages water system resiliency and supports efficient use of drinking water for long term sustainable supply. All drinking water in the City is purchased from Metro Vancouver, which is responsible for supply reservoirs, treatment, and delivery of water to the City system.

The water distribution network, valued at $3.1 billion, is made of 1,488 km of buried pipelines, 101,000 service connections, approximately 6,600 fire hydrants, 30,000 valves, and 25,000 water meters. The Water Utility also operates a dedicated fire protection system for the Downtown, Kitsilano and Fairview areas valued at $80 million consisting of 12 km of dedicated high pressure pipes and 2 pumping stations.

Pressures facing the drinking water utility include aging infrastructure, population growth, climate change, hazard vulnerabilities and evolving regulatory frameworks. Annual costs of the water

system are driven by capital costs for asset renewal, expansion to accommodate growth and investments to support efficient use of water; operating costs of maintaining the system; and the cost to purchase water from Metro Vancouver. The City's water rates and fees are set based on a principle of full cost recovery, which requires that no costs related to the delivery of water are included in the general tax levy.

Strategic Analysis

Currently, 22% of the Waterworks assets are in poor condition, while the remaining 78% are in fair-to-good condition. Additional asset renewal investments will reduce the rate of deterioration, however, in the next 10 years, the condition will deteriorate to 26% poor. As the assets increasingly deteriorate, it is expected there will be higher rates of water main breaks and leaks. This worsening condition is expected to be further exacerbated by climate change.

Regional population growth, combined with climate change, is expected to require expanded drinking water supply capacity by late 2030s if water consumption is not significantly reduced. Investing in more water meters and smart metering technology will continue to decrease Vancouver's per capita water consumption and reduce the burden on existing water supply. In the City of Vancouver, all services are fully metered except for single detached houses and duplex zoned properties. As of 2022, approximately 13% of single detached houses and duplexes are metered, with the remainder on flat rate billing.

Staff recommend the Water Utility user rates be increased by 3.0% and connection fees be increased by 3.3% to 10.0% over 2022 rates. This allocation supports the short and long-term needs of the Water Utility by optimizing performance of the water system, system planning and adaptation, and the cost efficient delivery of infrastructure renewal, rehabilitation and repair. Some cost areas are witnessing different cost escalations: user rate increases of 3% are driven by Metro rates, whereas connections are driven by general cost increases, and particularly pipe, parts and equipment, which are seeing higher than average cost increases of 10%.

Please refer to Appendix D for more details on the City's Drinking Water System and Long-Term Strategies.

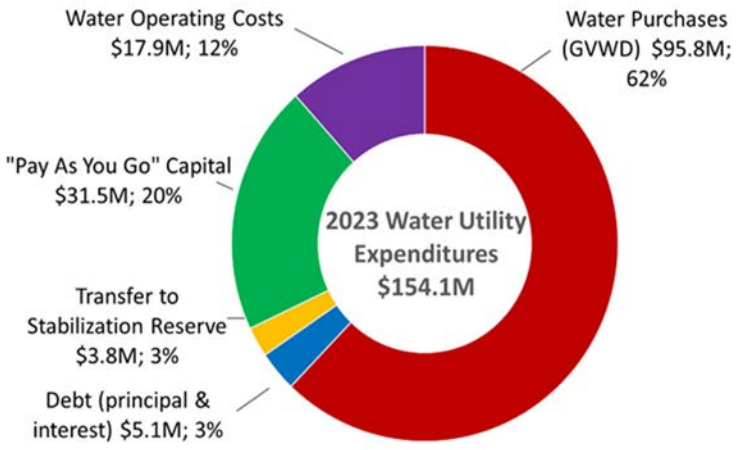
Financial Implications

Key Cost Drivers

Figure 1: Water Utility Expenditures

The Water Utility expenditures consist of four key cost drivers, shown in Figure 1:

- Water purchased from Metro Vancouver (62%)
- Capital expenditures and debt (23%)
- Operating and maintenance costs (12%)
- Transfers to or from the stabilization reserve (3%)



Water Purchases
The cost to purchase water from Metro Vancouver is the largest cost driver in the Water Utility (62%), driven by the price per cubic metre that Metro charges all member municipalities, as well as the total consumption within the City itself.

Metro Vancouver water rates are expected to rise by an average of 12% annually from 2024 to 2027 in preparation for major regional capacity expansions required in the next two decades. The continued success of water conservation in Vancouver has led to declining water consumption even with the pressures of population growth and climate change. Further water use reductions can reduce Vancouver's overall costs to operate the water system and help defer major regional water supply expansions.

Water Capital Program
The Water Capital Program supports work to replace aging infrastructure and improve the resiliency of the water system to climate change and emergencies. For the 2023-2026 Capital Plan, the water capital program will be fully funded on a 'pay-as-you-go' basis. 'Pay-as-you-go' uses current year revenues to fund current year and ongoing capital investments, ensuring the City's borrowing capacity is preserved for important one-time capital investments that are not appropriate or too costly to be funded on a 'pay-as-you-go' basis. The current debt charges represent past borrowing; the reduction of debt charges from moving to 'pay-as-you-go' will be realized over time, as the remaining debt declines.

Operating and Maintenance
These are the costs associated with cleaning, repairing, inspecting and managing the infrastructure, as well as emergency response for main breaks and service connection leaks.

2023 Proposed Budget and Rates

Water utility rates are proposed to increase by 3.0% or $24 per year for a single-family residence. This increase is necessary due to:

- An increase of 2.8% in Metro Vancouver water rates that fund infrastructure improvements throughout the region, including improvements to reservoirs, treatment and transmission infrastructure;
- Funding required for water capital projects within the approved 2023-2026 Capital Plan; and
- Increasing asset renewal rate from 0.9% annually to 1.1% during the 2023-2026 Capital Plan, to catch up with the rate of deterioration of aging infrastructure.

The Draft 2023 budget is summarized in Table 1 with the 2022 budget for comparison.

Table 1 – Draft 2023 Budget

Water Utility ($ millions)	2022 Budget	2023 Proposed	$ Change from 2022 Budget	% Change
Water Consumption Volume	**112,000,000**	**111,500,000**		
Revenues				
Metered Rate Revenues	$ 82.0	$ 84.1	$ 2.1	2.5%
Flat Rate Revenues	59.8	60.8	0.9	1.6%
Meter Service Charges	4.8	4.9	0.1	2.1%
Flat Rate Fire Line Charges	3.5	3.6	0.1	2.1%
Other Revenues	0.7	0.7	0.0	2.1%
Total Revenues	**$ 150.9**	**$ 154.1**	**$ 3.2**	**2.1%**
Expenses & Transfers				
Water Purchases (GVWD)	$ 93.8	$ 95.8	$ 2.0	2.1%
Waterworks Operations	16.6	17.9	1.3	8.1%
Debt Service Charges	7.5	5.1	(2.4)	-31.8%
Pay As you Go Capital	26.1	31.5	5.4	20.6%
Transfer to/(from) Stabilization Reserve	6.9	3.8	(3.1)	-45.1%
Total Expenses & Transfers	**$ 150.9**	**$ 154.1**	**$ 3.2**	**2.1%**
Surplus/(Deficit)	**$ -**	**$ -**	**$ -**	**0.0%**

** Tables may not sum due to rounding.*

2023 Revenues & Proposed Rates

For both metered customers and flat-rate single-family dwellings, a 3.0% rate increase is recommended for 2023. The revenue projections above also incorporate assumptions for reduced quantities of water, due to water conservation programs and efforts.

Also proposed are increases of 2.1% for fire line charges and meter service charges. Both the revenue and expense changes for meter service charges and fire line charges reflect an increase in the number of accounts over the last several years.

2023 Expenditures & Transfers

The increase for the 2023 water purchase budget is $2.0 million due to a Metro Vancouver price increase of 2.8%. Water Utility operational costs will increase by 8.1% from 2022 to 2023, primarily as a result of collective agreement increases and equipment cost increases.

The ‘pay-as-you-go’ contribution has increased from $26.1 million to $31.5 million which represents funding for projects scheduled as part of the 2023-2026 Capital Plan. The current debt charges represent past borrowing and will continue to decrease over time as outstanding borrowing is gradually retired in upcoming years.

Staff proposes to transfer $3.8 million to the Water Rates Stabilization Reserve in 2023 to mitigate against increases in Metro Vancouver water purchase prices in future years.

Five Year Outlook

Table 2 summarizes the five year rate outlook for the Water Utility at this time. These rates are reviewed every year and updated as needed.

Table 2 – Water Utility Rate Outlook 2023-2027

Water Utility Rate Forecasts	2023	2024	2025	2026	2027
Metro Rate Increase	2.8%	9.0%	13.8%	12.8%	13.8%
Proposed City Rate Increase	3.0%	8.0%	8.0%	9.0%	10.0%

Connection Fees and Miscellaneous Fees

All development and major renovation projects that require new water connections to the City water system pay fees for the connections on City property. Water meters are also required on all new developments and major renovations.

To maintain full cost recovery, it is recommended that a 10.0% increase be approved for residential flat rate water connection fees for Single Detached House or Duplex, and a 3.3% increase be approved for all other flat rate water connection and removal fees.

Private side water meter installation fees require adjustments in line with market increases in material costs that have also been experienced by various municipal supply sectors. To support full cost recovery, it is recommended that an increase of 10% be approved for some fees for installation of water meters on private property.

There are additional amendments recommended to ensure clear, fair and equitable application of once-through cooling removal requirements in By-law 4848. The update provides the prospect to operate once-through cooling equipment to end of lifecycle with a City Engineer approved permit; equipment is evaluated on expected reduction in water use, payback period, remaining lifecycle, and impact on business.

Legal Implications

The proposed amendments to the Water Works By-law are contained in Appendix B, and a red-lined version of the miscellaneous amendments is provided in Appendix C.

CONCLUSION

Rates for water services are adjusted annually to offset cost increases in the water utility, including capital and operating costs and water purchases from Metro Vancouver. Based on a review of the proposed water costs for 2023, it is recommended that rates and fees for water service incorporate a 3.0% increase for flat rate and metered user rates; 10.0% increase for flat rate water connection fees for Single Detached House or Duplex; 3.3% for all other Water flat rate connection Fees; varied changes for all other Water Utility rates and fees.

Amendments have also been incorporated to provide clarity for once-through cooling equipment operation permits as described in this report.

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Appendix A
Water Works By-Law No. 4848
2023 Rate Changes

Schedule A	**Flat Rate Connection Fees**		
	2022	**Proposed 2023**	**% Increase**
Single Detached House, with or without a Laneway House, and Duplex			
20 mm (3/4")	$6,488	$7,137	10.0%
25 mm (1")	$6,717	$7,389	10.0%
40 mm (1 1/2")	$8,077	$8,885	10.0%
50 mm (2")	$8,956	$9,852	10.0%
Other Connections			
20 mm (3/4")	$10,893	$11,252	3.3%
25 mm (1")	$11,333	$11,707	3.3%
40 mm (1 1/2")	$13,078	$13,510	3.3%
50 mm (2")	$13,078	$13,510	3.3%
100 mm (4")	$18,907	$19,531	3.3%
150 mm (6")	$23,386	$24,158	3.3%
200 mm (8")	$25,537	$26,380	3.3%
300 mm (12")	$35,940	$37,126	3.3%

Schedule A.1	**Removal Fees**		
	2022	**Proposed 2023**	**% Increase**
20mm (3/4") to 50mm (2") inclusive	$1,266	$1,308	3.3%
100mm (4") to 300mm (12") inclusive	$3,800	$3,925	3.3%

Schedule B	**Flat Service Charges for Residential Properties**		
	2022	**Proposed 2023**	**% Increase**
Single dwelling unit	$810	$834	3.0%
Single Detached House with secondary suite or laneway house	$1,098	$1,131	3.0%
Single Detached House with secondary suite and laneway house	$1,387	$1,429	3.0%
For each strata title duplex	$548	$564	3.0%
Parking Lot/Community Garden	$248	$255	3.0%
Water Service - Turned Off	$184	$190	3.0%
Other Property	$184	$190	3.0%

Schedule C	**Flat Service Charges for Unmetered Fire Service Pipes**		
	2022	**Proposed 2023**	**% Increase**
50 mm (2") or smaller	$249	$257	3.3%
75 mm (3")	$372	$384	3.3%
100 mm (4")	$515	$532	3.3%
150 mm (6")	$594	$614	3.3%
200 mm (8")	$696	$719	3.3%
250 mm (10")	$741	$765	3.3%
300 mm (12")	$793	$819	3.3%

Schedule D	**Charges for Metered Water Service**			
		2022	**Proposed 2023**	**% Increase**
Four Month Period				
Rate for all metered uses				
October 16 - April 30	Per Unit	$3.532	$3.638	3.0%
May 1 - October 15	Per Unit	$4.427	$4.560	3.0%

Schedule E **Meter Service Charge**

The following schedule shows the meter charge based on the size and type of meter, payable on each service, in addition to water consumption charges.

Per Four Monthly Period	**2022**	**Proposed 2023**	**% Increase**
Services with Standard Type Meters			
17 mm (1/2") and 20 mm (3/4")	$36	$37	3.3%
25 mm (1")	$36	$37	3.3%
40 mm (1 1/2")	$76	$79	3.3%
50 mm (2")	$105	$108	3.3%
75 mm (3")	$237	$245	3.3%
100 mm (4")	$288	$298	3.3%
150 mm (6")	$374	$386	3.3%
200 mm (8")	$580	$599	3.3%
250 mm (10")	$711	$734	3.3%
300 mm (12")	$843	$871	3.3%
Services with Low Head Loss Meters / Detector Check Valves			
100 mm (4")	$333	$344	3.3%
150 mm (6")	$487	$503	3.3%
200 mm (8")	$653	$675	3.3%
250 mm (10")	$814	$841	3.3%
300 mm (12")	$971	$1,003	3.3%

Schedule F	**Charges for Temporary Water Service during Construction**		
	2022	**Proposed 2023**	**% Increase**
Building Size in Square Meters of Gross Floor Area			
Up to an including 500 sq.m	$357	$369	3.3%
Over 500 but not exceeding 2,000	$700	$723	3.3%
Over 2,000 but not exceeding 9,000	$1,051	$1,086	3.3%
Over 9,000 but not exceeding 24,000	$1,768	$1,826	3.3%
Over 24,000 but not exceeding 45,000	$2,646	$2,733	3.3%
Over 45,000	$3,510	$3,626	3.3%

Schedule G	**Fees for Installation of Residential Water Meters**		
	2022	**Proposed 2023**	**% Increase**
Single Detached House and Duplex			
20 mm (3/4") meter assembly and box	$1,204	$1,204	0.0%
25 mm (1") meter assembly and box	$1,313	$1,313	0.0%
40 mm meter assembly and box	$1,788	$1,788	0.0%

	Fees for Installation of Water Meters			
Size of Standard Meter	Meter on City Property	**2022**	**Proposed 2023**	**% Increase**
20 mm (3/4")		$3,654	$3,775	3.3%
25 mm (1")		$3,821	$3,947	3.3%
40 mm (1 1/2")		$4,164	$4,301	3.3%
50 mm (2")		$4,305	$4,447	3.3%
75 mm (3")		$15,023	$15,519	3.3%
100 mm (4")		$16,427	$16,969	3.3%
150 mm (6")		$53,652	$55,423	3.3%
200 mm (8")		$55,181	$57,002	3.3%
250 mm (10")		$74,552	$77,012	3.3%
300 mm (12")		$82,431	$85,151	3.3%
Size of Standard Meter	Meter on Private Property	**2022**	**Proposed 2023**	**% Increase**
20 mm (3/4")		$578	$597	3.3%
25 mm (1")		$666	$733	10.0%
40 mm (1 1/2")		$957	$1,053	10.0%
50 mm (2")		$1,320	$1,452	10.0%
75 mm (3")		$2,913	$3,204	10.0%
100 mm (4")		$4,426	$4,869	10.0%
150 mm (6")		$8,728	$9,016	3.3%
200 mm (8")		$10,441	$10,786	3.3%
250 mm (10")		$21,043	$21,737	3.3%
300 mm (12")		$28,926	$29,881	3.3%

Schedule H	**Miscellaneous Fees and Charges**			
		2022	**Proposed 2023**	**% Increase**
Extra charge for inaccessible meter (per incident)		$83	$86	3.3%
Special meter reading (per occurrence)		$109	$113	3.3%
Customer requested meter test (deposit)		$219	$226	3.3%
Charges for Returned Cheques		$39	$40	3.3%
Residual Water Pressure Estimate Fee				
	Original calculation	$40	$41	3.3%
	Additional copies for same location	$10	$10	3.3%
Miscellaneous water information requests (per hour)		$49	$51	3.3%
City Crew call out fee (normal working hours) (per hour or portion thereof)		$109	$113	3.3%
City Crew call out fee (outside normal working hours) (per hour or portion thereof)		$219	$226	3.3%
Frozen pipe thawing		at cost	at cost	
Once-through cooling equipment permit fee			$184	

BY-LAW NO. _____

DRAFT By-law to amend Water Works By-law No. 4848 regarding disconnection of once-through cooling equipment and 2023 water rates and fees

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. This By-law amends the indicated provisions of By-law No. 4848.

2. In section 3.10, Council:

   (a) in subsection (a), strikes out "; and" and substitutes ";"
   (b) in subsection (b), strikes out "." and substitutes ";" and
   (c) adds a new subsection (c) as follows:

   "(c) once through cooling equipment may be operated with a permit from the Engineer if, in the opinion of the Engineer, the cost of disconnecting the once though cooling equipment and replacing it with other cooling equipment is unreasonable, taking into account any relevant factors, which may include the following:

   (i) the current water flow rate compared to the expected reduction in water consumption if the equipment is disconnected,
   (ii) where the equipment is in its life cycle,
   (iii) the potential impact the disconnection and replacement of the equipment, including any required renovations, will have on business operations,
   (iv) the cost to replace the equipment relative to the expected reduction in water and sewer costs, and
   (v) where applicable, the cost to replace the equipment relative to the operational size,

   and if the Engineer determines that issuing such permit is appropriate, the applicant must pay the permit fee as specified in Schedule H prior to issuance of the permit.".

3. Council strikes out Schedules A, B, C, D, E, F, G and H and substitutes the following:

"**SCHEDULE A**
Flat Rate Connection Fees
And Service Pipe Removal Fees

Flat Rate Connection Fees

Service Pipe Size	*Single Detached House with or without a Laneway House and Duplex*
20 mm (3/4")	$ 7,137.00
25 mm (1")	7,389.00
40 mm (1 ½")	8,885.00
50 mm (2")	9,852.00

Service Pipe Size	*Other Connections*
20 mm (3/4")	$11,252.00
25 mm (1")	11,707.00
40 mm (1 ½")	13,510.00
50 mm (2")	13,510.00
100 mm (4")	19,531.00
150 mm (6")	24,158.00
200 mm (8")	26,380.00
300 mm (12")	37,126.00

Service Pipe Removal Fees

Service Pipe Size	
20 mm (3/4") to 50 mm (2") inclusive	$ 1,308.00
100 mm (4") to 300 mm (12") inclusive	3,925.00

SCHEDULE B
Annual Flat Rate Service Charges for Residential Properties

The following charges apply to unmetered single detached houses and dwellings comprising not more than two separate dwelling units:

Single Dwelling Unit	$ 834.00
Single Detached House with secondary suite or laneway house	1,131.00
Single Detached House with secondary suite and laneway house	1,429.00
For each strata title duplex	564.00
Parking Lot/Community Garden	$ 255.00
Water Service - Turned Off	190.00
Other Property	190.00

SCHEDULE C
Annual Flat Rate Service Charges for Unmetered Fire Service Pipes

Fire Service Pipe Size

50 mm (2”) or smaller	$ 257.00
75 mm (3”)	384.00
100 mm (4”)	532.00
150 mm (6”)	614.00
200 mm (8”)	719.00
250 mm (10”)	765.00
300 mm (12”)	819.00

SCHEDULE D
Charges for Metered Water Service

Four Month Period		*Rate In Dollars per Unit (2,831.6 Litres)*
Rate for all metered uses		
October 16 - April 30	Per unit	$3.638
May 1 – October 15	Per unit	$4.560

SCHEDULE E
Meter Service Charge

The following schedule shows the meter charge based on the size and type of meter, payable on each service, in addition to water consumption charges:

Per Four Month Period
Services with Standard Type Meters

17 mm (1/2”) and 20 mm (3/4”)	$ 37.00
25 mm (1”)	37.00
40 mm (1 1/2”)	79.00
50 mm (2”)	108.00
75 mm (3”)	245.00
100 mm (4”)	298.00
150 mm (6”)	386.00
200 mm (8”)	599.00
250 mm (10”)	734.00
300 mm (12”)	871.00

Services with Low Head Loss Meters/Detector Check Valves

100 mm (4”)	$ 344.00
150 mm (6”)	503.00

200 mm (8”)	675.00
250 mm (10”)	841.00
300 mm (12”)	1,003.00

SCHEDULE F
Charges for Temporary Water Service During Construction

Building Size in Square Meters of Gross Floor Area	*Rate in Dollars of Gross Floor Area Per Building*
Up to and including 500	$ 369.00
Over 500 but not exceeding 2,000	723.00
Over 2,000 but not exceeding 9,000	1,086.00
Over 9,000 but not exceeding 24,000	1,826.00
Over 24,000 but not exceeding 45,000	2,733.00
Over 45,000	3,626.00

SCHEDULE G
Fees for Installation of Water Meters

Fees for Installation of Water Meters for Single Detached House with or without a Laneway House and Duplex

Size of Standard Meter

20 mm (3/4”) meter assembly and box	$1,204.00
25 mm (1”) meter assembly and box	$1,313.00
40 mm meter assembly and box	$1,788.00

Fees for Installation of Water Meters on Other Connections

Size of Standard Meter	*Meter on City Property*	*Meter on Private Property*
20 mm (3/4”)	$ 3,775.00	$ 597.00
25 mm (1”)	3,947.00	733.00
40 mm (1 1/2”)	4,301.00	1,053.00
50 mm (2”)	4,447.00	1,452.00
75 mm (3”)	15,519.00	3,204.00
100 mm (4”)	16,969.00	4,869.00
150 mm (6”)	55,423.00	9,016.00
200 mm (8”)	57,002.00	10,786.00
250 mm (10”)	77,012.00	21,737.00
300 mm (12”)	85,151.00	29,881.00

SCHEDULE H
Miscellaneous Fees and Charges

Extra charge for inaccessible meter (per incident)	$ 86.00
Special Meter Reading (per occurrence)	113.00
Customer Requested Meter Test (deposit)	226.00
Charges for Returned Cheques	40.00
Residual Water Pressure Estimate Fee	
Original calculation	41.00
Additional copies for same location	10.00
Miscellaneous water information requests (per hour)	51.00
City Crew call out fee (normal working hours) (per hour or portion thereof)	113.00
City Crew call out fee (outside normal working hours) (per hour or portion thereof)	226.00
Frozen pipe thawing	At cost (Section 5.4)
Once-through cooling equipment permit fee	184.00

4. A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.

5. This By-law is to come into force and take effect on January 1, 2023.

ENACTED by Council this day of , 2022

_____
Mayor

_____
Acting City Clerk

APPENDIX C

Proposed Amendments to Water Works By-law No. 4848

This document is being provided for information only as a reference tool to highlight the proposed amendments. The draft amending by-laws attached to the Council report RTS No. 15148 entitled November 1, 2022 represent the amendments being proposed to Council for approval. Should there be any discrepancy between this redline version and the draft amending by-laws, the draft amending by-laws prevail.

Section 3.10 Disconnection of Non-Recirculating Applications

All non-recirculating uses, equipment and systems listed in section 3.9 of this by-law must be disconnected from the City's water system by January 1, 2020, except that:

(a) emergency once through cooling equipment and maintenance once through cooling equipment may be operated with a permit from the Engineer~~; and~~;

(b) uses, equipment and systems in a building for which a demolition permit has been issued before January 1, 2020, may be operated with a permit from the Engineer, who may extend the disconnection deadline to January 1, 2021~~.~~; and

(c) once through cooling equipment may be operated with a permit from the Engineer if, in the opinion of the Engineer, the cost of disconnecting the once though cooling equipment and replacing it with other cooling equipment is unreasonable, taking into account any relevant factors, which may include the following:

(i) the current water flow rate compared to the expected reduction in water consumption if the equipment is disconnected,

(ii) where the equipment is in its life cycle,

(iii) the potential impact the disconnection and replacement of the equipment, including any required renovations, will have on business operations,

(iv) the cost to replace the equipment relative to the expected reduction in water and sewer costs, and

(v) where applicable, the cost to replace the equipment relative to the operational size

and if the Engineer determines that issuing such permit is appropriate, the applicant must pay the permit fee as specified in Schedule H prior to issuance of the permit.

Appendix D

City of Vancouver Drinking Water System and Long-Term Strategies

Vancouver purchases bulk, treated drinking water from Metro Vancouver and the City is responsible for distribution and delivery to customers. The Waterworks Utility monitors and protects potable water quality, maintains infrastructure in a good state of repair, ensures efficient use of drinking water, manages water system resiliency for emergencies and plans for the sustainable and equitable supply for future generations.

The City's drinking water distribution network was built over the last 130 years and is valued at $3.1 billion. The City's system includes 1,488 km of underground pipes, 101,000 service connections, 6,600 fire hydrants, 30,000 valves, and 25,000 water meters. Waterworks also operates a dedicated fire protection system for the Downtown, Kitsilano and Fairview areas, valued at $70 million, consisting of 12 kilometres of dedicated seismically hardened high pressure pipes and two pumping stations.

Key Water Utility Services and Objectives

- **Water distribution** - Deliver clean, safe drinking water to all residents and businesses to meet their daily needs and provide a sufficient water supply for fire suppression. Ensure that water system assets are in good condition and well managed by replacing aging and deteriorating infrastructure. Adapt drinking water system to accommodate increased population, development and densification.
- **Emergency preparedness** – Support emergency preparedness through water for health safety and fire protection, emergency response planning, system resiliency improvements, strategically strengthening infrastructure, and increased access to water points within the public realm.
- **Water conservation and resource management** – Encourage, enable and regulate the efficient use of drinking water corporately and in the community to support financial and environmental sustainability and equity, and to extend the life of our current regional water supplies.
- **Financial Sustainability** – Operate a fully cost-recovered utility, ensuring best value for customers and citizens while managing levels of service

Water Purchases and Water Demand Management

Bulk water purchases are the largest cost driver for the Vancouver Water Utility, making up forecasted 62% of annual expenditures for 2023. Not only is consumption the largest driver of costs, it also impacts regional water system performance and resiliency to population growth and climate change.

Metro Vancouver recently completed a long-term water supply study that identified requirements for system resiliency and continued supply and delivery of water over the next 100 years. Metro Vancouver's Water Supply Outlook 2120 indicates the region will likely need additional water supply storage by the mid-to late 2030s to avoid seasonal supply shortages. Metro Vancouver is currently in the planning phase of the Coquitlam Lake Water Supply Project, valued at approximately $4B, which will double the capacity to withdraw water from Coquitlam Lake. Reducing consumption through water conservation efforts can help defer investments needed for capacity expansion in the regional system.

The City of Vancouver's per capita water consumption has been steadily decreasing, with a 27% reduction realized since 2006. This has allowed the total water purchases to decline over the last 15 years, even with population growth of almost 20% and more extreme weather impacts. The water consumption volume budget for 2023 has been set at 111,500,000 m^3 and actual usage will be influenced by many factors including weather and the economic recovery from the impacts of the COVID-19 pandemic. Enhanced strategic drinking water conservation and efficiency programs and additional investment in water demand management (increased residential water meter coverage, smart meter reading system and rate structure revision) planned over the next decade are expected to further contribute to the downward per capita consumption trend and continue to lower Vancouver's draw on regional drinking water resources.

Water Utility Drivers and Pressures
Pressures facing the drinking water utility include aging infrastructure, population growth, climate change, hazard vulnerabilities and evolving regulatory frameworks.

- **Aging Infrastructure**: Currently 22% of the $3.1B City water system assets are in poor condition and deteriorating more rapidly than past renewal rates. A large portion of the City's water system will reach end of life over the next 30 years and will require renewal and upgrades to continue to meet demands and improve system resiliency. Increased investment is required to maintain current service performance and limit the number of assets in very poor condition.

- **Climate Change**: A changing climate impacts source water supply and potable water demand within the City, and these stresses are further compounded by population growth. Climate change is predicted to decrease winter snow and rainfall (water supply) and increase demand during hotter, drier summers. Policies and investments supporting water demand management to reduce per capita consumption will support the sustainable and efficient use of water drinking water resources allow the water system to be more resilient to acute climate events.

- **Hazard Vulnerabilities**: Seismic resiliency of the drinking water system continues to be a key area of improvement and investment. Events of the last several years have also emphasized the need for vulnerability assessments and emergency preparedness to also include health crisis events, such as a pandemic, and climate based events like "heat domes," and the impacts they have on demand for water services as well as the risks they can pose to system operation. It is a regional priority to build collaborative and cooperative strategies and guidelines for post-disaster response and provision of water. Investments in continuous improvement of emergency preparedness and response planning will ensure Vancouver is resilient to emergencies and ready to be a partner in regional water system response.

- **Regional Needs and Population Growth**: As the regional supplier of potable water, Metro Vancouver must also renew aging assets and is projected to require major system capacity upgrades to meet regional demand in the next 10 to 20 years. Vancouver's investments in reducing per capita consumption through water demand management in the next 10 years can alleviate medium and long-term strains on regional supply. This will also reduce Vancouver's portion of regional consumption and associated regional upgrade costs, such as the projected Coquitlam Lake Upgrades valued at $4B. The region is collectively

attempting to defer the need for this major supply upgrade by actively managing and reducing water demands. Metro Vancouver's Regional Guide on Residential Water Metering indicates that universal metering across the region in the next 10 years can have a significant impact on deferral of major water supply upgrades.

Long-term Investment and Policy Directions

- Implement a One Water approach to water resources management (potable, groundwater, rainwater, sewage, flood protection)
- Reduce potable water consumption and improve equity through universal water metering, advanced, smart metering technology, a more equitable rate structure to encourage conservation, and improved leak detection and management
- Increase rate of asset renewal to address an aging/deteriorating system, and maintain a reliable supply of potable water
- Support population growth and densification through upgrades to local and regional water systems and through innovative water conservation, efficiency and resource management approaches
- Expand the grid of seismically resilient water mains and improve emergency preparedness
- Increase citywide network of water fountains and other public access points for potable water, in recognition of access to water as a human right