A10

CITY OF VANCOUVER | 125 YEARS

ADMINISTRATIVE REPORT

Report Date:	November 29, 2011
Contact:	Peter Navratil
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Meeting Date:	December 13, 2011

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: 2012 Annual Review of Water Rates under the Water Works By-Law

RECOMMENDATION

A. *THAT fees for water consumption increase 9.9%, as detailed in this report and as setout in Appendix A, through adjustments to the following fees under the Water Works By-law:*

- *Flat rate annual consumption fees for single family dwelling units (increase from $467 to $513) (Schedule "B"),*
- *Other flat rate water service charges for single family dwelling unit with suite and each strata title duplex (Schedule "B"),*
- *Charges for metered water service (Schedule "D"), and*
- *Charges for temporary water service during construction (Schedule "F").*

B. *THAT fees for water connections and other services included in the Water Works By-law be increased by 3.5% as follows:*

- *Flat rate water connection fees for single family and two family dwellings (Schedule "A"),*
- *Flat rate water connection fees for properties other than single family and two family dwellings (Schedule "A") and service pipe removal fees (Schedule "A.1"),*
- *Meter service charge (Schedule "E"), flat service charges for unmetered fire service pipes (Schedule "C"), and fees for installation of water meters (Schedule "G").*

C. *THAT Council approve By-Law revisions requiring residential water metering for all new single family and duplex properties at an incremental increased cost of $500 per connection to cover the cost of the meter and labour.*

D. That Council approve By-Law revisions that establish a peak and off-peak seasonal rate structure for all metered residential and commercial class properties

E. That Council approve By-Law revisions to Schedule G of By-Law 4844 that increase permit fees for the purpose of including the cost of the meter in the connection fee

F. THAT the Director of Legal Services be instructed to bring forward for enactment amendments to the Water Works By-law substantially as set out in Appendix A to give effect to recommendations A, B, C, D and E of this report.

EXECUTIVE SUMMARY

Each year, the Water Utility reports past year results and proposes rate changes for the coming year. For 2012, the Utility is experiencing financial pressure due to increases by Metro Vancouver in 2012 and for the next several years, City efforts to build reserves to smooth the impact of those upcoming Metro increases, and an effort to reduce future City capital borrowing costs. Several initiatives are proposed in this report to improve conservation efforts and reduce the Utility's overall cost to maintain its assets. A significant policy decision seeking final approval is the requirement for residential metering on new single family and duplex properties.

The report contains four key recommendations for 2012. They are:

- To recommend increases in water charges for 2012, and implement a 10 year strategy to move towards a "pay as you go" funding model for water capital projects. Recommendation "A" and "B"
- To receive final approval to require water meters for all new single family and duplex properties. Recommendation "C"
- To recommend a seasonal rate structure for all metered residential and commercial classes of property. Recommendation. "D"
- To increase meter fees such that new multi family, commercial, institutional and industrial developments pay the full cost of the meter installations including the cost of the meter, as well as labour and equipment to install the meter. Recommendation "E"

These recommendations, if approved by Council, will serve to maintain adequate funding levels required to fund Metro initiatives associated with filtration, to provide efficient water service and to support water conservation initiatives.

*COUNCIL AUTHORITY/PREVIOUS DECISIONS **

Water rates for both metered and non-metered customers are specified in the Schedules of Rates and Charges included in the Water Works By-law. These schedules are updated annually by Council.

In 2001, Council endorsed the the Greater Vancouver Regional District Board (Metro Vancouver) decision to construct the Capilano Seymour filtration plant.

On July 12, 2011, Council approved "in principle" the requirement for mandatory water metering on all new single family and duplex properties commencing January 1, 2012, subject to consultation and a report back on details of the program including a rate structure.

*CITY MANAGER'S/GENERAL MANAGER'S COMMENTS **

The recommendations set out in this report are necessary to meet two policy objectives: 1) to address rising water supply costs from Metro, and 2) to address Council's Greenest City Goal 8 – Clean Water to reduce water consumption. Requiring metering for new single family and duplex properties is an important first step in redefining how the public values water. In a future report, staff will bring forward options on ways to accelerate the residential metering program. The recommendation to implement the conservation oriented seasonal rate structure for existing metered residential and commercial customers is also an important policy decision to support the Clean Water goal. This rate structure, modelled after Metro's, will put strategic pressure on summertime water use when regional storage and transmission are most stressed.

The City Manager and General Manager of Engineering Services RECOMMEND approval of A through F above.

REPORT:

BACKGROUND AND CONTEXT

This report seeks approval for the proposed water utility rates for 2012 and proposes many new policies. The following sections highlight the relevant background information required to properly understand the various proposals.

1. The City of Vancouver's Water System

   The City's water system is comprised of approximately 1,450 km of water mains buried underneath the City streets. This system supplies water to over 100,000 service connections and 6,000 fire hydrants and has a replacement value of approximately $2 billion. The City also maintains the Dedicated Fire Protection System (DFPS) which protects the City's most densely inhabited areas from large fires and which has been designed to withstand an earthquake for post-disaster fire fighting. All water supplied to the City is purchased from Metro Vancouver, which is responsible for supply reservoirs, treatment, and delivery of water to the City system

2. The Utility Financial Structure

   The waterworks distribution system of the City of Vancouver operates as a Utility. Utility operating costs and debt charges are combined with the cost of water purchased from the Metro Vancouver supply system and are recovered through charges to system users. The Utility uses a Water Rate Stabilization Reserve to balance revenues and expenditures each year.

Presently, revenues are collected from metered customers based on consumption and from single family and duplex dwellings through an annual flat fee. Approximately 55% of consumption is currently metered. Metered customers are charged for consumption via a uniform rate per unit of water consumed, and a fixed meter rental charge.

The utility has generally financed capital work through debt. This report outlines a proposal to transition towards a "pay as you go" funding model over 10 years.

3. Metro Vancouver – Bulk Water Wholesaler

Since 1931, when the City of Vancouver relinquished the water rights to Capilano and Seymour rivers, the Greater Vancouver Water District (Metro Vancouver) has provided the source water to the various municipalities' water distribution systems. Metro charges each municipality based on consumption. With those revenues, Metro maintains and operates the watersheds, dams, reservoirs, treatment, and bulk transmissions system.

Significant increases to the regional cost of water since 2004 are a result of regional capital water quality initiatives - primarily the new Seymour-Capilano Filtration project and the associated twin tunnel project between Capilano and Seymour lakes. We expect that Metro rate increases will stabilize by 2014 as all of the new costs for the treatment plant have been built into their wholesale rates.

The filtered water coming from the Seymour source has greatly improved water quality characteristics. The plant has successfully removed nearly all turbidity ensuring that Canadian, North American and International water quality guidelines are met and exceeded.

In addition to new capital and operating costs associated with the filtration plant, lower regional consumption (resulting in lower revenues for Metro) and increasing demands for transmission upgrades will continue to place significant upward pressure on the rate charged by Metro Vancouver.

4. Sewer Charges based on Water Consumption

The Water and Sewer Utilities are closely linked with water consumption being utilized as the proxy for measuring sewage discharges. Sewer fees are generally based on 85% of the water consumption for a property. In wet years like 2011, water consumption is lower than normal, and while sewer flows may actually be high within the system, revenues are lower since water consumption is the proxy. Later in the report, staff discusses the issues each utility faces due to weather patterns and propose a way to further mitigate seasonal variations between the two utilities.

5. Key Priorities for the Water Utility

The water utility has a number of objectives as detailed in its Long Range Plan:

- Provide clean, safe, secure and accessible drinking water
- Support the sustainable use of water resources, as a way of living within our means in perpetuity

- Be prepared for emergencies
- Manage assets proactively
- Operate a fully cost recovered utility ensuring best value for customers and citizens
- Provide excellent customer service
- Support innovation in the way we do our work

Over the past two years, the first two objectives have been reinforced through the Greenest City process, described in detail later on in the report.

Over the past twenty years, numerous initiatives like summertime sprinkling restrictions have resulted in declining per capital water consumption, despite population growth, as shown in figure 1. However, per capita consumption is still high by international standards (figure 2). In order to live within our means and defer the need for expensive source and transmission expansion, significant consumption reductions will be required to offset anticipated population growth.

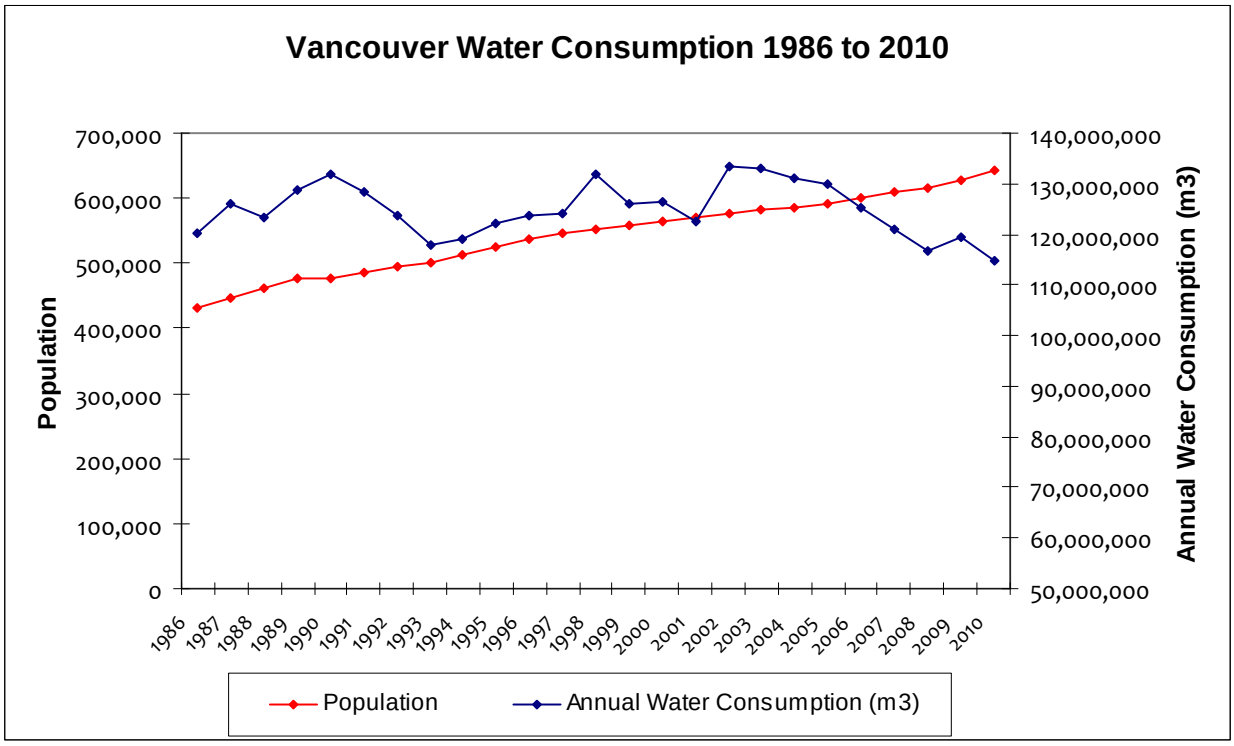


Figure 1: Total City Water Consumption vs. Population

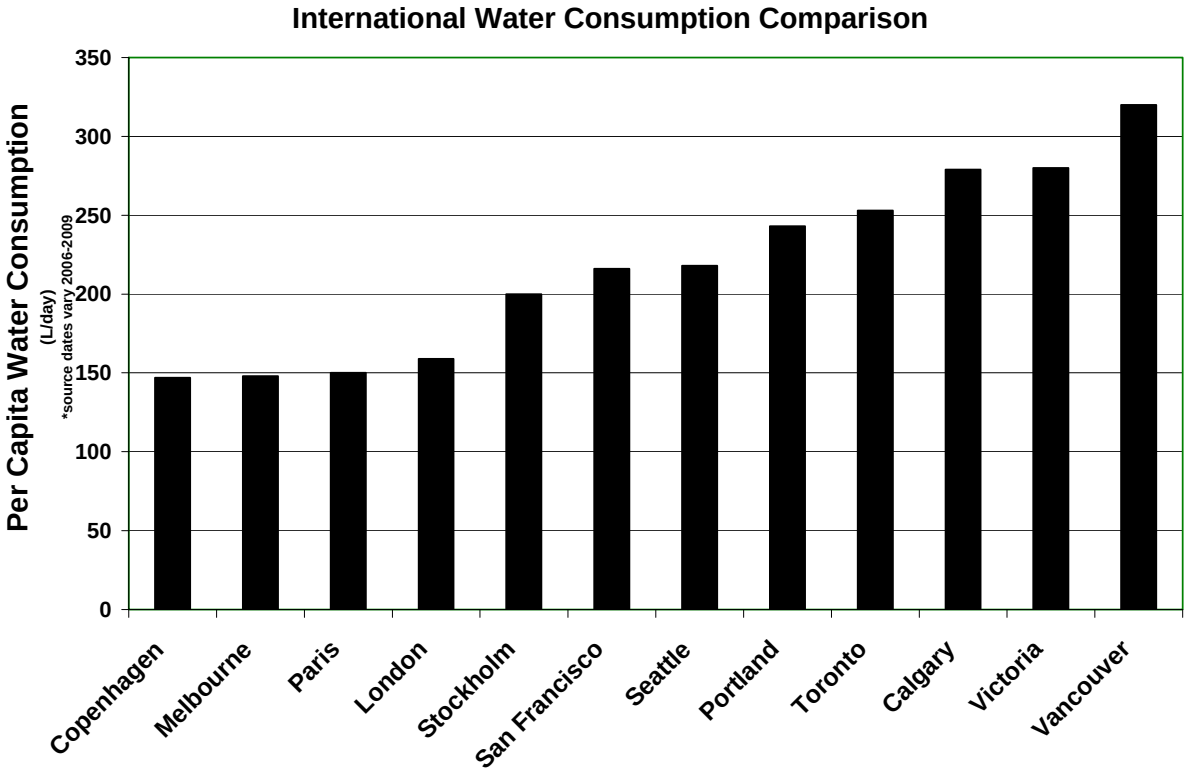


Figure 2 – International water use comparison (2006 data)

6. Greenest City Action Plan

The Greenest City Action Plan set an overall goal for Vancouver to be the greenest City in the world by 2020. A total of 10 specific goals were identified, including goal 8 – Clean Water. The Clean Water goal encourages actions to ensure Vancouver has the best water in the world. To achieve the goal, two targets were set:

a) Meet or beat the most stringent of British Columbian, Canadian and International drinking water standards and guidelines, and;

b) Reduce per capita water consumption by 33% over 2006 levels.

To achieve these goals, a phased approach has been developed with the highest priorities for the next three years being:

- Requiring water metering on all new single and dual family home services (new construction and major renovations) effective 2012;
- Developing and commencing enhanced water education, incentive and conservation programs;
- Continuing to expand public access to drinking water;

In July, the Clean Water implementation plan received support for rebate, incentive and sprinkling enforcement programs and endorsement in principle, of the requirement to install water meters on new single family and duplex properties. This report outlines the implementation of this water metering strategy along with other strategies to move the City towards the Greenest City water targets.

Strategic Analysis

Given the background discussed in the previous section, the following strategic analysis set out the issues and recommended solutions. In many areas of analysis, additional information is available within the appendices to support the proposed outcomes.

1. Key Budget Drivers

An important first step in preparing any rate increase is to have an accurate understanding of known cost drivers. The Water Utility budget estimates for 2011 and 2012, prior to consideration of changes to capital financing, are summarized as follows:

	2011 Budget	2012 Preliminary Budget*	2012 Cost Ratio	Inc/(Dec) in 2011 Budget and 2012 Preliminary Budget	%
Expenditures ($ million)					
Water Purchases (GVWD)	66.6	68.8	69%	2.2	3.3%
Capital and Debt Charges	19.3	19.6	19%	0.3	1.6%
Operating and Maintenance	11.4	12.0	12%	0.6	5.3%
Total Expenditures	**97.3**	**100.4**	**100%**	**3.1**	**3.24%**

*Prior to any financing change

Table 1 – Expenditure Projections

The cost of water purchased from Metro Vancouver comprises 69%. The key drivers that cause major fluctuations in water rates is the impact of costs for bulk water purchases, which depend on metro unit rates and our customer consumption.

2. Rate Mitigation – Water Rate Stabilization Reserve

The Water Utility uses the Water Rates Stabilization Reserve to mitigate year-over-year increases in water rates, and balance year-end differences between budgeted and actual revenues. This strategy has been particularly effective in keeping increases in the City's water rates to an average of 5% from 2001 to 2010 when the cost of water purchased from the region has increased an average of 11.5% for the same period. Figure 3 demonstrates how the City has used the reserve to smooth rates over time.

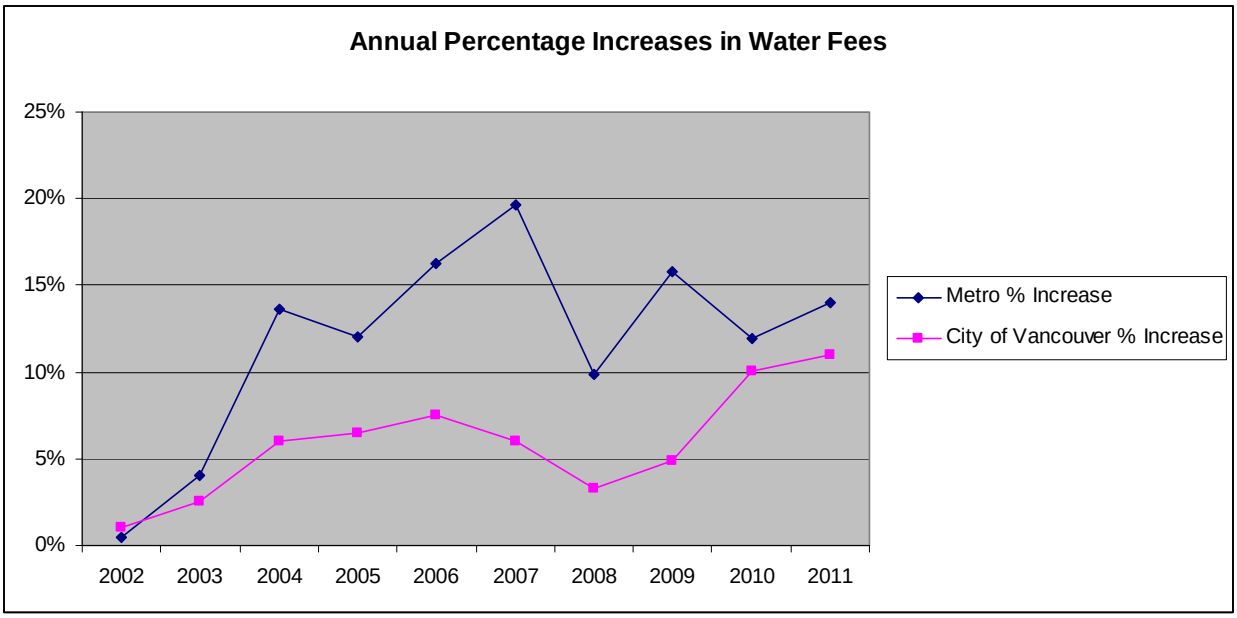


Figure 3: Annual Percentage Increases in Water Fees

Several years ago, in anticipation of the significant capital costs of the Seymour/Capilano water filtration project the City began to build the reserve. The reserve was used to smooth the impact of this substantial project on the City's water utility customers.

The current target balance in the reserve is $5.2 million which is equivalent to 7.5% of water purchases and work is planned for 2012 to review and update this target in the context of our evolving water policy.

Relationship to Sewer Reserve

Similar to the Water Utility, the Sewer Utility also has a rate stabilizing reserve. Sewer revenues are linked to water consumption, because metered water consumption is used as the proxy to determine sewer fees for metered City properties.

The relationship between annual water consumption and each utility's financial performance is inverted, because of the differences in how Metro water and sewer fees are determined.

Bulk water purchases from Metro are charged to the City based on Metro's metering of our total consumption, thus lower City water consumption results in lower Metro water charges, which benefits the water utility. Conversely, Metro's sewage treatment fees are flat charges calculated at the beginning of each year, and do not vary with the City's actual water purchases. Thus, during low water consumption/wet weather years, the sewer utility recovers less revenue from our metered customers without a corresponding reduction in Metro costs, which penalizes the sewer utility. During high water consumption/dry weather years the opposite effect occurs: sewer revenues are higher than budgeted, with no increase in Metro sewage treatment costs, whereas water revenues are offset by a higher bulk water purchase cost.

In order to balance the relationship and minimize impacts on both utilities' rates and reserves, staff recommend that the weather-related water consumption impact on the two utilities be reviewed annually and a year-end balancing transfer between the two stabilization reserves be effected as part of the rate reviews at year end. The transfer will be based on balancing the seasonal variation between the two utilities. In 2011, this equates to a $400,000 transfer from the water reserve into the sewer reserve. It is anticipated that the long term effect will be neutral between the two reserves. The transfer will only be used to balance weather related variations as opposed to rate buffering.

Strategy: Implement a balancing transfer between the Water and Sewer Utilities to balance annual weather related revenue variations. The recommendation for this action appears in the 2012 Sewer Rate Report (RTS 9373)

3. Financing Opportunities

It has been Council practice to finance the Water Utility capital program 100% through debt. Debt is generally amortized over 10 years, and the annual debt servicing charge (interest and principal) is funded from utility fees. While debt amortization reduces the annual budget impact, it increases the capital cost over the long term as approximately $3 to $4 million of interest is payable on the outstanding debt. By gradually transitioning from debt financing to pay as you go, interest savings can be realized in the long run.

Another consideration is that much of the water utility capital works are ongoing life-cycle infrastructure replacement programs, rather than occasional major projects, and the annual capital investment has been quite stable over the years. As such, a gradual transition from debt financing to pay as you go will not materially impact intergenerational equity – both current and future users will contribute to the system.

A full transition from debt financing to pay as you go can be achieved by applying a two percent surcharge to water rates each year over the next 8 years. By year 8, the majority of the Utility's capital debt would be funded through current year revenues. In between years 9-20, the outstanding debt will be retired lowering total capital costs until eventually all capital is funded from water utility revenue at a lower ongoing cost than possible with debt-financing. Figure 4 depicts the scenario graphically. Note that this graph is for illustrative purposes only, as actual costs will depend on approved capital programs and their financing costs.

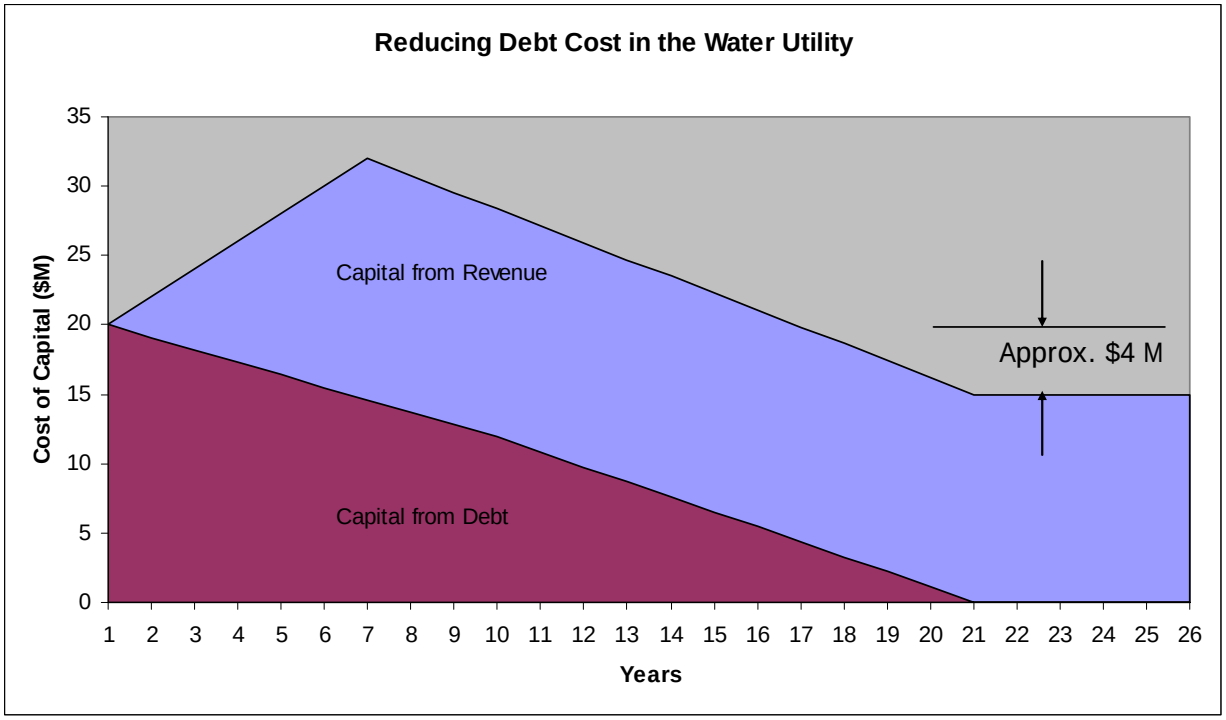


Figure 4 – Capital from Revenue Strategy

For the 2012 budget, staff are proposing increasing the water rate by 2% to transition $5 million of capital work from debt financing to pay as you go. If the two percent rate premium is added incrementally to the 2012, 2013 and 2014 budgets, then $15 million of anticipated borrowing for the 2012-14 Capital Plan could be avoided. This represents 36% of the 2012-14 plan for waterworks capital.

In addition to the interest savings, the rate surcharge sends a stronger price signal to metered water customers and will strengthen conservation efforts while the City strives to reduce water use 33% by 2020.

Recommendation: Implement a 2% annual increase to water rates to begin a transitioning from debt financing to pay as you go financing for the Waterworks Capital.

The impact of this premium is $10 for a residential property. Staff will report out as part of the 2013 Water Utility Report on the long term financing strategy for the utility

4. GCAP Water Metering Initiative

In-Principle Council Approval:

One of the key initiatives under the GCAP water goal is water metering of new single-family and duplex dwellings (SF/DF) specifically, this initiative is expected to achieve the following benefits:

- Eliminate the need for costly source expansion within this century
- Up to 20% reduction in water use through changes in consumer behaviour
- Reduce the stress on the City's water system (and that of Metro Vancouver's) by reducing peak summer demands
- Volumetric billing and consumption data provided to customers to inform water use behaviour
- Achieve billing equity among all customers. Reduced water use will result in savings compared to those who consume more water
- Reduces the stresses on our sanitary sewer system
- Provide system data that aids in directing capital investments
- Increase the ability to identify and address leaks and cross connections.

For more background information on the benefits and rationale for water metering in Vancouver, see Appendix C.

- *Current Water Metering Structure*:

  The single family and duplex sector are the only remaining property classes in Vancouver that are unmetered. For all currently metered customers, the Water Utility has employed a base rate in the form of a meter rental charge as well as a volumetric charge for consumption.

  The base rate depends on meter size and represents the approximate cost to read, bill and maintain the meter (see By-Law, Schedule E).

  The consumption charge is a constant per unit charge that does not incline or decline based on consumption. One unit of water is charged the same amount regardless of season or time of use.

  For comparative purposes, there are a small number of large lot single family properties (greater than ½-acre) that are currently metered and their rates are:

  > $0.79 per 1000 litres consumed and $32 meter rental charge per quarter which equals, on average, $436 per year. (2011)

- *Consultation*:

  When Council provided approval "in principle" of metering new home connections in July, staff were directed to consult with stakeholders and address any anticipated issues with the policy. Two major stakeholders were consulted: home builders and fire sprinkler design professionals. Input was solicited from the Home Builders Association (700 members) and the Canadian Automated Sprinkler Association. Some comments were received regarding affordability impacts due to the added cost to install the meter and potential sprinkler upgrades for properties in low pressure areas. Overall, however, the initiative is receiving broad support with no significant concerns.

- *Rate Structure*:

Three components of metered rates and fees were evaluated to determine the rate structure for new single family/duplex dwellings: installation cost; variable rates; and fixed rates.

Installation Cost - The supply and installation of new meters is estimated at approximately $500 per dwelling. It is proposed to add $500 to the permit fee for a new water service (from $4,348 to $4,848); a cost which will ultimately be passed on to the purchaser of the home or the initiator of the major renovation.

Variable Rate: To encourage conservation, the most important component of the rate structure is the variable portion that is linked to consumption. Appendix D details the three major variable rate options: uniform, seasonal, and inclining.

Staff recommends the introduction of seasonal rates that send a stronger price signal during the summer months when the system is most stressed. High summer water consumption drives the need for regional water supply upgrades such as new transmission mains and source development. Deferring these costly projects is the primary incentive to reduce local water consumption. This rate structure also aligns with Metro's seasonal rate structure applied to our bulk water purchases.

Fixed Rate: In addition to the basic rate structure, staff recommends continuing to charge a fixed rate (or base rate) component within the rate structure to:
- reflect the high proportion of fixed costs to operate the water system
- improve revenue stability
- account for fire protection services for vacant homes

To strengthen the price signal provided by the variable rate component, the recommended base rate for small connections has been reduced from $32 per billing period to $20 per billing period.

Recommendation:
Implement a seasonal rate with a 25% premium during the high season to reflect Metro's seasonal rate.
Reduce the base rate component for small meters that typically serve single family and duplex homes, to minimize the fixed portion of their metered water bill.
The rate structure for metered single family and duplex properties for 2012 is proposed as: Base Charge/Meter Rental Fee (3/4" and1" meters)- $20 per billing period (4 per year) Rates
October 1 to May 31 $0.79/cu meter of water June 1 to Sept 30 $0.99/cu meter of water Equates to $418 per year for an average single family home

- **Overall Impact on Single Family Homes**

  At present, approximately 84,000 single-family and duplex homes are not metered; only about 700 homes on lots that are larger than ½-acre are metered. The number of metered homes is expected to increase by 1000 to 2000 per year, depending on new home construction and renovation rates.

  The impact of these rate structure changes on the average homeowner on an annual basis is summarized as follows:

	2011	2012	%Change
Non-Metered Single Family Home	$467	$513	+9.9%
Average Metered Single Family Home *	$436	$418	-4%

* assumes 3.5 people per home with average per-capita consumption. Higher occupancy homes or those on large lots are likely to consume more water and pay proportionally higher fees.

- *Application of Seasonal Rates to other Metered Customers*

  Economic studies have shown that conservation oriented pricing enables water conservation among all customer classes. Therefore, staff recommends that seasonal volumetric rates also be applied to the multi family residential and commercial sectors.

  Since 2005, Metro Vancouver has sold water to the City under a seasonal rate structure. This seasonal rate structure was not passed on to City residents. Adopting a similar rate structure for the multi-family and commercial properties will better harmonize water revenues with purchase costs. Properties that maintain consistent usage patterns all year should benefit with lower total purchase costs as the unit rate will be lower for 2/3 of the year. Conversely, high summer water users will pay more than average depending on consumption.

Recommendation: Apply seasonal rates to all metered residential and commercial properties effective January 1, 2012.

Prior to implementation within the Industrial and Institutional sectors, consultation is recommended to ensure that seasonal price variations will not cause undue financial hardships. Staff will report back results in next year's rate report with recommendations on whether to include the Industrial and Institutional sectors within the seasonal pricing structure.

5. "Closing the Gap" – Future Initiatives to Meet GCAP Water Goals

The goal of reducing consumption by 33% by 2020 is aggressive. Work has begun on a number of outreach, incentive and enforcement programs. Phasing in water meters within the single family and duplex sector will gradually create a price to consumption signal for the final unmetered sector. However, the estimated installation pace of approximately 1000 – 2000 meters per year would require at least 40 years to achieve full metering. The overall suite of conservation tools under development by staff are expected to achieve approximately two-thirds of our water conservation target by 2020. In order to close the gap and achieve the desired 33% reduction in per-capita City water consumption, more aggressive metering and conservation programs will be required.
A number of options are currently being studied to expedite the residential (SF/DF) water meter program, such as:

- A voluntary metering program
- Requiring meters on City initiated service replacements and in concert with other capital construction (water & sewer replacement, major street work)
- A City initiated Retrofit program targeting larger properties with built in automatic irrigation systems and swimming pools.

In order to raise awareness within the unmetered single family and duplex sector, a seasonal surcharge per property could also be assessed, in addition to the annual flat charge for water service. The surcharge would be implemented when a voluntary metering program becomes available. The additional revenue generated by the surcharge would be used to accelerate conservation projects within the single family and duplex sector. Properties wishing to avoid the seasonal surcharge could be considered for the voluntary metering program.

Staff expects to report the details of accelerated residential metering programs and funding strategy in early 2012. Consideration of a seasonal surcharge for flat-rate properties will also be brought to Council at that time.

6. 2012 Preliminary Budget Summary

In building the 2012 preliminary budget, all of the recommendations discussed in this report have been factored in. Most notably the impact of Metro rate increases, the forecasted mitigation with the stabilization reserve, and the increase in capital program charges as a result of transitioning from debt financing to pay as you go. (See table 2)

The implementation of seasonal rates for residential and commercial customers is not expected to have a significant revenue impact in 2012. However, staff will monitor revenues closely throughout the summer months in case conservation effects due to the new rate structure are more significant than expected.

The costs to implement single family and duplex metering will not have direct effect on the budget as initial costs are borne by the developer and ultimately the new homeowner.

	2011 Budget	2012 Prelim. Budget	Inc/(Dec) in 2011 Budget and 2012 Prelimanary Budget	%
Expenditures				
Water Purchases (GVWD)	66,646,400	68,770,000	2,123,600	3.2%
Capital Program Charges	19,252,870	24,664,600	5,411,730	28.1%
Operating and Maintenance	11,384,139	12,020,510	636,371	5.6%
Total Expenditures	**97,283,409**	**105,455,110**	**8,171,701**	**8.4%**
Revenues				
Flat Rate Revenues	39,375,100	43,340,100	3,965,000	10.1%
Metered Rate Revenues	50,695,600	54,300,200	3,604,600	7.1%
Meter Service Charges	2,861,100	3,367,477	506,377	17.7%
Flat Rate Fire Line Charges	2,320,500	2,449,560	129,060	5.6%
Other Revenues	3,080	3,000	(80)	-2.6%
	95,255,380	**103,460,337**	**8,204,957**	**8.6%**
Transfer from/(to) Reserve	2,028,029	1,994,773	(33,256)	-1.6%
Total Revenues	**97,283,409**	**105,455,110**	**8,171,701**	**8.4%**

Table 2 2012 Preliminary Budget

The bottom line for 2012 is a 8.4% increase in expenditures, which are recovered through a 9.9% increase in flat fees and metered rates. The total flat rate and metered revenues in Table 2 are the result of the projected number of flat rate customers and the projected decrease in metered customers' consumption.

The 28.1% increase to the Capital Program charges is primarily driven by the proposal to introduce $5 million of "pay as you go" funding.

The 5.6% increase to Operating and Maintenance consists mainly of $555,000 of new funding to support the Clean Water conservation program.

Forecasted Impact on the Rate Stabilization Reserve

Past practice has been to maintain a balance in the water rate stabilization reserve of at least 7.5% of water purchases, which is approximately $5.2 million based on the 2012 budgeted water purchases. However, because the reserve has been built up to the current balance of $16 million, the City can continue to use the reserve over the next few years to mitigate the increase in Metro's projected cost of water and to help fund the transition from debt financing to pay as you go for the capital work. Following this strategy, the projected reserve balance in 2016 will be just over the 7.5% minimum target (as show in Table 3).

	2012	2013	2014	2015	2016
Projected GVWD Water Rate					
($ per cubic meter)	$0.5980	$0.7093	$0.7556	$0.8009	$0.8453
% Increase	5.90%	18.60%	6.50%	6.00%	5.50%
Water Consumption	68.77	78.73	82.36	94.27	97.13
Anticipated Change in City Water Rate	9.90%	11.00%	10.00%	10.00%	8.00%
Water Rate Stabilization Reserve					
Reserve Balance Beg. of Year ($ millions)	$ 15.85	$ 13.86	$ 9.75	$ 10.72	$ 6.26
Operating Surplus / (Deficit) ($ millions)	(1.99)	(4.11)	0.97	(4.46)	1.63
Reserve Balance End of Year ($ millions)	$ 13.86	$ 9.75	$ 10.72	$ 6.26	$ 7.89
% of Water Purchase Costs	20.2%	12.4%	13.0%	6.6%	8.1%

Table 3 - Forecast of Water Rate Stabilization Reserve

Achieving the result indicated above will depend on the GVWD completing its water treatment capital program and translating those costs to water rates as currently projected. This reserve forecast will also depend on the cost of future capital works undertaken by the City and the associated cost of borrowing for capital works, as well as annual operating costs. If there are changes to these projections, City water rates will be adjusted appropriately to manage the reserve.

7. Proposed 2012 Water Utility Fees and Bylaw Changes

The report thus far has focused on the 9.9% proposed increase to consumption based rates. Also requiring inflationary adjustment are the miscellaneous fees and charges contained within the By-Law.

With the exception of the water rate categories (Schedule B and D), most other fees are proposed to increase by 3.5% to cover inflationary increases to labour, materials and equipment rentals.

Appendix A provides a complete summary of the changes in fees proposed for 2012.

New Meter Funding

During preparation of the 2012-14 Capital Plan, a recommendation was made to discontinue capital funding for the purchase of water meters for new developments. Previously, these meters were funded through the capital program as opposed to including the cost in the permit fee. All connection costs, except for the meter were borne by the developer. In order to recover the full cost of the service connection including the meter, fees within Schedule G have been increased to include the wholesale cost of the meter.

Recommendation: Increase fees and charges as follows:

Schedule A – Flat Rate Connection Fees	3.5% increase*
Schedule A1 – Removal Fees	3.5% increase
Schedule C – Unmetered Fire Service Pipes	3.5% increase
Schedule E – Meter Service Charge	3.5% increase
Schedule F – Temporary Construction Water	9.9% increase
Schedule G – Water Meter Installation	3.5% increase**
Schedule H – Miscellaneous Fees	0.0% increase
Schedule I – Miscellaneous Charges	0.0% increase

*Flat rate connection fees have been increased by a further $500 to account for single family and duplex metering

** Water Meter Installation costs have also been increased by the wholesale cost of the water meter

LEGAL IMPLICATIONS - BY-LAW 4848 AMENDMENTS

Recommendation F seeks approval to authorize the Director of Legal Services to bring forward necessary By-Law amendments to require residential metering, establish the discussed rate structure and increase rates as outline in Recommendations “A” and “B”.

ASSUMPTIONS WITHIN REPORT

The forecasts and long term guidance within this report is subject to many assumptions regarding the cost of bulk water, inflation rates etc. The City has no long term obligation to update the content within this report. Future annual rate reports will include updated projections.

CONCLUSION

Rates for water consumption and services are adjusted annually to offset cost increases in the water utility, including operating and debt charge costs and the costs of purchasing water from Metro Vancouver. Based on a review of the waterworks costs for 2011, it is recommended that water consumption based fees be increased by approximately 9.9% and service and connection fees be increased by 3.5%, as described in this report.

As of January 1, 2012, new homes in Vancouver will be required to purchase a water meter with their new water connection. Metered residential and commercial customers will be billed on the basis of a seasonal rate structure.

* * * * *

Appendix A

Water Works By-Law No. 4848
2011 Rate

Water rate increase	**9.90%**	Applicable to Sch B, D & F
SF & Two-Family Dwellings Connection Fee Increase	**3.50%**	Applicable to Schedule A, A.1 and C
Other Connection Fee Increase	**3.50%**	Applicable to Schedule A, A.1 and C
Meter Service Fee Increase	**3.50%**	Applicable to Schedule C, E & G

Schedule A — Flat Rate Connection Fees

Service Pipe Size	Present	Proposed Fee
Single-Family & Two-Family Dwellings		
20 mm (3/4")	$3,624	$4,251
25 mm (1")	$3,771	$4,403
40 mm (1 1/2")	$4,348	$5,000
50 mm (2")	$5,206	$5,888
Other Connections		
20 mm (3/4")	$7,721	$7,991
25 mm (1")	$8,033	$8,314
40 mm (1 1/2")	$9,269	$9,593
50 mm (2")	$9,269	$9,593
100 mm (4")	$13,402	$13,871
150 mm (6")	$16,576	$17,156
200 mm (8")	$18,101	$18,735
300 mm (12")	$25,473	$26,365

Schedule A.1 — Removal Fees

20mm (3/4") to 50mm (2") inclusive	$970	$1,004
100mm (4") to 300mm (12") inclusive	$2,909	$3,011

Schedule B	Flat Service Charges for Residential Properties	
	Present	Proposed
Annual Flat Rate		
Single dwelling unit	$467	$513
Single-Family with suite or laneway house	$632	$695
Single-Family with suite and laneway house	$797	$876
For each strata title duplex	$316	$347

Schedule C	Flat Service Charges for Unmetered Fire Service Pipes	
Pipe Size	Present	Proposed
50 mm (2") or smaller	$193	$200
75 mm (3")	$289	$299
100 mm (4")	$399	$413
150 mm (6")	$460	$476
200 mm (8")	$539	$558
250 mm (10")	$572	$592
300 mm (12")	$614	$635

Schedule D	Charges for Metered Water Service		
Three Month Period		Present Rate	Proposed Rate
Seasonal Rate			
Applies to Residential and Commercial Use Codes			
October 1 - May 31	all units		$2.237
June 1 - September 30	all units		$2.803
Uniform Rate			
Industrial, Institutional and Agricultural Use Codes	All units	$2.251	$2.474

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 Three Month Period	Present	Proposed
Services with Standard Type Meters		
17 mm (1/2") and 20 mm (3/4")	$27	$20
25 mm (1")	$32	$20
40 mm (1 1/2")	$45	$47
50 mm (2")	$62	$64
75 mm (3")	$140	$145
100 mm (4")	$170	$176
150 mm (6")	$221	$229
200 mm (8")	$343	$355
250 mm (10")	$420	$435
300 mm (12")	$499	$516
Services with Low Head Loss Meters / Detector Check Valves		
100 mm (4")	$196	$203
150 mm (6")	$288	$298
200 mm (8")	$386	$400
250 mm (10")	$481	$498
300 mm (12")	$575	$595

Schedule F **Charges for Temporary Water Service during Construction**

Building Size in Square Meters of Gross Floor Area	Present	Proposed
Up to an including 500 sq.m	$206	$226
Over 500 but not exceeding 2,000	$403	$443
Over 2,000 but not exceeding 9,000	$606	$666
Over 9,000 but not exceeding 24,000	$1,018	$1,119
Over 24,000 but not exceeding 45,000	$1,524	$1,675
Over 45,000	$2,022	$2,222

Schedule G **Fees for Installation of Water Meters**

Size of Standard Meter	Meter on City Property	Present	Proposed Fee
20 mm (3/4")		$2,722	$2,923
25 mm (1")		$2,801	$3,055
40 mm (1 1/2")		$2,895	$3,330
50 mm (2")		$2,895	$3,443
75 mm (3")		$10,312	$12,015
100 mm (4")		$10,312	$13,139
150 mm (6")		$35,598	$42,910
200 mm (8")		$35,598	$44,133
250 mm (10")		$42,694	$59,625
300 mm (12")		$42,694	$65,928

Size of Standard Meter	Meter on Private Property	Present Fee	Proposed Fee
20 mm (3/4")		$344	$462
25 mm (1")		$364	$533
40 mm (1 1/2")		$364	$711
50 mm (2")		$517	$982
75 mm (3")		$798	$2,168
100 mm (4")		$798	$3,292
150 mm (6")		$893	$6,981
200 mm (8")		$1,034	$8,350
250 mm (10")		$1,346	$16,830
300 mm (12")		$1,346	$23,133

Schedule H	**Miscellaneous Fees for Water Users**		
		Present	Proposed
Cross Connection Control Administration Fees			
	First Assembly	$25	$25
	Additional Assembly	$13	$12.50
Charges when service pipes are shut off for more than ninety days (per month)			
15mm, 20mm or equivalent unmetered services		$2	$2

Schedule I	Miscellaneous Charges		
		Present	Proposed
Charges for Returned Cheques		$35	$35
Residual Water Pressure Estimate Fee			
	Original calculation	$35	$35
	Additional copies for same location	$10	$10
Miscellaneous water information requests (per hour)		$40	$40
City Crew Call Out fee (normal working hours) (per occurrence)		$50	$50
City Crew Call Out fee (outside normal working hours) (per occurrence)		$200	$200
Frozen pipe thawing request			
Deposit		90	$90
Fee to thaw frozen pipe		at cost	
Water Service Shut off or Turn On request (per occurrence)		$50	$50

APPENDIX B

2011 Waterworks Operating Budget Performance

Table 1 summarizes the operating budget and current forecasts for the Water Utility for 2011 and the 2011 projected results. Table 1 includes estimates of City operating and debt costs as well as the costs of purchasing water from Metro Vancouver.

	2011 Budget	2011 Projected Results	Variance %
Expenditures			
Water Purchases (GVWD)	66,646,400	62,664,231	(6.0%)
Capital and Debt Charges	19,252,870	19,252,211	0.0%
Operating and Maintenance	11,384,139	11,167,061	(1.9%)
Total Expenditures	**97,283,409**	**93,083,503**	**(4.3%)**
Revenues			
Flat Rate Revenues	39,375,100	39,546,283	(0.4%)
Metered Rate Revenues	50,695,600	47,402,500	(6.5%)
Meter Service Charges	2,861,100	3,253,601	(13.7%)
Flat Rate Fire Line Charges	2,320,500	2,366,725	(2.0%)
Other Revenues	3,080	3,000	(2.6%)
	95,255,380	**92,572,109**	**(2.8%)**
Transfer from/(to) Reserve	2,028,029	511,642	(74.8%)
Total Revenues	**97,283,409**	**93,083,503**	**(4.3%)**

Table 1 - 2011 Anticipated Financial Performance

Expenditures

The projected results for 2011 show water purchase costs will be less than budgeted (6.0% under budget). This past summer was particularly wet and wet summers create lower demands than normal. Historically, consumption forecasts were based on long-term averages. However, due to a steep decline in water consumption in recent years, a more suitable forecast based on recent consumption has been used since 2008 to develop the rates.

Water purchases are the main driver of the budget at 65% of the total, debt charges 24%, and operating and maintenance costs at 11%.

Revenues

Based on the recent summer, the actual water consumption is projected to be lower than estimated. While this reduction in the consumption changes the total revenues estimated, it has moderate impact on the rate as the volume of water purchased decreases as well.

APPENDIX C

Water Metering Background

Vancouver's distribution network supplies drinking water to properties throughout the City through approximately 100,000 service connections. Approximately 14,000 of those service connections are metered where customers are billed based on the amount of water used plus a monthly fee to cover the costs of billing, meter maintenance and replacement. Metered customers, which include all multi-family dwellings, industrial, commercial and institutional customers, capture about half (55%) of the total water consumption in the City. Of the remainder, thirty percent (30%) is consumed by the 85,000 single and dual family dwellings in the City who are billed an annual flat fee based on an average consumption. The rest is considered non-revenue which includes water used in parks, civic facilities and losses through system leakage.

Current City policy does not require metering single and dual family dwellings (SF/DF). In the past, the cost of installing, billing, and maintaining meters on single and dual family residential services was seen to outweigh the savings as water is a relatively inexpensive commodity in Vancouver.

This approach did not fully acknowledge the impacts of having to expand the region's water sources by either raising the dams or developing another fresh water lake (estimated at $500M plus associated environmental impacts). This was, in part, because source expansion was accepted as a requirement to support growth. For example, projections based on current rates of consumption by Metro Vancouver, predict that Seymour and Capilano Lake reservoirs levels will need to be raised between 2050 and 2070. However, if Vancouver meets our water conservation target (reduce total water consumption by 33% over 2006 levels), and if other member municipalities follow suit, we will extend the life of our current water sources well beyond 2100.

To achieve this goal, a more comprehensive conservation program which includes metering of all SF/DF residential services is necessary.

Benefits of metering SF/DF water connections include:

- Achieving up to 20% reduction in water use in this sector through changes in consumer behaviour
- Reduce the stress on the City's water system (and that of Metro Vancouver's) by reducing peak summer demands
- Volumetric billing and consumption data provided to customers to inform water use behaviour
- Achieve billing equity among all customers. Reduced water use will result in savings compared to those who consume more water
- Reduces the stresses on our sanitary sewer system
- Provide system data that aids in directing capital investments
- Increase the ability to identify and address leaks and cross connections.

APPENDIX D

Rate Structure Options

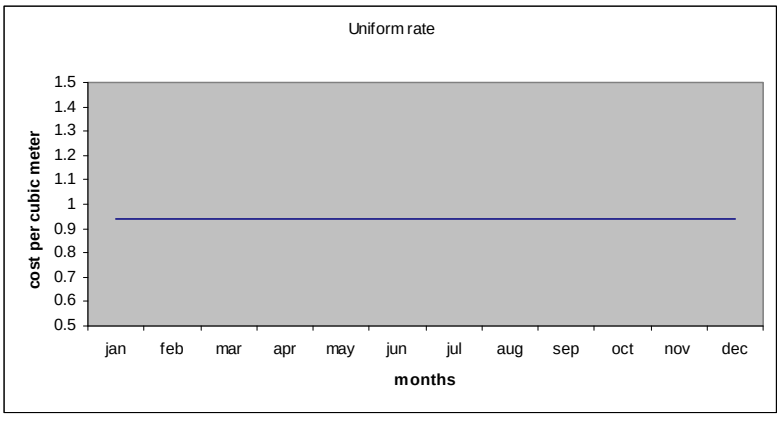
In designing an appropriate rate structure, staff considered principles that will guide the decision. For example, a conservation oriented rate will drive down consumption rates, but overly penalizing high occupant homes would conflict with other important City policies. The following lists the guiding principles that were considered when evaluating the rate structure:

- Conservation oriented Price to provide an incentive to use less
- Provides benefit when resource most stressed during summer weather conditions
- Ensures no disincentives occur that conflict with affordable housing and density policies
- Supports Council's urban agriculture policy and goals
- Rate structure can be applied to many customer classes, in addition to single family homes.
- Ease of understanding for customer
- Manageable to implement with existing internal systems – Tempest billing

Several rate structure options in use around the world are available for this sector class as well as the multi family residential and commercial classes. Those include:

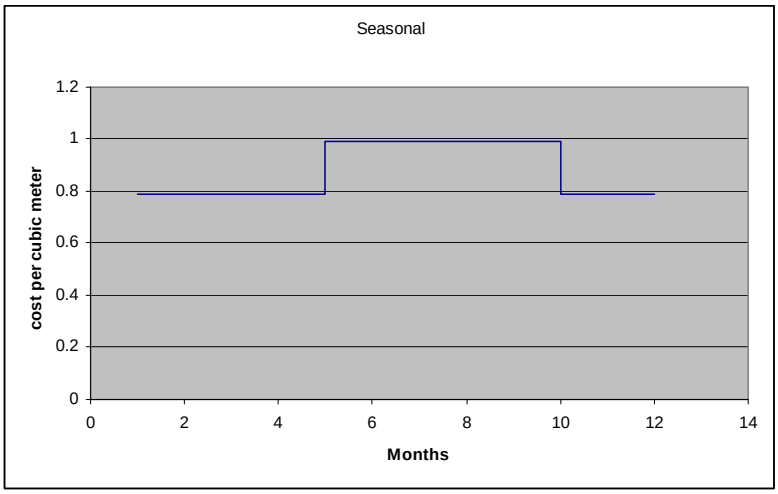
- Uniform rate

  The uniform rate is the most prevalent form of rate structure and is used by major cities like Toronto, Portland, Calgary and Vancouver. The structure is the simplest form of commodity usage fee; easily applied to all types of metered customers.



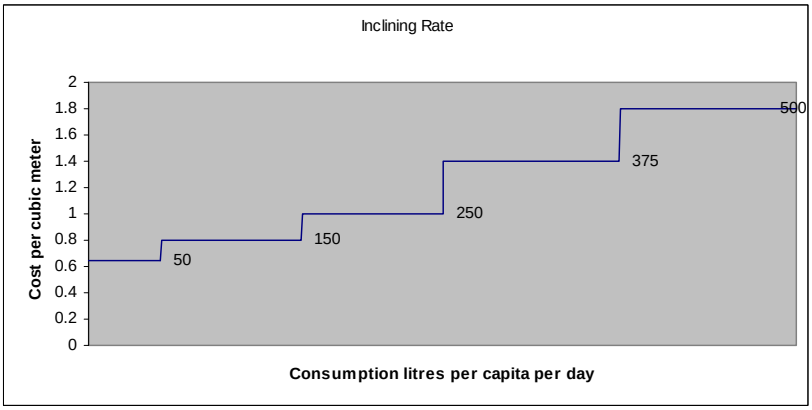
- Seasonal rate

  Seasonal rates are higher during times of stress on the water system. Metro Vancouver employs an off peak rate from October 1 to May 31 and a peak rate in effect June 1 to September 30th. Peak rates are priced at a 25% premium over off-peak, to send a stronger price signal when demand reduction is most beneficial.



- Inclining rates

  The use of inclining block rates has increased in areas experiencing drought conditions. The fee structure provides the strongest conservation incentive but works best when applied to sectors where properties are similar in nature (similar property size and similar number of people in each residence).



Given the options available, table 1 compares the guiding principles against the options:

Principles	**Uniform**	**Seasonal**	**Inclining**
Conservation oriented structure		✓	✓
Targets summer usage		✓	✓
Does not overly penalize homes with secondary suites and laneway housing, dense multi-family properties, etc	✓	✓	
Aligns with Council's urban agriculture goals	✓		
Applicable to many customer classes	✓	✓	
Easy to understand bill	✓	✓	
Manageable to implement for existing billing system	✓	✓	
Preferred		✓	

Table 1 – Rate Options vs. Fit against Principles

Seasonal and inclining rates meet the goal of a conservation oriented rate structure. The difficulty of introducing an inclining block rate in Vancouver is the heterogeneous nature of the housing stock. A high percentage of homes have unregistered secondary suites, many of those properties are also keen to add a laneway house. The increased density is regarded as a means to address affordable housing goals; however, the inclining block penalizes higher occupant homes, and instead rewards low occupant homes. Progressive water conservation cities like Portland and Seattle still employ a uniform rate for at least the majority of the year.

Seasonal rates target summer usage when the system is most stressed. The seasonal rate affects all properties equally regardless of the number of occupants. Most importantly, seasonal rates send a strong price signal during the summer months when the water system is most stressed.

Fixed vs. Variable Costs

In addition to the basic rate structure, most jurisdictions charge their customer a fixed rate or base rate component within their rate structure to:

- reflect the high proportion of fixed costs to operate the water system
- improve revenue stability
- account for fire protection services for vacant homes

The City of Vancouver has employed a base rate in the form of a meter rental charge for many years. Currently the base rate depends on meter size and represents the approximate cost to read, bill and maintain the meter (see By-Law, Schedule E)

APPENDIX E

Single/Dual Family Residential Water Metering Policy

FAQs

What is the water meter policy proposed to Council on December 15, 2011?

On December 15, 2011, City Council will consider a new policy to require all new water services for single and dual family homes with or without a laneway house applied for after January 1, 2012 to be installed with a water meter. On average, 1000 homes a year apply for a new service as a result of new home construction or renovations that require additional water capacity such as for the addition of a laneway house.

Do any other municipalities in Metro Vancouver require water meters?

Other municipalities in the Lower Mainland have adopted this method of water conservation in recent years. West Vancouver and Abbotsford have water meters on all their connections while Richmond and Surrey have just over half of single-family homes on a water meter.

Why is the City expanding the water meter requirement to single and dual family connections?

Currently all other sectors, including industrial, institutional, commercial and multi-family residential customers are metered.

Expanding the metering requirement to the single and dual family home sector for new services is the first step in achieving a fully metered system over long term.

Aside from the benefit of billing equity (ie paying only for what you use), metering is the foundation step in extending the life of our water sources by deferring the costs and environmental impacts of raising the dams of our current reservoirs or the development of an additional lake source.
Other benefits of metering SF/DF water connections include:
Achieving up to 20% reduction in water use through changes in consumer behaviour and help in identifying system leaks
Reducing the stress on the City's water system (and that of Metro Vancouver's) by reducing peak summer demands
Informing water use behaviour by providing volumetric billing and consumption data provided to customers
Consumption information would help identify customer base for targeted water conservation programs
Results in savings for those who consume wisely
Reducing the stresses on our sanitary sewer system

Collecting system data that aids in directing capital investment
Increasing capacity for identifying and addressing potential cross connections

How do water meters help conserve water?

Water meters make people aware about their water use. When people are charged for their actual measured use, they tend not to waste it, thereby reducing their overall water consumption. It immediately rewards customers who use water efficiently and provides a price signal for those who don't. Another benefit to water meters is that they help identify leaks. Leaks can constitute a significant portion of a city's water consumption – a leaky toilet can waste 750 litres of drinking water per day according to the EPA. That is equivalent to wasting over $270 per year. Eliminating leaks benefits everyone, including your pocketbook.

Will the new water meter requirement apply only to new homes?

No, all new services applied for after January 1, 2012, for any reason, will include a water meter as part of the installation.

How much will it cost?

There will be a $500 increase to the flat rates charge for a water service for a single/dual family zoned lot. This charge recovers the materials and labour associated with the water meter and meter box.

Will water services for commercial, industrial and institutional properties include water meters, as well?

Water meters are already required for all commercial, industrial and institutional sectors.

Where will the meter be installed and what will the water meter look like?

Meters will be installed in line with water service, typically 1m (3.3ft) underground. Access to the meter would be through a PVC meter box that will be installed flush to the surrounding landscaping. For future access for maintenance, the City is requiring that no landscaping other than grass be installed within a 1m (3.3 ft) of the box, and 2m (6.6 ft) clearance above.

Who will install the meter?

Water meters will be installed by City crews at the same time the sanitary and storm sewer connections are made.

Will a water meter affect the water pressure in the house?

No, there will be no noticeable drop in pressure associated with the water meter.

What will my bill look like?

You will receive a water bill every 3 months. It will consist of a basic charge to cover costs of billing, meter maintenance and replacement and a volumetric charge based on the amount of water used during the 3 month period. There will be two rates throughout the year. The offpeak rate assessed from October 1 to May 31 will be $0.79/1000 litres. During the summer months, a 25% premium is charged to inspire conservation. This is the same rate structure that Metro uses to sell their bulk water to all of the municipalities including Vancouver.

How are the water rates set?

Water rates have been calculated such that an average water user will be paying equal to or less than the current flat rate. This will allow customers who use water efficiently to see savings immediately. Alternately, it will provide an incentive for high volume users to conserve water.

APPENDIX F

Proposal to apply a Seasonal Surcharge for Unmetered Single Family and Duplex Properties as a funding source for a future voluntary metering program

In order to raise awareness within the unmetered single family and duplex residential sector, a seasonal surcharge per property could be assessed in addition to the annual flat charge for water service.

The additional revenue generated by the surcharge would be used to accelerate conservation projects within the single family and duplex sector. A number of options are currently being studied to expedite the residential (SF/DF) water meter program, such as:

- A voluntary metering program
- Requiring meters on City initiated service replacements and in concert with other capital construction (water & sewer replacement, major street work)
- A City initiated Retrofit program targeting larger properties with built in automatic irrigation systems and swimming pools.

Properties wishing to avoid the seasonal surcharge could be considered for a future voluntary metering program for instance.

Staff expects to report the details of accelerated residential metering programs in early 2012.