

---

DATE: September 27, 2011

REPORT TITLE: **UTILITY RATE STRUCTURE REVIEW**

FROM: Dan Labrecque, Commissioner of Public Works

---

### RECOMMENDATION

**That staff proceed to update the utility billing system to allow Regional Council to implement a variable rate structure including potentially inclining block rates and report to Council in the spring of 2012 prior to implementation to determine the actual structure.**

### REPORT HIGHLIGHTS

- Peel's current retail utility rate structure is 100 per cent volumetric (no fixed charge component) with a rate for water and a rate for wastewater. Residential customers are billed for wastewater based on 85 per cent of the water meter reading throughout the year to offset outdoor water usage that is not necessarily returned directly to the sanitary sewer.
- The Utility Rate Structure for Peel has not been reviewed for several years and the declining consumption trend and some fluctuation in revenue were drivers for undertaking a review.
- No changes to the rate structure can occur until the utility billing system is updated
- Based on the review a replacement billing system should be obtained which allows Council to implement a variable rate structure including block rates, administrative fees, and other rate structures with the exception of time of use billing
- Time of use rate structures may be beneficial in other utilities such as electricity but are expensive and will likely have minimal impact in Peel's water program and therefore is not recommended for future use.

### DISCUSSION

#### 1. Background

As indicated in the past reports to Council, the Region of Peel's water metering and billing operations are considered very efficient and effective by industry standards. Almost all properties are metered and very few accounts are written off as uncollectable. In order to ensure the continued efficiency of the system, ongoing reviews occur. Over the past two years a focus has been placed on the utility rate model and usage forecasting along with a review of the rate structure. Future reviews will focus on the billing application and the metering system.

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

In 2010 a review of Peel's Utility Rate Structure was started. The review was initiated to determine if a change to the structure may be warranted given a review has not been undertaken for several years, growth has slowed, and billed consumption has been declining. The review did not include Peel's wholesale rate with the Region of York as it is governed under a formal agreement.

The review was also intended to seek input from Council on future rate structures prior to consideration of systems to replace Peel's current billing system which is an in-house system and due for replacement.

**a) Billing System Considerations**

It is important to note that Peel's current billing system (Aqua Peel), which was developed in house over ten years ago, can only accommodate a fully variable rate structure and therefore any change in structure will require a new billing system. While maintaining the current rate structure will allow for the continued use of the current system, the system will need to be replaced. Its functionality is limited and similar to any older computer system that has not been updated; its business practices are outdated. Given that the system is accountable for collection of over \$1 million in revenues each business day, it is a critical system. Sufficient funds are included in the capital budget and are fully funded through existing reserves.

The approach is to first have Council confirm the parameters of the potential future rate structure based on the finding of the rate review and then once those parameters are known, to review other current systems owned by the Region of Peel. This will enable staff to determine if modules/upgrades can be purchased and added to accommodate the billing system needs or whether a new stand alone billing system is required.

In general, modern systems that will accommodate customer bases of 250,000 plus can accommodate the majority of rate structures such as fully variable (the current structure) or an inclining block rate or a combination depending on customer classification. System differentiation begins to occur when less common rate structures such as time of use are included in the system parameters. By eliminating the less common rate structures before exploring system replacement options a broader set of options can be considered and will likely reduce the overall cost of the system.

**b) Peel's Existing Retail Rate Structure**

The rate structure currently in place, in Peel, is referred to as uniform rate or single block rate. Regardless of the customer class - residential or industrial, commercial, institutional (ICI) and regardless of the amount of water supplied to a property, the same water rate applies. People only pay for what they use and do not pay any form of an annual administration fee or fixed component.

For the wastewater charge, it is calculated based on 100 per cent of the amount of water supplied if the property is ICI and only 85 per cent of the amount of water supplied if the property is residential. Residential properties receive a reduction year-round to reflect the fact that some summer water usage (such as the filling of a pool or watering of the garden) is not returned to the sanitary sewer.

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

Industrial customers may make a formal appeal, including engineering reports and other supporting documentation as outlined in the Wastewater By-law 53-2010. If the appeal is successful, an amount less than 100 per cent will be used for determining the wastewater charge.

Virtually all water services are metered and read by the Region of Peel. Wastewater is not metered (an industry-wide practice particularly for residential properties). Instead, the wastewater rate is established based on the full costs of treating wastewater and the costs are recovered by utilizing the water meter reading to allocate wastewater charges to properties.

**2. Findings**

In Ontario no legislative requirements exist specific to setting a utility rate structure and therefore in essence each municipality is free to select the methodologies and rate structures suitable to their needs.

The four basic types of rate structures include:

- Fully variable – There is a rate based on use and the total bill is based on rate times use (the current system in Peel). If the customer uses no water they pay nothing.
- Two part (Fixed rate plus Variable) – A base administration fee is charged based on type of dwelling or industry type or possible meter size as well as a usage rate. The total bill is base fee plus rate times use. If the customer uses no water they still pay the administration fee.
- Variable Rate with inclining block rates – A rate is charged for the first amount of water used and then a higher rate is charged for any amounts used over a certain limit. The total bill is the sum of the two amounts.
- Time Of Day Use – The water meter records the amount used as well as the time period during day used and then variable rates are charged based on the amount of water used in each time period (A similar system is used for Hydro in Ontario).

It is also possible to combine these methods and differentiate between classes of properties and therefore there are a number of possible combinations.

**a) Environmental Scan**

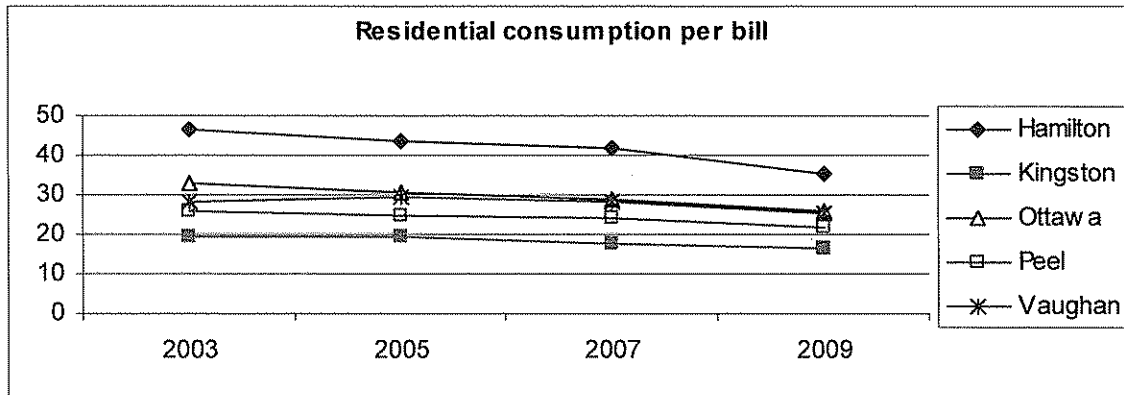
Prior to considering the various rate options an environmental scan of various properties across North America was undertaken. Approximately 75 per cent of the 41 North American utilities reviewed have a two part rate structure – a fixed charge for costs related to areas such as billing and metering and a volumetric charge which is based on metered consumption. Fixed charges vary across utilities ranging from 1 per cent to 76 per cent of total costs. Of the larger systems a fully variable rate tends to be used which may simply reflect that larger systems can better deal with revenue fluctuations as compared to smaller systems.

It was interesting to note that similar to Peel, other utilities are also experiencing declining consumption as shown in the chart below. Weather is a common factor for those organizations as well as an emphasis on conservation and a downturn in the economies.

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

Utilities that currently are using a rate structure that differs from Peel's are still finding that there is volatility in revenue and declining consumption is still occurring.



No municipalities were found to charge a premium or differential rate to large industrial customers such as water bottlers. As well, under Ontario Regulation 450/07, the Ministry of the Environment (MOE) charges a special levy to large users of water whose municipal water intake exceeds 50,000 litres per day.

**b) Fully Variable Rate**

The fully variable rate structure is the current structure in place. The advantages include the following:

- Promoting conservation by allowing customers to fully control their bills based on use
- Easy to explain
- Allocates costs based on use
- Large users (industrial and commercial) tend to subsidize smaller users.

This structure also presents challenges especially in times of revenue variability. Disadvantages include the following:

- Since a large percentage of the water and wastewater systems are fixed (85 per cent), a fully variable rate does not match the cost structure. Those who use smaller amount do not contribute to the fixed costs as much as larger users
- Does not address revenue variability; during low usage periods revenue shortfalls are greater

**c) Two Part Rate (Fixed Plus Variable)**

The two part rate systems are used in many municipalities. The advantages include:

- Better matches the cost structure by including a fixed amount
- Deals with revenue variability as the fixed component is not weather dependent
- Reasonably easy to explain, however justifying fixed component can be difficult
- Partially allocates costs based on use and recognizes upfront capital investment to provide water

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

The key disadvantage for Peel in moving to a fixed rate structure is that it would shift many of the costs to the smaller users away from the large Industrial Commercial Institutional (ICI) Users. For example establishing a fixed charge (based on 40 percent of system costs) plus a variable rate would result in 68 percent of the customers paying more for the same amount of water they receive today. Appendix I provides a graph that illustrates the shift.

**d) Variable Rate with Inclining Block Rates**

The advantages of a variable rate which includes increasing rates when users surpass a preset amount are similar to the variable rate and include the following:

- Promoting conservation by allowing customers to fully control their bills based on use and encouraging large users to undertake water efficiency initiatives to avoid higher costs
- Easy to explain
- Allocating costs based on use
- Large users (industrial and commercial) tend to subsidize smaller users.

There are disadvantages (again similar to the pure variable rate) that would need to be considered including:

- Since a large percentage of the water and wastewater systems are fixed (85 percent), a fully variable rate with an inclining block does not match the cost structure. Those who use smaller amount do not contribute to the fixed costs as much as larger users.
- Difficult to determine the price point threshold for the inclining blocks to ensure that increases do not impact multi residential properties or large families.
- Higher costs for industrial users may cause companies to relocate operations if costs become uncompetitive.
- Difficult to estimate annual reviews and establish rates.

One factor that may impact inclining block rate structures in Peel is that Peel's customer base is skewed towards small users. Over 95 percent of the users in Peel are residential and within that group there are some very large users that skew the averages (only 22 percent of the customers are above the average).

The remaining 5 percent of the users are Industrial, Commercial and Institutional (ICI) and within that group there is also a much skewed distribution. For example the average consumption for the ICI group is 3,650 m<sup>3</sup>. Within the ICI group 99 percent of the clients are below the average and 1 per cent is above. Therefore while inclining block rates will be considered in the future work determining the volume price point may be challenging.

One potential rate structure involving inclining block rates may involve promoting water efficiency initiatives in plants by rebating a component of the higher block charges if the customer invests in water efficiency infrastructure. This will be explored in the next steps.

**e) Time of Use (TOU) Rate Structure**

TOU is currently used in Ontario for electrical billing. The metering technology (Smart Meters) measures how much power is used along with the time of day and allows the power utility to bill at different rates during the day.

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

While TOU has several advantages with regard to electrical power its use is limited with regard to water utilities. The technology does exist however for Peel to implement TOU. Implementing TOU will involve replacing all of the water meters in the Region of Peel (in excess of 250,000) along with the development of a fixed area network to collect the information and the purchase of an advanced billing system. Rough estimates of these costs suggest that the premium for Peel would be in excess of \$50 million as compared to the current system. It is also likely that the system would take between four and five years to put in place unless an aggressive meter replacement program was instituted.

Aside from the cost and logistic issues, Peel's water rate is very low in comparison to other utilities. The monthly cost of water makes up a small percentage of households monthly utility costs (heating, electricity and water/sewer). Therefore, charging variable rates for different times during the day will likely have little impact on household behavior as compared to doing the same for electricity costs.

For these reasons, moving to a time-of-use billing structure is not recommended. Given that such a system will require a specific billing system and upgraded meter technology, it is recommended that time-of-use billing not form criteria for the future billing and metering system.

**General Conclusions and Next Steps**

Every rate structure has advantages and disadvantages. In evaluating these structures all could be beneficial but all will shift the distribution of who pays differently. For example establishing a fixed charge (based on 40 percent of system costs) plus a variable rate would result in 68 percent of the customers paying more for the same amount of water they receive today and therefore is not being recommended.

Future consideration of a time of day structure is also not being recommended as it is expensive to implement and may have limited benefit in achieving conservation and operational efficiencies.

As discussed earlier in the report, the current billing system does not allow for any change in the rate structure. Almost all of the new "off the shelf" systems will allow for multi rate structures including inclining block and differentiation by industry and would therefore allow Council the flexibility to adopt any combination of a variable rate including an inclining block structure. As well, the modern systems would allow Council to add in user fee structures for other services such as waste services, if so desired.


Therefore, it is recommended that staff proceed to update the billing system to allow Regional Council to implement a variable rate structure including potentially inclining block rates in the future. If Council concurs with this recommendation then due diligence on potential system replacements will begin including consideration of the current systems and a scan of other potential systems (which may include a formal RFP process). As well further review of rate structures as discussed in the report will be undertaken including consultation with various stakeholders including council. The work will coincide with the updating of the Water Efficiency Plan and therefore the potential to leverage rate structures and efficiency initiatives will be considered.

September 27, 2011

**UTILITY RATE STRUCTURE REVIEW**

A report would be forthcoming in the spring. Sufficient funds are included in the capital budget for the replacement system, and would be subject to Council approval prior to implementation.



 Dan Labrecque  
Commissioner of Public Works

**Approved for Submission:**



---

D. Szwarc, Chief Administrative Officer

*For further information regarding this report, please contact Shaun Hewitt Director Operations Support at extension 3243 or via email at [shaun.hewitt@peelregion.ca](mailto:shaun.hewitt@peelregion.ca)*

*Authored By: Shaun Hewitt and Melodie Reaume*

c. Legislative Services

APPENDIX I

