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September 10 2014

Draft Inquiry Report
Essential Services Commission of South Australia
GPO Box 2605
Adelaide SA 5001

Attn: Nathan Petrus

I would firstly like to commend the Commission on the fine work they have been doing in regard to this regulatory review of Drinking Water and Sewerage Retail Services Pricing. I thank you for this opportunity to add to the overall process with our thoughts and observations. It is not our intention that the measures outlined be prescriptive, but more in the form of general principles. We are confident that SA Water would have access to the usage and financial data required to implement the proposals.

The Essential Services Commission Act 2002 requires the Commission to promote economic efficiency (6(b)(iv)), have regard to cost reflectivity (25(4)(b)), and consider financial implications (25(4)(f)) when setting prices.

The intention of selling water from the desalination plant to the horticultural industry, where there is a competitive advantage, is definitely rational. Residential customers have heeded the water efficiency message and reduced their water consumption. The water network therefore currently has excess capacity that industry could utilise. This can only strengthen the economic base of the community. The obvious requirement is to create the demand.

The key driver of demand is price. The pricing of water should not solely be about reducing demand but optimising supply and demand. Marginal costing is accepted as the most efficient pricing method.

Long run marginal costing (LRMC) is appropriate where costs are increasing quickly, expansion of the system is needed or water supplies are scarce. Additional sales provide the revenue required to meet the potentially high capital costs of extra demand. However LRMC and volume-based tariff charges are less appropriate in the present environment. Demand is weak and any reduction in sales can lead to an under recovery of costs. ESCOSA would agree that in times of scarcity the Accountant sets the price to ensure maximum revenue, but in times of surplus the Marketing Manager sets the price to maximise sales.

The higher the LRMC the greater the revenue variability and the greater the potential for under or over recovery of the Utility's required revenue. Neither is attractive. Water Utilities should not be perversely punished for promoting water efficiency, nor are they to be rewarded for underestimating demand and siphoning off incoming capital revenue as profits. Of course if prices were truly cost reflective then Utilities would be indifferent to changes in demand because revenue changes would be exactly offset by cost changes.

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Recovering a greater proportion of costs from the base fee and less from volumetric sales reduces the financial incentive to promote consumption and the disincentive to promote conservation.

ESCOSA's proposal is to adopt a pricing formula that reflects excess supply conditions - lowering the 'user pays price' (and increasing fixed base fees) when water is plentiful to resuscitate demand. At present there is long term capacity and no additional capital investment is required. In this instance 'cost reflective' can mean that the efficient price is equal to the running costs of supplying the water.

In essence the reform is a shift to fixed charges based on the fixed costs of building (supplying) the network capacity that treats and supplies the water to each customer. Actually cost reflectivity is the ideal pricing mechanism for a natural monopoly. This entails a standing charge approaching 85 per cent of the total charge, with the water metered charge averaging 15 per cent.

In theory allocative efficiency can be achieved if prices are set according to *short-run* marginal costs. In the case of water, it could be argued that when there is excess capacity an increase in consumption will only incur an increase in pumping and treatment costs (supply costs alone), but little else of any significance.

SA Water's proposal is based on estimates resulting from empirical studies that found residential customers were relatively 'price inelastic'. Users who have no alternatives are normally less responsive to prices and it is for this very reason that monopolies often charge them more (Ramsey's Rule).

The whole discussion about tariff structures is related to avoiding discrimination between users of the water and wastewater networks, ensuring cost-reflectivity.

What in reality amounts to 'economic development rates' to large horticultural users may well be of benefit to the community. However the intention to charge one category of customer a different rate based on non 'cost reflective' factors and have that 'benefit' financed by a tax on another category needs to be transparent to avoid any charges of discriminatory behaviour. To its credit the long term economic gain to the community, and how the cross subsidies will be met, has been spelt out in the Victoria University's report.

Public Utilities, with their high fixed costs, always want to fill their capacity as much as possible. Economic development rates can assist in this regard but should be phased out before excess capacity needs to be added, and the cost of capital and economic externalities included. The impact of this, and the likelihood of it occurring, needs to be extensively deliberated upon.

Pricing mechanisms that have a high reliance on flat fees (fixed charges) are regressive by nature and adversely impact low volume users.

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Volume	100 kL pa	200 kL pa	50 kL pa	1000 kL pa
Class of Customer	Residential	Residential	Commercial	Commercial
Effluent strength of wastewater – Biological Oxygen Demand	150 mg/L	150 mg/L	150 mg/L	600 mg/L
Fixed Costs	$1382	$1382	$1585	$1585
Usage Fees	$62	$124	$31	$620
Price for water supply and delivery, and sewage services – per kL	$14.44	$7.53	$32.32	$2.21

The examples here are of low and average residential and food service establishments (commercial) customers but are indicative of the pricing reform. The lower their consumption, the greater the cost per unit of water consumed. The greater the volume of water used the cheaper the service. As reported in the ESCOSA Victoria University study: "We would expect a reduction in the volumetric charge for water to benefit large water users, particularly in agriculture. Households are the most likely group to bear increases in fixed costs. This is because there are many household customers, and the volume used per customer is lower than for most non-household customers. Additional fixed costs will be like a lump sum tax on households."

A flat fee per household (fixed charge) is unfair on poorer households as it takes up a larger share of their income. Less affluent households have less flexibility in their budget to absorb water bill increases as there are no real substitutes for potable water. These customers cannot choose lower priced alternatives.

Equity or fairness is not easily dealt with in economic terms. It involves social factors, such as politics and ethics. Water pricing should be directed at efficiency not distributional outcomes. While pricing cannot be used to address affordability concerns for disadvantaged customer we are not totally oblivious to the need to avoid perverse or clearly unintended outcomes.

A fee or charge that cannot be avoided is in effect a tax and the imposition and collection must be executed without bias. Charges should be "just and reasonable" and not derived on an indiscriminate basis. Discretion does not empower a delegated authority to arbitrarily set fees. There is no such thing as 'unfettered discretion".

One method of establishing "just and reasonable" rates is abiding by the standard that rates should not "unduly discriminate" against any customer or customer class. In practice, this means that no customer or customer class should pay significantly more (or less) than the cost of providing service to that customer or customer class.

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To avoid undue discrimination, rate analysts strive to achieve two forms of equity:

- Horizontal equity: Users with similar costs of service face similar rates.
- Vertical equity: Users with dissimilar costs of service face dissimilar rates.

Fixed, or common, costs depend on the capacity requirements of the customers – the greater the requirement, the more substantial the infrastructure required. As capacity is a cost driver of distribution infrastructure (the water network), it is consistent with the principles of cost-reflective pricing and economic efficiency to set the service availability charge, the share of common costs, based on a customer's individual capacity requirement.

DEMAND BASED SERVICE AVAILABILITY CHARGES

SAPERE noted that the perception of equity, following usage price variations on consumer bills, depends on how non-usage charges are set and modified. "It is therefore of interest to know whether pricing policies, which include usage and non-usage charges, can be developed that are perceived as equitable".

It is possible to construct a pricing strategy that incorporates financial incentives for water efficiency while at the same time providing revenue stability. The service availability charge can be consumption based, reflective of a customer's demand or utilisation of the capacity of the network provided. The goals of economic efficiency, environmental sustainability, and social equity are not necessarily mutually exclusive.

The National Water Initiative Principle 4 for Urban Water Tariffs - setting the service availability charge. This refers to the variance in the charge (pricing) having regard to: service demands, equity considerations and stand-alone costing.

Water Utilities need to build and provide a network capable of delivering their water services at all times - particularly throughout the period of greatest demand. These costs are significant and predominantly fixed. Each customer holds an option to utilize this capacity. The benefit the customer receives by being connected to the network is the capacity that they access during the peak period. The cost reflective charge for that customer is the share of the capacity they have called upon, having regard to the cost of capacity that makes consumption at the peak level possible. This gives individuals a clear signal about the cost of infrastructure.

A utility incurs these costs because of the amount and pattern of its customers' water demands. Based on cost causation, these costs are most appropriately recovered through a charge that varies with the customer's consumption – or reflective of the costs attributable to each customer as a consequence of the service demanded, that is their share of the costs.

The water system requirement is driven by peak demand and therefore, according to the conventional economic formula, these capacity costs should be recovered through charges on peak use. Each customer should pay their share of the total cost of providing capacity

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during the period of peak demand. The peak is determined by outdoor water use, which is highest in the summer months.

Customers that draw more water should pay more for that benefit than other customers that draw less water. The benefit is not solely the cost of the network that has supplied that water but the cost of providing the additional network capacity to meet the service requirements of the customers during the peak period of demand.

Simply put

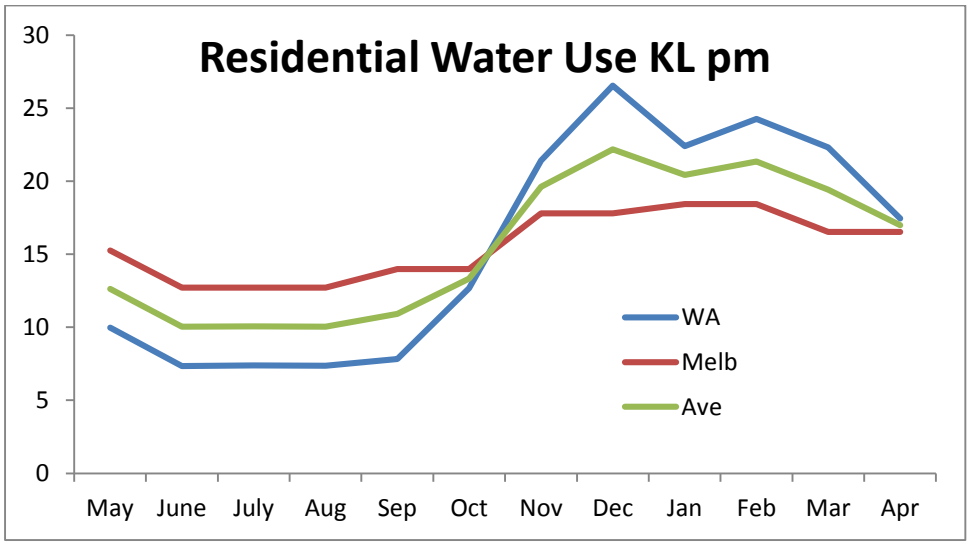
CBSC = Customer's Summer Usage / Total Summer Usage x ARR

CBSC is Capacity Based Supply Charge (aka Service Availability Charge)
Summer Usage is the volume of water consumed during the previous Dec/Jan/Feb
ARR is the Annual Revenue Requirement to cover the Utility's non LRMC revenue

We agree with the Commissions view of charges being cost reflective. Demand based pricing is designed to:

- Share costs proportionally, based on the service demanded by each customer;
- Reduce water consumption without negative impacts on utility revenues;
- Reward customers financially for water efficiencies;
- Delay costly water supply expansion projects; and
- Avoid inequitable charges for low level users.

The most recent pertinent study of residential water consumption we could find was for WA - Loh & Coghlan (2003). Due to water efficient appliances, smaller lawns etc we believe that the summer peak is not as pronounced and have included City West Water's current discharge factors and averaged the two. Non-residential usage is seen to be 5% higher in summer than autumn and spring and 5% lower in winter.



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SA Water would have all the data required to calculate this, but briefly as an example. Assuming that Total Summer Usage is 61000 mega litres (annual 195000) and Annual Revenue Requirement from base fees is $686 million the rate of the CBSC would be $11.24 per kilolitre (CSU). The following is to show that the financial implications are not inequitable, or that one perverse outcome has not been replaced by another.

Capacity Based Water Supply Charge						
kL pa	117	187	200	300	1000	10000
Type	Residential	Residential	Commercial	Residential	Commercial	Industrial
CSU	Low	Average	Low	High	Low	Low
CBSC	$394	$715	$590	$1517	$2950	$2950
Volumetric	$73	$116	$124	$186	$620	$6200
Water kL	$3.99	$4.44	$3.57	$5.67	$3.57	$3.57

The 'capacity based supply charge' is used to recover the costs of constructing the facilities required to meet peak capacity demands, including maintenance and refurbishment. It discourages non-essential water use and flattens peak demand, which in turn lowers the cost of providing water services in the long run as less infrastructure is needed to supply the population's demand. Being a consumption-based fixed charge it allows the utility to build more of their cost recovery into the base charge while still promoting customer conservation and efficiency.

Consumer groups have pointed out the inequity in charging all residential customers with the same meter size the same charge, irrespective of demand. This assumes that every residential customer with a 200 mm connection places the same fixed costs on the water system. Yet there is ample evidence that customers with different usage patterns place very different cost burdens on the system. Charges that are customized, based on each customer's historic peak water use, more equitably allocate the utility's fixed costs, which are linked to capacity, to the customers that have greater peak demands. This also shifts much of the revenue generation from the volumetric rates on to the base charges, increasing revenue resiliency against declining water demands in the short-term, while building a conservation incentive into the base charge itself.

WASTEWATER CHARGES – Load-based Fixed Charges

Residential waste water is known as sewage and commercial wastewater is known as trade waste. We propose a load-based fixed charge for wastewater service availability charge.

In light of the recently completed Adelaide Desalination Plant there is excess capacity in the water system but this is not as readily apparent with the wastewater network. The community will benefit from the reduction of liquid waste to sewers. It is in nobody's interest to be confronted with Fatbergs within the system or the need for more costly augmentation when it can be obviated.

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Transport and treatment costs depend on the volume and the amount of contaminants in the wastewater discharged by the customer – the greater the demand, the more substantial the infrastructure required. Capital costs (including depreciation and repayment of debt) are being driven by infrastructure rehabilitation, replacement costs and more stringent effluent limitations. The greater demand placed on the wastewater network the greater the cost of maintenance and treatment. It is therefore consistent with the principles of cost-reflective pricing and economic efficiency to set the charge based on a customer's demand for wastewater services.

The most appropriate reflection of a customer's demand is the amount, and strength, of wastewater discharged into the sewer network. For most customers the volume will be equivalent to their indoor water use. A WA study found this to be 85% of water usage during the winter months of June, July and August, when outdoor use is at a minimum. It is assumed that a customer's base load, or 'in house water usage', remains reasonably constant throughout the year and all things being equal, factors such as visiting relatives, absences on holidays, rain water tanks, grey water use and the like will even out.

The sewage network has been established to transport and treat residential wastewater and therefore that is considered to be the base load. That level of effluent would incur the base price and everything stronger would be a multiple of that. Households would be charged on the predicted volume discharged to the network during the previous winter.

Trade waste customers are likely to have their own discharge records. New residents to the area have the average winter monthly consumption (WMC) applied until they have built up their own historical record of usage.

The public benefits from economic efficiency. Pricing should reflect the value received from businesses that choose to use the sewage system to dispose of waste. The waste hierarchy lists disposal as the least preferred option - with no consumption based charge it will become the option of choice. Economic efficiency is maximised when all decision-makers pay prices that reflect the costs of their decisions. In the case of waste water services, customers should incur the true cost of being provided with those services.

It is economically efficient that those who incur the costs should be responsible for paying them. This means that appropriate price signals are sent and appropriate behavioural or infrastructure changes are made. Effluent discharged from Food Service Establishments is potentially expensive for SA Water to transport, treat and dispose of and may bring forward capital expenditure in refurbishing or augmenting infrastructure. Fats, oils and grease in particular can block drains and clog pump wells. Augmentation of sewerage infrastructure can be expensive and, as far as possible, should be avoided or postponed through the price signal. The Property Council supports moving to a pricing model that better reflects actual costs and demand for trade waste services.

Business SA believes that there should be adequate incentives for those businesses that invest in their own wastewater treatment facilities, as this ultimately reduces the impact on

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SA Water infrastructure. This of course has a positive environmental impact on our natural water sources as well as reduced demand for chemicals and reduced energy requirements for pumping, treatment and desalination. Emerging technologies in wastewater treatment will be encouraged and result in future cost efficiencies. These may include the adoption of nano-technology and advanced microbiological processes in SA Water's treatment systems, improvements in nutrient capture from wastewater, and likely improvements over time in energy efficiency and energy recovery.

We are strongly opposed to a fixed charge that is based on a 'flat rate' charging system for sewage services, irrespective of demand. Such an approach is highly regressive. Fixed sewage charges significantly disadvantage those consumers who derive least benefit from the service. An excessive reliance on fixed charges also compromises wastewater pricing as a policy instrument.

The size of the sewage connection was mandated by council authorities at the time the house was built and to intimate that it is in any way reflective of the current customers call upon the capacity of the network (service demand) is tenuous at best. A cursory glance at household usage indicates an interest in gardening or the size of the family is what drives water (and wastewater) consumption. Fortunately we do not need sewage meters to gather personal data on each customer as several studies provide us with the information required.

The present proposal, which recovers base fees from flat charges, does so with a disproportionate amount of the costs recovered from low level users.

	Residential	Commercial 1	Commercial 2	Industrial
Volume - kilolitres	187	100	1000	10000
Effluent - Biological Oxygen Demand mg/L	150	1000	1000	1000
Sewage Fees	$509	$509	$509	$509
Trade waste fees		$220	$220	$1654
Treatment Costs $ per gram BOD	$18.07	$6.29	$0.63	$1.66

SA Water regrets that the current prices for trade waste parameters are set well below LRMC estimates. As full-cost recovery from trade waste customers is not being achieved, other sewerage customers are subsidising trade waste customers. SA Water is reviewing cross-subsidies that are undermining economic efficiency.

The best approach to controlling cross subsidisation is to establish a revenue contribution in proportion to the benefit received by each customer of the network. The revenue contribution of each customer should reflect cost proportionality, which in essence forms the principle of stand-alone costing.

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Vertical Equity – Customers that discharge more waste, such as food service establishments, should pay for the benefit of having that waste treated offsite. The benefit is not solely the cost of the network that transports the effluent but the treatment processes that remove the pollutants. The greater the strength of contaminants in the effluent the greater the load placed on the network, which includes energy to run pumping stations. Customers discharging wastewater should pay their share of the total treatment costs.

The polluter pays policy. The charge paid is determined by:

- the volume of effluent discharged;
- the strength of effluent discharged; and
- the level of sewage treatment applied.

Quarterly Sewage Charge = ((Customer's Load)/Total Load) x SWWRR

Customer's Load = Base Level x strength of effluent
Base Level of Usage = 85% of volume of water consumed in the previous winter months
SWWRR - Sewage Waste Water Revenue Requirement for the quarter (annual / 4).

Industrial waste dischargers will normally be able to determine the volume of wastewater discharged and therefore the Base Level will not need to be predicated upon Winter Months Usage. Base level will be actual volume of wastewater discharged.

This formula links fees to the volume and strength of the effluent discharged from the premises, which determine the level of treatment needed and therefore the costs involved. No study has shown that the marginal utility drops as strength of effluent increases. Costs include the maintenance and refurbishment of sewer drains, pumping stations and treatment plants.

We feel that load based pricing is a pricing structure for wastewater services which fully recovers the cost of providing that service in an economically efficient, environmentally sound, and socially acceptable manner, and which promotes efficient water use by customers.

As it is a fixed charge for the upcoming year it adds to the revenue stability of the utility. A greater proportion of revenue does not fluctuate with customer demands. Profit will be derived by attention to asset management, operations and maintenance efficiency and technological innovation.

Sustainability and conservation are in the long term interests of customers, industry and the community. A demand based fixed charge, provides every customer with a second point of focus in relation to water use. It will also help make more water conservation, stormwater recovery and recycling projects viable.

Waste Management is a growing industry. The experience, skills and technology developed minimising liquid waste can be utilised by SA businesses in other jurisdictions. For example, China has earmarked $345,000 million to tackle water pollution.

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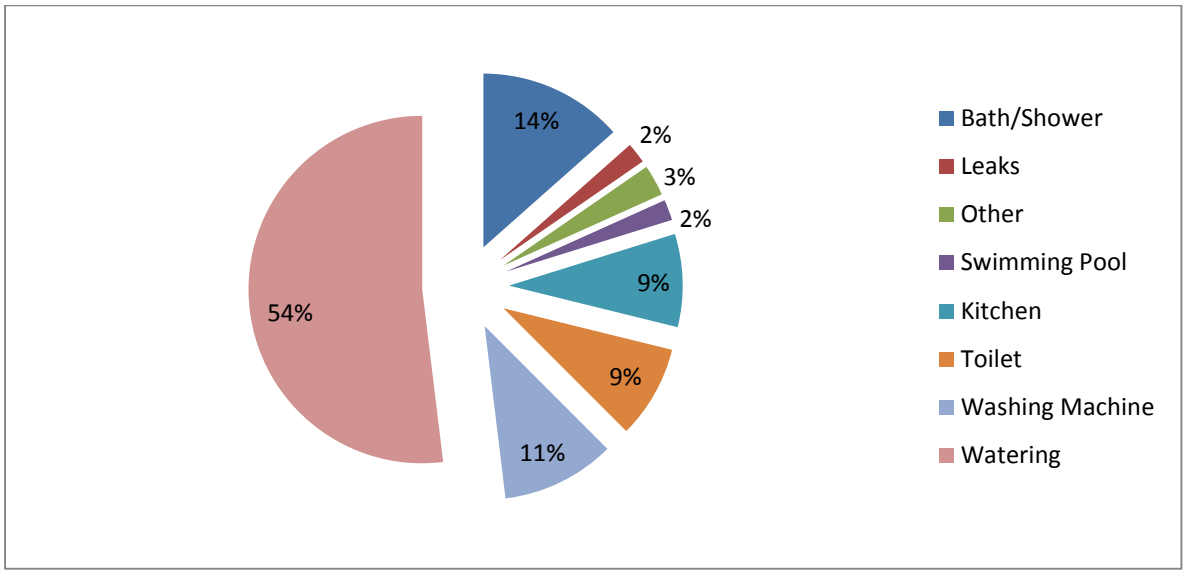
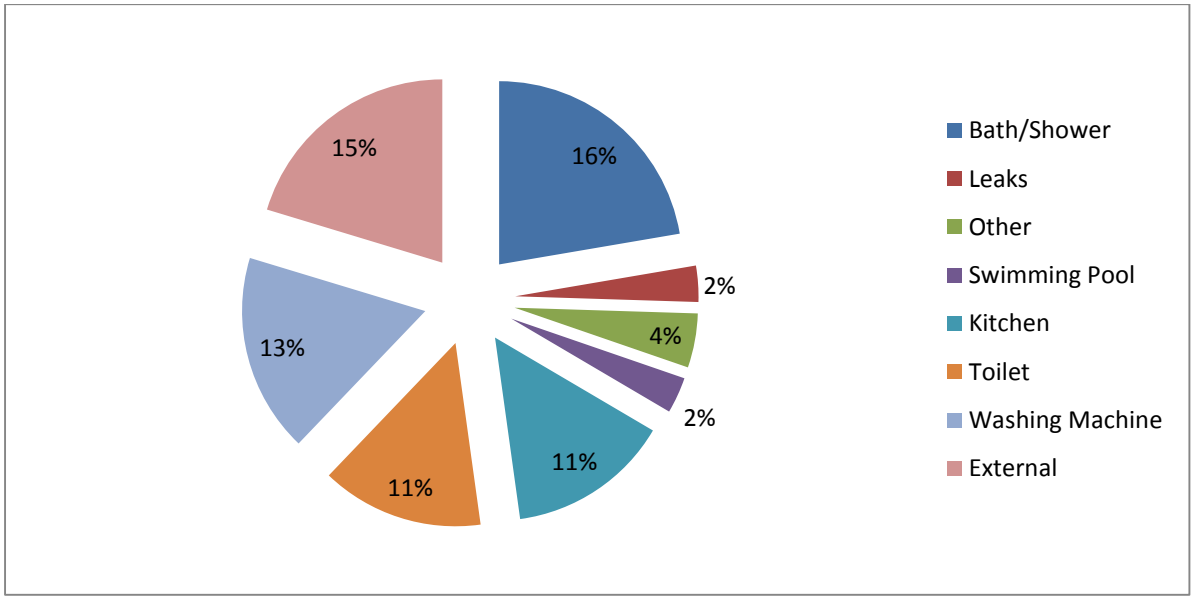
Residential water consumption



Residential water consumption during winter – base level of usage



Kind Regards,

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