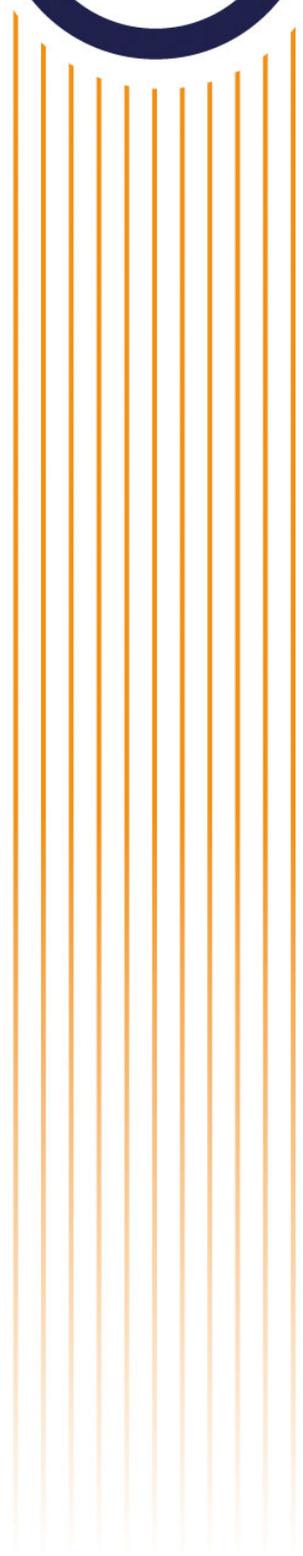




ICRC

independent competition and regulatory commission



Draft report
Tariff Review 2016
Regulated water and sewerage services
Report 5 of 2016, September 2016

The Independent Competition and Regulatory Commission is a Territory Authority established under the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act). The Commission is constituted under the ICRC Act by one or more standing commissioners and any associated commissioners appointed for particular purposes. Commissioners are statutory appointments. The current Senior Commissioner is Joe Dimasi who constitutes the Commission and takes direct responsibility for delivery of the outcomes of the Commission.

The Commission has responsibilities for a broad range of regulatory and utility administrative matters. The Commission responsibility under the ICRC Act for regulating and advising government about pricing and other matters for monopoly, near-monopoly and ministerially declared regulated industries, and providing advice on competitive neutrality complaints and government-regulated activities. We also have responsibility for arbitrating infrastructure access disputes under the ICRC Act. In discharging its objectives and functions, the Commission provides independent robust analysis and advice.

The Commission's objectives are set out in section 7 of the ICRC Act and section 3 of the *Utilities Act 2000*.

Correspondence or other inquiries may be directed to the Commission at the following addresses:

Independent Competition and Regulatory Commission
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The Commission may be contacted at the above addresses, by telephone on (02) 6205 0799, or by fax on (02) 6207 5887. The Commission's website is at www.icrc.act.gov.au and the Commission's email address is icrc@act.gov.au.

Foreword

This draft report sets out the Commission's draft position on the future structure of Icon Water's regulated water and sewerage services tariffs.

The structure of the water tariff and constituent prices play a vital role in providing incentives to customers to use Icon Water's infrastructure and water resources efficiently. The draft report finds that given the current and prospective water supply conditions in the ACT, the existing water tariff structure can be improved for the benefit of the ACT community. It suggests that this can be done by rebalancing the ratio of the supply and usage charges, whilst being responsive to the future possibility of water scarcity.

Given the significance of this matter, the draft report is open for public consultation for a longer period than usual, with the closing date for submissions on **30 November 2016**. The Commission will also be holding a public forum to discuss the draft report findings at a date to be announced.

I look forward to hearing the views of the ACT community on the structure of tariffs moving forward.

Joe Dimasi

Senior Commissioner

6 September 2016

How to make a submission

The draft report provides an opportunity for stakeholders to inform the development of the final report for the tariff review. It will also ensure that relevant information and views are made public and brought to the Commission's attention.

Submissions may be mailed to the Commission at:

Independent Competition and Regulatory Commission
PO Box 161
Civic Square ACT 2608

Alternatively, submissions may be emailed to the Commission at icrc@act.gov.au. The Commission encourages stakeholders to make submissions in either Microsoft Word format or PDF (OCR readable text format – that is, they should be direct conversions from the word-processing program, rather than scanned copies in which the text cannot be searched).

For submissions received from individuals, all personal details (for example, home and email addresses, and telephone and fax numbers) will be removed for privacy reasons before the submissions are published on the website.

The Commission is guided by and believes strongly in the principles of openness, transparency, consistency and accountability. Public consultation is a crucial element of the Commission's processes. The Commission's preference is that all submissions it receives be treated as public and be published on the Commission's website unless the author of the submission indicates clearly that all or part of the submission is confidential and not to be made available publicly. Where confidential material is claimed, the Commission prefers that this be under a separate cover and clearly marked 'In Confidence'. The Commission will assess the author's claim and discuss appropriate steps to ensure that confidential material is protected while maintaining the principles of openness, transparency, consistency and accountability.

The Commission may be contacted at the above addresses, by telephone on (02) 6205 0799 or by fax on (02) 6207 5887. The Commission's website is at www.icrc.act.gov.au.

The closing date for submissions on the draft report is **5 pm, 30 November 2016**.

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Main conclusions

Introduction

This draft report sets out, for public comment, the Commission’s draft position on whether Icon Water’s current water and sewerage services tariff structures will continue to deliver the best outcome for the ACT community. Where required, it also presents an alternative structure that the Commission believes will deliver a better outcome.

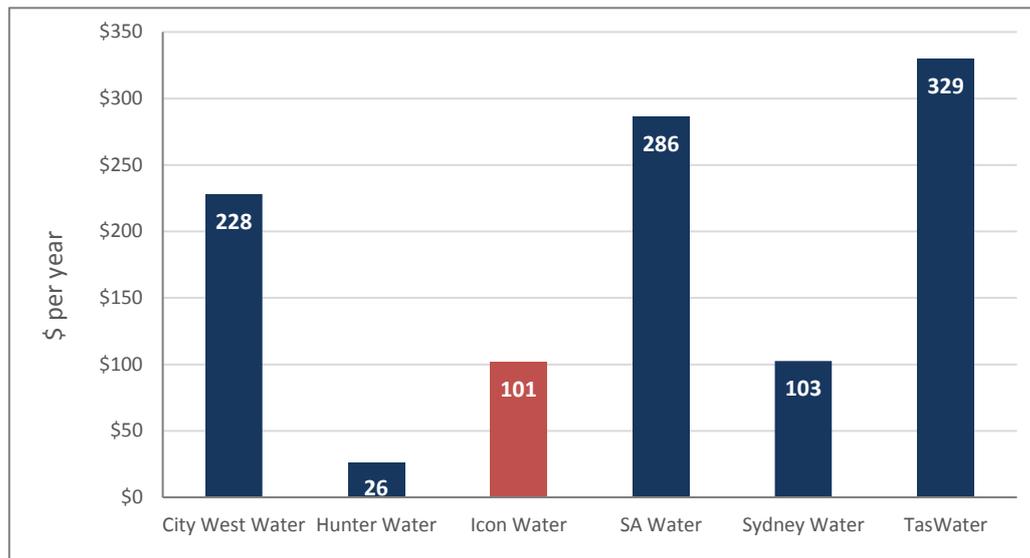
Water

The current tariff structure and the Millennium Drought

The current ACT water tariff structure comprises an annual connection or supply charge and a two-tier usage charge with a lower price for the first 200 kilolitres (kL) of water use and a higher water price for water used above that level. The current supply charge is \$101.48 per year. The current usage charges are \$2.61 per kL for the first tier and \$5.24 per kL for the second tier. At this level of prices, Icon Water recovers about 10 per cent of its water revenue from the supply charge, with the remaining 90 per cent recovered from usage charges.

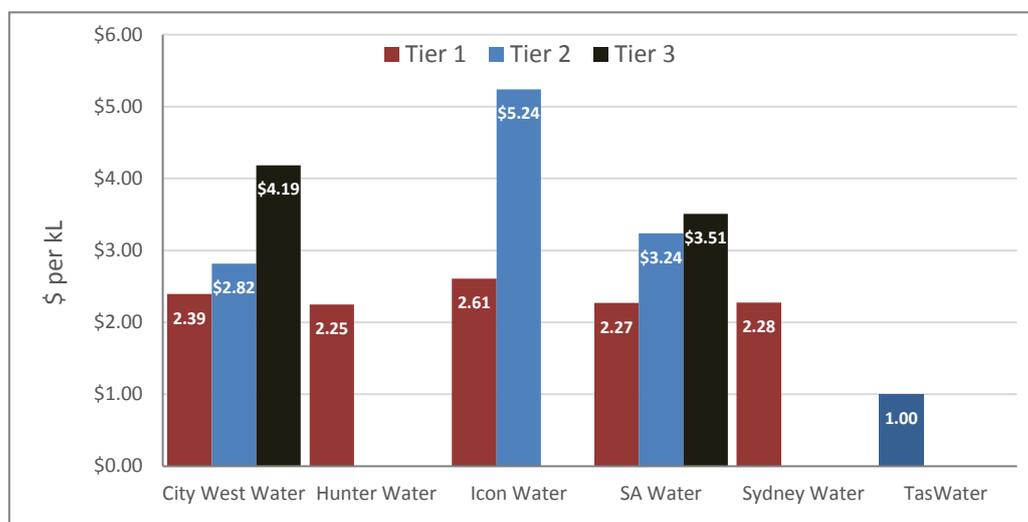
Figure ES.1 and Figure ES.2 show a comparison between Icon Water’s residential water tariff structure and arrangements for a number of utilities in other jurisdictions. Icon Water’s Tier 2 charge is the highest and its supply charge amongst the lowest.

Figure ES.1 Residential water supply charges by utility, 2016–17



Source: Appendix 3.

Figure ES.2 Residential water usage charges by utility, 2016–17



Source: Appendix 3.

Icon Water’s inclining block tariff structure was introduced during the Millennium Drought, which affected southeast Australia from about 1997 to 2009. This period was characterised by very low inflows to ACT dam catchments, due to low rainfall and the impact of the 2003 bushfires which reduced dam inflows even in years of reasonable rainfall. Coupled with fairly high per capita water consumption, this resulted in rapidly diminishing water supplies with combined dam levels falling to a low of 31 per cent by mid-2007.

The dire water security situation drew a short-term response in the form of temporary water restrictions, with severe Stage 3 restrictions in place from December 2006 to August 2010. As a longer-term measure, Icon Water embarked on a substantial investment programme to augment Canberra’s water supply. The key projects were the enlargement of the Cotter Dam from 4 gegalitres (GL) to 76 GL and the construction of the Murrumbidgee to Googong Dam pipeline to transfer water directly from the Murrumbidgee River to the Googong Dam.

Given the water security situation at the time, an inclining block structure, especially with a usage charge doubling for the higher tier, made sense as a relatively blunt instrument intended to discourage outdoor water use for the express purpose of conserving water.

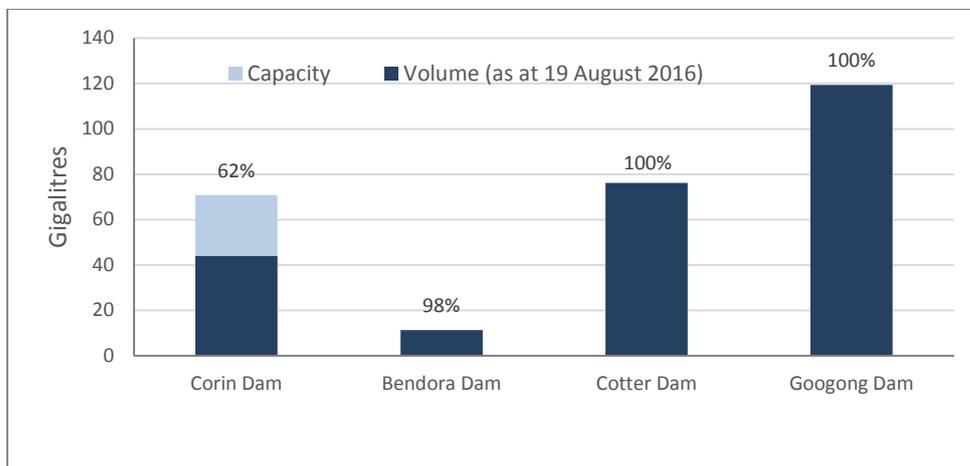
The ACT is now more water secure

The ACT’s water supply and demand balance today is very different.

On the supply side, the Millennium Drought broke in 2010 due to a strong La Niña event, with Canberra Airport recording 960 millimetres of rainfall, well above the historical average of 617 millimetres, with dam inflows estimated at 404 GL, well above the long-term average of 235 GL per year. The enlarged Cotter Dam increased the ACT combined dam storage capacity by more than a third from 206 to 278 GL.

The current combined dam storage level is 90 per cent, as shown in Figure ES.3, and the Cotter Dam started spilling in July this year.¹

Figure ES.3 Current ACT dam storage levels

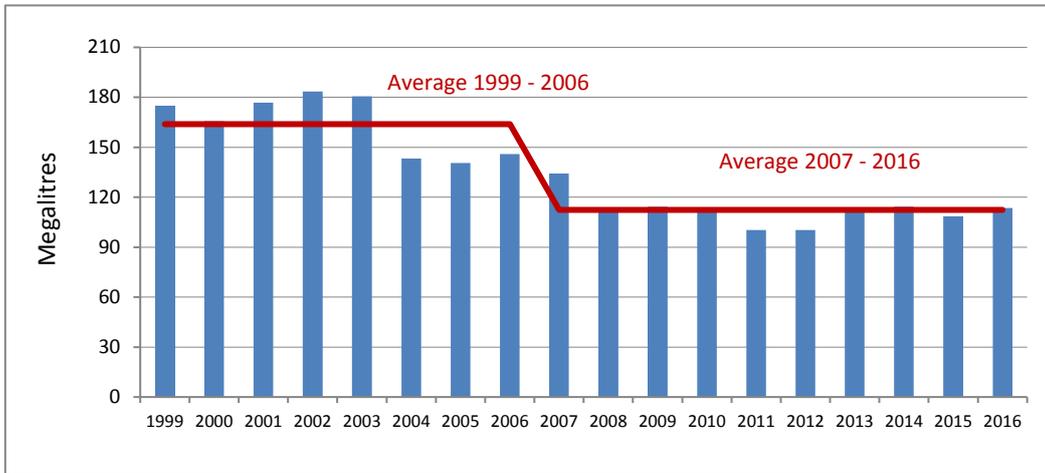


Source: Icon Water (<https://www.iconwater.com.au/Water-and-Sewerage-System/Dams/Water-Storage-Levels.aspx>).

On the demand side, there has been no evidence of a bounce back in per capita water consumption levels since the lifting of temporary water restrictions in 2010. As shown in Figure ES.4, current levels are well below those prevailing in the early to mid-2000s.

¹ <https://www.iconwater.com.au/Water-and-Sewerage-System/Dams/Cotter-Dam.aspx>.

Figure ES.4 Icon Water dam releases per capita, 1999 to 2016²

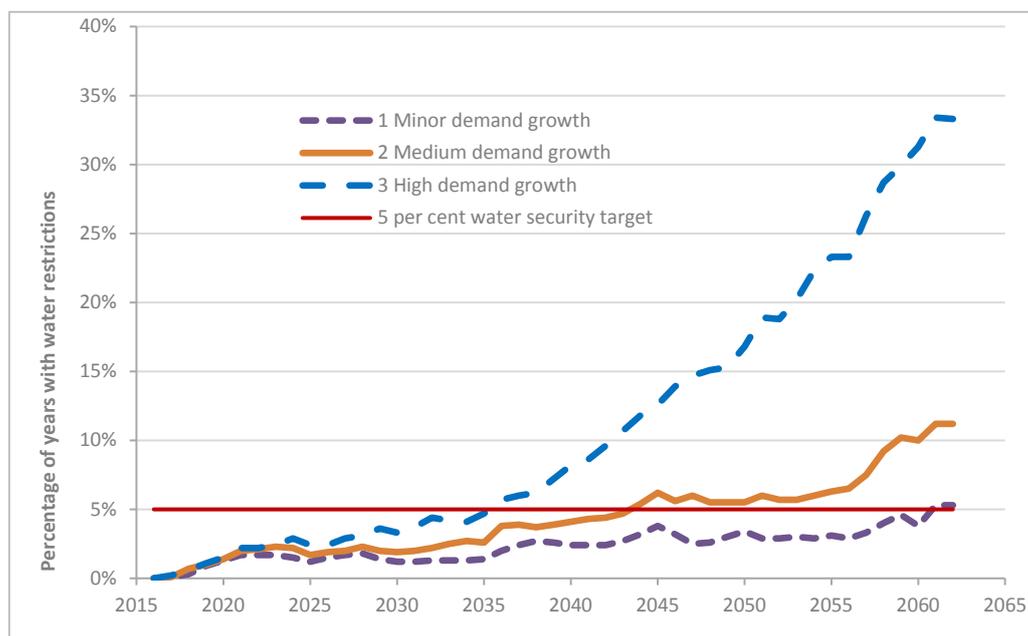


Source: Australian Bureau of Statistics, ACT Treasury and Icon Water.

A number of water security scenarios were modelled in the Commission’s technical paper on marginal cost pricing using Icon Water’s supply and demand model. This model is used to calculate the probability of temporary restrictions each year from the present day until 2062. On the supply side it uses current dam levels and projected dam inflows, adjusted for the expected impact of climate change on rainfall and evaporation. On the demand side, growth in water demand under various population growth and per capita demand assumptions is modelled. Using this model, the timing of the next water supply augmentation (or demand reduction intervention) can be gauged from the point at which the probability of being in temporary water restrictions rises above the ACT Government’s five per cent water security target (see Figure ES.5).

Figure ES.5 Probability of water restrictions

² Per capita volumes are obtained by dividing total dam releases by the sum of the ACT and Queanbeyan population.



Source: ICRC (2016b): 57.

Under the minor demand growth scenario, augmentation of ACT's water supply is not likely to be needed for another 40 years.³ Under the more conservative medium demand growth scenario, augmentation is only required in about 30 years.⁴ Under the high demand growth scenario, which can be considered an upper bound, augmentation may be required in about 20 years.⁵

The minor demand growth scenario is used as the optimal investment scenario for marginal cost calculation purpose as we have not seen even minor aggregate demand growth in recent years.

In these circumstances, Icon Water is currently considering whether to mothball the Murrumbidgee to Googong pipeline on the basis that it is unlikely to be required for some time.⁶

Limited value in restricting water demand

The ACT is therefore currently in a very positive water security situation. The water security prospects also look positive over the long-term, as demonstrated above. With

³ The minor demand growth scenario is based on the Australian Bureau of Statistics (ABS) medium series population growth with only 50 per cent of the incremental population contributing to aggregate demand growth.

⁴ The medium demand growth scenario is based on the ABS medium series population growth with 100 per cent of the incremental population contributing to aggregate demand growth.

⁵ The high demand growth scenario is based on the ABS high series population growth with 100 per cent of the incremental population contributing to aggregate demand growth.

⁶ ACT Legislative Assembly, 2016: 285.

expanded storages 90 per cent full, temporary water restrictions are unlikely to be required to restrict demand in the next regulatory period. The value of an additional kilolitre of water left in ACT dams, which primarily derives from its contribution to postponing further augmentation of the water supply system, is very low in these circumstances.

Moreover, from an environmental perspective, there is limited local or downstream environmental benefit to be gained from leaving an extra kilolitre of water in ACT dams rather than consuming it, for two reasons.

First, Icon Water is subject to strict environmental flow requirements to ensure the flows of water in ACT streams and rivers that are necessary to maintain aquatic ecosystems. Icon Water's licence to take water requires it to ensure that environmental flows are given first priority.

Second, the downstream environmental benefits of any water (over and above environmental flows), that flow from ACT dams are limited for two reasons. The first is that there are no key environmental assets in the ACT that require specific environmental watering. The second is that Burrinjuck Dam sits between the ACT and any benefits for environmental sites further downstream in New South Wales.

From a broader perspective it is also worth noting that, largely due to its urban nature, the ACT only consumes a small proportion of the total amount of water that flows into its catchments. The long-term average water inflows to 2003 averaged about 492 GL per year, with around 244 GL per year legislated for environmental flows. Of the balance of 248 GL per year, gross extractions for consumptive use have averaged about 50 GL per year in recent years with about 30 GL returned to the river system as treated effluent. The net use has been at or below 20 GL per year since 2007–08, 4 per cent of total inflows or 8 per cent of the balance after environmental flows. This is also well below the ACT's sustainable diversion limit under the Basin Plan of 40.5 GL per year taken from watercourses.

The current tariff structure is not appropriate for today's conditions

The key conclusion is that the inclining block water tariff that has served the ACT well throughout the drought years as a blunt tool to encourage water conservation is no longer providing the best—the most efficient—outcome for the community in the current water secure circumstances. Recent amendments to the *Independent Competition and Regulatory Commission Act (1997)*, which governs the Commission's decision-making in relation to determining regulated prices, emphasise economic efficiency considerations, whilst still requiring the Commission to have regard to the broader suite of legislative requirements.

Previous analysis by the Commission in its marginal cost technical paper demonstrated that the current tariff structure is not sending suitable price signals to water users about the cost of continuing to provide water services efficiently into the future (the forward-looking marginal cost). The definition of long-run marginal cost adopted in the technical paper comprises three elements. The first is the infrastructure cost of

providing the capacity to supply demand requirements into the future from Icon Water's dams. The second is the operational cost of storing, treating and delivering the water to customers through Icon Water's reticulation network. The third is the scarcity value of the water resource.

The current top tier price of \$5.24 per kL is three times the Commission's current estimate of long-run marginal cost of \$1.74 per kL. This mismatch between price and marginal cost leads to inefficient use of the water infrastructure and water resource, resulting in welfare losses for the ACT community.

An example of this is the potential for what is called uneconomic bypass whereby, due to the very high top tier price, large customers may find it cheaper to invest in alternative water supplies that are more expensive than Icon Water's marginal cost of supply. The large customer is worse off compared to the alternative of paying the marginal cost. All other customers are also worse off as Icon Water's prices have to rise to recover its costs from a smaller customer base now that it has lost a large customer. This is due to the fact that Icon Water's existing cost base is largely fixed and does not vary a great deal with the level of water consumption.

Equity arguments are also put forward for an inclining block tariff. That is to provide households with sufficient water at a lower cost to meet their essential health and hygiene needs. This is premised on an assumption that low income or disadvantaged customers are low water users. The Commission, however, has not seen evidence that income is correlated with water use. In its submission to the tariff review, Icon Water assessed the level of water use of customers receiving the ACT Government's Utilities Concession. Icon Water found that around 40 per cent of these customers use more than 200 kL and pay the Tier 2 water usage price and that there are just as many concessional customers using more than 200 kL per year as there are using less than 150 kL per year.

There is empirical evidence, however, showing that the number of people in a household increases water consumption.⁷ This implies that an inclining block structure may have the unintended consequence that some large and poor households, who may have little discretion in their water consumption, may pay a higher price for water than small, high-income households.

An alternative, more efficient water tariff structure

An effective tariff structure should allow for the recovery of the efficient cost of providing water services. It should also provide incentives to use water efficiently depending on the supply conditions of the time. It should also provide the flexibility to adjust should conditions change.

The Commission's draft position is that a better outcome for the ACT community will be achieved by moving to an alternative, more efficient, water tariff structure that still

⁷ For example, see Grafton and Ward, 2010: .

has a supply charge but only one usage charge, the latter set with reference to long-run marginal cost. With a single lower usage charge, the supply charge would need to be higher to allow Icon Water to recover its costs. What is required therefore is a rebalancing between the supply charge and the usage charge.

Such a cost-reflective tariff structure will enhance community welfare as it encourages consumers to use water in a way which is consistent with the infrastructure and resource value cost of providing the water service. In addition, a more efficient tariff structure will reduce the possibility of uneconomic bypass of Icon Water's primary water system.

Drought pricing

Drought pricing provides an alternative to quantitative water restrictions by using price to ration water demand by sending price signals to consumers about the scarcity of the water resource. In its submission to the tariff review Icon Water indicated its support for the implementation of a drought pricing scheme that would involve changing the usage price to reflect the level of water in ACT dams.

The cost-reflective alternative tariff structure proposed above would accommodate a rise in the usage charge as water storage levels drop and the scarcity value of the water resource increases. While the current water security situation means that drought pricing arrangements are not likely to be required for some time, the Commission would expect such a proposal to be put forward should conditions change. The Commission would assess any proposal put forward on its merits.

In practice, due to the price inelasticity of ACT residential water consumption as demonstrated in the Commission's technical paper on water price elasticity, any drought pricing arrangements would need to be applied in conjunction with quantitative restrictions in order to meet the required demand reduction.

Rebalancing the supply and usage charges while minimising customer impacts

Moving directly from the current to the alternative structure would have substantial distributional impacts on customers, and negative impacts in particular on low volume water users. In order to gauge a suitable transition period, the Commission analysed the likely distributional impacts of moving from the current structure to the alternative, more efficient structure on residential and commercial customers.

The key trade-off in determining the appropriate length of the transition period is that between minimising annual customer bill impacts and delaying the efficiency benefits that will flow from more rapidly applying the cost-reflective structure.

The Commission's view is that a transition period of 10 years would achieve this balance. The transition process involves gradually increasing the supply charge until it reaches the desired level while at the same time bringing down the Tier 2 usage charge until there is only one usage charge.

For indicative purposes only, the Commission has examined two transition paths, as shown in Table ES.1. The options should be treated with caution as they are based on current cost estimates and supply conditions. These will vary as conditions change. The balance between the usage charge and the supply charge may also vary as supply conditions change.

Table ES.1 Current and indicative alternative water tariffs

Tariffs	Year 1	Year 2	Year 3	Year 4	Year 5
Current tariff – 2015–16					
Supply charge (\$/year)	101.48				
Tier 1 price (\$/kL)	2.61				
Tier 2 price (\$/kL)	5.24				
Option A. One usage charge – set at long-run marginal cost					
Supply charge (\$/year)	125.20	149.29	178.00	212.25	253.08
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	5.02	4.80	4.53	4.21	3.84
Option B: One usage charge – set at current Tier 1 price					
Supply charge (\$/year)	119.72	136.51	155.65	177.48	202.36
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	5.07	4.92	4.74	4.54	4.31
Tariffs	Year 6	Year 7	Year 8	Year 9	Year 10
Option A cont.					
Supply charge (\$/year)	301.77	359.82	429.04	511.58	610.00
Tier 1 price (\$/kL)	2.61	2.61	2.44	2.12	1.74
Tier 2 price (\$/kL)	3.39	2.85			
Option B cont.					
Supply charge (\$/year)	230.74	263.09	299.98	342.04	390.00
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	4.04	3.74	3.40	3.01	

Source: Commission's calculations.

Option A transitions over 10 years to one usage charge. The aim would be for the usage charge to be eventually set so that it reflects the cost of providing additional units of water (the estimated long-run marginal cost of providing more water). One usage charge is reached by year 8. Option B, transitions over 10 years to one usage charge set at the current Tier 1 level.

The level of both the usage and supply charges would depend on the costs and the supply conditions faced at the time. For indicative purposes, Table ES.1 shows the possible changes to the tariffs using the current costs and expected water inflows and outflows. Option A would reach one usage charge earlier than Option B. It would also move to more fully reflect the marginal cost of providing additional water compared to option B. As a result it would have a higher fixed charge than option B.

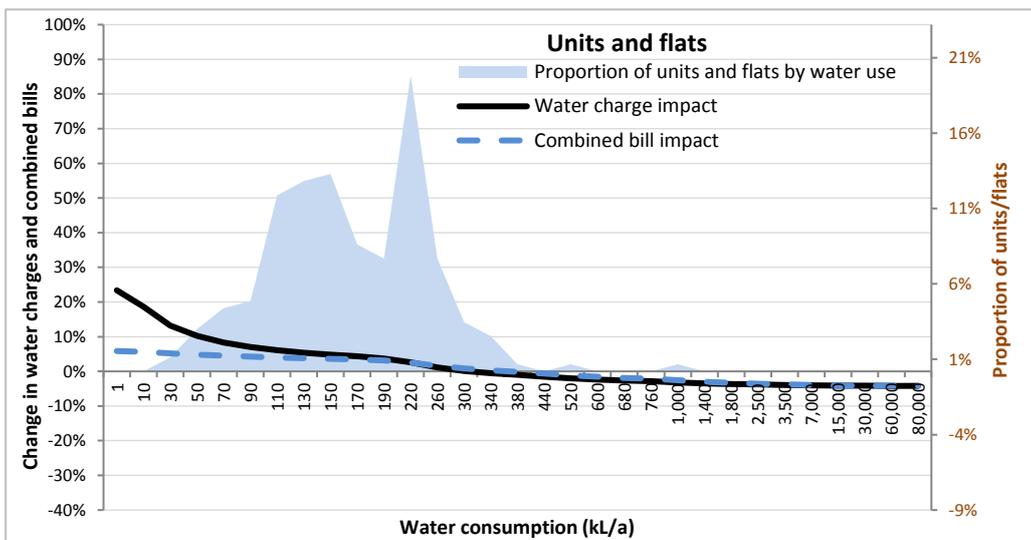
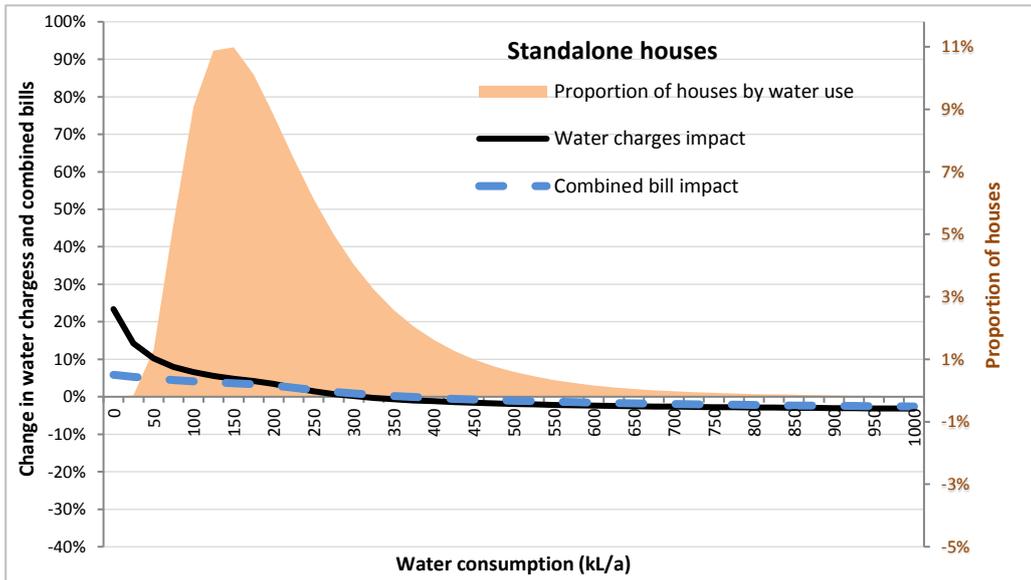
The analysis undertaken by the Commission for the tariff review suggests that option A would be more efficient but would have greater distributional effects. The distributional impacts on low volume water users could be mitigated by raising the supply charge by the same annual percentage over the 10 years and by keeping the Tier 1 charge at the current level until it can be reduced towards the end of the transition period.

Having only one usage charge, option B is likely to be more efficient than the current structure, and would reduce the negative distributional impacts on low volume water customers compared to option A. However, the usage charge would still be substantially higher than the estimated long-run marginal cost of providing additional water resulting in continued welfare losses for the ACT community.

The Commission's draft position is that option A should provide a long term goal for the structure of water tariffs. Over the longer-term with the transition period discussed above applied to mitigate negative customer impacts, and subject to change as conditions change, it provides a better guide as it will provide the greatest efficiency benefits.

Figure ES.6 shows the indicative annual impact of this transition plan on water charges and combined water and sewerage services bills on residential customers in standalone houses and those in units and flats.

Figure ES.6 Year 1 impact, residential customers

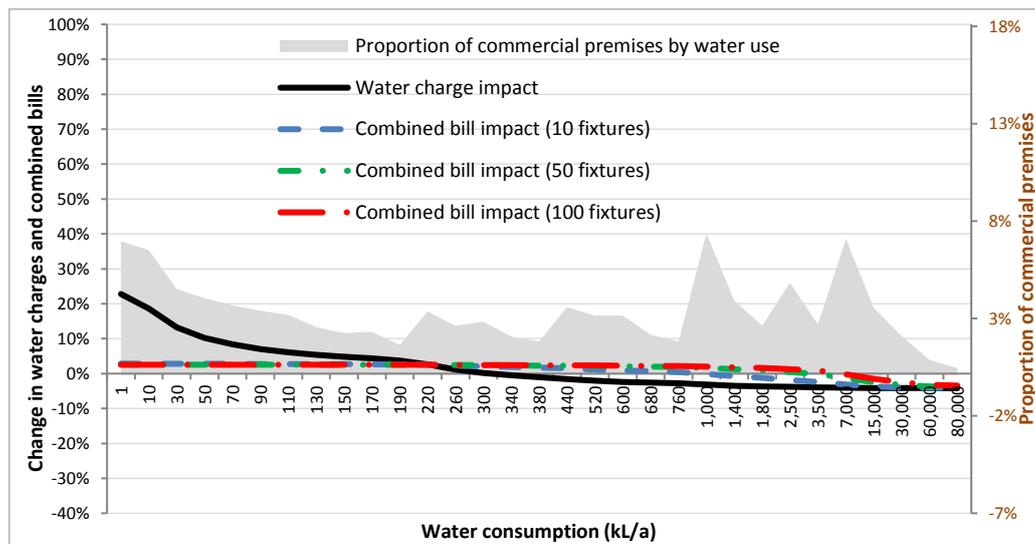


Source: Commission's calculations

Charges and combined bills for low volume water users increase while those for high volume water users decrease, with the transition at the 300 kL per year level. The combined bill impact on low volume customers is lower than that of the water charge alone due to the inclusion of sewerage charges, which form a large portion of their bills and only rise by the rate of inflation. Customers consuming 200 kL per year face an annual water charge rise of 3.4 per cent, or \$22, with their combined bill increasing by 3.0 per cent, or \$35.

Figure ES.7 shows the annual water charges and combined water and sewerage services bill impacts for commercial customers. Once again, low volume commercial water customers face higher water charges with high volume water users facing lower charges. The combined bill impacts show a slightly different story, with the effect of fixture charges limiting bill decreases to very much higher volume water users than in the residential case.

Figure ES.7 Year 1 impact, commercial customers



Source: Commission's calculations

It should be noted that the cost estimate underpinning this analysis is likely to change over the transition period. The cost of providing additional water (the marginal cost) is a dynamic concept in that any estimate is dependent on the circumstance prevailing at the time it is estimated, and will be different as conditions change. For example, the short-run marginal operating cost for water will be dependent on dam levels and source of supply at the time. Demand requirements can also change significantly from one estimation point to the next.

Sewerage services

Icon Water's current sewerage services tariff structure comprises an annual supply charge for residential premises, and the same supply charge plus an annual charge per flushing fixture (in excess of two) for non-residential premises. Icon Water does not currently have a trade waste tariff.

The Commission's draft position is that, particularly in the absence of a reliable measure of actual discharge volumes, it is unlikely that any potential economic efficiency benefits of introducing a sewage usage charge will outweigh the costs. The Commission therefore recommends that the current supply charge tariff structure should be retained.

Consistent with cost-reflective pricing, the Commission has in the past noted that where Icon Water incurs material trade waste-related increased costs, these higher costs should be passed on to the relevant customers. The Commission welcomes Icon Water's commitment to introducing a trade waste pricing regime in the forthcoming regulatory period.

The draft assessment framework

In coming to the main conclusions reported above, the Commission applied an assessment framework, comprising an overarching economic efficiency objective and a number of pricing principles (see Table ES.2.)

Table ES.2 Draft assessment framework

Category	Stream	Detail
Objective		To promote the efficient investment in, and efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.
Pricing principle 1	Economic efficiency	Tariff structures and prices should promote the economically efficient use of Icon Water's water and sewerage services infrastructure, and in the case of water should also encourage economically efficient use of the water resource.
	2	Any change from an existing to a more efficient tariff structure should only be undertaken if the efficiency benefits are greater than the costs of the change.
	3	For each tariff class, prices should lie on or between an upper bound reflecting the stand-alone cost of serving customers in that class and a lower bound reflecting the avoidable cost of not serving those customers.
4	Financial viability	Tariff structures and prices should reflect the full recovery of the prudent and efficient costs of providing regulated water and sewerage services to ensure business viability.
	5	Tariff structures and prices should facilitate the recovery of Icon Water's allowed revenue over the regulatory period.
6	Community impact	Tariff structures should be robust enough to promote the economically efficient use of Icon Water's water and sewerage services infrastructure over a reasonable period of time.
	7	Any change to the structure of tariffs and prices that will have substantial customer impacts should be phased in over a transition period to allow customers reasonable time to adjust to the change.
	8	Tariff structures should be simple for customers to understand and straightforward for the utility to implement.
	9	Tariffs should be set using a transparent methodology and subject to public consultation and scrutiny.

Three changes have been made to the initial framework that was proposed in the November 2015 issues paper that launched the tariff review:

- the new the economic efficiency objective set out in section 19L of the *Independent Competition and Regulatory Commission Act 1997* replaces the objective proposed in the issues paper;

- a cost-benefit pricing principle was added under the economic efficiency stream to make it abundantly clear that the efficiency benefits of any tariff restructure should outweigh the costs of implementing the change; and
- a tariff differentiation pricing principle was added under the economic efficiency stream to make it clear that tariff differentiation between customer classes is acceptable as long as there is no economic cross-subsidy.

The draft framework has a clear focus on achieving an economically efficient outcome—or an outcome which maximises the social welfare of the ACT community, while at the same time being consistent with the Commission’s broader legislative requirements.

Potential dual role of the assessment framework

Regulators have various methods to control the prices charged by regulated utility service providers. The methods differ in the degree of direct control exercised over tariff structures and prices by the regulator. At one end of the spectrum, the regulator directly caps individual prices. At the other end, the utility takes control under a pure revenue cap, often subject to a set of pricing principles. The form of price control that will apply to Icon Water during the next regulatory period will be determined as part of the broader price investigation process that will commence at about the time this tariff review concludes.

The Commission’s view is that it is sensible for the tariff review to remain open to the possibility of either the Commission, under some form of price cap, or Icon Water under some form of revenue cap, being responsible for the structure of tariffs and the level of constituent prices from 1 July 2018. Under the former, the assessment framework would be used directly by the Commission to determine the best tariff structure and constituent price levels. Under the latter, Icon Water would assume responsibility for tariffs, subject to consistency with the assessment framework and the revenue cap, and would be subject to final approval by the Commission.

The Commission’s preference is for Icon Water to take more responsibility for tariff structures and price levels moving forward. Icon Water is best placed to engage with its customers on tariff reform and pricing more generally, and has already started a discussion on these matters with customers. In this scenario, Icon Water would consult with its customers, including particular customer groups, in developing its preferred water tariff structure and constituent prices, consistent with the assessment framework, for presentation to the Commission in its main submission to the price investigation leading up to 1 July 2018.

Submissions to the tariff review

The Commission received 9 submissions on the tariff review papers published to date.⁸ Two submissions were received from Icon Water, one from the ACT Civil and Administrative Tribunal, one from ClubsACT, one from the Federal Golf Club and four from members of the ACT community. Submissions are considered in the relevant chapters of the draft report.

Implementation

The Commission's draft position is that the transition to the alternative water tariff structure, and the introduction of trade waste pricing, will commence from 1 July 2018.

Next steps

The Commission welcomes submissions from stakeholders on the draft report by the closing date of **30 November 2016**. The Commission is also intending to hold a public forum to discuss the draft report findings in November 2016. The Commission will advertise details of the timing and location of the forum once finalised.

⁸ The Commission released an issues paper in November 2015. This was followed by a technical paper on the elasticity of demand for water in the ACT published in February 2016 and a technical paper on marginal cost pricing in the ACT released in June 2016.

1 Introduction

1.1 Background

The current structure of Icon Water's water and sewerage services tariffs has served the ACT community well over the last 15 or so years. Nonetheless, in recent years a number of questions have been raised about whether improvements could be made to the way tariffs are structured. In the 2013 price investigation process for example, the Commission received a number of submissions from stakeholders in this regard.

In its 2013 determination, the Commission chose to maintain the existing tariff structures for water and sewerage services for the regulatory period commencing 1 July 2013 (the current regulatory period).⁹ Notwithstanding this decision, the Commission stated that it recognised the value in further reviewing alternative price structures and price-setting arrangements over the course of the current regulatory period.

This view was reflected as a future reset principle in the *Price Direction: Regulated Water and Sewerage Services – 1 July 2013 to 30 June 2019* (the price direction).¹⁰ Clause 11(b) of the *Substituted Price Direction: Regulated Water and Sewerage Services – 1 July 2013 to 30 June 2018* (the substitute price direction) maintained this reset principle requiring the Commission to undertake a review of Icon Water's water and sewerage services tariff structures (the tariff review) during the current regulatory period.¹¹

1.2 The tariff review story leading up to the draft report

The review of Icon Water's water and sewerage services tariff structures commenced with the publication of an issues paper in November 2015.¹² This was followed by a technical paper on the elasticity of demand for water in the ACT released in February 2016.¹³ A technical paper on marginal cost pricing in the ACT was then published in June 2016.¹⁴

⁹ ICRC, 2013a: 165.

¹⁰ ICRC, 2013b: 13.

¹¹ Industry Panel, 2015: 12.

¹² ICRC, 2015a: 1-90. Available for download from: <http://www.icrc.act.gov.au/wp-content/uploads/2015/11/Report-7-of-2015-Issues-Paper-Tariff-Review-2016-November-2015.pdf>.

¹³ ICRC, 2016a: 1-31. Available for download from: http://www.icrc.act.gov.au/wp-content/uploads/2015/11/TariffRev_Elasticity_paper8.pdf.

¹⁴ ICRC, 2016b: 1-81. Available for download from: <http://www.icrc.act.gov.au/wp-content/uploads/2016/06/Report-4-of-2016-June-2016.pdf>.

1.2.1 Issues paper

The issues paper proposed a frame of reference to guide the Commission’s evaluation of Icon Water’s existing tariff structures and potential alternatives. The framework comprises an overarching economic regulation objective and set of pricing principles (see Table 1.1).

Table 1.1 Issues paper proposed assessment framework

Category	Stream	Detail
Objective		To promote the efficient investment in, and efficient operation and use of, Icon Water’s regulated water and sewerage services to maximise the social welfare of the community over the long term.
Pricing principle 1	Economic efficiency	Tariff structures and prices should promote the economically efficient use of Icon Water’s water and sewerage services infrastructure, and in the case of water should also encourage economically efficient use of the water resource.
	2 Financial viability	Tariff structures and prices should reflect the full recovery of the prudent and efficient costs of providing regulated water and sewerage services to ensure business viability.
	3	Tariff structures and prices should facilitate the recovery of Icon Water’s allowed revenue over the regulatory period.
	4 Community impact	Tariff structures should be robust enough to promote the economically efficient use of Icon Water’s water and sewerage services infrastructure over a reasonable period of time.
	5	Any change to the structure of tariffs and prices that will have substantial customer impacts should be phased in over a transition period to allow customers reasonable time to adjust to the change.
	6	Tariff structures should be simple for customers to understand and straightforward for the utility to implement.
	7	Tariffs should be set using a transparent methodology and subject to public consultation and scrutiny.

Source: ICRC (2015a): 46.

The overarching objective seeks to promote the efficient investment in, and efficient operation and use of, Icon Water’s regulated water and sewerage services to maximise the social welfare of the community over the long term. Social welfare is maximised at the point at which it is impossible to make some individuals better off without making some other individuals worse off. Such an outcome is termed Pareto-optimal or Pareto-efficient.

Pareto optimality addresses the organisation of production and the allocation of resulting commodities among consumers. The ‘organisation of production’ part deals with what is commonly termed productive or technical efficiency and is concerned with the allocation of factors of production to ensure goods and services are produced at the lowest possible resource cost. The ‘allocation of resulting commodities among consumers’ part deals with what is often called ‘allocative efficiency’ and is concerned with the efficient allocation of resources and commodities between competing uses. A Pareto optimal outcome is one where the commodities, or services in this particular case, are produced at least cost and allocated efficiently between consumers.

The productive efficiency of the delivery of water and sewerage services is a key consideration in the Commission’s review of the prudence and efficiency of Icon Water’s operating and capital costs as part of a price investigation process leading up to a new regulatory period. In considering the design of water and sewerage services tariffs in this review, it is the allocative efficiency aspect of Pareto optimality which is of primary relevance—that is, the efficient allocation of water and sewerage services to Icon Water customers.¹⁵

The set of proposed pricing principles has been categorised into three streams: economic efficiency, financial viability and community impacts.

The economic efficiency principle follows directly from the overarching objective and deals with the efficient allocation of water and sewerage services to Icon Water customers. An economically efficient (to the extent possible given the natural monopoly situation and a revenue constraint) tariff structure will assist in achieving the objective of maximising social welfare by providing price signals—often called cost-reflective pricing—to Icon Water customers about the efficient costs and therefore the efficient use of the service infrastructure and water resource.¹⁶ Marginal cost pricing is an approach commonly advocated to give effect to this proposed principle when regulating monopoly utility prices.

In its simplest form, marginal cost pricing involves setting price equal to the marginal cost of providing water and sewerage services. Marginal cost, as defined by Turvey (1976):

is the effect upon future system costs of a small increment or decrement to the projected growth of demand.¹⁷

As such, marginal cost is a forward-looking concept. This differs from the Commission’s current approach to setting Icon Water’s prices which can be characterised as backward-looking as, in the case of water for example, prices are ‘based on the annualized cost of providing the most recent realized supply augmentation’.¹⁸

The pricing principles relating to full cost recovery, price path stability and the transition to a new tariff structure, are also relevant to marginal cost pricing, albeit from the perspective of the Commission’s recommendation at the conclusion of this tariff review on whether or not to implement such a pricing approach in the ACT.

¹⁵ This encompasses both the total amount of water and sewerage services consumed and the distribution of that consumption among customers. The objective is to secure an outcome in which social welfare could not be improved by consuming more of the services, nor by reallocating consumption between users, nor by some combination of the two.

¹⁶ It is important to note that prices can be cost-reflective only if the costs reflected are prudent and efficient.

¹⁷ Turvey, 1976: 159.

¹⁸ Grafton and Ward, 2010: 4.

The issues paper also canvassed a range of theoretical and practical pricing matters that are directly relevant to the review. These included marginal cost pricing in a monopoly situation, using price to manage demand and differential pricing for customer groups.

The issues paper further flagged that the Commission would publish two technical papers—one on the price elasticity of demand for water in the ACT and the other on marginal cost pricing—in order to provide the necessary evidence base for informed decision-making on the tariff structure at the draft and final report stages of the review.

1.2.2 Technical paper 1: Elasticity of water demand

The first technical paper provided an estimate of the price elasticity of demand for water in the ACT, information necessary to evaluate the merits of using price to manage demand rather than solely relying on quantity restrictions, and required for the practical application of Ramsey pricing.

The Commission found that the price elasticity of demand for residential water in the ACT while not zero is relatively small with a point estimate of -0.14 across the 1999 to 2015 period.

Under the current ACT temporary water restrictions scheme, Stage 3 restrictions target a 35 per cent reduction in water use relative to permanent water conservation measures. Given the elasticity estimate above, to achieve this reduction in demand would require a 250 per cent increase in the average usage price. Applying the more elastic summer estimate of -0.19 implies a price increase in excess of 180 per cent to meet the water reduction objective. Furthermore, prices of this magnitude are well outside the data used for this analysis, and therefore the demand response would be uncertain.

The Commission's primary conclusion was that this finding mitigates against the sole use of price as a tool to manage water demand in the ACT. The finding that the residential price response is less elastic in the sub-period after the 2006 structural break than over the entire 1999 to 2015 period further supports this conclusion.

1.2.3 Technical paper 2: Marginal cost pricing

The second technical paper assessed the theory and practice of marginal cost pricing in a natural monopoly industry, and provided current estimates of the marginal cost of providing regulated water and sewerage services in the ACT. More specifically, the paper sought to answer two questions:

1. Is Icon Water's current tariff structure providing suitable price signals to its customers about the efficient costs of water and sewerage services?
2. If not, what would a more efficient tariff structure look like?

The analysis showed that all the water marginal cost estimates calculated for the purposes of this paper, short- and long-run, are well below even the first tier current water price of \$2.61 per kL. The paper concluded that Icon Water's current water tariff

structure does not appear to be providing suitable price signals to customers about the efficient use of the service infrastructure and water resource.

As to the second question about what a more efficient water tariff structure would look like, the paper concluded that the pursuit of economic efficiency would dictate a move towards one usage price, set with reference to marginal cost. The paper noted that moving from the current inclining block structure and price levels to a new, more efficient, single usage charge structure with the price set with reference to marginal cost would require a rebalancing of the supply and usage charge—with a significant adjustment in the level of the supply charge.

With regard to sewerage services, the paper noted that the fact that the current tariff is based entirely on supply charges implies that it is incapable of providing suitable price signals to customers about the efficient costs of sewerage services in the ACT.

1.2.4 Submissions received

The Commission has received 9 submissions on the tariff review papers published to date. Two submissions were received from Icon Water, one from the ACT Civil and Administrative Tribunal (ACAT), one from Clubs ACT, one from the Federal Golf Club and four from members of the ACT community. A summary of the submissions is provided in Appendix 1. Submissions are considered in the relevant chapters of the draft report.

1.3 Purpose of the draft report

The purpose of the tariff review is to determine whether the current water and sewerage services tariff structure will continue to deliver the best outcome for the ACT community, or whether changes are required.

The purpose of the draft report is to set out, for public consideration, the Commission's initial position on whether the current water and sewerage services tariff structure will continue to deliver the best outcome for the ACT community, and if not, present an alternative structure that the Commission believes will deliver a better outcome. This process involves the following steps.

First, in Chapter 2, the tariff assessment framework proposed in the issues paper is reviewed and refined in light of recent legislative changes, stakeholder submissions and further Commission analysis.

Second, in Chapters 3 and 4, using the refined framework, and the evidence base from the two technical papers, Icon Water's current water and sewerage tariff structures and potential alternatives are evaluated.

Third and finally, in Chapter 5, matters related to the implementation of any recommended changes to current tariff structures, such as transition periods, are discussed.

1.4 Tariff review timeline and submission process

The indicative timeline for the remainder of the review is set out in Table 1.2.

Table 1.2 Indicative timeline for the tariff review

Task	Date
Release of issues paper	23 November 2015
Release of technical paper 1: Water demand elasticity	29 February 2016
Release of technical paper 2: Marginal cost pricing	17 June 2016
Release of draft report	6 September 2016
Public forum	November 2016
Submissions on draft report close	30 November 2016
Final report	January 2017

The closing date for submissions on the draft report is **30 November 2016**. Details on how to make a submission are shown in the **How to make a submission** section at the front of this draft report. Written submissions received by the closing date will be considered in the development of the final report.

1.5 Draft report structure

The remainder of this paper is structured as follows:

- Chapter 2 reviews and refines the assessment framework for the tariff review in light of recent legislative changes, stakeholder submissions and further Commission analysis.
- Chapter 3 evaluates the current water tariff structure and potential alternatives.
- Chapter 4 evaluates the current sewerage services tariff structure and potential alternatives.
- Chapter 5 considers matters related to the implementation of any recommended changes to current tariff structures.
- Appendix 1 provides a summary submissions received on the tariff review papers published to date.
- Appendix 2 provides details of other legislative and national considerations relevant to the tariff review.
- Appendix 3 provides a summary of water tariffs in other jurisdictions.

2 The assessment framework

2.1 Introduction

Any changes to Icon Water's tariff structures recommended at the conclusion of this tariff review will be given effect through a variation of the current price direction or a new price direction. When varying or making a price direction, the Commission is required to have regard to a number of legislative requirements set out in the *Independent Competition and Regulatory Commission Act* (the ICRC Act).

The issues paper proposed a frame of reference to guide the Commission's evaluation of Icon Water's existing tariff structures and potential alternatives. The framework comprises an overarching economic regulation objective and set of pricing principles, the application of which will help achieve that objective. In other words, given the objective, the principles postulate the general characteristics that any tariff structure should exhibit if it is to achieve that objective.

The framework is designed to be consistent with the Commission's legislative price direction requirements, and in particular the new overarching economic efficiency objective in section 19L and a number of other considerations listed in section 20(2).

This chapter first reviews and refines the proposed overarching objective and pricing principles in light of recent legislative changes, submissions received and further Commission analysis before considering the potential dual role of the assessment framework.

2.2 Refining the assessment framework

2.2.1 Overarching objective

In the absence of an overarching objective in the ICRC Act at the time of publication of the issues paper in November 2015, the Commission proposed an overarching objective with a focus on efficiency, as shown in Box 2.1.

Box 2.1 Issues paper proposed overarching efficiency objective

To promote the efficient investment in, and efficient operation and use of, Icon Water's regulated water and sewerage services to maximise the social welfare of the community over the long term.

Source: ICRC, 2015: 46.

Submissions

Icon Water supports the proposed overarching economic efficiency objective, but noted that the amendments to the ICRC Act from 1 July 2015 need to be taken into

consideration.¹⁹ Dr David Denham also supported the proposed objective as a sound basis for developing a tariff structure, but argues that social welfare cannot be maximised ‘because the fixed charge component is far too high and does not appropriately reward customers for conserving water.’²⁰

Commission’s consideration

On 1 July 2016 the ICRC Act was amended to incorporate an overarching objective specific to the making of a price direction. Part 4 of the ICRC Act now includes a section 19L that states:²¹

The objective of the commission, when making a price direction in a regulated industry, is to promote the efficient investment in, and efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.²²

In order to apply this new objective in practice, the Commission’s preference is to adopt a social welfare approach, using the concept of Pareto optimality. An economic outcome is Pareto-efficient if it is impossible to make some individuals better off without making some other individuals worse off. When examining a single market using the tools of partial equilibrium analysis, embodied in the familiar supply and demand curves, the concept of Marshallian aggregate surplus provides a ready means of judging whether a change in market outcomes increases or decreases social welfare.²³

As to the interpretation of the phrase ‘long term’, the Commission’s preference is to adopt an approach that recognises that a particular measure or decision might reduce welfare in the immediate future but confer benefits at some later point. In recognising this possibility, the Commission would, however, expect that the benefits of the measure should outweigh its costs, where more distant costs and benefits may be given less weight in the assessment than those accruing earlier.

Draft position

For the purposes of the draft assessment framework, the legislated economic efficiency objective set out in section 19L of the ICRC Act replaces the objective proposed in the issues paper (see Box 2.2).

¹⁹ Icon Water, 2016c: 18.

²⁰ Denham, 2016: 1.

²¹ This amendment followed the Grant review recommendations regarding the lack of an overarching economic efficiency objective in the ICRC Act (Grant, 2015: 86).

²² ACT Government, 1997: 27.

²³ Measuring welfare using the concept of aggregate surplus, which is the sum of producers’ and consumers’ surplus, was introduced by Alfred Marshall in his analysis of the effects of taxes and price shifts on market equilibrium.

Box 2.2 Draft overarching efficiency objective

To promote the efficient investment in, and efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.

2.2.2 Pricing principles

In addition to the overarching efficiency objective discussed above, when varying or making a price direction the Commission is also required to have regard to the provisions set out in section 20(2) of the ICRC Act (see Appendix 2).

In addition to economic efficiency, these provisions include social, environmental and financial viability considerations.

While income distribution questions are more efficiently dealt with by the general government tax and transfer system, the social or community impact requirements cannot be overlooked when considering alternative tariff designs.

The environmental requirements can also be considered within the rubric of economic efficiency. In this regard, the scarcity value of the water resource itself can be considered in addition to marginal infrastructure costs, when estimating marginal cost for the purposes of setting economically efficient—or cost-reflective—prices.

The financial viability requirements for Icon Water cannot be avoided and can be considered as a constraint in the exercise of maximising social welfare. That is, we are dealing with a constrained maximisation problem, with social welfare maximised subject to a revenue constraint.

In addition to legislative requirements, as the ACT Government is a signatory to the National Water Initiative and the Initiative's pricing principles (see Appendix 2), the Commission is also required to ensure, to the extent possible, that Icon Water's water tariff structure is consistent with both.

The set of proposed principles has been designed to take into account the overarching economic efficiency objective, section 20(2) considerations and National Water Initiative pricing principles. The principles proposed in the issues paper, categorised into economic efficiency, financial viability and community impact streams, are shown in Box 2.3.

Box 2.3 Issues paper proposed pricing principles

Category	Stream	Detail
Pricing principle 1	Economic efficiency	Tariff structures and prices should promote the economically efficient use of Icon Water's water and sewerage services infrastructure, and in the case of water should also encourage economically efficient use of the water resource.
	2 Financial viability	Tariff structures and prices should reflect the full recovery of the prudent and efficient costs of providing regulated water and sewerage services to ensure business viability.
	3	Tariff structures and prices should facilitate the recovery of Icon Water's allowed revenue over the regulatory period.
	4 Community impact	Tariff structures should be robust enough to promote the economically efficient use of Icon Water's water and sewerage services infrastructure over a reasonable period of time.
	5	Any change to the structure of tariffs and prices that will have substantial customer impacts should be phased in over a transition period to allow customers reasonable time to adjust to the change.
	6	Tariff structures should be simple for customers to understand and straightforward for the utility to implement.
	7	Tariffs should be set using a transparent methodology and subject to public consultation and scrutiny.

Source: ICRC (2015a): 46.

Submissions

In its first submission to the tariff review, Icon Water expressed support for the proposed pricing principles, noting in particular that:²⁴

- drought pricing arrangements that would improve economic efficiency (principle 1) and full cost recovery (principle 2) should not be precluded on the basis that they would make prices less stable (principles 4 and 5);
- promoting the use of existing infrastructure where it is valued above marginal cost, in accordance with principle 1, will be critical to achieving the objective;
- it is appropriate that full cost recovery and revenue sustainability principles have been included not just to safeguard the viability of Icon Water but also to safeguard incentives to make purpose-specific investments in infrastructure when they are required to deliver the services that customers want over the long term; and
- it is appropriate that the influence of customer impact considerations be limited mainly to the decision on the length of any transition period (principle 5), without compromising the ultimate goal of a welfare-maximising tariff structure.

²⁴ Icon Water, 2016b: 2.

In its second submission, Icon Water reiterated its support for the proposed pricing principles, and added:

Icon Water is also committed to listening to its customers on this issue and refining our proposals to ensure tariff structures take account of community views appropriately.²⁵

Dr David Denham submitted that the proposed principles were good.²⁶

Costs versus benefits

Commission's consideration

In its second submission, Icon Water noted that as the marginal cost of sewage discharge represents only seven per cent of the total amount that needs to be recovered in tariffs, which is mostly fixed or sunk expenditure, there would be limited economic efficiency benefits from introducing a sewerage usage charge, but there may be significant impacts on individual customer bills.²⁷

Although the weighing of costs and benefits is an integral part of the welfare maximisation approach underpinning principle 1, for clarity it could be separately specified that any change from an existing to a more efficient tariff structure should only be undertaken if the efficiency benefits are greater than the costs of the change. In the case of a change to the sewerage tariff structure for example, in addition to the social costs associated with distributional impacts, the administrative costs of introducing a usage charge would need to be considered.

Draft position

The Commission considers there is merit in inserting an additional principle under the economic efficiency stream to make it abundantly clear that the efficiency benefits of any tariff restructure should outweigh the costs of implementing the change (see Box 2.4).

Box 2.4 New cost-benefit pricing principle

New principle 2: Any change from an existing to a more efficient tariff structure should only be undertaken if the efficiency benefits are greater than the costs of the change.

Differential tariffs – subsidy-free pricing and uneconomic bypass

Commission's consideration

Applying different tariffs to customer classes provides a means to deal with two issues, the first related to economic efficiency and the second to social or community impact.

²⁵ Icon Water, 2016c: 18.

²⁶ Denham, 2016: 2.

²⁷ Icon Water, 2016c: 20.

The first involves applying differential tariffs to respond to uneconomic bypass of the primary water system in a bid to avoid welfare losses. Icon Water noted the potential for uneconomic bypass due to the level of the second tier usage price:

The Tier 2 water usage price, in particular, is dramatically higher than the marginal cost of supply.

This mismatch leads to large customers considering investments in alternative supply arrangements that are considerably more expensive than Icon Water's marginal cost of supply. This type of investment is known as uneconomic bypass. Uneconomic bypass makes all customers worse off because it means prices need to increase to spread Icon Water's predominantly fixed costs across less usage and/or fewer customers.²⁸

As a potential solution, Icon Water submitted that:

Significant welfare losses would be avoided by reducing the Tier 2 price, at least for non-residential customers, in order to prevent uneconomic bypass of the primary water network and better utilise the water supply security in which Icon Water on behalf of customers has already invested.²⁹

The second issue is using differential tariffs to help manage residential customer impacts associated with any substantial change in the water tariff structure. In its second submission, Icon Water indicated that it is planning to discuss with its customers the introduction of different tariffs for residential and non-residential customers, with a higher supply charge for the latter.

This approach would help manage customer impacts by limiting increases in residential customer bills, consistent with the ICRC principle relating to transition arrangements.³⁰

The key issue here is that of cross-subsidisation. The economic efficiency principle precludes the cross-subsidisation of one tariff class by another. Icon Water, in its second submission, submits that there is no substantial difference in the forward-looking costs of providing water and sewerage services across different customer types.³¹

At face value therefore, it may seem that differential charging between two customer classes that face the same cost service provision will mean one class is subsidising the other. However, there is no economic cross-subsidy as long as the charges lie between the avoidable and stand-alone cost of providing the service to each customer class.

This is best explained with reference to an example. Assume that a golf course operator can install a stand-alone stormwater system that provides irrigation water at a cost of

²⁸ Icon Water, 2016c: 9.

²⁹ Icon Water, 2016b: 3.

³⁰ Icon Water, 2016c: 17.

³¹ Icon Water, 2016c: 19.

\$4.00 per kilolitre (kL), lower than the current top-tier Icon Water price of \$5.24 per kL. The short-run marginal cost of water from the Icon Water primary supply is estimated at \$0.72 per kL. As long as the differential price is set between the stand-alone cost of \$4.00 per kL and the avoidable cost of Icon Water not servicing these customers of \$0.72 per kL, there is no economic cross-subsidy.

Draft position

The Commission's view is that it is necessary, for clarification purposes, to make it obvious that the economic efficiency principle is not compromised under these circumstances. To this end, the Commission proposes a further additional principle under the economic efficiency stream (see Box 2.5).

Box 2.5 Additional tariff differentiation principle

New principle 3: For each tariff class, prices should lie on or between an upper bound reflecting the stand-alone cost of serving customers in that class and a lower bound reflecting the avoidable cost of not serving those customers.

2.3 Summary

The draft framework, incorporating the changes discussed above, which is applied to assess current and alternative tariff options in the following chapters of this draft report, is summarised in Table 2.1.

Table 2.1 Draft assessment framework

Category	Stream	Detail
Objective		To promote the efficient investment in, and efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.
Pricing principle 1	Economic efficiency	Tariff structures and prices should promote the economically efficient use of Icon Water's water and sewerage services infrastructure, and in the case of water should also encourage economically efficient use of the water resource.
	2	Any change from an existing to a more efficient tariff structure should only be undertaken if the efficiency benefits are greater than the costs of the change.
	3	For each tariff class, prices should lie on or between an upper bound reflecting the stand-alone cost of serving customers in that class and a lower bound reflecting the avoidable cost of not serving those customers.
	4 Financial viability	Tariff structures and prices should reflect the full recovery of the prudent and efficient costs of providing regulated water and sewerage services to ensure business viability.
	5	Tariff structures and prices should facilitate the recovery of Icon Water's allowed revenue over the regulatory period.
	6 Community impact	Tariff structures should be robust enough to promote the economically efficient use of Icon Water's water and sewerage services infrastructure over a reasonable period of time.
	7	Any change to the structure of tariffs and prices that will have substantial customer impacts should be phased in over a transition period to allow customers reasonable time to adjust to the change.
	8	Tariff structures should be simple for customers to understand and straightforward for the utility to implement.
	9	Tariffs should be set using a transparent methodology and subject to public consultation and scrutiny.

2.4 Potential dual role for the framework

In the issues paper the Commission raised the matter of the interaction between the form of price control that will apply in the next regulatory period, commencing 1 July 2018, and the structure of tariffs.

Regulators have various methods to control the prices charged by regulated utility service providers. The methods differ in the degree of direct control exercised over tariff structures and prices by the regulator. At one end of the spectrum, the regulator directly caps individual prices. At the other end, the utility takes control under a pure revenue cap, often subject to a set of pricing principles. The form of price control that will apply to Icon Water during the next regulatory period will be determined as part of the broader price investigation process that will commence at about the time this tariff review concludes.

Price cap regulation involves the regulator determining or approving the maximum prices for each regulated service that the utility provides. This generally involves the regulator being responsible for setting the tariff structures and calculating the level of

prices to be applied by the utility. The Commission's approach in its 2013 price direction could be characterised as a price cap approach.

Revenue cap regulation entails the regulator determining or approving a maximum revenue amount that can be earned by the utility. In contrast to price cap regulation, the utility is generally given the task of setting tariff structures and constituent prices. The regulator's involvement in tariffs is often restricted to determining a set of pricing principles to be applied by the utility and subsequently confirming that proposed prices do not breach the utility's revenue cap. An example of this approach is the way in which the Australian Energy Regulator regulates electricity distribution businesses.

Icon Water is currently operating under the substitute price direction. The form of regulation under this price direction is a hybrid price and revenue cap with:

individual price caps set for water and sewerage charges and a demand volatility adjustment mechanism used to account for deviations between actual and forecast volumetric water sales revenue (i.e., revenue from tier 1 and tier 2 water sales) in excess of a 6% deadband over the full five-year regulatory period (2013–14 to 2017–18).³²

The form of price control that will apply to Icon Water during the next regulatory period will be determined as part of the broader price investigation process that will commence at about the time this tariff review concludes.

2.4.1 Submissions

Icon Water was the only stakeholder to comment on this matter in its second submission to the tariff review:

It would be in the interests of all stakeholders for the recommendations made by the ICRC in its final report to keep open the option of Icon Water setting prices from 2018 within constraints and principles provided by the ICRC.³³

2.4.2 Commission's consideration

The Commission agrees that is sensible for the tariff review to remain open to the possibility of either the Commission or Icon Water being responsible for the structure of tariffs and the determining the level of constituent prices from 1 July 2018. The implications of this for the tariff review primarily relate to the role of the assessment framework.

If the Commission continues to take direct responsibility for the tariff structure and level of prices under a price cap approach, the assessment framework will be used by the Commission to determine the best tariff structure moving forward. The Commission's initial proposals in this regard are presented later in this draft report, and

³² Industry Panel, 2015: 27.

³³ Icon Water, 2016c: 5.

will be confirmed at the conclusion of the tariff review. Icon Water would then be expected to adopt the recommended tariff structures in its main regulatory submission to the price investigation process leading up to 1 July 2018. The price levels would then be determined in the usual fashion and prescribed in the price direction.

Alternatively, should Icon Water be given responsibility for pricing from 1 July 2018 under a revenue cap approach, it would be expected to use the assessment framework to develop, consult on, and present its proposed tariff structures in its main regulatory submission. The Commission would then check that Icon Water's proposals are compliant with the framework. Prior to 1 July 2018, the Commission would also check that the level of constituent prices is consistent with the revenue cap.

Given its potential dual role, the key issue is to find the right level of prescription for the assessment framework. If the set of principles is broadly defined, this may provide too much latitude to ensure that the overall efficiency objective is met. On the other hand, if the set of principles is too tightly defined, it may not provide sufficient flexibility to allow for innovative tariff solutions. In finding the right balance between latitude and prescription the Commission's preference is to err on the side of latitude.

2.4.3 Draft position

The Commission's draft position is that the tariff review should remain open to the possibility of whether the Commission or Icon Water being responsible for the structure of tariffs and the level of constituent prices from 1 July 2018.

The Commission's preference is for Icon Water to take more responsibility for tariff structures and price levels moving forward. Icon Water is best placed to engage with its customers on tariff reform and pricing more generally, and has already started a discussion on these matters with customers.

In this scenario, Icon Water would consult with its customers, including particular customer groups, in developing its preferred water tariff structure and constituent prices, consistent with the assessment framework, for presentation to the Commission in its main submission to the price investigation leading up to 1 July 2018.

3 Water tariffs: Options and analysis

3.1 Introduction

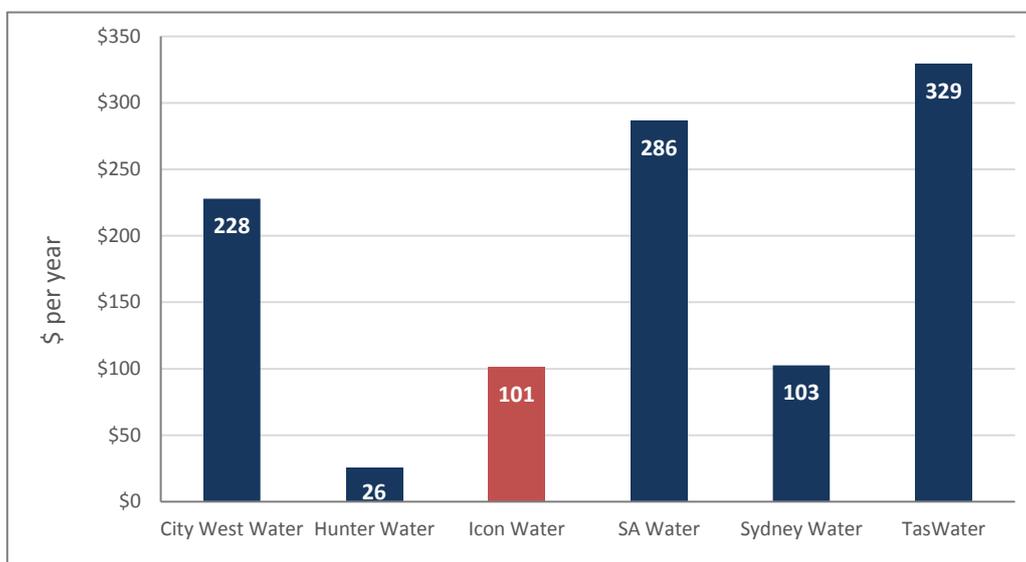
This chapter applies the draft assessment framework described in the previous chapter to evaluate whether Icon Water’s current water tariff structure is best placed to achieve the overarching economic efficiency objective, or whether an alternative structure is more likely to do so.

3.2 Current tariff structure: two-part, inclining block

The current ACT water tariff structure comprises an annual supply charge and a two-tier usage charge with a lower price for the first 200 kL of water use and a higher water price, double that of the first tier price, for water used above that level. This is known as a two-part inclining block tariff. At this level of prices, Icon Water recovers about 10 per cent of its water revenue from the supply charge, with the remaining 90 per cent recovered from volumetric charges.

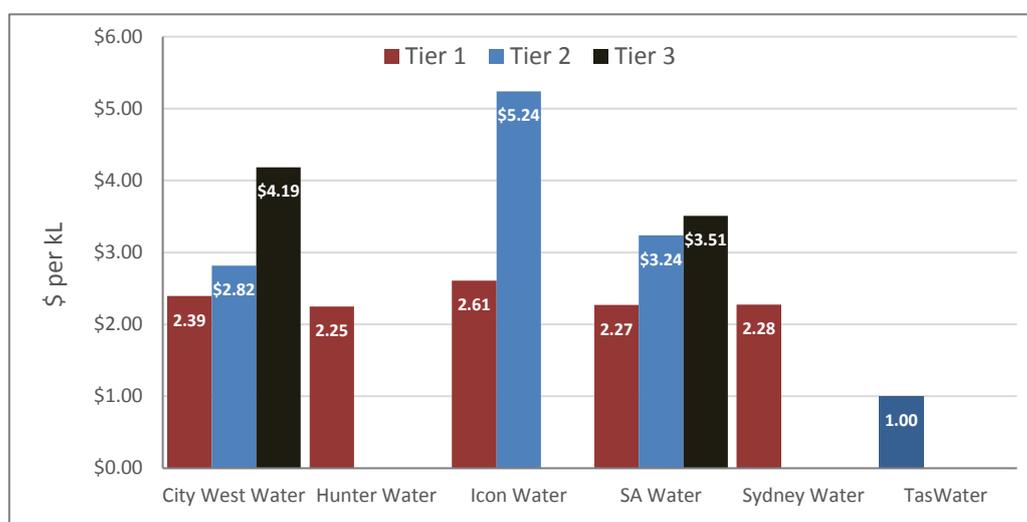
Figure 3.1 and Figure 3.2 show a comparison between Icon Water’s residential water tariff structure and arrangements for a number of utilities in other jurisdictions. Icon Water’s Tier 2 charge is the highest and its supply charge amongst the lowest.

Figure 3.1 Residential water supply charges by utility, 2016–17



Source: Appendix 3.

Figure 3.2 Residential water usage charges by utility, 2016–17



Source: Appendix 3.

3.2.1 Economic efficiency

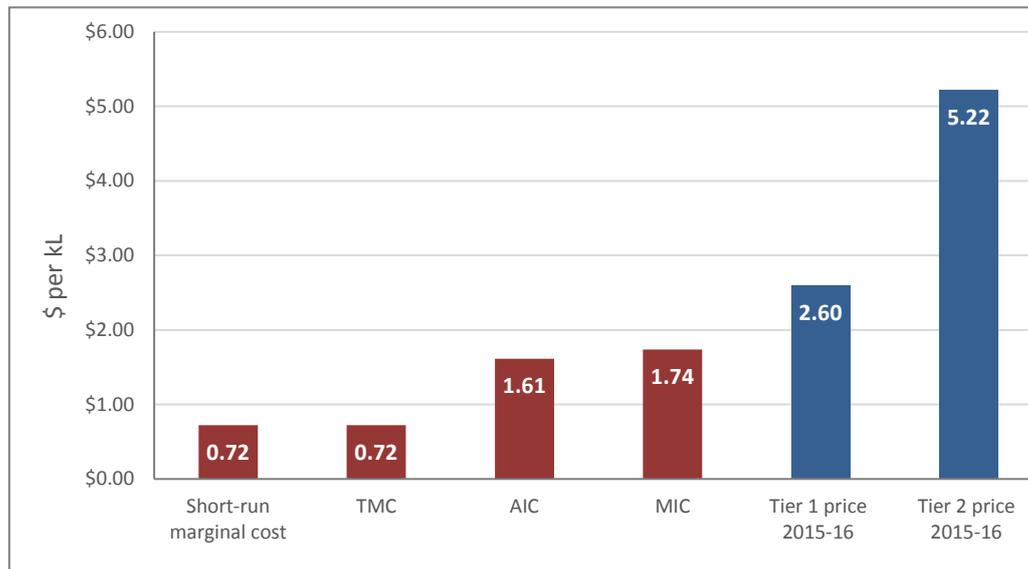
Economic theory suggests that marginal cost pricing—that is setting price with reference to the marginal cost of providing an additional unit of the service in question—is the key to ensuring that cost-reflective price signals are provided to customers to enable them to make efficient consumption decisions.³⁴ First in the issues paper, and then in more detail in the technical paper on marginal cost pricing, the Commission demonstrated the link between pricing at marginal cost and efficiency.

The marginal cost pricing paper also provided current estimates of the marginal cost of providing regulated water services in the ACT, using a range of measurement methods.³⁵ A summary of the short- and long-run marginal cost estimates is shown in Figure 3.3.

³⁴ It is important to note that prices can be cost-reflective only if the costs reflected are prudent and efficient.

³⁵ These included textbook marginal cost (TMC), average incremental cost (AIC) and marginal incremental cost (MIC).

Figure 3.3 Marginal cost estimate for water, summary



Source: ICRC (2016b): 60.

For the long-run methods, estimates range from a low of \$0.72 per kL for the TMC method, the same as the short-run marginal cost estimate, to a high of \$1.74 using the MIC method. The two most common long-run measurement methods, AIC and MIC, return estimates of similar magnitude.

Recall that Icon Water’s current two tier usage prices for water are \$2.61 per kL for the first 0.548 kL per day and \$5.24 per kL thereafter. What is clear is that, irrespective of which measure is used, all the marginal cost estimates are well below even the first tier price. This conclusion holds in the face of all the sensitivity tests run on the various measures.

What this implies is that the current tariff structure is not providing cost-reflective price signals to water customers about the efficient use of the service infrastructure and water resource. This means that the current tariff structure is inconsistent with the first pricing principle and is likely to result in welfare losses, both directly in the case of consumers that have been induced to use less water than they would have had water been priced at marginal cost, and indirectly through uneconomic bypass.

The second principle is not relevant as no change in structure is required. The current structure provides for tariff differentiation, subject to principle 3, although no differentiation is applied at present.

3.2.2 Financial viability

The current tariff structure is consistent with pricing principle 4, in that the level of prices can be set to fully recover the prudent and efficient costs of providing water services.

The current tariff structure is characterised by a relatively low supply charge and high reliance on usage charges. Supply charges comprise only 16 per cent of the current water bill for a customer using 200 kL per year, with usage charges accounting for the remaining 84 per cent. Icon Water notes that:

Over the past 13 years, there has been a significant shift away from fixed charges towards usage charges. The top tier usage price has increased by roughly 400 per cent over that period, while the fixed supply charge has decreased.³⁶

Due to this high reliance on usage charges, Icon Water is exposed to a higher level of revenue risk (associated with the need to forecast water sales in advance of the regulatory period) than would be the case with a structure giving more weight to the annual supply charge. To ensure consistency with the fifth pricing principle, which entails facilitating revenue recovery over a regulatory period, the current structure may require the use of other regulatory mechanisms such as overs and unders accounts.

3.2.3 Community impact

The current structure is consistent with three of the four community impact principles. Retaining the current structure means no customer impacts and therefore no transition required under principle 7. It has been in place for a long time and should be well understood by customers in line with principle 8. It was also introduced using a transparent methodology and subject to public scrutiny, as required by principle 9.

The current structure is not consistent with principle 6 on the basis that it is not promoting the economically efficient use of Icon Water's water infrastructure over any period of time.

3.2.4 Summary assessment

Table 3.1 shows the summary assessment of the current water tariff structure against the draft pricing principles. The inconsistency of the current structure with the first pricing principle, which requires a tariff that sends cost-reflective price signals, limits its ability to achieve the overarching economic efficiency objective.

³⁶ Icon Water, 2016c: 5.

Table 3.1 Summary assessment of the current water tariff structure

Stream	Principles	Assessment	Comment
Economic efficiency	1 Economic efficiency	✘	Not efficient
	2 Cost-benefit	N/A	No change in tariff structure
	3 Cross-subsidy	✓	No differentiation at present
Financial impact	4 Full cost recovery	✓	Price levels can be set to recover revenue requirement
	5 Revenue sustainability	✓	Revenue risk from reliance on usage charges may need to be managed with other mechanisms
Community impact	6 Stability over time	✘	Not efficient over any period
	7 Transition arrangements	N/A	No change in tariff structure
	8 Simplicity	✓	In place for many years and understood
	9 Transparency	✓	Originally set through a transparent and public process

3.3 Alternative tariff structure: two-part, single usage charge set with reference to long-run marginal cost

3.3.1 Economic efficiency

In the technical paper on marginal cost pricing, the Commission concluded that the pursuit of economic efficiency would dictate a move towards one usage price, set with reference to marginal cost, within a two-part tariff framework to ensure full cost recovery. More specifically, a two-part tariff with the usage charge set with reference to marginal cost would send appropriate price signals about the forward-looking costs of providing the water service to customers.

On the choice between setting price with reference to short- or long-run marginal cost, the Commission concluded that, in principle, short-run marginal cost pricing is the efficient basis for pricing. The sale of water to consumers is a short-term agreement that does not bind the consumer to take any more water at a later date and the utility is therefore faced with the short-run problem of selling water given its current capacity.

Nonetheless, in practice, the Commission sees merit in a long-run measure, for two reasons. First, although the short-run approach is unlikely in the present supply and demand circumstances to lead to any great instability in prices over the near to medium term, this may not always be the case as the supply and demand conditions change over time. Second, as discussed below in the community impacts section, the gap between the current tariff structure and one based on marginal cost pricing is substantial, and likely to require a long transition period. In these circumstances, aiming to transition the usage price to a long-run marginal cost estimate is a more realistic goal.

As noted earlier, a number of ways to calculate long-run marginal cost were assessed in the technical paper. The Commission's preference is to calculate long-run marginal cost using the MIC method as this approach is more explicitly concerned with

decision-making at the margin. The definition adopted in the technical paper comprises three elements. The first is the infrastructure cost of providing the capacity to supply demand requirements into the future from Icon Water's dams. The second is the operational cost of storing, treating and delivering the water to customers through Icon Water's reticulation network. The third is the scarcity value of the water resource.

Currently, due to the favourable water security situation, the scarcity value is represented by the portion of the ACT Government's Water Abstraction Charge that is intended to reflect scarcity. There is scope, however, to increase the scarcity value as the next augmentation approaches as the value of water stored in Icon Water's dams increases.

A two-part tariff with a single usage charge set with reference to marginal cost would be consistent with pricing principle 1. Given the magnitude of the discrepancy between marginal cost and current top tier price, the efficiency benefits are likely to outweigh the costs of moving to this tariff structure, consistent with principle 2. The alternative tariff structure provides for differentiation between customer classes, if required, subject to principle 3.

3.3.2 Financial viability

As discussed at length in the technical paper on marginal cost pricing, the application of marginal cost pricing in a decreasing cost natural monopoly industry, such as the provision of regulated water and sewerage services in the ACT, raises particular difficulties for revenue recovery. In such an industry, as marginal cost is less than average cost, pricing at marginal cost will not allow the utility to recover all of the costs of providing the service.

In order to price at marginal cost for efficiency purposes, and achieve full cost recovery, the regulator is essentially faced with three alternatives to recover the revenue shortfall.

The first is to recover the revenue shortfall through general taxation. The second is to adopt a multi-part tariff comprising a price for additional units based on marginal cost, and an additional charge, independent of consumption, set to ensure that total supply costs are recovered. The third alternative is Ramsey pricing. This involves deliberate price discrimination on the basis of elasticities of demand to allow the monopoly business to recover residual costs while minimising the deviations from optimal consumption patterns—that is, those based on marginal cost pricing.

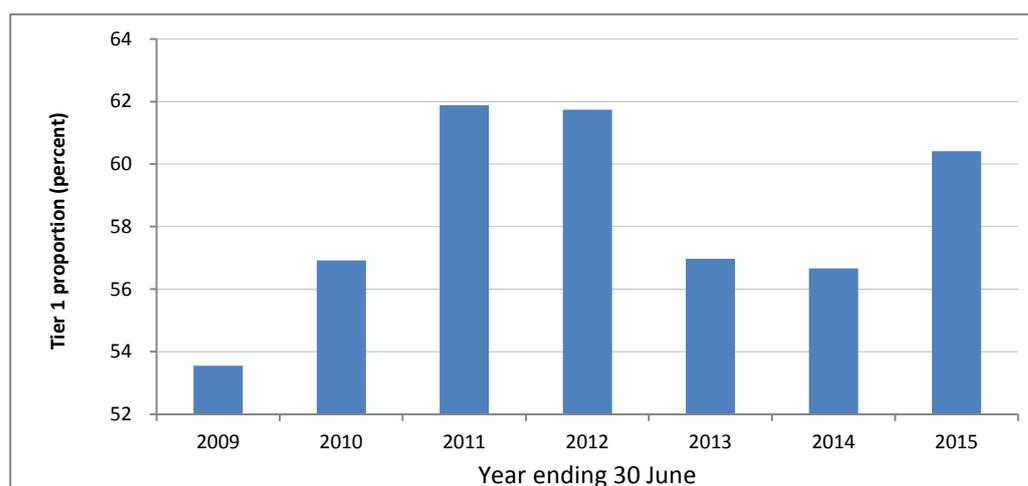
The first alternative is untenable as the Commission is required to have regard to the full recovery of Icon Water's prudent and efficient costs. The third alternative, which requires price discrimination between customer classes, has high information requirements and is likely to raise equity concerns. This leaves the second alternative, multi-part pricing, which is the current structure in the ACT, as the preferred alternative.

As a multi-part tariff, the alternative tariff structure is consistent with pricing principle 4, in that the level of prices can be set to fully recover the prudent and efficient costs of providing water services.

Moreover, in contrast to the current structure, following a transition period, the alternative structure would be characterised by a much lower reliance on usage charges. This would reduce Icon Water’s exposure to revenue risk and improve consistency with the fifth pricing principle, which requires facilitating revenue recovery over a regulatory period.

One consequence of the current inclining block approach is the need to forecast water sales not only at the aggregate but also at the block sales level. As shown in Figure 3.4, the proportion of first tier sales has shown significant variation since the introduction of the two-step structure in 2008–09. Moving to a single usage charge would remove this element of revenue uncertainty.

Figure 3.4 Icon Water first tier proportion of total water sales, 2008–09 to 2014–15



Source: Icon Water billed consumption data.

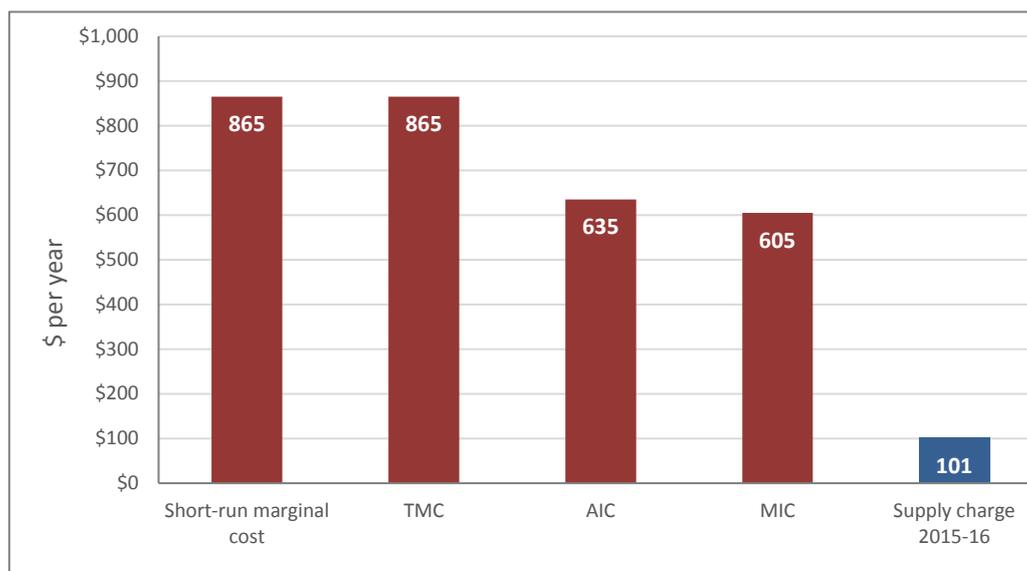
3.3.3 Community impact

The alternative structure is consistent with three of the four community impact principles.

As long as the usage charge is adjusted on a regular basis to reflect the prevailing marginal cost estimate, it will be consistent with principle 6 in promoting the economically efficient use of Icon Water’s water infrastructure over time. The alternative structure is simpler than that currently in place, and should be readily understood and straightforward to implement, in line with principle 8. As required by principle 9, the alternative structure is being considered in a transparent manner and subject to public scrutiny, both by the Commission through this tariff review process and Icon Water in its customer consultation on tariff structures.

Moving directly to this alternative tariff structure would have significant impacts. For indicative purposes, Figure 3.5 shows the upper bound scenario—the supply charge that would be required to recover the same revenue for Icon Water as 2015–16 water prices for each marginal cost estimate, should a single usage charge be introduced, priced at marginal cost.

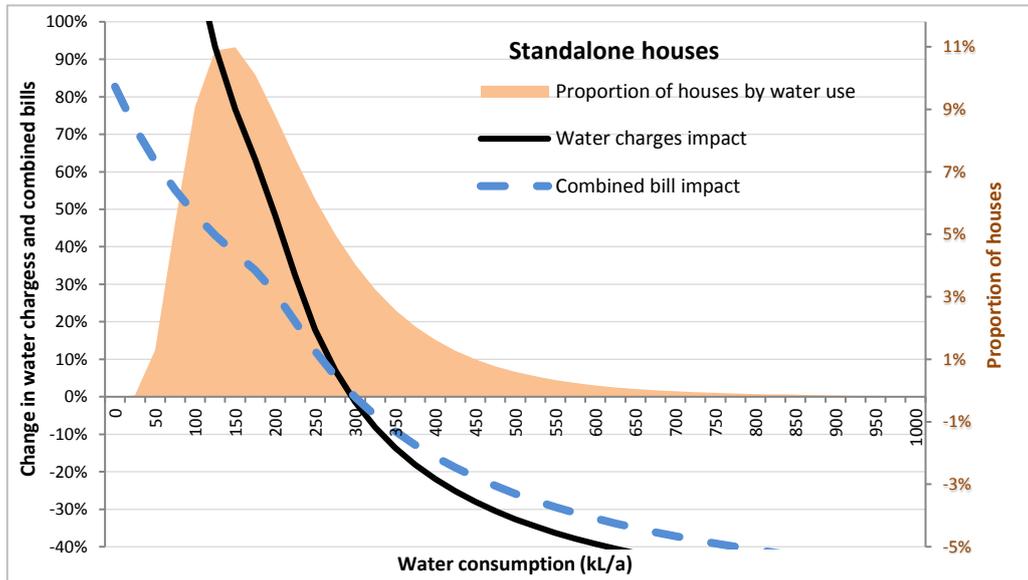
Figure 3.5 Indicative water supply charge, with single usage charge set at marginal cost



Source: ICRC (2016b): 60.

The indicative annual charges are clearly considerably higher than the current supply charge of about \$101, ranging from \$865 for the short-run marginal cost measure to \$605 for the preferred MIC estimate. The Commission’s analysis indicates that moving to a single usage tariff of \$1.74 per kL, with a supply charge of \$605 per year, would result in bill increases for customers using less than 300 kL per year, and decreases for those using more than this volume, as shown for residential customers in stand-alone houses in Figure 3.6.

Figure 3.6 Indicative residential customer impact, direct move to \$1.74 per kL usage charge



Source: Commission's calculations

Clearly, moving immediately from the current pricing situation to a more efficient arrangement with a higher supply charge and lower usage charge, without a transition period, would have substantial distributional impacts on customers, in particular on low volume water users, and therefore be inconsistent with principle 7.

3.3.4 Summary assessment

Table 3.2 shows the summary assessment of the alternative water tariff structure against the draft pricing principles. The alternative structure, subject to an appropriate transition period to comply with principle 7, would be consistent with all the pricing principles, and in particular the first, which requires a tariff that sends cost-reflective price signals.

Table 3.2 Summary assessment of the alternative water tariff structure

Stream	Principles	Assessment	Comment
Economic efficiency	1 Economic efficiency	✓	The single water usage charge is set with reference to marginal cost
	2 Cost-benefit	✓	Given the magnitude of the discrepancy between marginal cost and current top tier price, the efficiency benefits are likely to outweigh the costs of moving to this tariff structure
	3 Cross-subsidy	✓	Provides for differentiation between customer classes
Financial viability	4 Full cost recovery	✓	Price levels can be set to recover the revenue requirement
	5 Revenue sustainability	✓	Revenue risk will reduce as reliance on usage charges falls and move to single charge removes need to separately forecast tier consumption
Community impact	6 Stability over time	✓	Usage charge can be adjusted over time as the marginal cost changes
	7 Transition arrangements	✗	Would require a transition period as direct move to this structure would have substantial customer impacts
	8 Simplicity	✓	Simpler than the current inclining block structure
	9 Transparency	✓	Will be set through a transparent and public process

3.4 Submissions and Commission's consideration

3.4.1 Submissions

The Commission received a number of submissions in support of retaining the current water tariff structure.

The ACT Civil and Administrative Appeals Tribunal (ACAT) supported retaining the inclining block tariff for water. In particular, ACAT submitted that the Tier 1 price should be maintained at the current level or lower to provide access to an essential service at a reasonable price. On the Tier 2 price, ACAT submitted that it should be applied to all customers, irrespective of size, at the same rate.

In relation to environmental matters, ACAT indicated that:

the pricing structure for water should encourage conservation and promote the development of bypass & water reuse systems based on the Tier 2 price. This strategy is more likely to develop a system that avoids excessive water restrictions and the resultant revenue problems during periods of drought.³⁷

Similarly, Mr Jason Rae supports an inclining block tariff and submitted that water charges should be higher than they currently are to encourage water conservation for environmental reasons:

³⁷ ACAT, 2016: 2.

I would have thought it made more sense to charge more in general and a lot more for excessive use.³⁸

In relation to the question of whether price reductions would stimulate demand in the ACT, Mr Ross Knee submitted that this would not be a realistic option as Icon Water is subject to the *Territory-owned Corporations Act 1990* (the TOC Act) which ‘requires the utility to be environmentally sustainable’.³⁹

Dr Denham submitted that the current inclining block water tariff be retained but with:

- a significant reduction in the supply charge; and
- a significantly reduced price for the first 40 kL of water consumed per quarter.⁴⁰

The Commission also received submissions that do not support retaining the current structure.

Dr Kristine Klugman did not support an inclining block tariff and in particular the doubling of the water charge for water consumption over a very minimal level:

The effect will be to kill the gardens of Canberra, because people will not be able to pay this amount of extra surcharge.⁴¹

The Federal Golf Club submitted that it does not support the inclining block tariff but would support a declining block arrangement.⁴²

Icon Water submitted that it agrees with the finding of the Commission’s technical paper on marginal cost pricing that the current water tariff structure does not appear to be providing suitable price signals to customers about the efficient use of the service infrastructure and water resource. Icon Water indicated that it is intending to consult with its customers on a move away from the inclining block tariff towards a single usage price that applies to all water use.⁴³

In its second submission, Icon Water provided the results of its recent customer survey on tariff structure changes, the respondents to which were predominantly residential customers.

When asked whether they would support a move towards a single usage price, assuming no change in water bills, Icon Water indicated that the majority supported

³⁸ Rae, 2016: 1.

³⁹ Knee, 2016: 2.

⁴⁰ Denham, 2016: 2.

⁴¹ Klugman, 2016: 1.

⁴² Federal Golf Club, 2016: 1.

⁴³ Icon Water, 2016c: 3.

applying the change to non-residential customers, while about half supported applying the change to all customers.⁴⁴

Icon Water advised that the majority of residential customers supported moving away from usage charges to supply charges to some extent. When asked to identify their preferred balance between supply and usage charges:

- about 40 per cent preferred lower usage charges than currently in place;
- about 30 per cent preferred the current balance;
- 20 per cent indicated a preference for a tariff entirely based on usage charges; and
- the average preference across all residential respondents was for usage charges to form 63 per cent of the bill.⁴⁵

In response to customer views on the suitability for the ACT of two hypothetical tariff structures, Option 1 with only one usage charge and Option 2 with two usage charges, Icon Water reported that:

The option in which the usage price is reduced to \$2.60/kL (Option 1) was considered unsuitable for the ACT by more than half of the respondents (see Figure 8). The option in which the Tier 2 usage price is reduced to \$3.90/kL (Option 2), however, was considered by more respondents to be suitable than unsuitable.⁴⁶

ClubsACT submitted that, in recognition of the ‘community benefit of clubs and the unreasonable costs they currently face in providing services for the ACT community’, clubs should be provided with:⁴⁷

- a tariff that provides a discount on water prices (such as that provided to ACT schools and churches); or
- be provided with a community service obligation mechanism to reduce water costs.

3.4.2 Commission’s consideration

The first consumption block in an inclining block tariff structure is usually intended to provide essential water to households at a relatively cheap rate, while the second, more expensive block is intended to encourage water conservation as the more discretionary consumption increases. The same two general themes of equity and water conservation can be drawn from the submissions that support retaining the current inclining block water structure. These are discussed in turn.

⁴⁴ Icon Water, 2016c: 11-12.

⁴⁵ Icon Water, 2016c: 12.

⁴⁶ Icon Water, 2016c: 15.

⁴⁷ ClubsACT, 2016: 6.

The equity argument associated with providing households with sufficient water at a lower cost to meet their essential health and hygiene needs is usually premised on an assumption that low income customers or disadvantaged are low water users.

Grafton and Ward (2010) cite empirical studies that show that the number of people in a household increases water consumption. Saunders et al. (1977) also comment on this issue, in the developing country context, noting that:

There are many influences on water consumption other than income, a reliable correlation between water consumption and household per capita income being particularly difficult to establish.⁴⁸

In its second submission, Icon Water assessed the 2013–14 level of water use of an identifiable group of disadvantaged water customers, those receiving the ACT Government’s Utilities Concession. Icon Water found that:

- around 40 per cent of Utilities Concession customers use more than 200 kL and pay the Tier 2 water usage price
- there are just as many Utilities Concession customers using more than 200 kL per year as there are using less than 150 kL per year.⁴⁹

These results imply that an inclining block structure may have the unintended consequence that large and poor households, who may have little discretion in their water consumption, may pay a higher price for water than small, high-income households. In this vein, Icon Water submitted:

A change in tariff structure that reduces bills for small users, but increases bills for customers using more than 200 kL per year may adversely affect more Utilities Concession customers than it benefits.

As for the second theme, the Commission recognises that some members of the ACT community strongly support water conservation and the role played by the current inclining block tariff, particularly with the second tier priced at double the first, in reducing discretionary water use. In its customer survey on tariff structure changes, in response to the question about removing the 200 kL step, Icon Water found that more than half of customers that provided reasons in support of retaining the step gave reasons relating to water conservation.⁵⁰ In addition, Icon Water reported that a tariff option with a single usage charge set at \$2.60 was considered unsuitable by more than half of the respondents.

The Commission’s view is that following the recent investments in water security, the current levels of water in Icon Water’s expanded storages, and the relatively low levels of per capita demand post the Millennium Drought, there does not appear to be a strong

⁴⁸ Saunders, Warford and Mann, 1977: 18.

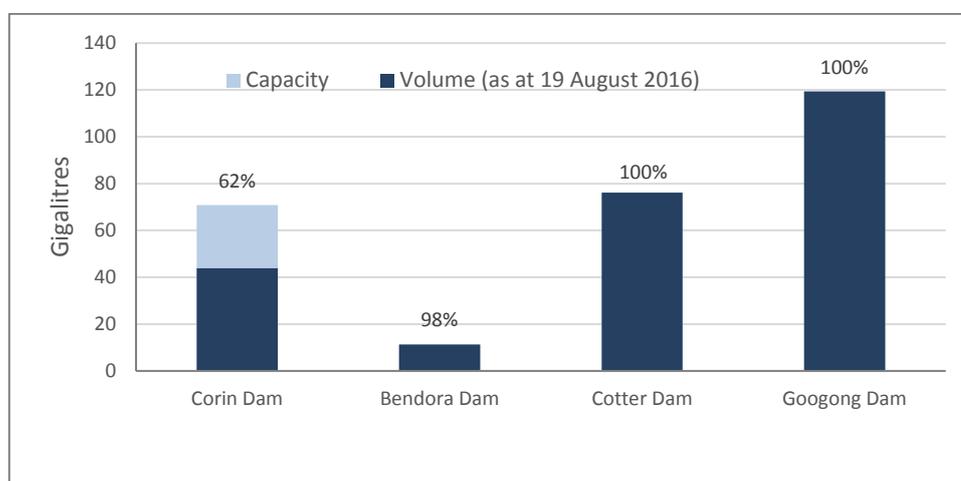
⁴⁹ Icon Water, 2016c: 10.

⁵⁰ Icon Water, 2016a: 12.

case for an inclining block to encourage water conservation for water security purposes.

On the supply side, the Millennium Drought broke in 2010 due to a strong La Niña event, with Canberra Airport recording 960 millimetres of rainfall, well above the historical average of 617 millimetres, with dam inflows estimated at 404 GL, well above the long-term average of 235 GL per year. The enlarged Cotter Dam increased the ACT combined dam storage capacity by more than a third from 206 to 278 GL. The current combined dam storage level is 90 per cent, as shown in Figure 3.7, and the Cotter Dam started spilling in July this year.⁵¹

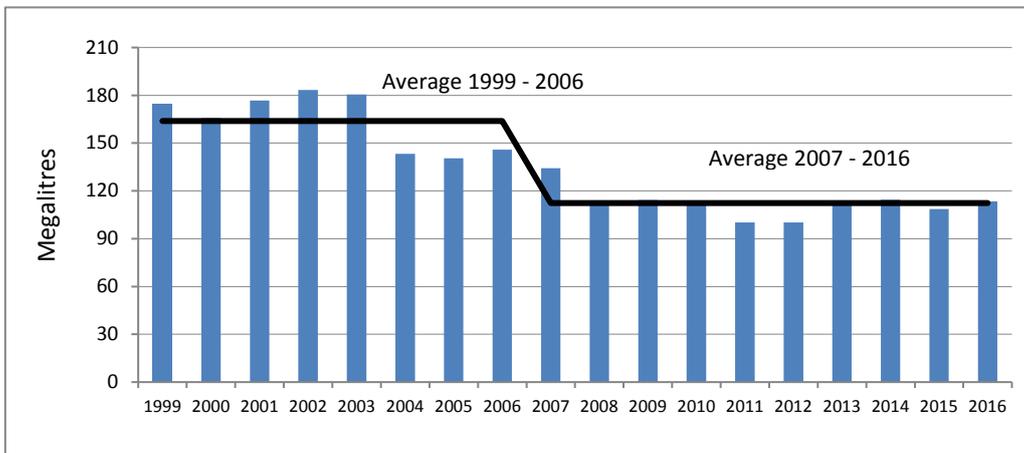
Figure 3.7 Current ACT dam storage levels



Source: Icon Water (<https://www.iconwater.com.au/Water-and-Sewerage-System/Dams/Water-Storage-Levels.aspx>).

On the demand side, there has been no evidence of a bounce back in per capita water consumption levels since the lifting of temporary water restrictions in 2010. As shown in Figure 3.8, current levels are well below those prevailing in the early- to mid-2000s.

⁵¹ <https://www.iconwater.com.au/Water-and-Sewerage-System/Dams/Cotter-Dam.aspx>.

Figure 3.8 Icon Water dam releases per capita, 1999 to 2016⁵²

Source: Australian Bureau of Statistics, ACT Treasury and Icon Water.

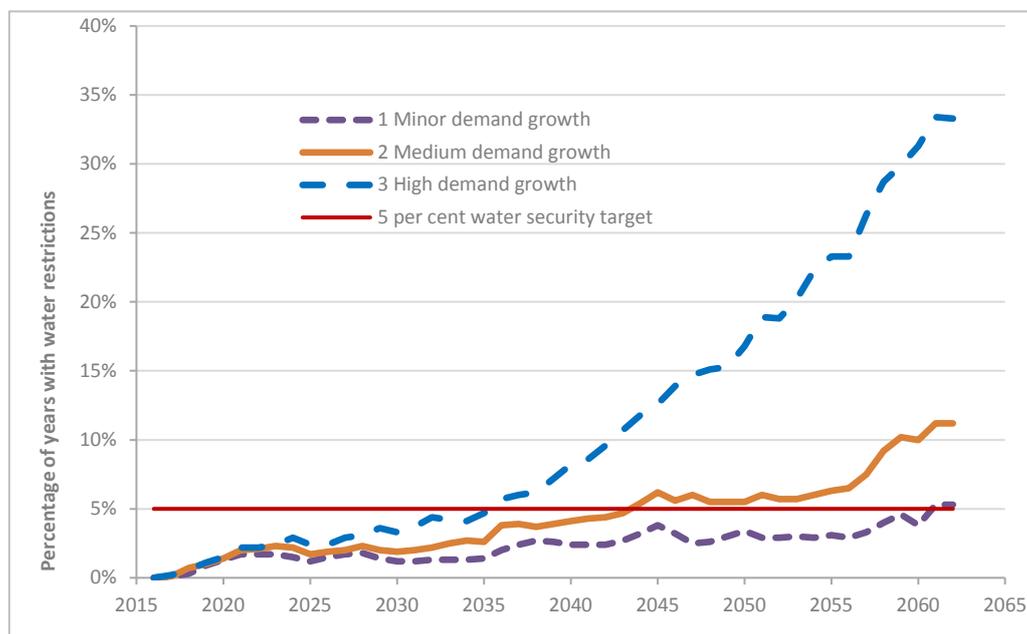
This is corroborated by the results of the water demand and supply modelling undertaken for the purposes of the technical paper, using Icon Water’s supply and demand model. This model is used to calculate the probability of temporary restrictions each year from the present day until 2062.

On the supply side it uses current dam levels and projected dam inflows, adjusted for the expected impact of climate change on rainfall and evaporation. On the demand side, growth in water demand under various population growth and per capita demand assumptions is modelled.

Using this model, the timing of the next water supply augmentation (or demand reduction intervention) can be gauged from the point at which the probability of being in temporary water restrictions rises above the 5 per cent ACT Government water security target (see Figure 3.9)

⁵² Per capita volumes are obtained by dividing total dam releases by the sum of the ACT and Queanbeyan population.

Figure 3.9 Probability of water restrictions



Source: ICRC (2016b): 57.

Under the minor demand growth scenario, augmentation of ACT's water supply is not likely to be needed for another 40 years.⁵³ Under the more conservative medium demand growth scenario, augmentation is only required in about 30 years. Under the high demand growth scenario, which can be considered an upper bound, augmentation is required in about 20 years.⁵⁴

The minor demand growth scenario is used as the optimal investment scenario for marginal cost calculation purpose as we have not seen even minor aggregate demand growth in recent years.

In these circumstances, Icon Water is currently considering whether to mothball the Murrumbidgee to Googong pipeline on the basis that it is unlikely to be required for some time.⁵⁵

⁵³ The minor demand growth scenario, which assumes a medium series population growth with 50 per cent contribution to aggregate demand growth, may well be conservative given the recent downward trend in per capita consumption. In this regard, Icon Water recently noted:

We know that Canberra values its water greatly and still use it very wisely following the decade of uncertainty for the region. Our community managed to significantly reduce its water usage over that period and we've seen very little bounce back since that time. This is a great indication that even as our population increases, we remain steady in our consumption figures as a community. (Icon Water, 2016a: 1).

⁵⁴ The high demand growth scenario assumes a high series population growth with 100 per cent of the incremental population contributing to aggregate demand growth.

⁵⁵ ACT Legislative Assembly, 2016: 285.

The Commission's view is that the scarcity value of water in ACT dams should be recognised but is better addressed by adjusting the marginal cost upwards (and therefore the usage price) when water is scarce, rather than relying on an inclining block arrangement which assigns a high price irrespective of dam levels. This could be achieved by a drought pricing scheme, for example, discussed further below.

The key point here is that the value of an additional kilolitre of water left in ACT dams primarily derives from its contribution to postponing further augmentation of the water supply system. From an environmental perspective, there is limited local or downstream environmental benefit to be gained from leaving an extra kilolitre of water in ACT dams rather than consuming it, for two reasons.

First, Icon Water is subject to strict environmental flow requirements to ensure the flows of water in ACT streams and rivers that are necessary to maintain aquatic ecosystems. Icon Water's licence to take water requires it to ensure that environmental flows are given first priority.⁵⁶

Second, the downstream environmental benefits of any water (over and above environmental flows), that flow from ACT dams are limited for two reasons. The first is that there are no key environmental assets in the ACT that require specific environmental watering. The second is that Burrinjuck Dam sits between the ACT and any benefits for sites further downstream in New South Wales.

From a broader perspective it is also worth noting that, largely due to its urban nature, the ACT only consumes a small proportion of the total amount of water that flows into its catchments. The long-term average water inflows to 2003 averaged about 492 GL per year, with around 244 GL per year legislated for environmental flows. Of the balance of 248 GL per year, gross extractions for consumptive use have averaged about 50 GL per year in recent years with about 30 GL returned to the river system as treated effluent. The net use has been at or below 20 GL per year since 2007–08, 4 per cent of total inflows or 8 per cent of the balance after environmental flows. This is also well below the ACT's sustainable diversion limit under the Basin Plan of 40.5 GL per year taken from watercourses.

Mr Knee contends that Icon Water would be restrained by section 7 of the TOC Act, which requires Icon Water, in relation to activities that affect the environment, to operate in accordance with the object of ecologically sustainable development, from contemplating a price reduction that may increase demand. Given the low level of overall water use in the ACT and the fact that Icon Water is subject to environmental flow requirements, it is difficult to see how such an action would conflict with the sustainability requirements in the TOC Act.

Finally, as noted in the issues paper, the broader difficulty with inclining block tariffs is that the key requirement for economic efficiency, which is that the usage charge

⁵⁶ It also worth noting that a portion of the WAC reflects the costs relating to environmental flow, including the effect of storing water in dams on downstream flows (ACT Government, 2014: 2.)

should equal the opportunity cost of water, implies a single marginal price for water. If two customers are paying for water at different marginal prices due to different levels of consumption under an inclining block structure, one of the two prices cannot be efficient. As such, inclining block tariffs are often criticised for being inefficient. The Commission agrees that an inclining block tariff is likely to be less efficient than a single usage charge.

On a separate note, ClubsACT submitted that clubs should be provided with the same discount on water tariffs as applied to ACT churches and schools, or a community service obligation to assist in reducing water bills. Both proposals require ACT taxpayers to fund Icon Water to subsidise a particular customer class. Such decisions made on behalf of the ACT community are, quite rightly, the responsibility of the ACT Government.

3.4.3 Draft position

Under a cost-reflective tariff structure, community welfare will be maximised as customers will no longer be prevented from using water when the usage of that water is valued above the infrastructure and resource value cost of providing the water service. In addition, a more efficient tariff structure will also reduce the possibility of uneconomic bypass of Icon Water's primary water system. As noted in section 2.2.2, Icon Water submitted that uneconomic bypass makes all customers worse off as it means prices need to rise to spread Icon Water's predominantly fixed costs across fewer customers and lower water consumption.

The Commission's draft position is that a two-part tariff with a single usage charge set with reference to long-run marginal cost will better achieve the overarching efficiency objective than the current inclining block structure.

Given the magnitude of the change from the current to alternative structure, the Commission's draft position is that a substantial transition period will be required in order to comply with principle 7. This is discussed further in Chapter 5.

3.5 Other tariff alternatives

3.5.1 Ramsey pricing

Background

In the case of monopolies that produce more than one good or service or have different prices for customer groups, Ramsey pricing provides another means to recover the revenue shortfall—or residual cost—associated with pricing at marginal cost—an alternative to recovering the residual equally from all consumers through a fixed or supply charge.

Ramsey pricing, also known as the inverse elasticity rule, deals with the problem of how to set prices to minimise changes in the pattern of demand caused by deviating

from marginal cost in order to recover the residual costs.⁵⁷ The Ramsey formula enables the calculation of prices that results in the smallest surplus loss when prices must be raised above marginal cost in order for the business to remain financially viable.

Baumol and Bradford (1970) presented a formal analysis of the rule for setting prices under this approach to minimise price distortions.⁵⁸ The rule is that each price be set so that its percentage deviation from marginal cost is inversely proportionate to the item's price elasticity of demand.⁵⁹

Ramsey pricing, somewhat counter-intuitively, involves deliberate price discrimination on the basis of elasticities of demand to allow the monopoly business to recover residual costs while minimising the deviations from optimal consumption patterns—that is, those based on marginal cost pricing. Customers who are price inelastic are charged a higher price than those who are price elastic, with more of the residual costs recovered from customers who are price inelastic than from the customers with elastic demand.

Submissions

The Commission received no submissions on the topic of Ramsey pricing.

Commission's consideration

There are two main issues that need to be considered in relation to the application of Ramsey pricing for Icon Water. The first is the availability of information on relevant price elasticities of demand, without which Ramsey prices cannot be calculated. The second is the equity issue associated with differential charging between consumers for the same product.

The application of Ramsey pricing in the case of Icon Water's regulated water services requires an estimate of the price elasticity of demand for the service for different customer groups. The Commission's first technical paper for the tariff review provides estimates of the price elasticity of demand for water for Icon Water's residential (stand-alone houses), units and flats, and commercial customers. The results are shown in Table 3.3.

⁵⁷ Frank Ramsey, in his 1927 seminal article on optimal taxation, provided at least implicitly a solution to the optimal pricing problem for an industry in which marginal cost prices do not cover total costs (Ramsey, 1927: 47–61).

⁵⁸ Train, 1991: 125–35 also provides a derivation of the Ramsey pricing rule.

⁵⁹ The price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price that brought it about. Demand is said to be elastic if the percentage change in quantity is greater than the percentage change in price (elasticity is greater than one). Demand is inelastic if the percentage change in quantity is less than the percentage change in price (elasticity is less than one).

Table 3.3 Price elasticities of demand for water in the ACT, 1999 to 2015

Customer category	Elasticity estimate
Residential (RESS charge class)	-0.14
Units and flats (ACP1 charge class)	-0.07
Commercial (COMM)	-0.32

Source: ICRC (2016a).

The technical paper concluded that, in general and bearing in mind the caveats around the estimates for units and flats and commercial customers, the demand response is the most price elastic for commercial customers and least elastic for units and flats customers, with residential customers in the middle. Should Ramsey pricing be contemplated, this would imply that units and flats customers, who are price inelastic, could be charged a higher price than the more price elastic commercial and residential customers. Alternatively, both residential and units and flats customers could pay a higher charge. Clearly, the application of Ramsey pricing in the ACT is likely to raise equity concerns.

Draft position

The Commission's draft position is to apply a multi-part tariff for revenue recovery in the provision of water services in the ACT rather than rely on Ramsey pricing.

3.5.2 Scarcity or drought pricing

Background

The ACT primarily relies on supply-side restrictions in the form of temporary water restrictions to reduce water consumption during times of water resource scarcity, such as during the Millennium Drought.

Water restrictions are a quantity-rationing scheme. Quantity rationing is viewed as being economically inefficient because the rationed outcome can result in an allocation where consumers who most value the product or service do not necessarily consume it. The economic inefficiency exists because there are potential gains from trade between consumers, where consumers with low valuations for the product could sell their allocation to consumers with higher valuations, thus making both consumers better off. For example, a consumer with a large garden who places a high value on irrigating during a drought might be prepared to purchase water allocation from a consumer without a garden.

An alternative to quantity rationing is to use price to ration water demand by sending price signals to consumers about the scarcity of the water resource.

The economics underpinning this approach is straightforward. Quantity demanded is inversely related to price—the higher the price of the product, the less the consumer will demand. If the goal is to limit the quantity demanded, simply raise the price to the level at which demand is reduced to the desired amount. Armed with the price elasticity of

demand for water, one can calculate the required change in price to achieve a desired reduction in consumption. For example, if a 20 per cent reduction in quantity is the goal and the elasticity of demand is minus 0.2, a 100 per cent increase in price would be required.

Scarcity pricing—also known as drought or dynamic pricing— has been proposed as a more efficient way to use price to manage demand during times of water scarcity. Scarcity pricing, or more precisely administered scarcity pricing (as opposed to market-based), involves a water utility adjusting the water usage price in inverse relation to a measure of water scarcity, such as dam levels. In effect, scarcity pricing involves pricing at the short-run marginal cost of the resource. The National Water Commission defines scarcity pricing as follows:

A scarcity-based pricing approach is one that seeks to set urban water prices to reflect the scarcity value expected during the relevant period such that available supply would be rationed on the basis of the willingness to pay its scarcity value (rather than through water use restrictions).⁶⁰

In addition to sending signals about the value of the water resource itself, scarcity pricing has the added benefit of sending a signal that the next supply augmentation may cause a sharp increase in price.

Grafton and Ward (2010), using data from Sydney, show that using supply-inflexible water usage pricing generates large welfare losses in excess of the annual average household water bill, which they attribute to water restrictions and premature supply augmentation. Grafton and Ward argue that these losses ‘could be avoided if dynamically efficient usage pricing were to be adopted by price regulators or water utilities in response to variability in water availability’.⁶¹

Submissions

In its first submission, Icon Water stated that:

Icon Water continues to support the implementation of a revenue-neutral drought pricing scheme that would involve updating consumption prices to account for expectations about demand when changes in water restrictions occur.⁶²

Icon Water submitted that such an approach has the potential to improve allocative efficiency with price increases causing consumers to forego their lowest value uses of water in contrast to restrictions which potentially prevent high value uses of water.

Moreover, in its second submission, Icon Water stated:

⁶⁰ NWC, 2011: 5.

⁶¹ Grafton and Ward, 2010: 1.

⁶² Icon Water, 2016b: 3.

This approach would align with ICRC principles relating to economic efficiency (since prices would track more closely with marginal cost), full cost recovery, and revenue sustainability.⁶³

Mr Ross Knee, responding to the technical paper on the price elasticity of water demand in the ACT, submitted that the analysis in the paper is flawed as it does not analyse the two tiers separately:

Tier 1 is intended for basic human water needs, so by definition, is very likely to be price inelastic. Tier 2 is intended for optional use like lawn watering, so is likely to be price elastic. By not analysing the tiers separately, it is giving an aggregated result, and hence is not representative of the real price elasticity of water across the range of uses.⁶⁴

In addition, Mr Knee submitted that the analysis should have been done over two periods, pre and post 2010 when temporary water restrictions were lifted, rather than over the entire period 2003 to 2015.

Commission's consideration

General

In order to consider employing a scarcity pricing approach, an estimate of price elasticity of demand is required in order to adjust the usage price to cause a desired adjustment in water use. As discussed in section 3.5.1, the Commission undertook its own elasticity analysis for the purposes of this tariff review. In line with the empirical literature, the Commission found that the price elasticity of demand for residential water in the ACT while not zero is relatively small with a point estimate of -0.14 across the 1999 to 2015 period.

Under the current ACT temporary water restrictions scheme, Stage 3 restrictions target a 35 per cent reduction in water use relative to permanent water conservation measures. Given the elasticity estimate above, to achieve this reduction in demand would require a 250 per cent increase in the average usage price. Applying the more elastic summer estimate of -0.19 implies a price increase in excess of 180 per cent to meet the water reduction objective. The Commission concluded in the technical paper that this finding mitigates against the sole use of price as a tool to manage water demand in the ACT. The finding that the residential price response is less elastic in the sub-period after the 2006 structural break than over the entire 1999 to 2015 period further supported this conclusion.

In the issues paper, the Commission identified three implications from the scarcity pricing scenario described above. The first is that prices of this magnitude are well outside the data used for this analysis, and therefore the demand response would be uncertain. The second implication, which is self-evident, is that, if prices are adjusted frequently, this would lead to price path instability. The third is that extended periods

⁶³ Icon Water, 2016c: 17.

⁶⁴ Knee, 2016: 1-2.

at high prices may lead to revenue over-recovery by the utility. In addition, the Commission noted a practical issue concerning the ability of the Icon Water's quarterly billing system to accommodate rapid price changes.

Nonetheless, the Commission agrees with Icon Water that a drought pricing arrangement that demonstrably improves economic efficiency would be consistent with the draft pricing principles.

A simple drought pricing arrangement could involve raising the usage charge as part of the annual price reset process as water storage levels drop and the scarcity value of the water resource rises. Not only would this be consistent with marginal cost pricing, it would also overcome the concerns noted above relating to price stability and the billing system. Moreover, in practice, based on the Commission's elasticity results, any drought pricing arrangements would most likely need to be applied in conjunction with quantitative restrictions in order to meet the required demand reduction. Finally, the arrangements would need to be revenue neutral, which could be achieved through some form of overs and unders arrangement.

Comments on the econometric analysis in the technical paper

Mr Knee raised two particular concerns about the econometric analysis undertaken by the Commission in the elasticity paper.

As to the first, Mr Knee suggested that as Tier 1 is intended for basic human needs and Tier 2 is aimed at more discretionary uses such as outdoor watering, and these uses have different elasticities, each tier should be analysed separately rather than in aggregate.

The purpose of the analysis undertaken in the technical paper is to examine the consumption response of water customers to changes in price. In the ACT, customers face price changes across years, but also as their consumption moves from one tier to another under an inclining block arrangement. The effect of the change in tier price on consumption is therefore integral to the estimation of the price elasticity of demand.⁶⁵

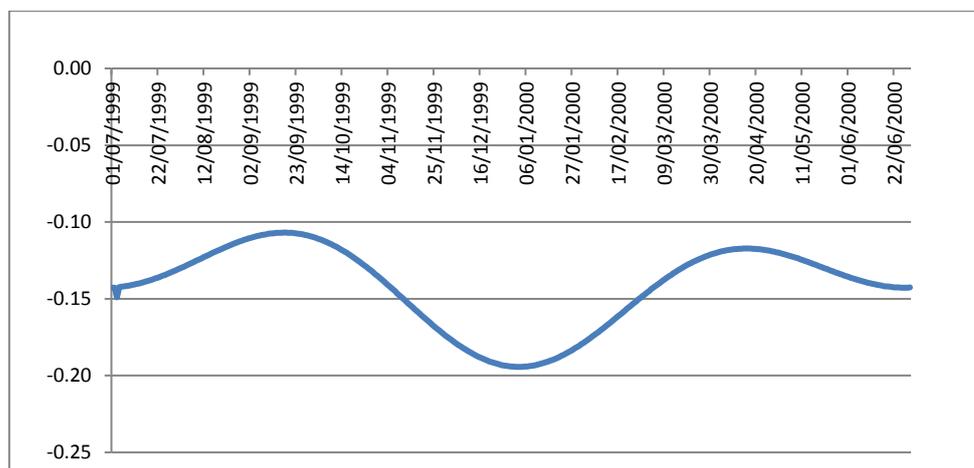
In any case, the data for metered water consumption in the ACT does not allow for any differentiation by use by the customer. This requires the elasticity analysis to be based on the assumption that there is a single market for residential water, irrespective of actual use. Caution should also be applied in assuming that in practice all first tier water usage is essential and second tier is discretionary outdoor use. As discussed in section 3.4.2, the empirical evidence implies that under an inclining block structure some large households may be paying Tier 2 prices for essential water use.

⁶⁵ As discussed at length in the technical paper, the inclining block tariff raises particular econometric difficulties, the key one being the price endogeneity problem arising from the price varying with the quantity of water consumed. The Commission addressed this using the industry standard instrumental variables approach.

The Commission agrees that the key elasticity estimate of -0.14 for standalone residential properties presented in the technical paper represents an average result. It is the average price responsiveness of the 10 per cent sample of this customer class over the 1999 to 2015 period given the conditions over that period. A more disaggregated analysis is likely to reveal more heterogeneity in the results.

For example, as noted by Mr Knee, and Renwick and Green (2000) and Dalhuisen et al. (2001), the price elasticity of water demand tends to be greater for more discretionary uses such as outdoor irrigation. This tendency is confirmed in the Commission's analysis, indirectly (rather than by direct observation of type of use) by examining the impact of the seasonal variables on the central standalone residential customer elasticity estimate. As shown in Figure 3.10, the elasticity estimate varies from a low of -0.11 to a high of -0.19 with the latter coinciding with the generally warmer months when outdoor water use is likely to be more prevalent.

Figure 3.10 Seasonal interaction with elasticity estimate

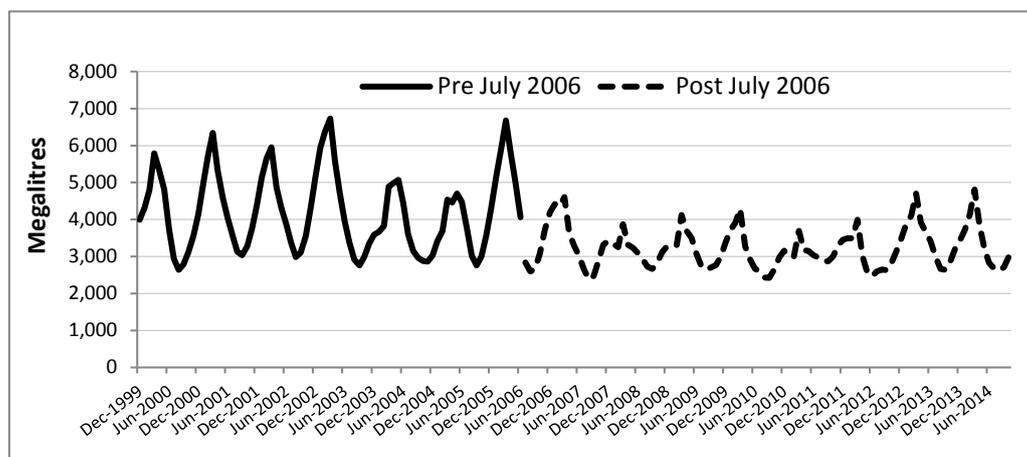


Source: ICRC (2016a): 36.

As for Mr Knee's second concern about the structural integrity of the time series data, in its 2015 forecasting work on ACT dam releases data, the Commission found evidence that there may have been a structural break in the relationship between water demand and climate, not in 2010 as suggested by Mr Knee, but in about July 2006. The location of the breakpoint was established visually, as shown in Figure 3.11, and statistically using Chow and CUSUM tests. The Commission also found that since then, it appears that there may be a new and stable relationship between water sales and weather variables.⁶⁶ In line with this hypothesis, the Commission's preferred releases forecasting model was estimated using weather and releases data from July 2006 onwards.

⁶⁶ ICRC, 2015b: 15.

Figure 3.11 July 2006 breakpoint



Source: ICRC (2015b): 16.

The unit record data for the elasticity analysis spans a 15½ year period from July 1999 to December 2015, which cuts across the structural break. As such, the Commission took steps to explore the effect of the hypothesized break on the demand equation estimation.

The first step involved the introduction of an additional water restrictions dummy variable. This dummy was set at 0 until the day after Stage 1 restrictions were lifted at the end of August 2010 and then at one for the remainder of the estimation period. This dummy was intended as a somewhat crude means to reflect the minimal bounce-back in water consumption following the removal of restrictions at the end of the Millennium Drought.

The second step involved running regressions with the preferred specification over the entire period and the two sub-periods: July 1999 to June 2006 and July 2006 to December 2015. The result for standalone residential houses showed an elasticity estimate of -0.31 for the 1999 to 2006 period, implying a more elastic demand response to price than is the case over the entire 1999 to 2015 period. In contrast, the result from the post-structural break sub-period suggested a less elastic demand response of -0.04.

One interpretation of these results is that the reduction in elasticity simply reflects the change in consumer behaviour from one sub-period to the next. Anecdotal evidence suggests that households, in response to the years of water restrictions in place during the Millennium Drought, and new planning laws with a focus on potable water saving measures, have made investments in improving water use efficiency over the long-term. For example, less water-intensive gardens have been planted, more efficient irrigation systems have been installed, and rainwater tanks now provide some alternative to potable water. The end result is that ACT households may now have less scope to adjust their water consumption in response to price changes.

Draft position

The Commission's draft position is that a drought or scarcity pricing arrangement that is revenue neutral and improves economic efficiency would be consistent with the draft pricing principles.

While the current water security situation means that drought pricing arrangements are not likely to be required for some time, the Commission would expect such a proposal to be put forward should conditions change. The Commission would assess any proposal put forward on its merits.

3.5.3 Differential pricing

Background

Icon Water's current water tariff structure does not differentiate between type of customer or by location.

As discussed in the issues paper, a number of utilities in other jurisdictions have different tariffs for residential and business customers. Where there is a difference between the tariffs charged to each customer group, there appears to be a tendency for non-residential customers to face a comparable supply charge to that of residential customers, but for non-residential customers to face a single usage charge typically set at the lowest or middle residential tier.

Icon Water's tariffs are applied equally across its customers in the ACT irrespective of their location. This is known as postage stamp pricing.

Submissions

In its second submission Icon Water indicated that it is intending to discuss with its customers the introduction of separate residential and non-residential tariffs, with a higher supply charge for non-residential customers as a means to help manage the impacts on residential customer bills due to tariff structure reform.⁶⁷

Others, such as ACAT, did not support differential charging, at least for the Tier 2 usage charge:

The second tier price path should be uniform for all usage and not reduced for users of more substantial volume.⁶⁸

Commission's consideration

As discussed in 2.2.2, the Commission's view is that tariff differentiation would be consistent with the draft pricing principles, as long as there is no economic cross-subsidy. That is, for each tariff class, prices should lie on or between an upper bound

⁶⁷ Icon Water, 2016c: 17.

⁶⁸ ACAT, 2016: 2.

reflecting the standalone cost of serving customers in that class and a lower bound reflecting the avoidable cost of not serving those customers.

On the question of mitigating residential customer impacts due to moving to the alternative tariff structure, the Commission's analysis suggests that higher supply charges for non-residential customers would have limited effect as they only account for about 5 per cent of total customer numbers. This is discussed further in Chapter 5.

Draft position

Consistent with section 2.2.2, the Commission proposes a new pricing principle to clarify that tariff differentiation would be consistent with the draft pricing principles, as long as there is no economic cross-subsidy.

4 Sewerage services tariffs: Options and analysis

4.1 Introduction

This chapter applies the draft assessment framework described in the Chapter 2 to evaluate whether Icon Water's current sewerage services tariff structure is best placed to achieve the overarching economic efficiency objective, or whether an alternative structure is more likely to do so.

4.2 Current tariff structure: Supply charges only

The current tariff structure for Icon Water's regulated sewerage services comprises an annual supply charge for residential premises, and the same supply charge plus an annual charge per flushing fixture (in excess of two) for non-residential premises. Icon Water does not currently have a trade waste tariff.

4.2.1 Efficiency

In the technical paper on marginal cost pricing, the Commission concluded that, since there is no usage charge, this in itself implies that the current sewerage services structure, based entirely on supply charges, is incapable of providing suitable price signals to customers about the efficient costs of sewerage services in the ACT. As such, on the face of it, the current structure is not consistent with the first draft pricing principle.

The second principle is not relevant as there is no change in structure. The current structure allows for differential charging, subject to principle 3, and with charges currently differentiated between residential and commercial customers.

4.2.2 Financial viability

The current tariff structure is consistent with pricing principle 4, in that the level of prices can be set to fully recover the prudent and efficient costs of providing water services.

As the current structure is entirely based on supply charges, Icon Water's exposure to revenue risk in relation to its sewerage services business is limited and therefore consistent with the fifth pricing principle, which requires facilitating revenue recovery over a regulatory period.

4.2.3 Community impact

The current structure is consistent with three of the four community impact principles. Retaining the current structure means no customer impacts and therefore no transition required under principle 7. It has been in place for a long time, it is about as simple a tariff as you can get, and, in line with principle 8, should be well understood by customers. It was also introduced using a transparent methodology and subject to public scrutiny, as required by principle 9.

The current structure is potentially inconsistent with principle 6 on the basis that it is not promoting the economically efficient use of Icon Water’s sewerage infrastructure over any period of time.

4.2.4 Summary

Table 4.1 shows the summary assessment of the current sewerage services tariff structure against the draft pricing principles.

Table 4.1 Summary assessment of current sewerage services tariff structure

Stream	Principles	Assessment	Comment
Economic efficiency	1 Economic efficiency	✘	No usage component
	2 Cost-benefit	N/A	No change in structure
	3 Cross-subsidy	✓	Provides for differentiation between customer classes
Financial viability	4 Full cost recovery	✓	Price levels can be set to recover revenue requirement
	5 Revenue sustainability	✓	Limited revenue risk as based entirely on supply charges
Community impact	6 Stability over time	✘	Not efficient over any period
	7 Transition arrangements	N/A	None required as no change
	8 Simplicity	✓	In place for many years and easily understood
	9 Transparency	✓	Originally set through a transparent and public process

4.3 Alternative tariff structure: two-part tariff, single usage charge set with reference to short-run marginal cost

4.3.1 Efficiency

In the technical paper on marginal cost pricing, the Commission chose to focus on the short- rather than long-run marginal cost of sewerage services, for two reasons.

The first is, as noted earlier in relation to water, the Commission’s general view is that, in principle, the objective of economic efficiency is best served by setting prices with reference to short- rather than long-run marginal cost.

Second, we are primarily concerned with marginal cost with respect to changes in the quantity or volume of services provided through the central sewerage network, that is the central treatment plants and trunk sewer pipes, as opposed to the suburb-level

collection network. Given that the capacity of Icon Water’s central sewerage network is sized to deal with rainfall events, there is currently no immediate need to augment capacity for reasons of expanding demand.

The short-run marginal cost of sewerage services in the ACT presented in the technical paper comprises:

- treatment cost – the cost of chemicals, electricity, fuel and freight to treat an additional kilolitre of sewage at the Lower Molonglo Water Quality Control Centre; and
- pumping – the electricity costs to pump an additional kilolitre of sewage through the sewerage network to the treatment plant.⁶⁹

Icon Water estimates the marginal treatment cost at \$0.25 per kL, and the marginal pumping cost at \$0.005 per kL, for a total short-run marginal cost of about 0.26 per kL.

In the technical paper, in line with principle 1, the Commission indicated that a more efficient structure would entail a multi-part tariff which would include a sewerage usage charge set with reference to marginal cost.

Icon Water submitted that as the marginal cost of sewage discharge represents only seven per cent of the total amount that needs to be recovered in tariffs, which is mostly fixed or sunk expenditure, there would be limited economic efficiency benefits from introducing a sewerage usage charge, but there may be significant impacts on individual customer bills. There are also likely to be significant administrative costs associated with designing and implementing a proxy measure for sewage discharge in the absence of metering. Icon Water would also face additional revenue risk for its sewerage services business.

As such, a move to the alternative structure is likely to be inconsistent with principle 2, which requires that the efficiency benefits of a change in structure need to outweigh the costs of the change.

The alternative tariff structure provides for differential pricing, subject to principle 3.

4.3.2 Financial viability

The alternative tariff structure is consistent with pricing principle 4, in that the level of prices can be set to fully recover the prudent and efficient costs of providing water services.

The advent of a usage component, which would require annual volume forecasting, would increase Icon Water’s exposure to revenue risk compared to the current tariff which is based entirely on supply charges. Consistency with the fifth pricing principle,

⁶⁹ This is an average cost across the network, with some areas not requiring any pumping.

which requires facilitating revenue recovery over a regulatory period, may require the introduction of some form of overs and unders arrangement.

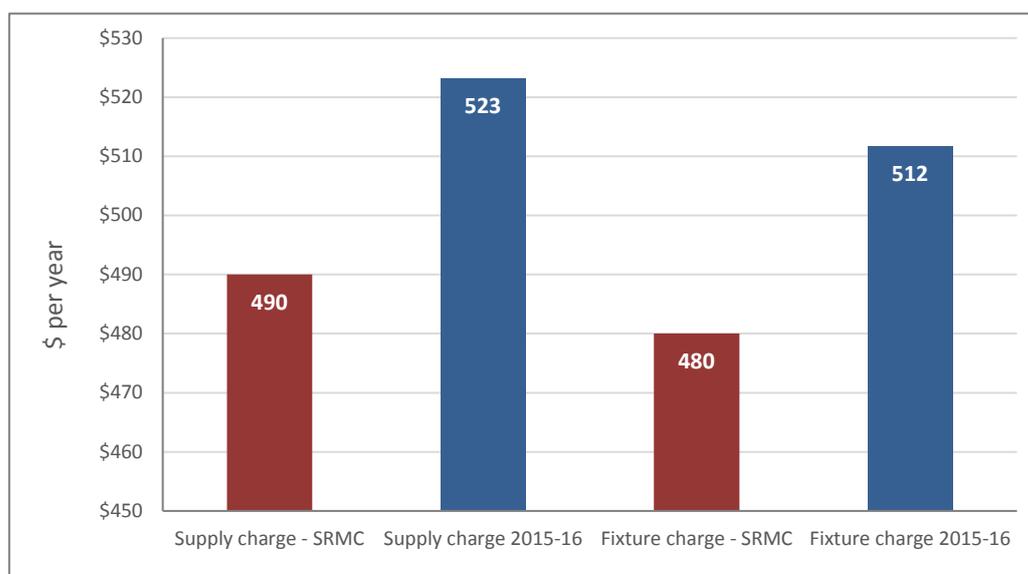
4.3.3 Community impact

The alternative structure is consistent with three of the four community impact principles.

It is consistent with principle 6 on the basis that it will promote the economically efficient use of Icon Water’s sewerage infrastructure over time.

Figure 4.1 shows the indicative supply and fixture charges that would be required to recover the same revenue for Icon Water as 2015–16 prices should a sewage usage charge be introduced at the short-run marginal cost of \$0.26 per kL. The indicative annual charges are about six per cent lower than the current charges.

Figure 4.1 Indicative sewerage service supply and fixture charges, with usage charge set at short-run marginal cost



Source: ICRC (2016b): 66.

At face value therefore, the distributional impacts of such a change in tariff structure and price levels are likely to be relatively small, and therefore unlikely to require a transition period under principle 7. However, should water use be adopted as the proxy for sewage discharge, there is potential for significant distributional impacts on high volume water users. Under these circumstances, a transition period would be required.

The alternative structure would be more complicated than the current tariff structure as it would have two rather than one price component. Moreover, the requirement for a proxy for sewage discharge would further complicate the arrangements, leading to inconsistency with principle 8.

Should the alternative tariff be introduced, it would be through a transparent methodology and subject to public scrutiny, as required by principle 9.

4.3.4 Summary

Table 4.2 shows the summary assessment of the alternative water tariff structure against the draft pricing principles. The alternative structure, subject to an appropriate transition period to comply with principle 7, is consistent with seven of the pricing principles. It is inconsistent with the second and eighth principles, which require that the benefits of any change outweigh the costs and that the tariff is simple to understand and implement.

Table 4.2 Summary assessment of the alternative sewerage services tariff structure

Stream	Principles	Assessment	Comment
Economic efficiency	1 Economic efficiency	✓	Single sewage usage charge set with reference to marginal cost
	2 Cost-benefit	✗	Limited efficiency benefits unlikely to outweigh the costs of moving to this tariff structure
	3 Cross-subsidy	✓	Provides for differentiation between customer classes
Financial viability	4 Full cost recovery	✓	Price levels can be set to recover the revenue requirement
	5 Revenue sustainability	✓	Revenue risk will increase with the introduction of a usage charge
Community impact	6 Stability over time	✓	Usage charge can be adjusted over time as the marginal cost changes
	7 Transition arrangements	✓	Customer impacts would depend on proxy volume measure
	8 Simplicity	✗	More complicated than current supply charge structure
	9 Transparency	✓	Would be set through a transparent and public process

4.4 Submissions and Commission's consideration

4.4.1 Submissions

In addition to comments noted above, Icon Water further stated that:

Any benefits from introducing volumetric sewerage services pricing would be significantly lower than benefits from other tariff structure reforms discussed in this submission. Icon Water's view is that sewerage pricing reform in the period commencing in 2018 should focus on introducing a trade waste charging regime.⁷⁰

⁷⁰ Icon Water, 2016c: 20.

Icon Water also noted that during spells of dry weather, there may actually be cost savings from customer sewage discharge in some circumstances due to avoided flushing by Icon Water to clear sewerage pipes.⁷¹

The Federal Golf Club submitted that it did not support a sewage usage charge based on water usage:

We would not like to see a water proxy used for the sewerage charge – I think this would be unfair for large water users like ourselves.⁷²

Dr David Denham submitted that he would support a scheme involving sewage usage charges where large users pay more.⁷³

4.4.2 Commission's consideration

In contrast to Icon Water's one-part supply charge tariff, a number of utilities in other jurisdictions apply a two-part tariff for sewerage services—a supply charge and a usage-based rate.

Unlike the economic literature on pricing of water, there is almost no literature on the pricing of sewerage services. Nonetheless, the argument for applying a usage rate based on the sewage volume disposed of through the sewerage system is essentially the same—that is, to communicate the costs of providing sewerage services to customers and, in theory, allow customers to balance the costs and benefits of producing sewage such that they would produce an efficient level.

The critical question is whether the economic efficiency benefits outweigh the costs of moving from the current tariff to one with a single usage charge set with reference to marginal cost. Icon Water's view is that the answer to this question is a clear no. The Commission agrees with this for several reasons.

The first concerns the practical difficulty associated with introducing usage-based pricing given that sewage is not metered and no information is available on the volume of sewage produced by any particular customer. In addition, there is currently no way in which to monitor the type or strength of sewage produced and therefore the cost associated with treatment.

Other utilities have sidestepped the metering issue by using water consumption as a proxy for discharge into the sewerage system. The premise here is that there is a direct relationship between the amount of indoor water used and the volume of sewage that is discharged into the sewerage network. This approach therefore requires the application of a seasonal factor, to account for the seasonal pattern of outdoor water use. The

⁷¹ Icon Water, 2016c: 9.

⁷² Federal Golf Club, 2016: 1.

⁷³ Denham, 2016: 3.

complexities underlying this approach should not be underestimated, as a quick perusal of Melbourne’s City West Water pricing handbook will reveal.⁷⁴

The second reason is that adding a usage component requires a forecast of sewage discharge in order to calculate prices in advance of the regulatory year. If water is used as a proxy, any revenue uncertainty associated with water volumes would then be extended to Icon Water’s sewerage services business.

The third reason is that, as noted by Icon Water, lower volumes entering the sewerage network do not necessarily translate into reduced costs for Icon Water. For example, low sewage volumes during a drought can result in difficulties moving sewage through the network. A classic example of this was played out in the Zimbabwean city of Bulawayo in 2012, which involved a simultaneous ‘big flush’ by all community residents to move congealed sewage through the system.⁷⁵

4.4.3 Draft position

The Commission’s draft position is that, particularly in the absence of reliable measure of actual discharge volumes, it is unlikely that any potential economic efficiency benefits of introducing a sewage usage charge will outweigh the costs. The Commission therefore recommends that the current supply charge tariff structure should be retained.

4.5 Trade waste pricing

4.5.1 Background

In the ACT, non-domestic sewage, also known as trade waste, that requires more effort to treat than standard residential sewage, must be approved by Icon Water before discharge into the sewer. Icon Water notes that this category also includes discharges from sewage recycling plants, cooling towers, rainwater filters, garbage bin enclosures, pumped sewage and stormwater run-off directed to the sewer.

In contrast to many other water and sewerage utilities however, Icon Water does not currently have a specific pricing regime for trade waste. Paragraph 66(iii) of the National Water Initiative states that states and territories agree to the:

⁷⁴ City West Water, 2016: 5-9. Available for download at http://www.citywestwater.com.au/business/charges_explained.aspx.

⁷⁵ Gotora, 2012: 1.

review and development of pricing policies for trade wastes that encourage the most cost effective methods of treating industrial wastes, whether at the source or at downstream plants, by 2006.⁷⁶

4.5.2 Submissions

ACAT submitted that:

The [sewerage charging] system should ensure large businesses are paying appropriately for quantity and toxicity of the waste discharged into the sewerage system.

In its submissions, Icon Water indicated that it is working towards introducing a trade waste charging regime in 20-18 to signal the costs imposed on the sewerage network by non-domestic discharge and align with the National Water Initiative principles.⁷⁷

4.5.3 Commission's consideration

Consistent with cost-reflective pricing, the Commission has in the past noted that where Icon Water incurs material trade waste-related increased costs, these higher costs should be passed on to the relevant customers. The Commission welcomes Icon Water's commitment to introducing a trade waste pricing regime in the forthcoming regulatory period

4.5.4 Draft position

The Commission supports the introduction of trade waste pricing to ensure that the actual costs imposed on the sewerage network are signalled to customers. The Commission will assess Icon Water's trade waste pricing proposal on its merits, when presented in the lead up to the next regulatory period.

⁷⁶ COAG, 2004: 14.

⁷⁷ Icon Water, 2016c: 20.

5 Implementation and transition

5.1 Introduction

The Commission's draft position, as concluded in Chapter 3, is that given the current circumstances the water tariff structure could be improved in order to maximise the social welfare of the ACT community.

Three things are relevant to the implementation of the alternative cost-reflective water tariff structure. First is when the implementation process should start. Second is who should take responsibility for implementation, the Commission or Icon Water. Third is the length of the transition period required in order to meet the requirements of pricing principle 7. These are addressed in turn.

5.2 Implementation start

5.2.1 Background

In the issues paper, the Commission discussed the two implementation alternatives. The first is to start applying a new tariff structure during this regulatory period, which, given the timing of the final tariff review report, would mean from 1 July 2017. This would entail a variation of the substitute price direction. The second option is to start applying the new tariff structures from the start of the next regulatory period, that is from 1 July 2018, under a new price direction.

5.2.2 Commission's consideration

The Commission's preference is to commence the implementation process at the start of the next regulatory period, that is from 1 July 2018, for two reasons.

It will be more straightforward to start applying a new tariff structure at the same time as all the elements that go into determining Icon Water's revenue requirement are reset.

Starting from July 2018 would also allow Icon to take a greater role in proposing a new tariff structure. It would also allow for Icon Water to consult on proposed tariffs as part of its main submission to the price investigation process leading up to the next regulatory period.

5.2.3 Draft position

The Commission's draft position is that the transition to the alternative water tariff structure, and the introduction of trade waste pricing should be considered as part of the next pricing review and any change would commence from 1 July 2018.

5.3 Responsibility for tariff structure and prices

The interaction between the form of price control that will apply in the next regulatory period and the structure of tariffs and the potential dual role of the draft assessment framework was discussed in section 2.4.

The Commission's draft position is that the tariff review should remain open to the possibility of either the Commission or Icon Water being responsible for the structure of tariffs and the level of constituent prices from 1 July 2018. The Commission's preference is for Icon Water to take responsibility for tariff structures and price levels moving forward. Icon Water is best placed to engage with its customers on tariff reform and pricing more generally, and has already started a discussion on these matters with customers.

The final decision on this matter will be made as part of the price investigation process leading up to the start of the next regulatory period. The key point to note is that, irrespective of the final decision, tariff structures and constituent prices will be subject to the pricing principles, and the price levels will also be consistent with Icon Water's allowed revenue requirement.

5.4 Transition to the alternative water tariff structure

5.4.1 Background

Principle 7 requires that any change in tariff structures and prices that will have substantial impacts on customers should be phased in over a transition period to allow customers reasonable time to adjust to the change.

It is clear, as discussed in section 3.3 and illustrated in Figure 3.6, that moving directly to the alternative water tariff structure would have substantial distributional impacts on customers, and negative impacts in particular on low volume water users.

5.4.2 Submissions

In its recent customer consultation on tariff structures, Icon Water asked respondents about the length of the transition period they would prefer in moving towards two tariff options, both with a higher supply charge and lower usage charges. In its second submission, Icon Water provided the results of this transition question:

Figure 7 shows most respondents opted for either a quick transition of five years or less or a long transition of more than ten years. For both tariff options, more than half of respondents preferred a quick transition and they were evenly split between an immediate transition and a transition applied evenly over five years.⁷⁸

⁷⁸ Icon Water, 2016c: 14.

5.4.3 Commission’s consideration

Introduction

Moving directly from the current to the alternative structure would have substantial distributional impacts on customers, and negative impacts in particular on low volume water users.

In order to gauge a suitable transition period, the Commission analysed the likely distributional impacts of moving from the current structure to the alternative, more efficient structure, on residential and commercial customers. For the purposes of this analysis, the proportion of houses, units and flats and commercial customers by water use is calculated using consumption data from 2013–14, which Icon Water considers a relatively normal consumption year.

The key trade-off in determining the appropriate length of the transition period is that between minimising annual customer bill impacts and delaying the efficiency benefits that will flow from rapidly applying the cost-reflective structure.

The Commission’s view is that a transition period of 10 years would achieve this balance. The transition process involves gradually increasing the supply charge until it reaches the desired level while at the same time bringing down the Tier 2 usage charge towards the Tier 1 charge until there is only one.⁷⁹

Indicative transition options

For indicative purposes only, the Commission has examined two transition paths, as shown in Table 5.1. The options should be treated with caution as they are based on current cost estimates and supply conditions. These will vary as conditions change. The balance between the usage charge and the supply charge may also vary as supply conditions change.

⁷⁹ The Commission also considered differential charging between residential and commercial customers. The analysis showed that as commercial customers are such a small proportion of total customers, any mitigation of residential customer impacts from levying a higher supply charge on commercial customers is limited.

Table 5.1 Current and indicative alternative water tariffs

Tariffs	Year 1	Year 2	Year 3	Year 4	Year 5
Current tariff – 2015–16					
Supply charge (\$/year)	101.48				
Tier 1 price (\$/kL)	2.61				
Tier 2 price (\$/kL)	5.24				
Option A. One usage charge – set at long-run marginal cost					
Supply charge (\$/year)	125.20	149.29	178.00	212.25	253.08
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	5.02	4.80	4.53	4.21	3.84
Option B: One usage charge – set at current Tier 1 price					
Supply charge (\$/year)	119.72	136.51	155.65	177.48	202.36
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	5.07	4.92	4.74	4.54	4.31
Tariffs	Year 6	Year 7	Year 8	Year 9	Year 10
Option A cont.					
Supply charge (\$/year)	301.77	359.82	429.04	511.58	610.00
Tier 1 price (\$/kL)	2.61	2.61	2.44	2.12	1.74
Tier 2 price (\$/kL)	3.39	2.85			
Option B cont.					
Supply charge (\$/year)	230.74	263.09	299.98	342.04	390.00
Tier 1 price (\$/kL)	2.61	2.61	2.61	2.61	2.61
Tier 2 price (\$/kL)	4.04	3.74	3.40	3.01	

Source: Commission's calculations.

Option A transitions over 10 years to one usage charge. The aim would be for the usage charge to be eventually set so that it reflects the cost of providing additional units of water (the estimated long-run marginal cost of providing more water). One usage charge is reached by year 8. Option B, transitions over 10 years to one usage charge set at the current Tier 1 level.

The level of both the usage and supply charges would depend on the costs and the supply conditions faced at the time. For indicative purposes, Table 5.1 shows the possible changes to the tariffs using the current costs and expected water inflows and outflows. Option A would reach one usage charge earlier than Option B. It would also move to more fully reflect the marginal cost of providing additional water compared to option B. As a result it would have a higher fixed charge than option B.

The analysis undertaken by the Commission for the tariff review suggests that option A would be more efficient but would have greater distributional effects. The distributional impacts on low volume water users could be mitigated by raising the supply charge by the same annual percentage over the 10 years and by keeping the Tier 1 charge at the current level until it can be reduced towards the end of the transition period.

Having only one usage charge, option B is likely to be more efficient than the current structure, and would reduce the negative distributional impacts on low volume water customers compared to option A. However, the usage charge would still be substantially higher than the estimated long-run marginal cost of providing additional water resulting in continued welfare losses for the ACT community.

The Commission's draft position is that option A should provide a long term goal for the structure of water tariffs. Over the longer-term with the transition period discussed above applied to mitigate negative customer impacts, and subject to change as conditions change, it provides a better guide as it will provide the greatest efficiency benefits.

Residential customer impact

Introduction

Residential customers comprise those in separately-metered standalone houses and others living in units and flats.

There are currently about 110,000 standalone residential customers, accounting for about 65 per cent of Icon Water's 170,000 total water customers. Total water consumption by standalone residential customers in 2013–14 was about 24 GL, or 57 per cent of the total 42 GL consumed that year. The mean annual water consumption per customer in a standalone house in 2013–14 was in the region of 218 kL.⁸⁰

Residential customers in units and flats number about 51,000 or 30 per cent of total customers. Total water consumption by units and flats customers in 2013–14 was about 6.8 GL, or 16 per cent of total consumption. The mean annual water consumption per customer in a unit or flat in 2013–14 was in the region of 134 kL.⁸¹

Total residential customers account for about 95 per cent Icon Water's total water customers and 73 per cent of total water consumption in 2013–14.

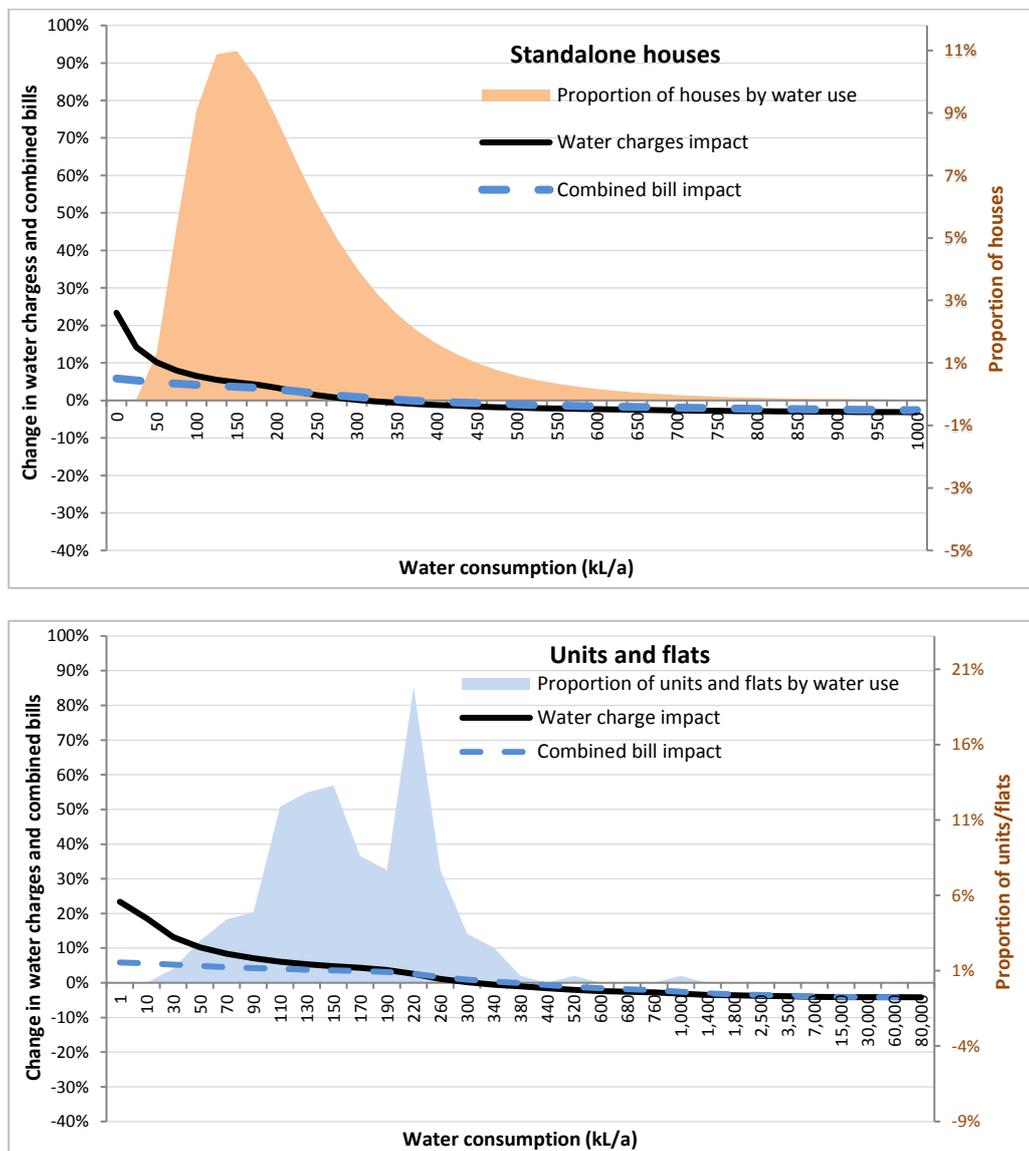
Figure 5.1 shows the impact on water charges and combined water and sewerage services bills over the full distribution by water use of customers in standalone houses and those in units and flats. While the prices and therefore bill impacts for a particular level of water use are the same for both categories, they exhibit different distributions

⁸⁰ This reflects 2013–14 standalone customer water use and current customer numbers.

⁸¹ This reflects 2013–14 units and flats customer water use and current customer numbers.

by volume. This is characterised by standalone house customers having a greater proportion of high volume users, which is reflected in the mean consumption per customer noted earlier.

Figure 5.1 Year 1 impact, residential customers



Note: The standalone customer distribution by water use presented in this figure is based on the normalised actual distribution while that for the units and flats customers is derived from a 10 per cent sample of ACP1 customers.

Source: Commission's calculations.

Two things are clear from Figure 5.1. First, charges and combined bills for low volume water users increase while those for high volume water users decrease, with the transition at the 300 kL per year level. Second, the combined bill impact on low volume customers is lower than that of the water charge alone due to the inclusion of sewerage charges, which form a large portion of their bills and only rise by the rate of inflation.

Water charges

Table 5.2 shows the change in annual water charges from 2016–17 to the first year of the transition to the alternative tariff for residential customers at different consumption levels. Water charges for low volume water customers increase while charges for customers using more than 300 kL per year decrease. Customers consuming 200 kL per year face an annual water charge rise of 3.4 per cent, or \$22.⁸²

Table 5.2 Change in annual water charges for residential customers (\$, current prices)

Annual water consumption (kL)	Annual 2017–17 water charge (\$)	Annual Year 1 water charge (\$)	Change in water charge (%)	Change in water charge (\$)
0	101	125	23.4%	24
50	232	256	10.2%	24
100	362	386	6.5%	24
150	493	517	4.8%	24
200	645	667	3.4%	22
250	885	898	1.4%	13
300	1,147	1,149	0.2%	2
350	1,409	1,400	-0.7%	-9
400	1,671	1,651	-1.2%	-20
500	2,195	2,153	-1.9%	-42

Source: Commission's calculations.

Combined water and sewerage bills

Table 5.3 shows the change from 2016–17 to the first year of the transition to the alternative tariff in the combined water and sewerage services bill for residential customers. The combined bill impacts show the same pattern as for water charges, with low volume water customers facing bill increases and high volume water customers facing bill reductions. However, as discussed above, the combined bill impact on low volume customers is lower than the water charges impact. For example, a customer consuming 50 kL of water per year will see an increase in their water charges of 10.2 per cent while their combined bill would increase by 4.9 per cent. A customer consuming 200 kL of water per year will see an increase in their combined bill of 3.0 per cent, or \$35.

⁸² The calculations include the application of daily pricing consistent with historical water use in each quarter. This means that 200 kL per year customers pay for a small amount of water at the Tier 2 price in some quarters.

Table 5.3 Change in annual combined water and sewerage services bill for residential customers (\$, current prices)

Annual water consumption (kL)	Annual 2015–16 combined bill (\$)	Annual 2016–17 combined bill (\$)	Change in combined bill (%)	Change in combined bill (\$)
0	631	668	5.9%	37
50	761	798	4.9%	37
100	892	929	4.1%	37
150	1,022	1,059	3.6%	37
200	1,175	1,210	3.0%	35
250	1,415	1,441	1.8%	26
300	1,677	1,692	0.9%	15
350	1,939	1,943	0.2%	4
400	2,201	2,194	-0.3%	-7
500	2,725	2,696	-1.1%	-29

Source: Commission's calculations.

Commercial customer impact

Introduction

For the purposes of this analysis, commercial customers are distinguished from the broader set of non-residential customers. There are currently about 3,400 commercial customers, accounting for about 2 per cent of Icon Water's 170,000 total water customers. Total water consumption by commercial customers in 2013–14 was about 9.5 GL, or 23 per cent of the total 42 GL consumed that year. The mean annual water consumption per commercial customer in 2013–14 was in the region of 2,900 kL.⁸³

Two cases are presented. The first assumes that residential and commercial customers face the same prices. However, this need not necessarily be the case and a different supply charge could be considered for larger customers. The second case considers the implications of differential pricing for commercial customers.

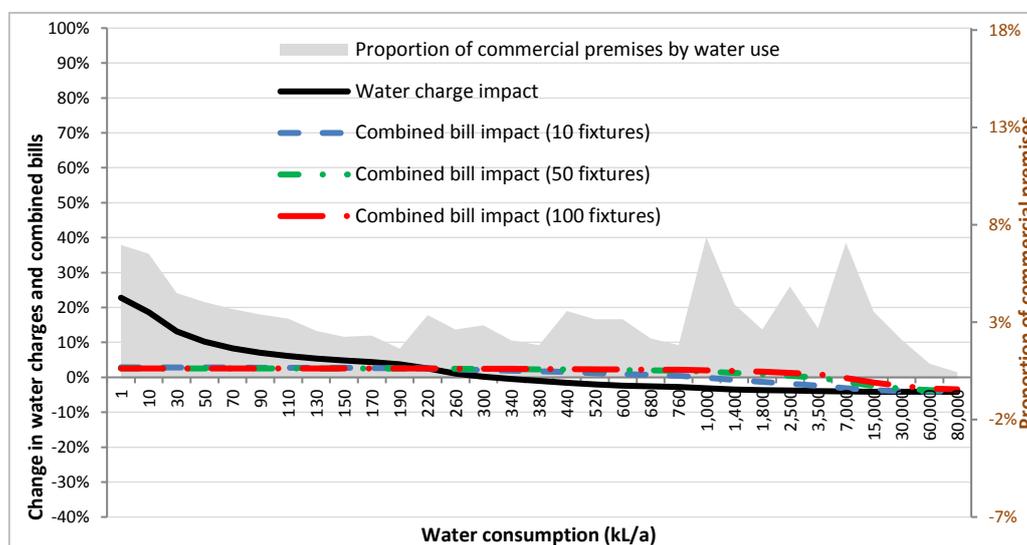
Case 1: Same prices

Figure 5.2 shows the water charges and combined water and sewerage services bill impacts over the full distribution by water use of commercial customers. As for residential customers, low volume commercial water customers face higher water charges with high volume water users facing lower charges. Not surprisingly, the distribution of commercial customers shows a much higher proportion of customers in the higher water use bracket than is the case for residential customers.

The combined bill impacts show a slightly different story, with the effect of fixture charges limiting bill decreases to very much higher volume water users than in the residential case.

⁸³ This reflects 2013–14 commercial customer water use and current customer numbers.

Figure 5.2 Year 1 impact, commercial customers



Note: The commercial customer distribution by water use presented in this figure is based on the normalised actual distribution.

Source: Commission's calculations

Table 5.4 shows the change in annual water charges from 2016–17 to the first year of the transition to the alternative tariff for commercial customers at different consumption levels. Changes range from a 2.6 per cent increase, or \$19 per year, to a 4.2 per cent decrease or minus \$6,518 per year.

Table 5.4 Change in annual water charges for commercial customers (\$, current prices)

Annual water consumption (kL)	Annual 2015–16 water charge (\$)	Annual 2016–17 water charge (\$)	Change in water charge (%)	Change in water charge (\$)
220	733	752	2.6%	19
520	2,300	2,254	-2.0%	-47
1,000	4,815	4,664	-3.2%	-152
2,500	12,675	12,194	-3.8%	-481
7,000	36,255	34,787	-4.1%	-1,469
15,000	78,175	74,951	-4.1%	-3,225
30,000	156,775	150,258	-4.2%	-6,518

Source: Commission's calculations.

Table 5.5 shows the change from 2016–17 to the first year of the transition to the alternative tariff in the combined water and sewerage services bill for commercial customers. The bill changes vary depending on the combination of water use level and number of sewerage fixtures.

Table 5.5 Change in annual combined water and sewerage services bill for commercial customers (\$, current prices)

Annual water consumption (kL)	Number of billable fixtures (#)	Annual 2015–16 combined bill (\$)	Annual 2016–17 combined bill (\$)	Change in combined bill (%)	Change in combined bill (\$)
220	10	6,440	6,601	2.5%	162
	50	27,149	27,828	2.5%	679
	100	53,035	54,362	2.5%	1,326
520	10	8,007	8,103	1.2%	96
	50	28,716	29,330	2.1%	614
	100	54,603	55,864	2.3%	1,261
1,000	10	10,522	10,513	-0.1%	-9
	50	31,231	31,740	1.6%	509
	100	57,118	58,274	2.0%	1,156
2,500	10	18,382	18,044	-1.8%	-338
	50	39,091	39,271	0.5%	179
	100	64,978	65,804	1.3%	826
7,000	10	41,962	40,636	-3.2%	-1,326
	50	62,671	61,863	-1.3%	-809
	100	88,558	88,397	-0.2%	-161
15,000	10	83,882	80,800	-3.7%	-3,082
	50	104,591	102,027	-2.5%	-2,565
	100	130,478	128,560	-1.5%	-1,917
30,000	10	162,482	156,107	-3.9%	-6,375
	50	183,191	177,334	-3.2%	-5,857
	100	209,078	203,868	-2.5%	-5,210

Source: Commission's calculations.

Case 2: Differential pricing

As noted earlier, Icon Water indicated in its second submission that it is considering the introduction of differential water pricing, with a higher supply charge for non-residential customers, of which commercial customers are a subset. Should this eventuate, the water charge and combined bill impacts on commercial customers would vary from those presented in the analysis above.

For example, a higher supply charge across the board for all commercial customers, will increase the negative distributional impacts on low volume customers compared to the results presented above.

Another option could be for Icon Water to negotiate particular arrangements with its large commercial customers. This might involve trade-offs between the supply and usage charges that provide benefits to both parties. Such arrangements would be consistent with the draft principles as long there is no economic cross-subsidy.

5.4.4 Draft position

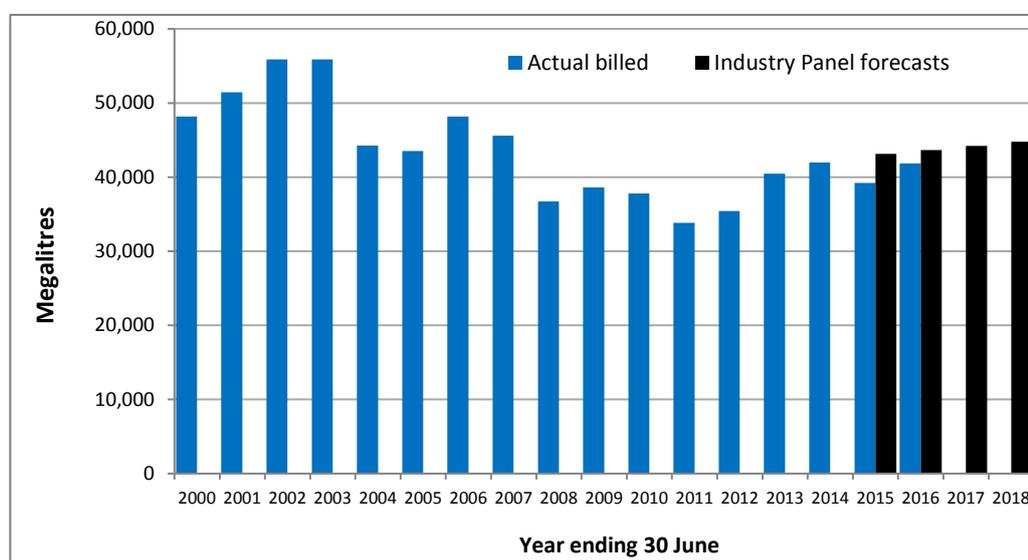
The key trade-off in determining the appropriate length of the transition period to the alternative water tariff is that between minimising annual customer bill impacts and delaying the efficiency benefits that will flow from more rapidly applying the cost-reflective structure.

The Commission’s draft position is that option A should provide a long term goal for the structure of water tariffs. Over the longer-term with the transition period discussed above applied to mitigate negative customer impacts, and subject to change as conditions change, it provides a better guide as it will provide the greatest efficiency benefits.

It is important to note, however, that the analysis underpinning this draft position is based on a revenue neutral assumption, that is there is no general increase in the level of water prices.

Current water price levels have been calculated using water volume forecasts that, based on recent performance, are a little on the high side. For example, actual water sales for 2014–15 of 39.2 GL and 2015–16 of 41.8 GL are cumulatively about 7 per cent lower than the forecasts used to calculate prices (see Figure 5.3).

Figure 5.3 ACT billed water sales, actual and forecast, 1999–2000 to 2017–18



Source: Icon Water billed water sales data; Industry Panel (2015a).

Should there be a return to water forecasts that reflect more recent outcomes at the beginning of the next regulatory period, this is likely to put upward pressure on water prices. In addition, if actual water sales are low enough to trigger the deadband in the substitute price direction, there may be further upward pressure on prices to recover that portion of water revenue lost by Icon Water in the current period that lies outside

the deadband.⁸⁴ The implications of any general increase in the general level of water for the tariff transition will be taken into account in the price investigation process.

It is also worth noting that the \$1.74 per kL marginal cost estimate underpinning this analysis is likely to change over the transition period. Marginal cost is a dynamic concept in that any estimate is dependent on the circumstance prevailing at the time it is estimated, and will be different as conditions change. For example, the short-run marginal operating cost for water will be dependent on dam levels and source of supply at the time. Demand requirements can also change significantly from one estimation point to the next.

5.5 Next steps

The indicative timeline for the remainder of the tariff review is set out in Table 5.6.

Table 5.6 Indicative timeline for the tariff review

Task	Date
Release of issues paper	23 November 2015
Release of technical paper 1: Water demand elasticity	29 February 2016
Release of technical paper 2: Marginal cost pricing	17 June 2016
Release of draft report	6 September 2016
Public forum	November 2016
Submissions on draft report close	30 November 2016
Final report	January 2017

The Commission welcomes submissions from stakeholders on the draft report by the closing date of **30 November 2016**. The Commission is also intending to hold a public forum to discuss the draft report findings in November 2016. The Commission will advertise details of the timing and location of the forum once they are finalised.

⁸⁴ Industry Panel, 2015b: 13.

Appendix 1 Summary of submissions

A1.1 Icon Water

A1.1.1 Initial response to issues paper

Icon Water's first submission, provided in response to the issues paper, makes a number of key points.

National commitments

The Commission should have regard to the National Water Initiative pricing principles and, in light of the Australian Government's response to the Harper review of competition policy, should take into account any consensus among other jurisdictional regulators as to what constitutes best water pricing practice.

Form of price control

As the tariff review is being undertaken in advance of decisions on the form of price control to apply from 1 July 2018, the review should maintain an open stance on the question of whether the Commission or Icon Water will have responsibility for setting tariff structures.

Objectives and principles

Icon Water supports the proposed overarching economic regulation objective and pricing principles set out in the issues paper stating:

The use of a single, overarching objective will allow for more transparent and evidence-based analysis of alternative tariff structures and it is appropriate that the objective be defined in terms of the welfare of Icon Water customers over the long term.⁸⁵

Icon Water also submitted that customer impact considerations are mainly restricted to decisions on the length of the transition period to avoid compromising the ultimate goal of a welfare-maximising tariff structure.

Uneconomic bypass

Icon Water submits that one of the primary issues for the review is the role of tariff structures in discouraging uneconomic bypass:

Significant welfare losses would be avoided by reducing the Tier 2 price, at least for non-residential customers, in order to prevent uneconomic bypass of the primary water

⁸⁵ Icon Water, 2016b: 2.

network and better utilise the water supply security in which Icon Water on behalf of customers has already invested.⁸⁶

Drought pricing

Icon Water submits that it continues to support the implementation of a revenue-neutral drought pricing scheme that would involve changing water usage prices to account for expectations about demand when changes in water restrictions occur.

Trade waste

Icon Water submits that its trade waste policy and charging regime, currently under development, will provide price signals about the cost of dealing with liquid trade waste to provide incentives for customers to undertake pre-treatment where this would reduce overall costs.

A1.1.2 Submission on tariff structure

Icon Water's second submission to the tariff review agrees with the finding of the Commission's technical paper on marginal cost pricing that the current water tariff structure does not appear to be providing suitable price signals to customers about the efficient use of the service infrastructure and water resource. Icon Water submits, however, that:

based on our analysis and customer engagement to date, we are of the view that it would not be appropriate to move directly to fully cost-reflective tariffs within a five-year regulatory period.⁸⁷

Icon Water submits that it intends to discuss the following proposed direction for tariff reform with its customers in preparation for its response to the Commission's draft report on the tariff review:

- Working towards a single usage price that applies to all water use and is significantly lower than the current Tier 2 price of \$5.24 per kilolitre.
- Introducing separate residential and non-residential tariffs, with a higher supply charge for non-residential customers.
- Introducing a charging regime for liquid trade waste.
- Introducing drought pricing arrangements.

Icon Water notes that as the marginal cost of sewage discharge represents just seven per cent of the total amount that needs to be recovered in tariffs, which is mostly fixed or sunk expenditure. Icon Water submits that there would be limited economic efficiency benefits from introducing a sewage usage charge, but may be significant impacts on individual customer bills.

⁸⁶ Icon Water, 2016b: 2.

⁸⁷ Icon Water, 2016c: 3.

Icon Water’s submission provides initial results of customer views on potential tariff structure changes arising from its community engagement program, Talking Icon Water. The submission also provided responses to the questions posed by the Commission in the issues paper.

A1.2 ACAT

ACAT submits that:

the pricing structure for water should encourage conservation and promote the development of bypass & water reuse systems based on the Tier 2 price. This strategy is more likely to develop a system that avoids excessive water restrictions and the resultant revenue problems during periods of drought.⁸⁸

More specifically, ACAT supports keeping the inclining block tariff for water, stating:

- the Tier 1 price should be maintained at the current level or lower to provide access to an essential service at a reasonable price; and
- the Tier 2 price should be uniform for all customers.

In relation to sewerage services, ACAT submits that the charging system should ensure that large businesses are paying appropriately for quantity and toxicity of the waste discharged into the sewerage system.

A1.3 ClubsACT

ClubsACT submits that more than two-thirds of ACT clubs maintain some form of sport and recreation infrastructure and are facing increasing water costs:

Clubs have experienced increases in water charges over the past decade of over 400%. This dramatically exceeds any reasonable measure of real cost growth, and forces ACT Clubs to endure much higher costs than do their counterparts in other comparable jurisdictions.⁸⁹

In recognition of the ‘community benefit of clubs and the unreasonable costs they currently face in providing services for the ACT community’, ClubsACT submits that clubs should be provided with:⁹⁰

- a tariff that provides a discount on water prices (such as that provided to ACT schools and churches); or

⁸⁸ Icon Water, 2016b: 2.

⁸⁹ ClubsACT, 2016: 3.

⁹⁰ ClubsACT, 2016: 6.

- be provided with a community service obligation mechanism to reduce water costs.

A1.4 Federal Golf Club

The Federal Golf Club submitted that it:⁹¹

- supported a move towards a higher supply charge and lower usage charge for water;
- did not support a sewerage services usage charge using water use as a proxy as this would disadvantage large water users;
- did not support an inclining block tariff but would support a declining block arrangement; and
- supported consideration of a reduced water tariff for not-for-profit community organisations that provide health and social benefits

A1.5 ACT community

Mr Jason Rae supports an inclining block tariff and submits that water charges should be higher than they currently are to encourage water conservation for environmental reasons:

I would have thought it made more sense to charge more in general and a lot more for excessive use.⁹²

Dr Kristine Klugman does not support an inclining block tariff and in particular the doubling of the water charge for ‘water consumption over a very minimal level.’⁹³

Mr Ross Knee, responding to the technical paper on the price elasticity of water demand in the ACT, submits that:⁹⁴

- the analysis in the paper is flawed as it does not analyse the two tiers separately;
- the analysis should have been done over two periods, pre and post 2010 when temporary water restrictions were lifted, rather than over the entire period 2003 to 2015;
- if scarcity pricing is used as a means to reduce water consumption this needs to be implemented before temporary water restrictions are applied and the price increase should only be applied to the second tier price; and

⁹¹ Federal Golf Club, 2016: 1.

⁹² Rae, 2016: 1.

⁹³ Klugman, 2016: 1.

⁹⁴ Knee, 2016: 1-2.

- price reductions to stimulate demand are not a realistic option as Icon Water is subject to environmental sustainability requirements under the *Territory-owned Corporations Act 1990*.

Dr David Denham AM supports the proposed overarching economic efficiency objective as a sound basis for developing a tariff structure, and agrees that the proposed pricing principles provide an effective basis for assessing current and alternative structures, but argues that social welfare cannot be maximised ‘because the fixed charge component is far too high and does not appropriately reward customers for conserving water.’⁹⁵ Dr Denham submits that the current inclining block water tariff be retained but with:

- a significant reduction in the supply charge; and
- a significantly reduced price for the first 40 kL of water consumed per quarter.

⁹⁵ Denham, 2016: 1.

Appendix 2 Other legislative and national considerations

A2.1 Section 20(2) of the ICRC Act

In making a decision under subsection (1), the Commission must have regard to:

- (a) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services; and
- (b) standards of quality, reliability and safety of the regulated services; and
- (c) the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers; and
- (d) an appropriate rate of return on any investment in the regulated industry; and
- (e) the cost of providing the regulated services; and
- (f) the principles of ecologically sustainable development mentioned in subsection (5);
- (g) the social impacts of the decision; and
- (h) considerations of demand management and least cost planning; and
- (i) the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry; and
- (j) the effect on general price inflation over the medium term; and
- (k) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person.⁹⁶

A2.2 National Water Initiative pricing principles

In 2010, a set of National Water Initiative pricing principles, agreed by all Australian governments and endorsed by the Natural Resource Management Ministerial Council, was developed as the basis for setting water prices in all jurisdictions. The 10 pricing principles for setting urban water tariffs are summarised in Box A2.1.

⁹⁶ ACT Government, 1997: 26–27.

Box A2.1 National Water Initiative urban water price-setting principles

Principle 1: Cost recovery – full recovery of efficient costs through upper bound pricing.⁹⁷

Principle 2: Tariff structures – two-part tariffs (service availability and water usage charge) unless demonstrated to not be cost-effective.

Principle 3: Cost-reflective tariffs – for economic efficiency reasons, water usage charge should have regard to the long-run marginal cost of the supply of additional water (does not preclude inclining block charges where governments seek to promote efficient water use).

Principle 4: Setting the service availability charge – should recover the difference between revenue collected from variable water charges and developer charges and total revenue requirement.

Principle 5: Pricing transparency – tariffs should be set using a transparent methodology and subject to public consultation and scrutiny.

Principle 6: Over recovery of revenue – where water usage charges lead to revenue recovery in excess of upper bound revenue requirements in respect of new investments, jurisdictions are to address the over recovery.

Principle 7: Differential water charges – water charges should be differentiated by the cost of servicing different customers where the benefits of doing so outweigh the costs of identifying differences and the equity advantages of alternatives.

Principle 8: Setting developer charges – charges should reflect the investment in both new and existing assets required to serve a new development and have regard to the way in which ongoing water usage and service availability charges are set.

Principle 9: Capping developer charges – charges should not exceed the costs of serving new developments, including investment in both new and existing assets.

Principle 10: Revenue from developer charges – to avoid over-recovery, revenue from developer charges should be offset against the total revenue requirement either by excluding or deducting the contributed assets from the regulatory asset base or by offsetting the revenue recovered using other mechanisms.

Source: NRMCC (2010).

⁹⁷ The National Water Initiative defines upper bound pricing as ‘the level at which, to avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes, provision for the cost of asset consumption and cost of capital, the latter being calculated using a weighted average cost of capital’ (COAG, 2004: 30).

Appendix 3 Water tariffs in other jurisdictions

Table A3.7 Water tariffs in various jurisdictions, 2016–17

	Supply charge (\$/a)	Tier 1 price (\$/kL)	Tier 2 price (\$/kL)	Tier 3 price (\$/kL)	Step 1 (kL/a)	Step 2 (kL/a)	200 kL/a bill (\$)
City West Water ^(a) – residential	228.00	2.39	2.82	4.19	161	321	723
– business	332.08	2.66					865
Hunter Water – residential	25.69	2.25					476
– business ^(b)	25.69	2.25					476
– business ^(c)	9,239.56	2.25					9,690
Icon Water – res & business	101.48	2.61	5.24		200		623
SA Water – residential	286.40	2.27	3.24	3.51	120	520	818
– business	286.40	3.24					934
Sydney Water – residential	102.56	\$2.28					558
– business ^(d)	102.56	\$2.28					558
– business ^(e)	80,955.00	\$2.28					81,141
TasWater – res & business ^(f)	329.48	\$1.00					529
– res & business ^(g)	51,481.25	\$1.00					51,681

(a) Prices from 1 July 2016 to 31 December 2016.

(b) One 20 mm connection.

(c) One 350 mm connection.

(d) One 20 mm connection.

(e) 600 mm connection.

(f) One 20 mm connection.

(g) 250 mm connection.

Note: This table only contains a sample of the supply water charges by connection size for Sydney Water and TasWater. For the full lists, see www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/our-prices/index.htm and www.taswater.com.au/Your-Account/Water-and-Sewerage-Charges.

Source: Sydney Water (2016b); Sydney Water (2016a); City West Water (2016); Hunter Water (2016a); Hunter Water (2016b); TasWater (2015); SA Water (2016).

Abbreviations and acronyms

ACT	Australian Capital Territory
ACAT	ACT Civil and Administrative Tribunal
AIC	Average incremental cost
Commission	Independent Competition and Regulatory Commission
GL	gigalitre (one thousand megalitres)
ICRC	Independent Competition and Regulatory Commission
ICRC Act	<i>Independent Competition and Regulatory Commission Act 1997 (ACT)</i>
kL	kilolitre (one thousand litres)
LMWQCC	Lower Molonglo Water Quality Control Centre
MIC	marginal incremental cost
ML	megalitre (one thousand kilolitres)
NWI	National Water Initiative
SRMC	short-run marginal cost
TMC	‘Textbook’ marginal cost
TOC Act	<i>Territory-owned Corporations Act 1990 (ACT)</i>
WAC	Water Abstraction Charge

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