12th March, 2018

Water Team
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000

Dear Sir/Madam

Re: Coliban Water 2018 water price review

I am highly concerned, on a number of accounts, about a component of Coliban Water's 2018 pricing strategy: namely the 6-year rollout of water smart meters that it commenced this month.

Customer engagement: an illusion

Although it appears that Coliban Water has undertaken extensive customer engagement activities, I believe the process that it undertook was fundamentally flawed.

Coliban Water's Pricing Submission 2018 Community Draft contains five brief mentions relating to the introduction of 'digital' meters; however, the document fails to inform the community that these particular meters are not merely digital meters, but that they also host radiofrequency transmitters which, specifically, are transmitting pulsed microwaves to network gateways on an hourly basis.

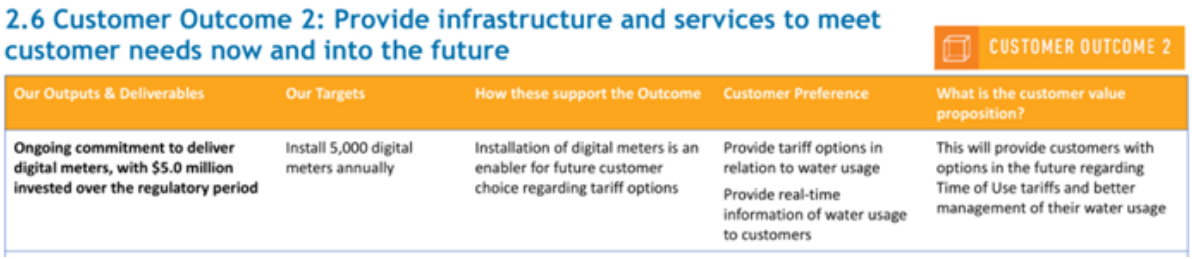
This lack of transparency makes the community feedback to questions that relate to the implementation of 'digital' meters into an inanity. Clearly the answers would have differed if people had realised that Coliban Water was instead proposing to introduce smart meters.

Compounding the fact that customers were misinformed during the community consultation phase in regard to the nature of the proposed technology of the rollout, is that it is unlikely that Coliban Water would hear from ordinary residential customers during its community consultations as an 'engaged' residential water services customer by definition is, most probably, an atypical customer.

One only need substitute 'water' for 'electricity' in the following extract from a recent review by economist and Professor of Energy Policy, Dieter Helm, on the UK's floundering implementation of electricity smart meters, to sum up the situation: "People just want a reliable electricity supply at a reasonable price and want to spend as little time as possible in getting this outcome. They don't actually want to be "engaged" customers." My sentiments exactly, and I suspect, that also of most other residential customers.

This calls into question some of the outcomes that Coliban Water has identified as being of benefit to customers, such as the claim that, "Installation of digital [sic] meters is an enabler for future customer choice regarding tariff options".

I also wonder how many members of the community would have even had an inkling that Coliban Water is envisaging the possibility of introducing Time of Use tariffs? Oddly, Time of Use pricing does not get a mention in the Pricing Submission 2018 Community Draft; yet, as shown below, the submission submitted to the ESC clearly sets out this possibility:



2.6 Customer Outcome 2: Provide infrastructure and services to meet customer needs now and into the future

CUSTOMER OUTCOME 2

Our Outputs & Deliverables	Our Targets	How these support the Outcome	Customer Preference	What is the customer value proposition?
Ongoing commitment to deliver digital meters, with $5.0 million invested over the regulatory period	Install 5,000 digital meters annually	Installation of digital meters is an enabler for future customer choice regarding tariff options	Provide tariff options in relation to water usage Provide real-time information of water usage to customers	This will provide customers with options in the future regarding Time of Use tariffs and better management of their water usage

I doubt that I am alone in, not for a minute, imagining that the anodyne wording of Question 3 in the Community Draft version, which asks "Do you agree more tariff choice to better meet individual household circumstances is a good idea rather than the same price for everyone? (Eg lower fixed, higher usage charges)" was the harbinger of Time of Use tariffs. Whereas I might well have been unsure of my answer with regard to the aforementioned wording, had Time of Use pricing been mentioned, I would have strongly disagreed! (Seriously, how many people would want to face the possibility of having to delay their shower until, say, 11 pm, just to suit the requirements of Time of Use pricing?)

The ability to access online monitoring of water use also appears to be a highly questionable benefit – customers need only walk over to their water meter in order to be able to do this at the moment!

Smart meter rollout: a potential IT system blow-out

Coliban Water's Pricing Submission 2018 states that $5.0 million is to be invested over the regulatory period in respect of digital meters. As many members of the community are aware, IT rollouts are notorious for running vastly over budget. Smart meter rollouts, in particular, are prone to result in projects where the costs exceed benefits.

It is also unclear to what extent Coliban Water is exposing itself to unexpected costs, in view of the relative infancy of the LoRaWAN technology which it has elected to use for its wireless smart meter communications.

Another risk lies in its use of 915-928 MHz spectrum for the transmission of data between its meters and network gateways. Reliance on using this spectrum may prove to be problematical. This small slice of spectrum is utilised by a number of users because use of these frequencies does not incur a fee. In line with requirements stipulated by the Australian Communications and Media Authority (ACMA), devices operating under this spectrum's class licence "must **not cause interference** to other radiocommunications services **and will not be afforded protection** from interference caused by other radiocommunications services" (my emphasis).

Even in 2011, the ACMA flagged a number of potential risks in using this spectrum for smart meters and smart grids due to the possibility that the "level of interference by these devices to other users of the 900 MHz ISM band could become unacceptable". It now appears that there may be a large volume of new players wishing to make use of this spectrum in the near future, which will create even further congestion.

A recent paper, titled Free Spectrum for IoT: How Much Can It Take?, examined "the readiness of this open-access spectrum for the expected vast increase in IoT applications", concluding that, "This indeed might come at the cost of more complicated systems and increased power consumption".

It is unknown whether Coliban Water has factored in the attendant risk of investing in infrastructure relying on frequencies that are subject to a rapidly changing landscape.

Degradation of environment

Coliban Water made it clear in the Community Draft version of its Pricing Submission 2018 that its plans include caring for the environment. In light of these sentiments, it is ironical that its rollout of smart meter infrastructure will, instead, add to electro-pollution, thereby increasing its environmental footprint.

The implementation of smart meters will cause pulsed microwave radiation levels to increase, not only in consequence of the hourly microwave transmissions from each water meter via omni-directional antennas to network gateways, but also because the network gateways generate a concentration of traffic, utilising 3G and 4G technology, to nearby telecommunication towers.

Botanist Mark Broomhall, in a Report for the United Nations Educational Scientific and Cultural Organization, has meticulously documented, over a 15-year period, the exodus of species from NSW's World Heritage Area, Nightcap National Park, in consequence of increasing levels of electromagnetic radiation from the Mt. Nardi telecommunications tower complex. Broomhall estimated that "from 70 to 90% of the wildlife has become rare or has disappeared from the Nightcap National Park within a 2-3 km radius of the Mt. Nardi tower complex". His data also revealed that:

- 3 bat species once common have become rare or gone
- 11 threatened and endangered bird species are gone
- 11 migratory bird species are gone
- 86 bird species are demonstrating unnatural behaviours
- 66 once common bird species are now rare or gone

Broomhall states in his report that "it is evident that pulsed microwaves are particularly toxic". He says that this matter "should be considered a National Emergency".

In light of these findings – and taking into consideration many other studies which document harmful effects from pulsed radiofrequencies on bees, amphibians, birds and wildlife – how can Coliban Water justify augmenting, in any way whatsoever, existing electro-smog levels?

Health and well-being of the community

Coliban Water's Community Draft version of the pricing submission clearly flags that the 'health and well-being of our communities is a priority". This claim appears to be in conflict with the response that I received from Coliban Water, when I asked if it would be possible to opt out of a smart meter if one had the medical documentation to support such a request; I was advised that there is NO provision to opt out. I was also informed by Coliban Water that the meters need to transmit at least once per hour – so will be transmitting throughout the night.

This answer is of immense concern to me as our water meter is situated within approximately 10 metres of our bedroom. I have been advised by Coliban Water that the meters will have a power of 100 milliwatts. Whilst this means that emission levels will be a fraction of Australia's radiofrequency standard, Australia's standard only takes into consideration heating effects (that is, body tissue must heat up by over one degree Celsius for it to be invoked). Australia's radiofrequency standard does not take into account biological effects – as shown in a very large body of scientific studies – that may occur as a result of low-level exposure. Australia's standard also permits exposure that is *ten to thousands of times* higher than what radiofrequency standards and guidelines in a number of other countries recommend. It is especially worrying that the exposure will also occur during sleeping hours, as this is the key time when it is important, biologically, to be in an environment which is free of toxic agents. As an analogy, if a light were to strobe once per hour – even briefly – whilst one was sleeping, this would seriously impact upon the health of some people. Even though we are unable to see, smell or taste pulsed radiofrequency waves, from the point of view of our bodies, as finely tuned electrical beings ourselves, there is an impact.

Peer-reviewed published science[1] shows low-intensity radiofrequency radiation exposure leads to a wide range of adverse biological outcomes including fatigue, headaches, sleeping disorders, concentration problems, reduced sperm count and cardiovascular problems.

Coliban Water's stance in refusing smart meter opt-outs appears to be an unprecedented situation in Victoria. I, like many other people, do not have a communicating electricity smart meter; even in the case of the State Government mandated roll-out of electricity smart meters, at no stage did the government pass legislation compelling consumers to

[1]The reference list for the *Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Levels* colour chart is available here.

accept a smart meter, simply distributors were required to use their best endeavours to install them.

Conclusion

If Coliban Water continues to forge ahead with its compulsory rollout of wireless smart meters, instead of furthering its declared aim of supporting the liveability of the region, it will have the opposite effect for my husband and myself. We are currently fortunate to live in an area surrounded by state forest, with no nearby telecommunication towers and very low radiofrequency levels on our property.

We do not wish to see this destroyed on account of Coliban Water's dalliance with wireless technology.

I trust that the Water Team will take into account the issues which I have raised in regard to Coliban Water's rollout of smart meter technology in assessing the costs and benefits of its Pricing Submission 2018. Clearly, Coliban Water has omitted to factor in all costs of its rollout of smart meters.

Neither the cost of expanding its environmental footprint or the cost to the community of decreasing the liveability of the region have been included in its pricing submission. It is also unclear, from the information provided to the public, what contingency costs might have been allowed for to provide for future occupancy of Australia's limited free telecommunications spectrum or to provide for other teething problems endemic to rollouts of smart meter technology.

The pricing submission also appears to have exaggerated the benefits of deploying this technology; I believe that online monitoring and Time of Use pricing would be seen by the majority of customers as being most unlikely benefits.

Yours sincerely

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