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Environment and Natural Resources Committee  
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Dear Sir/Madam

Thank you for the opportunity to submit this information to the Environment and Natural Resources Committee on Melbourne's future water supply, one of the simplest ways to preserve the Water Supply for Melbourne is to limit the amount of water wasted during Hot Water Delivery.

The Technology required to achieve this has been in existence for over 15 years and the design principals for new home plumbing that will not waste any more than 250ml to 500ml or 1 to 2 Cups of water while waiting for the hot water to arrive is readily available and easy to install.

It is only plumbing smartly, but using Smartly and Plumbing or Plumber in the same sentence could be considered to be a contradiction in terms.

Please view attachment Hot Water Delivery Requirements etc., the figures in this document relate to Australia in a whole but are totally relevant for the purpose of expressing the severity of this situation, Global Warming is here to stay if we like it or not and the wastage of water during hot water delivery has a larger impact on it than you may think.

The Building Industry should be made by changes to the Building Regulations be required to construct all new homes to limit to the water wasted at all hot water fixtures during hot water delivery to 500ml or 2 Cups Full, household plumbing can be designed to achieve this without compromising the floor plan of the home and in doing so use less energy than running the water down the drain.

So by changing the Building or Plumbing Regulations to limit these losses and you would be amazed at the water savings achieved over the total water supply to Melbourne and Victoria see information below and attachments.

- o In reality I have been informing the Victorian Government and relevant Departments of this very simple change to Plumbing design that will benefit our environment greatly for the past 6 years and all with the same result, I will forward the information on to somebody else and with no follow-up from the person that it goes to with the exception of one person in the DSE. (Why is it taking so long for people to realize that there is a simple solution to some of our water supply problems.)
- o In that time (based on 5 years only), for Victoria calculating that 35,000 new dwellings per year at 40 litres per day (Average 22 sq Home) and this calculation is based on the CEC Model equation established in the CEC research in 2005 and testing carried out with new home construction plumbing runs with the Victorian Governments DSE, a minimum of 2555 Mega Litres of water has been wasted during hot water delivery. In reality the figures are much higher.
- o CEC Report 2005 website that calculations came from.  
<<http://www.energy.ca.gov/2005publications/CEC-500-2005-161/CEC-500-2005-161.PDF>>
- o For the record, catching the water in a bucket while waiting for hot water and using it on the garden or elsewhere, this water is still good potable water that could have remained in the piping and secondly it has had energy applied to it in some form during delivery and

heating so you are also throwing away energy unnecessarily, this was not a good campaign as it promoted energy wastage for no sound reason and only redirected the waste water that could have been saved.

- o Additionally for every 20 litres of water wasted during hot water delivery 1 kWh of energy is consumed.
- o A minimum of 511 Mega Litres of water has been wasted in new homes constructed 12 months ago.
- o In addition 25,550,000 kWh of Energy has been unnecessarily applied and wasted in the delivery phase of hot water in New Home constructed 12 months ago due to poor hot water delivery techniques.
- o 20.44 Giga Litres of water are wasted annually in existing homes based on only 1.4 million billed Water Board Customers, residential and commercial.
- o As a comparison the Maroondah Reservoir when full holds 22 Giga Litres.
- a Victoria wide annually the 1.4 Million existing Water Board customers will waste almost the same amount of water in the Maroondah Reservoir while waiting for hot water to arrive.
- o Embodied or lost energy in poor hot water delivery would be, 1,022,000,000 kWh of energy is annually wasted in existing homes based on 1.4 million billed Water Board Customers, residential and commercial.
- o Points of interest, Governor Arnold Schwarzenegger and the California Government have supported the introduction of the Australian Green Plumbers Scheme into California.
- o Gary Klein formerly the Advisor to Commissioner John Geesman of the CEC and colleague of mine has been appointed the Chief Technical Officer for the Californian Green Plumbers Organisation.
- o Californian Building legislations are changing to incorporate smarter hot water plumbing.
- o Correct Hot Water delivery also reduces CO/Greenhouse Gas Emissions by around 1 ton per home based on CEC and US. DOE research.
- o With around 35,000 new homes built every year in Victoria just to start there would be a great improvement as that would be about 35,000 Tons of Greenhouse Gases not entering the Atmosphere in the first year after construction.
- a After 2 years it would be an accumulative 105,000 Tons of CO that would not have entered the Atmosphere.
- a Then after the tenth year staying with the 35,000 new homes constructed the accumulative annual figure of CO Emissions saved from the Atmosphere would be 35,805,000 Tons of CO emissions.
- o My credentials extend to working with and providing technical support for Hot Water Delivery techniques to Spain, Turkey, New Zealand and just beginning to make new contacts in England and China.
- o I was also requested to assist with the WA Governments 5 Star Plus Program in 2007, but at the last minute after around 4 months of working with then the HIA in WA stepped in and said that they did not want to change the way things were done as their members

were to busy, so the whole program was basically dropped and a poor requirement that offers effectively no benefit to water and energy savings was introduced.

- o For the record the existing 5 Star Regulations have included two measures that in fact has effected the amount of water and energy wasted in hot water delivery, the inclusion of the Concrete Slab has lead to the length of Plumbing being increase as Plumbers tend to wrap the piping around the Home as they can no longer plumb in a direct line under the floor as the once did.
- o Secondly the low flow fixture Shower Heads slows the rate of water down to half of the previous Shower Head this then increases the heat lost to the pipes in hot water delivery causing more energy and water to be wasted than previously, -5 Star was not correctly investigated to see what problems would be experienced when changes to the basic design changes were made, big mistake and we are paying for it now. But with correct hot water delivery limiting the wastage to 500ml the Shower Heads would do what they were originally designed to do and that is limit the amount of flow and wastage during use instead of causing a huge problem in the hot water delivery stage of their operation .
- o All New Homes currently under construction are Environmental disasters waiting to happen regardless of the 5 Star Regulations they are built under as they don't work environmentally as proven in the Wilkenflod Report that the Victorian Government commisioned, building companies must be held responsible for the poor environmental standard that they construct their Homes to, all show and shine leaving a poor environmental foot print.

I trust this information is of interests to your Committee and if you would like the opportunity to discuss this matter further in the near future I am at your service.

It is amazing how a simple design change in Hot Water Plumbing can have such an effect on our Energy and Water usage, I have also been consulted on for technical information for the PIC PlumbSmarter campaign, there's those words again, Plumb and Smarter and that is all that would be required.

Part of the Technology that enables the possibility to reduce the water wasted in hot water delivery can also be applied to existing homes through a Retro Fit Kit that will use the cold water pipe as a return line to the Hot Water System to eliminate the wastage of water.

I await your comments and thank you for the opportunity to present this information to you.

Regards.

Tom

**Tom Rendall.**

Manager/Consultant.

Advanced Conservation Technology

Australia Pty. Ltd.