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Big solutions for our water needs will use even more energy

Peter Fisher
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THE STATE Government is turning to big answers to meet Melbourne's long-term and not so long-term water needs in response to a predictably drier climate. So far, these mega-projects come in the form of inter-basin pipelines and reverse-osmosis desalination plants. But forcing seawater through ultrafine membranes or pumping raw water over mountain ranges — each cubic metre weighs a tonne — takes a lot of puff which, back at the power stations, translates into even greater emissions and yet more water for cooling.

For their own part, water companies have, with a few exceptions, been slow to embrace new ideas or innovative technologies. Now energy-greedy, big-answer water supply projects are being superimposed onto current and planned carbon-intensive wastewater treatments (struggling to be offset by methane capture, pumping efficiencies, etc.). Becoming black balloon junkies at a time when everyone else is being urged by TV ads to kick the habit isn't a good look.

Black Saturday showed that surface water supply is not only in jeopardy from growing aridity but, as Gary Sheridan and Patrick Lane recently detailed (Comment and Debate, 18/2), also from serious contamination of catchments due to burnt vegetation. Another complication is the huge swings that bushfires can bring to yield. Heavy rainfall could cause mud, ash, soil and rocks to be washed into the dams, as happened after the Canberra fires.

A planned upgrade of Sugarloaf's Winneke Filtration Plant must be accelerated. And Silvan, drawing from the fire-ravaged O'Shannassy catchment, urgently requires a higher standard of treatment than the present chlorination. Such installations would result in yet more energy use.

It's frequently maintained that very large energy-consuming projects can be rendered carbon neutral by renewables — 48 wind turbines were built in recompense for the coal and gas-fired turbines powering the Kwinana desalination plant near Perth. Unfortunately, at the rate we're seeing reverse-osmosis desalination introduced, wind farms will only succeed in slowing the shameful rate of growth in emissions.

There are several ways in combination to break the nexus between water security and emissions growth.

The first is to pursue smaller water-energy projects dotted across the city and regional areas. These would allow a fine-tuning of adaptation as understanding of climatic change grows. They would spread the risk of being hit by a single cataclysmic event and circumvent transmission line losses (by up to 20 per cent) due to the distance of the user from the baseload generator.

Wind turbines and solar panels, both domestic and commercial, are now common but there's little being done in the way of marine power.

Wave machines coupled with on-shore desalination plants could, for example, produce potable water for Bass Strait

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towns. (WA is investing \$12.5 million in a new low-emissions wave energy power station off the Albany coast). A tidal power facility located in The Narrows near the San Reno Bridge might do the trick for Phillip Island. There's also a good deal of geothermal energy in southern Victoria.

A few notches up is scavenging waste heat from industrial sites to run so-called multiple-effect distillation plants (commonplace in ships and sugar refineries) using seawater or brackish bore water as feed. The availability of waste heat and/or combustible gases at refineries, power stations and gas plants should not be ignored.

A multiple-effect plant at Werribee, for instance, could use refinery gas piped from Altona alongside sewerage farm methane to purify Class A water with no overall increase in emissions.

Finally, following the example set by Fujairah in the United Arab Emirates, a hybrid water recovery plant could be linked with a high-efficiency gas-fired power station. Sited at the Natural Gas Terminal at Longford, a state-of-the-art facility could match Wonthaggi's output for just a third of its power demand (even allowing for the extra pumping load to the Thomson Dam) while deferring the building of a new coal-based power station in the Latrobe Valley. The wind farms could then be turned to other uses with lower transmission losses. And, being 10 kilometres from the coast, the site wouldn't be susceptible to sea level rise or storm surge.

All of these options need to be openly considered by the Government if there is to be any serious attempt to achieve real carbon reduction in the next couple of decades. An overall distributed power grid may not be as expensive as the course it has chosen.

The New York Times recently told its readers that "from all over the globe, in bits and pieces, data are accumulating that suggest we may have already left behind the world of possibilities portrayed in the (IPCC) panel's report".

Not all that far from *The Times'* office, the Arctic tundra is melting, potentially releasing three times more carbon dioxide than has been put into the atmosphere since the industrial revolution. The resultant warming would make for a totally horrid, unliveable Victoria (of which February 7 was a harbinger) where even coastal desalination plants would be under the waves. In light of this there is no justification for a business-as-usual approach to the economy and population growth.

Dr Peter Fisher works in the environment industry, specialising in water and climate change adaptation.

This story was found at: <http://www.theage.com.au/opinion/big-solutions-for-our-water-needs-will-use-even-more-energy-20090308-8sck.html>