

Question Details

#	Question	Answer	Answer Name
1	water "used" for hydro are non consumptive use right?	yes that is right. No water consumed in hydropower. However, we could consider it "lost" from storage which is sort of like consuming if having the water in storage also has its own benefits.	Jason Lillywhite
		There are also evaporative losses from the hydro storages, which require replacement from the main water source ongoing.	Attendee
		The principle losses are as evaporation from storage and, depending on how the water is "released", some additional loss from regular flow can occur through increased evaporation from spray.	Chris McAuley
2	Energy generation in water utilities should be coming from the kinetic energy already flowing in pipelines. With inline pipe turbines, we can generate 10's to 100's of MW's of energy without building new solar or wind farms. We have existing infrastructure that can be a source of a new renewable energy source through water pipelines. A new market can be created here.	That's true—there are definitely opportunities to extract energy this way as long as there is excess head available. The sweet spot is finding those areas where the utility already needs to 'burn' extra pressure, like at existing pressure reducing valves.	Jason Lillywhite
3	Understanding it would be large-scale infrastructure, could steam from cooling towers be 'recaptured' to condense & return to a water store/source?	Great question, Michelle! It is technically possible, but to condense that steam back into a liquid, you have to cool it down, which requires massive heat exchangers and extra energy. Since the cooling tower's job is to reject heat, adding another cooling step to catch the water creates a huge energy penalty. Usually, the cost of the extra energy far outweighs the value of the water you get back.	Jason Lillywhite
4	There is a big difference between CSG water impacts and shale gas impacts. Do you think that the policy people recognise this?	I recall that (at least in the usa), the EPA tries to separate them but I think most of these issues are dealt with at the state level (not federal as much) without a lot of consistency. I will need to let Chris answer this one!	Jason Lillywhite
		Policy understanding of the nuances of different energy sources is often lacking. It is important that development of any energy source is required to have a clear and transparent statement of life cycle water use so that it can be considered in comparisons with other energy sources.	Chris McAuley
5	Comment on whether Policy recognises the loss of groundwater from drawdown and interception from Coal mining . NSW central west mines create significant and permanent dewatering and drawdown of local and regional aquifer systems with modelling prediction 100s years to stabilise an altered groundwater network - e.g. cumulative water extraction licences coal mine in Ulan Wollar area NSW extract > 15 GL/year - water is discharged to river system affecting flow regime and water quality, also requires additional energy for water treatment It is three adjoining coal mines Ulan Coal (Glencore) Moolarben (Yancoal) and Wilpinjong (Peabody) - also have discharge licences 18 GL Just one more Glencore Ulan 2024 groundwater input was 9271 ML - runoff rainfall 2895 that significant interception and impacts to the water system	The focus of this presentation was on the transition AWAY from fossil fuels, primarily coal in Australia, to lower emission energy production. The water use in coal mining (as opposed to power production) has often been a secondary consideration (an "impact") in historical energy production. There is a clear positive in that in moving away from coal to other sources will result in less water requirements for mine stability. The caveat is that there is still a transition period as coal mines close, often the preferred rehabilitation approach to maintain long term stability is to fill them with very significant quantities of water. Effective water use in rehabilitation of mines is another challenging topic.	Chris McAuley
6	Data centre advocates will typically only present the direct water use component, not the indirect water use for increased energy consumption. The indirect water use component can be substantially larger than direct potable water use. Why is so difficult to get accurate data on the combined direct and indirect data centre water use?	Great point. Direct water is just a meter reading, but indirect water requires calculating the water intensity of the shared power grid, which fluctuates constantly based on the energy mix. From a modeling perspective, coupling a grid-scale energy model with a facility water balance is complex.	Jason Lillywhite
7	Are you able to advise which technique (or techniques) represent a 'reasonable' balance between low emissions and water demand?	Answered in the presentation. Short answer is "it depends". It is often driven by the energy demand pattern - from daily, to seasonal to annual. Ultimately a stable electricity generation grid will include local scale (eg. roof top solar), distributed regional (small to medium supply systems, usually still connected into the grid) and grid power. The location of demand and the availability of the "fuel" generally drives the initial evaluation of options - however where water is used, then this needs to be a comparator right at the initial development of options. Where wind and solar power can meet the need, then this is the best outcome for water use. Where additional capacity is needed, then consideration of the energy source that impacts the water system the least would be preferred, unless there is a prohibitive cost implication.	Chris McAuley

	Where do you envision the 'Policy Reform Specialists' needed to make this change, most effective - which government departments/levels should be looking at this?	Energy generation is primarily a State-based activity, although the Commonwealth underwrites some major generation such as the Snowy Mountains Scheme. For power generation, there is already strong interdependence between States through the power "grids" - particularly the east coast. The role for "Policy Reform Specialists" is to recognise the interdependencies between sectors and resolve the best means to insure they are integrated. At one level, this may involve expanding "strategy documents" such as AEMOs "Integrated System Plan" to expand out from predominantly supply / demand (noting it does talk generation type as well) to include principles for how energy and water policy are to be considered collectively or better still helping define the options that best match energy and water.	Chris McAuley
	Wastewater implications sometimes get overlooked in these discussions on water used for cooling in data centres and heat-intensive generators - increased salinity and sometimes antimicrobial additives. What trends are we seeing in addressing these challenges?	This presentation focussed very much on the use of catchment water. The challenge with wastewater is that large volume systems are usually at the bottom end of catchments and a whole separate distribution system would be needed. However, there is an opportunity when considering new supply, for example gas fired plants, to look at locating them where the wastewater supplies are. This is an opportunity.	Chris McAuley