Ex3: Water - IRP 2010 Input Parameter

Parameter	**Water**
Parameter Value	The usage of water is quantified for each technology, according to the independent EPRI report and existing Eskom plant (see Generation Life Cycle Costs input parameter sheet). The cost of water for existing plant and approved future plant is known and quantified. For plant that is recommended to be built in the proposed IRP 2010 only the usage of water is quantified given the fact that the location of the plant is not known at this stage of the IRP.
Rationale	The predicted water usage of the proposed plan will be analysed in conjunction with the Department of Water Affairs to determine cost impacts as well as timelines for water infrastructure. This analysis may then change the recommended plan. This analysis will require an understanding of location of new generation.

Responses to Public Inputs

Summary of specific comments	Response
It should be assumed that FGD is installed on all new coal-fired options with provision for retrofitting on existing power stations. (90x2030, ELA)	Noted. The generic future coal options are based on the costs inclusive of FGD.
Costs of NOx and SOx emissions should be included as externality costs for IRP2 (90x2030)	Noted. These externalities will be included in the externality costs when assessing the different scenarios as part of the criteria assessment phase.
Inclusion of CCS in IRP2 is inappropriate as it is only a theoretical possibility without an assessment of viability in SA. (90x2030, ELA)	Noted. CCS costs are not included in IRP2.
Water used in mining operations should be included in the water use of fossil powered plants (90x2030, CJN!-WC, Coega Development Corporation, ELA, Private-WB, SASOL, SusActMov)	Noted. The water assessment will include water used for mining operations.
Modelling of site-specific water restrictions should be explained (90x2030, CJN!-WC)	As discussed above there will be an assessment of the location specific issues arising from the IRP, inclusive of water restrictions and additional infrastructure cost requirements.
Water usage considerations favours coastal locations (as desalination could easily be included) especially for CCGT and nuclear (Coega Development Corporation)	Noted.
Although dry-cooled CSP has similar water usage to dry-cooled power plants, able to spread water resource burden due to modular capability of CSP relative to large, centralised coal stations (CSP Developers)	Noted.
Coastal sites are possible to allow wet-cooling of CSP, including use of desalination. (CSP Developers)	Noted.
All generations require data on water consumption, not just nuclear (ELA, Coega Development Corporation)	Noted.
Infrastructure needs to be included (mitigation against single source availability in geographic areas). (Exxaro)	Noted.
Quantify the value of water savings from certain technologies (e.g. wind) (MainstRenPower, SAWEA, Windlab Developments SA)	This would be identified in the water assessment in comparing different scenarios. The benefit of low water usage would generally promote scenarios with higher wind capacities.
Distributed generation can overcome most of the water requirements, by using waste heat for process heat in certain industries, and can even increase the water supply to a region through desalination or water purification and driving adiabatic coolers for air conditioning. Rain water can also be harvested form solar collectors to reuse in the plant and adiabatic coolers should be used to further reduce the water requirements, and waste heat can also be used to reduce cooling loads. (Mbani Wesizwe)	Noted.

	Nuclear power plants at the coast alleviate many water constraints. (NECSA, SASOL)	Noted.
	It should be noted that while dry cooling significantly reduces the water demand, it also has a negative impact on efficiency (and CO2 emissions) of a coal-fired power station. (SASOL)	Noted.
	CSP has the potential for dry-cooling, leading to improvements in water usage. (SASOL)	Noted.