

Interactive comment on “Pump schedules optimisation with pressure aspects in complex large-scale water distribution systems” by P. Skworcow et al.

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The paper is a worthwhile extension to the literature on water distribution system operation. I was happy to see the authors apply their method to a real water system as opposed to a trivial test system.

The authors should mention that the price of energy is treated as a function of time which is good but they are neglecting some of the other complexities that exist in real energy tariffs. These would include peak demand charges and block rate pricing among others. They may want to look into Walski (2012).

It would have been very helpful to have provided a schematic map of the distribution
C5

system being studied.

I am concerned about the use of Flow Control Valves (FCV) in models when these valves do not exist in the real system being modeled. These FCV's can produce flows in the model which cannot be achieved in the real system. Is there a real FCV in the system or are they being used to “trick” the model into producing flows? Are there real FCV's as shown in Figure 2? Valves like this tend to waste energy.

In mentioning commercial optimization packages, the authors should also have mentioned the Darwin Scheduler in WaterGEMS from Bentley Systems.

The authors list that 315 and 40 valve in their original and reduced models but they should indicate which are isolation valves, which are open-closed, and which are control valves, which can have a continuum of settings.

It was not completely clear which decision variables are solved for using equation (8) as the objective function. For pumps, was it on-off status or speed? For valves, was it open-closed or some indicator of relative opening?

Walski, T.M., “Understanding Energy Pricing for Water Pumping,” Water Distribution System Analysis Conference, Adelaide, SA, Australia, Sept 2012.

Interactive comment on Drink. Water Eng. Sci. Discuss., 7, 121, 2014.