

## ***Interactive comment on “Protecting environmental flows through enhanced water licensing and water markets” by T. Erfani et al.***

### **Anonymous Referee #1**

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This manuscript addresses an interesting topic related to the impacts of institutional change to water allocation approaches in the UK. At the heart of this manuscript is an analysis of the differences between an allocation policy with rights/licenses subject to a constant minimum flow constraint, and one in which the quantity that the license entitles the owner to “scales” as streamflow declines. Results suggest that the scaled approach protects environmental flows more effectively, but at the sacrifice of some economic benefits.

I found the paper to be interesting, and the modeling approach sound, but kept asking what the nature of the contribution might be. The results are useful (i.e. scaled approach improves environmental flows), in particular to the basin in question, but surely the outcome could have been largely predicted before the analysis was undertaken. Is

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identifying the magnitude of the effect alone enough to constitute a novel addition to the literature? I'm not sure. The fact that this manuscript appears to be the third of three papers in a similar vein also gives rise to questions about what differentiates this work from the earlier submissions (both in review). It would be nice to see the authors take a bit more time to make the academic case for the novelty of the work. Presuming that the authors can provide a reasonable rationale, this work is likely to be interesting to some portion of the HESS readership. With regard to specific questions, most of mine revolve around the role of Public Water Supplies (PWSs) in this work. Do I understand correctly that PWS usage (read: urban) comprises 95% of basin demand? If so, does that make this problem less interesting in general? In most water scarce regions the transfers move irrigation-to-urban uses, but here it is urban-to-power. In the regions I am familiar with, an urban supplier would never transfer water to another user under conditions of scarcity out of concern (however unjustified) that the urban supplier might "run out" of water. In this case, it appears that the PWSs enjoy some sort of favored status under drought, however, and are not subject to reductions in their supply. If true, is that the reason that they feel comfortable in selling water to energy producers during drought (i.e. they have so much that it doesn't matter). And, if that is the case, it would seem that the PWSs are set up to collect substantial economic rents from this arrangement. Some more discussion of this would assist in an understanding of Figures 5 & 6. This point might also have bearing on the transferability of the results to other water scarce regions, especially if the magnitude of the economic losses imposed by a move to scalable allocations in the point of the paper (this value is likely to be substantially higher than in the more common scenario involving irrigator-to-urban transfers in a market where urban users receive no such protection).

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2967, 2014.

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