

Interactive comment on “WaterMet²: a tool for integrated analysis of sustainability-based performance of urban water systems” by K. Behzadian et al.

Anonymous Referee #1

Received and published: 19 February 2014

The authors present an interesting tool for evaluating urban water system performances. Water distribution system and wastewater system are simultaneously taken into account and several evaluation criteria are considered in order to compare different intervention strategy. The title and the abstract clearly reflect the content of the paper and the manuscript is logically structured. I just would like inviting the authors to revise the case study application in order to better explain the role of the WaterMet2 model for the quantification of the criteria. Indeed, WaterMet2 quantifies the principal water related flows and to this end, according to section 2 “WaterMet2 methodology”, the water supply system is modeled featuring four type of key storages and three types of water flow routes. Similarly, the wastewater system is modelled featuring different

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components and links (see also figures 1 and 2). In the application, the authors state that for the whole Oslo water system just one subcatchment was considered, but it is not clear, at least to me, the role played in the criteria evaluation by the WTW, service connections, trunk mains and distribution mains, on which the model is built. Similar considerations apply for the sewer system. Indeed, it seems that the hydraulic evaluation criteria 3, 4, 5 and 6 are computed just according to the mass balance, being all function of the water supplied and water consumption; in such a case what is the role of the model structure and elements characterizing WaterMet2?

Furthermore, and strictly related to the previous comments, assumptions for leakage evaluation according to water consumption is somewhat questionable. In fact, the authors assume that leakages are simply a constant percentage of water supply and thus, being the water system the same, a reduction of water consumption leads to a leakage reduction. Indeed, it is generally the opposite: for example, at daily level, during night hours the water consumptions (and thus the water supplied) are lower but leakages are typically higher than during peak hours, due to the lower head losses and higher pressure heads.

Interactive comment on Drink. Water Eng. Sci. Discuss., 7, 1, 2014.

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