Original comments in black, author responses in ***bold italics***.

The authors present two models for estimating household water use: (1) an "existing conditions" model which is used to reproduce household water used in San Ramon, CA, and (2) a "least-cost conservation" model, which is used to estimate conservation savings under different water shortage scenarios. This research is important for addressing water scarcity challenges. The methods also illustrate practical way that water utilities can optimize their water conservation strategies.
The authors clearly identify the scope of previous research on this subject and the contribution of their research to the overall subject field. The assumptions of the model are clearly defined and based on previous work of others. The "existing conditions" model reproduces the CDF of household water use quite well in both summer and winter conditions. The "least-cost conservation" model is used to estimate an upper bound on the water savings of a customer base that minimizes its costs related to water use. The authors also identify useful insights based on the results of this model. For instance, they note which water-use efficiency improvements (such as high efficiency toilets or stress irrigation) could be most effective in conserving water under normal pricing. The model is also utilized to estimate the effectiveness of indoor device rebate programs.
There were some areas that were unclear to me, in particular with regards to the implementation
of the integer programming model. While someone more familiar with
this method may understand the implementation better, I nonetheless suggest some clarifications in my comments below. The manuscript is well written (though see typographical errors below) and I have no major comments.

1. It would be useful to include a citation for the statistical approaches mentioned on page 4873, line 5.

This actually was a typo—it should have said "inductive", not "deductive". The statistical approaches referenced in this sentence were the other examples previously mentioned in the introduction. The sentence was struck from the manuscript, as other reviewers did not like the language about being "novel" and it seemed a bit repetitive.

2. I suggest the authors explicitly note the calibration strategy used for the existing conditions model (e.g., manual calibration) and that only one parameter needed tuning (the percentage of landscaped area that is lawn), which was fixed to the amount given by EBMUD in 2002.

Although important, the landscape water use calibration was not intended as the main focus of the paper. We could have tuned the parameters to get a better fit, but our intention with the study was providing insights on cost effectiveness of short and long term residential water conservation actions. . However, your comment about describing the methods is well taken—a sentence was added making clear that the calibration was manually done.

3. The least-cost conservation model utilizes a Monte Carlo method, but I am unclear of the random variables that are sampled in each iteration.

Formerly Sections 2.1.2 and 2.1.3 (now 2.1) outlines the process, An example of these parameters is shown in equation 1, non-sampled elements in the equation are the physical constants-and/or conversion factors (in brackets).

4. It took me some time to understand the relationships and distinctions between the existing conditions model and least-cost conservation model (While Table 1 is very useful in illustrating what the models do, I'm referring to how the models are constructed and applied). I think that a more detailed written explanation of Figure 1 would clarify this issue, as well as reinforcing this distinction in a couple more locations as described in the following two notes.

Other reviewers have mentioned this as well—Figure 1 has been folded in a bit more in the revised manuscript in section 2: Modeling overview

5. In section 2.2 (P4877, L7), the authors state: "The 'least-cost conservation' component incorporates household behavior into the 'existing conditions' component." If I am understanding the model correctly, I think it would be more appropriate to state: "The results from the existing conditions model are used as a starting point (or original household water use) for the 'least-cost conservation' model". Since the models are somewhat intertwined, being more deliberate about such distinctions will help the reader. I suggest such a clarification be made in section 2.2 and in section 3.

Thanks for the suggestion. You do have an understanding of the modeling procedure, and the language you suggest is a bit more clear than what was in the manuscript. The language was tidied up in the manuscript.

6. In section 4.1 (P4884, L21), the authors state: "The results from 'base condition' runs are a benchmark for all alternative runs." I think it should be clarified that the base condition run is a run of the least-cost conservation model using prices from 2010. It should also be clear that the existing conditions model is the benchmark for understanding the savings from the base condition run. Then, in section 4.2, the above quoted sentence could be appropriately modified and included as: "The results from 'base conditions' runs are a benchmark for estimating the effectiveness of indoor device rebates."

Added in additional language to make clear the relation between the existing condition model, the base conditions run, and the runs with rebate scenarios (which are actually re-runs of the least-cost conservation model with different inputs). Figure 1 has these rebate scenarios as policy analysis scenarios on the top of the least cost conservation.

7. In the integer programming optimization, I was expecting a constraint (section 3.3) connecting the water use U with water savings W, and water savings W with conservation actions S and L. I don't see how the optimization can work without this connection, and I think this connection should be more clearly noted within section 3.

You are quite right. The equations were mistyped. U >= O – W, where O = original water use. The equations have been rectified—thank you!

I suggest that more details be added to some of the figures, in particular:
Figure 1: The inputs, processes, and outputs are not clearly defined in the figure, nor in the text that references it.

This figure is intended to be "high-level", so a conscious decision was made not to get too detailed with the figure.

Figure 2: I suggest adding that the results in this figure are from the existing conditions model.

This was done in the revised manuscript.

Figure 3: It is not fully clear whether these results are from winter, summer, or an average of the two.

These are average annual—this is now noted

Figure 7: I suggest clarifying that the money invested is invested as rebates (in other words, it is not the money invested by the household in purchasing the device).

Noted and changed

Grammatical and typographic notes
1. Page 4870, line 4: remove comma
2. Page 4873, line 23: "...model *that* builds..."
3. Page 4874, line 6: the sentence wording should be reviewed (e.g., "of a models" changed to "from a model"?)
4. Page 4885, line 16: missing space at beginning of sentence

Thank you for catching those up. These corrections have been made.