# Discussion Guide: Safety Factor Considerations

## Purpose of Discussion

WRIA 14 WREC members have been discussing how to address the uncertainty that will be inherent in some elements of the watershed plan. While not required, the Committee may choose to add one or more safety factors to account for uncertainty in such things as permit-exempt well/connection growth projections, consumptive use estimates, anticipated benefits from the implementation of offset projects, or climate change. If a safety factor is included, it could help ensure that the Net Ecological Benefit (NEB) requirement is met by the plan, even if there is uncertainty in some of the assumptions used in the analysis.

Two key questions for the committee to ask are 1) do you want to consider adding in watershed plan safety factor? and 2) if so, what should the basis of that safety factor be?

## Background

If the Committee chooses to include a safety factor within the watershed plan, there are several potential ways to do this.

Some committees have considered adding safety factors into individual components of the plan, such as the permit-exempt well/connection growth estimates and the consumptive use estimates. However, there are downsides with this approach, since multiple factors would change results during multiple stages, compounding the process in ways that would be difficult for committee members and Ecology to track. Furthermore, many counties are reticent to stray too far from the growth estimates used in the comprehensive planning process. Also, Ecology has indicated that it expects to see strong technical justification for the various numbers presented in the plan. It may be simpler and more transparent to add a single safety factor to the final offset number presented in the plan, rather than individual components along the way. The committee may choose to do so in an effort to provide best estimates for permit-exempt well/connection growth and consumptive use estimates that are not inflated with safety factors, but rather add a safety factor to the final offset number or range of numbers.

As the Committee considers whether and how to include a safety factor, it is important to understand that some individual components in the plan are inherently conservative (i.e. err on the side of estimating more water use rather than less). For example, the method for estimating consumptive use relying on the outdoor irrigation method tends to produce high estimates, since that method assumes outdoor watering rates equal to those for commercial turf grass production.

The Committee should also consider that the plan may include an adaptive management component that will recommend changes and adaptation during plan implementation if some of the assumptions turn out to be inaccurate, if projects are not implemented as planned, or other new information or conditions emerge.

## Options for Committee Consideration

1. **Choose a percentage to add to the offset number**. Some people argue that it is not possible to know the future trends in growth, climate change, irrigation, etc. so it will be simplest to choose a percentage to add to the offset number. The committee would need to determine this percentage, which could be based on data from population growth estimates, climate data, irrigation efficiency data, etc. Similarly, the committee could choose to add a percentage to the consumptive use estimate (instead of to the offset number).
2. **Change specific factors and assumptions in the permit-exempt well/connection projections or consumptive use analysis.** For instance, the committee could choose to use a more conservative permit-exempt well/connection growth projection, assume a larger outdoor irrigation area, and/or a greater outdoor consumptive rate to account for uncertainty in these assumptions. If committees have local justification determining safety factors, adjustments to each of the assumptions may more accurately reflect the local reality. However, as noted above, making slight adjustments to each of the assumptions may lead to difficulty with tracking and a significant inflation of the best estimates; clear documentation of the reasoning and application will be essential.
3. **Add a safety factor to outdoor irrigation numbers by incorporating a minimum irrigation amount for all new wells.** Based on HDR’s analysis, many homes do not have associated outdoor water use, although this does not account for other small outdoor water use such as for washing cars, potted plant watering, etc. Therefore, assuming some minimal outdoor watering area (e.g. 0.05 acres) for all new permit-exempt wells/connections would introduce a de facto safety factor, the size of which would depend on the minimum outdoor watering area assumed.
4. **Add a safety factor based on the extreme high-range water use estimate based on the maximum legal water-use allowance** (the maximum gallons per day (950) and outdoor irrigation allowance (0.5 acres)). This approach would present the amount of water that could be used if all homes in the future used the maximum amount legally available. The primary concern with this approach is that it could result in an offset target that may be extremely difficult for the committee to meet and decrease the likelihood of a successful plan.

## Questions for the Committee

1. Do you think a safety factor should be included?
2. If so, which of the above options do you prefer?
3. Do you have other options to propose to the group?