

## Excerpt from the August 12, 2015 Q/A

### Topic 3: Production and Yield

#### Question: What's the difference between production and yield?

Answer: The short answer is that yield is the goal. Yield reflects how much an option contributes to closing the gap between peak season supply and demand. Yield is thus an indicator of the benefit the community receives in terms of reducing peak season shortages. Annual Production is the means to that end; it reflects the expected total amount of water produced by an option over the course of a year. Here's what's important to understand:

*Production* is what matters for estimating things like operating costs and energy usage. But what we're buying with the money we're spending is *yield*. That's what we really care about, since it measures the increase in reliability (the reduction in peak-season shortages) that Santa Cruz customers receive, which is the ultimate benefit of any resource portfolio.

The yield is not the annual volume the new source(s) produce. Instead, it is a function of how the new supply/ infrastructure interacts with the rest of the Santa Cruz system. If two alternatives generate the same yield, but one does it with much less production, the two are of equal value to Santa Cruz.

So to compare the economic value of two portfolios, dividing total annualized costs by production is misleading. What really matters is the annualized cost per unit of yield. This tells us what it costs ratepayers to buy each million gallons of yield. If this value is lower, it means that ratepayers are getting a better deal (all else equal).

For instance, when we look at BB #1 (in-lieu), the average annual production (the water Santa Cruz takes back from the aquifer to serve demand) is low (90 mg), because when that source is operated conjunctively with Loch Lomond, we don't need too much of it in most years. So when we divide the annualized cost by that small number, we get a really big number.

But the average *yield* is much higher (290 mg) because of the fact that this source allows us to keep more water in Loch Lomond to use when needed. And in a drought, the combined benefit of the draw from the aquifer and the added water that's sitting in Loch Lomond is much higher (780 mg worst-year yield). When the annualized cost is divided by those *yield* numbers, we get the unit costs that we care about, and these results are more in line with the other building blocks.

The costs per unit of yield numbers of all the building blocks (the green bars in the building block summary table) are much more similar to each other than the costs per unit of production, and this is important to understand and focus on.