Question 7:

Are our proposed process heat electrification demand variations, as shown in Figure 5 reasonable?

In relation to the climate change commissions report this projection seems conservative. I do agree with the reduction in high temperature process heat electrification in the disruptive scenario.

I would question Table 4 here where accelerated decarbonization in SI is 'N' for all cases. Surely disruptive case would include this as an option, and if the CCC recommendations are implemented this would also be included in the Environmental case also.

Page 32:

One comment about geothermal generation seems inaccurate. From my experience with Contact and Mercury there is very little waste heat available. I suppose this is dependent on your definition of waste heat. Yes, the spent geothermal fluid has a temperature higher than ambient, but the operators would not allow this fluid to be utilized in any form as it would cause significant operational concerns.

Most notably reducing the temperature of the reinjected fluid leads to silica scaling and plugging of reinjection wellbores. It should be evident that this is undesirable as these wells are expensive to drill.

See this publication for more details:
https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.533.3386&rep=rep1&type=pdf

Also just talk to Mercury or Contact.

Question 17:

Is our proposed approach whereby a relevant mix of demand, energy supply and peak/dry year reserve supply scenarios is determined for each investigation reasonable?

In general, a good job has been done of separating the dry year and peaking issues. I was just surprised to see hydrogen considered alone (#6 on Table 7). When the section on hydrogen above seems to indicate a synergy with renewable overbuild.

Finally I would like to see hydrogen as a process input separated from hydrogen as a electricity storage medium. Using produced hydrogen in a fuel cell or combustion unit to produce more energy seems much less efficient than simply using demand response hydrogen plants. And there is definitely some complexity in developing plants with such flexible capabilities in addition to the differences between shutting down for ~6 months (dry year) and 2-3 hours during a daily peak. But I think demand response hydrogen should be considered separately than a "hydrogen battery".