

1. The white papers do not provide an adequate technical justification for the simplified equipment availability and reliability model used (N equipment $P = 0.1$, N+1 $P = 0.01$). The technical justification should take common cause failure into account, which it currently does not.
2. The papers have reference to "other equipment" or "other functions" that "may need further evaluation to determine if use is appropriate", this may expand the scope of the documents inappropriately, and more information is needed as to what equipment and functions these statements are referring to. The white papers need to provide more clarity on what equipment is within scope and the effect on the associated HEP. Additionally, no PRA credit should be allowed for portable equipment that is housed at the regional response centers.
3. Licensees are taking actions to meet Commission orders put in place after the events at Fukushima Daiichi. Those actions were taken specifically for BDBEE and do not immediately translate into an effective program that can be credited in other regulatory applications. This includes the validation activities using NEI 12-06 Appendix E. Since licensees are seeking to request credit for FLEX equipment for sequences other than BDBEE, additional guidance beyond that already included in the whitepapers and further clarifications are appropriate.
4. The whitepaper notes the following: *"The initial step is to perform an overall feasibility assessment to determine if a detailed evaluation is warranted. This feasibility assessment performs a high level evaluation of the specific scenarios that credit mitigating strategies equipment, whether the equipment can be used to mitigate a loss of function given the conditions of the scenario, and whether the specific equipment has the capability to perform the function. The considerations in this section are not intended to be all-inclusive."* The assessments described here are very good and necessary in order to evaluate FLEX for internal events and fire, which are the likely risk contributors but there are others. These assessments will be time consuming as they were not performed for compliance with the order.
5. The technical basis provided to use a baseline human error probability (HEP) of 0.1 is not adequate.
6. Post-initiator HEPs should include both diagnosis and response execution failures. The white paper on semi-quantitative evaluation appears to omit the diagnosis element essential for successfully performing the human factors evaluation.
7. When procedures developed for BDBEE are integrated with EOPs, the frequency of a subset of core-damage sequences associated with ELAP (sequences where the operators have shed DC loads) may increase. PRA models will need to be adjusted to properly account not only for the use of FLEX equipment, but also the possible impacts to changes put in place (e.g. ELAP scenario, DC load shedding unavailability of certain equipment) due to the equipment and strategies.
8. There is a lack of testing/reliability information for the equipment being utilized for the strategies. This combined with a lack of associated human actions performance data makes it

difficult to ascertain what appropriate credit should be given. The industry should take the initiative to collect data and operating experience in order to minimize uncertainties on the amount of credit that can be provided for FLEX equipment.

9. Detailed, event specific, procedural guidance must be available and adequate for design basis events or conditions in which FLEX is being credited. The white papers do not provide sufficient justification on the quality of written procedures or operator training to support the relatively high success probabilities proposed.
10. The whitepaper states that “The first requirement is that the FLEX mitigation strategy or equipment deployment would be procedurally directed in the scenarios of interest and that sufficient cues and indications are available for the direction of the actions.” The NRC fully supports this statement and plans to emphasize this in providing credit for FLEX equipment. In that context, we suggest the following change – “As is the practice for incorporation into PRA models, manual actions must be procedurally directed **for the scenario of interest**, trained upon, and able to be successfully performed in order to receive realistic credit for the risk-informed decision.”
11. The Performance Shaping Factor (PSF) information provided in the white papers are not specific enough, adequate, or in some cases reduce the failure probability inappropriately.