

Model SLR “New & Significant” Assessment Approach For SAMAs

Meeting of
NEI License Renewal Environmental
Task Force and NRC Staff
May 19, 2016

Overview

- 10 CFR 51.53(c)(3)(ii)(L) provides that, after severe accident mitigation alternatives (SAMAs) have been considered once by the NRC in a National Environmental Policy Act (NEPA) document, further consideration of SAMAs is not required.
- CLI-12-19 concluded that 10 CFR 51.53(c)(3)(ii)(L) functionally converts the issue of SAMAs to a Category 1 issue in subsequent license renewal proceedings.
- 10 CFR 51.53(c)(iv) requires an Applicant's License Renewal Environmental Report (ER) to identify any "new and significant" information concerning Category 1 issues of which the applicant is aware.

Overview (continued)

- To support the Second License Renewal (SLR) efforts for nuclear power plants, the NEI License Renewal Environmental Task Force has developed a model approach for:
 - Identifying “new” information; and
 - Assessing whether “new” information is “significant” with respect to SAMA analyses previously considered by the NRC.
- This presentation outlines the model approach, which incorporates experience gained from the “new and significant” information review conducted by the applicant and NRC Staff during the Limerick Generating Station license renewal review.
- Results obtained using the model approach will be summarized in Applicant’s Environmental Reports for SLR.

“New” Information

- Under the model approach, the following types of information would be considered “new” with respect to unimplemented Phase 2 SAMAs (from Phase 2 of the first SAMA analysis) :
 - Changes in factors that affect Level 3 risk model consequence results, such as changes in:
 - Population
 - Farm and non-farm wealth value
 - Generic economic inputs (e.g., inputs based on consumer price index)
 - Estimated evacuation timing and speed
 - Changes in Level 3 risk modeling methodology
 - Changes in factors that affect cost-benefit calculations (as described in NUREG/BR-0058)
 - Changes in site-specific circumstances that affect plant risk estimates, such as:
 - Newly identified hazards (e.g., previously unanalyzed geologic fault),
 - Plant risk model updates, and
 - Plant modifications with risk-significance that have not been previously modeled

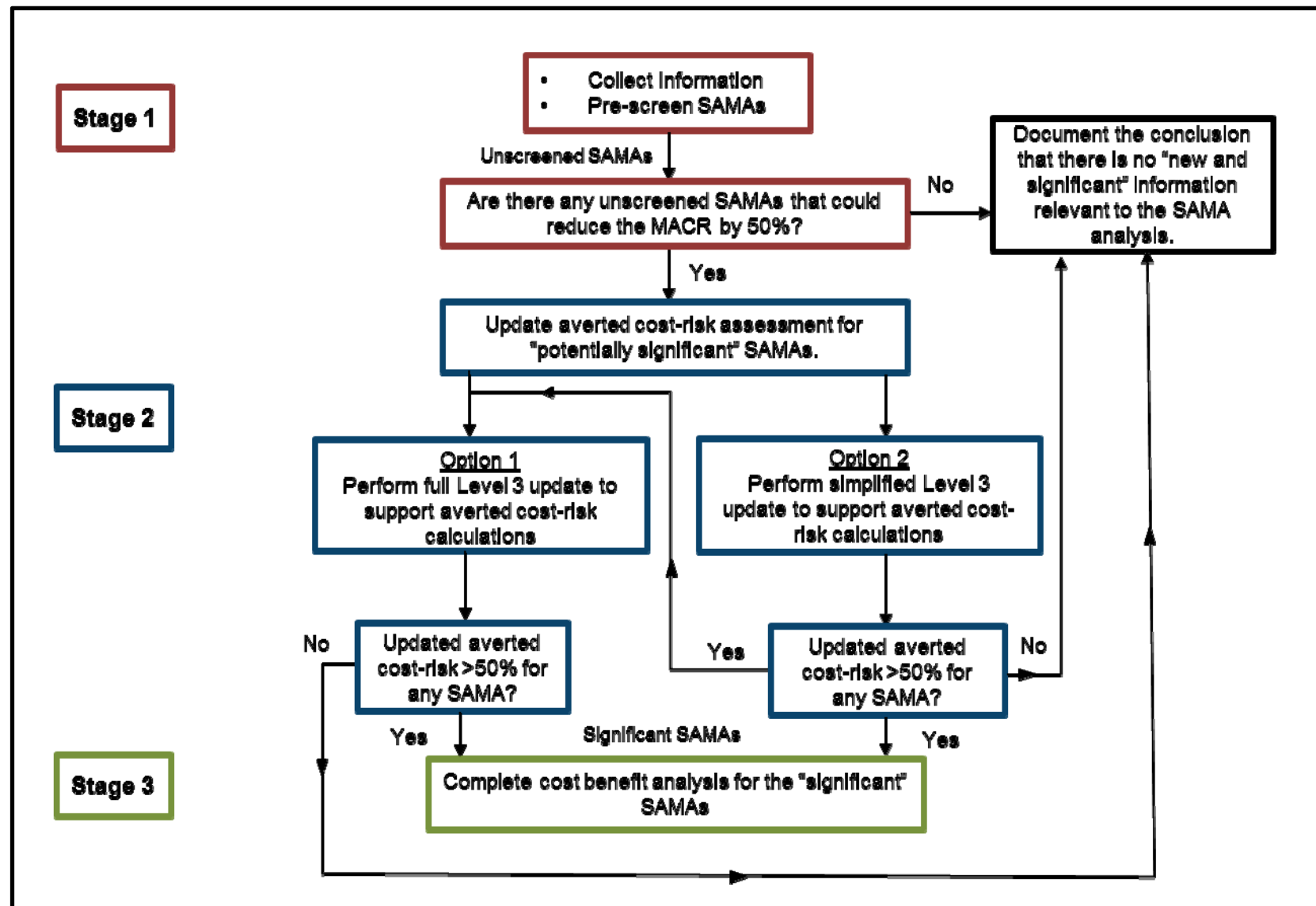
“New” Information (continued)

- Also, potentially cost beneficial SAMAs identified in U.S. license renewal applications for plants with similar design (i.e., BWR or PWR) that were submitted later than the SLR applicant’s original SAMA analysis would be “new” information
 - This type of “new” information is referred to as “Industry SAMAs”
 - Industry SAMAs would require further evaluation only if they:
 - Apply to the design of the plant being analyzed;
 - Have not already been implemented at the plant being analyzed; and
 - Cannot be combined with other similar applicable SAMAs.
- Industry SAMAs that require further evaluation are referred to as “Unscreened Industry SAMAs”)

“Significant” Information

- “New” information will be considered “significant” if:
 - The information yields a SAMA with an averted cost risk that is 50% or more of the maximum averted cost risk (MACR), AND
 - The same SAMA was previously determined to have an averted cost risk of less than 50% of the previous MACR
- This test is based on well established indicators of Probabilistic Risk Assessment (PRA) significance

Model Approach Flowchart



Stage 1

- Collect “new” information
- Pre-screen SAMAs
- Evaluate risk reduction
 - Use PRA risk insights and/or risk quantifications from Level 1 and Level 2 models to estimate the percentage of MACR represented by the averted cost risk for:
 - Unimplemented Phase 2 SAMAs (from Phase 2 of the first SAMA analysis), and
 - Unscreened Industry SAMAs
 - If it can be shown that a particular SAMA would not reduce the core damage frequency (CDF) or any of the important release category frequencies in the Level 2 model of record by more than a factor of two, then:
 - Implementing that particular SAMA could not have an averted cost-risk of 50% or more of the MACR, and
 - That particular SAMA is not “significant” information relevant to the previous SAMA analysis
 - If all Unimplemented Phase 2 SAMAs and Unscreened Industry SAMAs are shown to be not “significant” (i.e., there is no “new and significant” information relevant to the previous SAMA analysis), **STOP**
 - Otherwise, **GO TO Stage 2**
- Prepare documentation

Stage 2

- Collect “new” information
- Perform updated Level 3 consequence analysis modeling using one of two options
 - Option 1 = Full Level 3 update
 - Option 2 = Simplified Level 3 update
- Update the MACR
- Evaluate Unimplemented Phase 2 SAMAs and Unscreened Industry SAMAs (“potentially significant” SAMAs)
 - SAMAs with averted cost risk values that are 50% or more of the updated MACR are “significant”
- If any Unimplemented Phase 2 SAMA or Unscreened Industry SAMA is “significant,” **GO TO Stage 3**
- If no Unimplemented Phase 2 SAMA or Unscreened Industry SAMA is “significant,” **STOP**
- Prepare documentation

Stage 3

- Evaluate whether “significant” SAMAs would be potentially cost-beneficial using methodology in NEI 05-01
- Prepare documentation
- Follow existing plant processes to consider potentially cost-beneficial SAMAs for implementation

Next Steps

- Obtain NRC feedback regarding technical approach
- Incorporate NRC feedback into the Model Approach
- Explore possibilities for efficient implementation