

SSHAC Level 2 Site Response Study for Two Example US Sites

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The structured process referred to as the Senior Seismic Hazard Analysis Committee (SSHAC) has been used to evaluate seismic hazards for nuclear and other critical facilities for over 20 years. The hazard community uses the SSHAC process to characterize the center, body, and range of technically defensible interpretations of data and models, facilitating appropriate inclusion of epistemic uncertainty in the analysis. SSHAC studies in the United States have typically been limited to seismic source characterization and ground motion models, leaving the important contribution of site response outside the SSHAC process. Because site response can significantly impact the seismic hazard, we expect the seismic hazard analysis will benefit from including site response within the SSHAC process. An example SSHAC Level 2 site response project was initiated by the US NRC in late 2019 with the first and only SSHAC workshop being held in January 2020. The SSHAC process is being implemented for site response analyses at two sites, one site in the Western United States and the other site in the Eastern United States. We will present the key considerations in developing logic trees developed for the site response analyses along with preliminary results. These two examples illustrate how differing amounts of geophysical and ground motion data affect logic tree development and the site response evaluation. The resulting site amplification distributions will be implemented into a Probabilistic Seismic Hazard Analysis (PSHA) using multiple approaches to develop hazard curves for the two sites.