

## Post Fukushima Flooding and Seismic Hazard Reevaluation Status

### Flooding Hazard Reevaluation

- The licensees for all operating power reactor sites have completed their hazard reevaluation and have submitted their flood hazard reevaluation reports (FHRR).
- The NRC used a graded approach to address flood hazard results that exceed the current design basis.
- The licensees for 45\* operating reactor sites completed focused evaluations (FE) to address local intense precipitation and to leverage available physical margin to protect against the reevaluated flood levels. All of the expected focused evaluation reports have been submitted. The NRC has completed its review of all of the focused evaluation reports.
- The licensees for 6 operating power reactor sites completed integrated assessments (IA) to address the reevaluated flooding hazard impact on their sites. All of the expected integrated assessment reports have been submitted. The NRC has completed its review of all of the integrated assessment reports.

### Seismic Hazard Reevaluation

- The licensees for all operating power reactor sites have completed their hazard reevaluation and have submitted their Seismic Hazard and Screening Reports (SHSR).
- The NRC used a graded approach to address seismic hazard results that exceed the current design basis.
- The licensees for 34 operating power reactor sites completed the expedited seismic evaluation process (ESEP) screening and evaluation. All of the expected ESEP reports have been submitted and the NRC has completed its review of the ESEP reports.
- The licensees for 15\* operating power reactor sites completed seismic probabilistic risk assessments (SPRA). All of the expected SPRA reports have been submitted. The NRC has completed its review of all of the SPRA reports.
- The NRC requested that the licensees for 49 operating power reactor sites submit one or more limited scope evaluations (i.e., high frequency evaluations and spent fuel pool evaluations). All of the limited scope evaluations have been submitted and the NRC has completed its review of these limited scope evaluations.

### Mitigation Strategies Assessments

- As noted in the seismic hazard (ADAMS Accession No. ML19140A307, dated July 3, 2019) and flood hazard (ADAMS Accession No. ML19067A247, dated August 20, 2019) binning letters, the staff has suspended its review of the remaining MSAs based on the final approved MBDBE rule. For the reviews not yet completed, or not yet submitted, the staff evaluated the mitigation strategies, as appropriate, as part of its review of FE, IA, or SPRA reports.
- Licensees are no longer expected to submit MSAs associated with their reevaluated hazards.

\* The NRC granted Entergy's requests to defer the submittal dates for remaining seismic and flooding reevaluation activities for Indian Point and Palisades to dates beyond the planned permanent shutdown dates in 2021 and 2022.

A table with the status of the hazard reevaluations is provided on the following pages. Site names that are highlighted in green have completed all post-Fukushima activities. The NRC has issued a completion letter to those sites highlighted in dark green.

## Flooding and Seismic Hazard Reevaluation Status for Operating Reactors – Regions I and II

Region I		Flood Hazard		Seismic Hazard				Region II		Flood Hazard		Seismic Hazard			
		FHRR	FE/IA	SHSR	ESEP	LSE	SPRA			FHRR	FE/IA	SHSR	ESEP	LSE	SPRA
Beaver Valley	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Browns Ferry	1 2 3	Yes	Yes	Yes	Yes	Yes	Yes
Calvert Cliffs	1 2	Yes	Yes	Yes	Yes	Yes	NR	Brunswick	1 2	Yes	Yes	Yes	Yes	Yes	NR
FitzPatrick		Yes	Yes	Yes	Yes	Yes	NR	Catawba	1 2	Yes	Yes	Yes	Yes	Yes	NR
Ginna		Yes	Yes	Yes	NR	Yes	NR	Farley	1 2	Yes	Yes	Yes	NR	NR	NR
Hope Creek		Yes	Yes	Yes	NR	Yes	NR	Harris		Yes	Yes	Yes	NR	Yes	NR
Indian Point	2 3	Yes	Note 1	Yes	Yes	Note 2 Note 2	Note 2 Note 2	Hatch	1 2	Yes	Yes	Yes	Yes	Yes	NR
Limerick	1 2	Yes	Yes	Yes	NR	Yes	NR	McGuire	1 2	Yes	Yes	Yes	Yes	Yes	NR
Millstone	2 3	Yes	Yes	Yes	NR	Yes	NR	North Anna	1 2	Yes	Yes	Yes	Yes	Yes	Yes
Nine Mile Point	1 2	Yes	Yes	Yes	NR	Yes	NR	Oconee	1 2 3	Yes	Yes	Yes	Yes	Yes	Yes
Peach Bottom	2 3	Yes	Yes	Yes	Yes	Yes	Yes	Robinson		Yes	Yes	Yes	Yes	Yes	Yes
Salem	1 2	Yes	Yes	Yes	NR	Yes	NR	St. Lucie	1 2	Yes	Yes	Yes	NR	NR	NR
Seabrook		Yes	Yes	Yes	Yes	Yes	NR	Sequoyah	1 2	Yes	Yes	Yes	Yes	Yes	Yes
Susquehanna	1 2	Yes	NR	Yes	NR	Yes	NR	Summer		Yes	Yes	Yes	Yes	Yes	Yes
Three Mile Island		Yes	Yes	Yes	Yes	Yes	NR	Surry	1 2	Yes	Yes	Yes	NR	NR	NR
								Turkey Point	3 4	Yes	Yes	Yes	NR	NR	NR
								Vogtle	1 2	Yes	Yes	Yes	Yes	Yes	Yes
								Watts Bar	1 2	Yes	Yes	Yes	Yes	Yes	Yes

NR = Not Required

Note 1: The NRC granted Entergy's request to defer the submittal date for remaining flooding reevaluation activities for Indian Point Units 2 and 3 until August 1, 2021.

Note 2: For Unit 3, the NRC granted Entergy's request to defer the submittal date for remaining seismic reevaluation activities until August 1, 2021. For Unit 2, completion of the seismic reevaluation activities is no longer required because of the permanent shutdown of unit 2 on April 30, 2020.

### Flooding and Seismic Hazard Reevaluation Status for Operating Reactors – Regions III and IV

Region III		Flood Hazard		Seismic Hazard				Region IV		Flood Hazard		Seismic Hazard			
		FHRR	FE/IA	SHSR	ESEP	LSE	SPRA			FHRR	FE/IA	SHSR	ESEP	LSE	SPRA
Braidwood	1 2	Yes	Yes	Yes	NR	Yes	NR	ANO	1 2	Yes	Yes	Yes	NR	Yes	NR
Byron	1 2	Yes	NR	Yes	NR	Yes	NR	Callaway		Yes	NR	Yes	Yes	Yes	Yes
Clinton		Yes	NR	Yes	NR	Yes	NR	Columbia		Yes	Yes	Yes	Yes	Yes	Yes
DC Cook	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Comanche Peak	1 2	Yes	Yes	Yes	NR	NR	NR
Davis Besse		Yes	Yes	Yes	Yes	Yes	NR	Cooper		Yes	Yes	Yes	Yes	Yes	NR
Dresden	2 3	Yes	Yes	Yes	Yes	Yes	Yes	Diablo Canyon	1 2	Yes	Yes	Yes	NR	Yes	Yes
Duane Arnold		Yes	Yes	Yes	NR	Yes	NR	Grand Gulf		Yes	Yes	Yes	NR	NR	NR
Fermi		Yes	NR	Yes	Yes	Yes	NR	Palo Verde	1 2 3	Yes	Yes	Yes	NR	NR	NR
LaSalle	1 2	Yes	Yes	Yes	Yes	Yes	NR	River Bend		Yes	Yes	Yes	NR	Yes	NR
Monticello		Yes	Yes	Yes	Yes	Yes	NR	South Texas Project	1 2	Yes	NR	Yes	NR	NR	NR
Palisades		Yes	Yes	Yes	Yes	Yes	Note 3	Waterford		Yes	Yes	Yes	NR	Yes	NR
Perry		Yes	Yes	Yes	Yes	Yes	NR	Wolf Creek		Yes	Yes	Yes	Yes	Yes	NR
Point Beach	1 2	Yes	Yes	Yes	Yes	Yes	NR								
Prairie Island	1 2	Yes	Yes	Yes	NR	NR	NR								
Quad Cities	1 2	Yes	Yes	Yes	NR	Yes	NR								

NR = Not Required

Note 3: The NRC has granted Entergy's request to defer the submittal date for the SPRA until December 31, 2022.