

## Post Fukushima Flooding and Seismic Hazard Reevaluation Status

### Flooding Hazard Reevaluation

- The licensees for all operating 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.
- Forty-nine sites will need to submit a focused evaluation (FE) to address local intense precipitation and to leverage available physical margin. The licensees for 38 of 49 operating reactor sites have provided their focused evaluations.
- The NRC expects that five operating reactor sites will submit integrated assessments (IA) to address the reevaluated flooding hazard impact on their sites. The licensee for one operating reactor site has submitted its integrated assessment. The remaining IAs are scheduled to be completed by December 2018.

### Seismic Hazard Reevaluation

- All operating reactor licensees 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.
- Thirty-four sites completed the expedited seismic evaluation process (ESEP) screening and evaluation. All of the ESEP reports have been submitted.
- Eighteen operating reactor sites will need to complete a seismic probabilistic risk assessment (SPRA). The licensees for 3 out of 18 sites have submitted their SPRA.
- Forty-nine operating reactor licensees were requested to submit one or more limited scope evaluations (LSE). All of the limited scope evaluations have been submitted.

### Mitigation Strategies Assessments

- Licensees were requested to perform both a seismic and flooding mitigation strategies assessment (MSA) to ensure the reevaluated hazard information was addressed by the mitigation strategies for their sites.
- The licensees for 57 out of 60 operating reactor sites have submitted their Flood Hazard MSA.
- The licensees for 46 out of 60 operating reactor sites have submitted their Seismic Hazard MSA. The remaining seismic MSAs depend on insights to be developed as part of the SPRA process.

A table with the status of the hazard reevaluations is provided on the following pages

## 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	MSA	FE/IA	SHSR	ESEP	LSE	MSA	SPRA			FHRR	MSA	FE/IA	SHSR	ESEP	LSE	MSA	SPRA
Beaver Valley	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Browns Ferry	1 2 3	Yes	Yes	2Q 2018	Yes	Yes	Yes	1Q 2020	4Q 2019
Calvert Cliffs	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Brunswick	1 2	Yes	1Q 2018	3Q 2018	Yes	Yes	Yes	Yes	NR
FitzPatrick		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Catawba	1 2	Yes	Yes	2Q 2018	Yes	Yes	Yes	Yes	NR
GINNA		Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Farley	1 2	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Hope Creek		Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Harris	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR
Indian Point	2 3	Yes	Yes	Note 1	Yes	Yes	Note 1	Note 1	Note 1	Hatch	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR
Limerick	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	McGuire	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR
Millstone	2 3	Yes	Yes	1Q 2018	Yes	NR	Yes	Yes	NR	North Anna	1 2	Yes	Yes	Yes	Yes	Yes	Yes	2Q 2018	1Q 2018
Nine Mile Point	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Oconee	1 2 3	Yes	Yes	Yes	Yes	Yes	Yes	1Q 2019	4Q 2018
Oyster Creek		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Robinson		Yes	Yes	NR	Yes	Yes	Yes	2Q 2019	1Q 2019
Peach Bottom	2 3	Yes	Yes	Yes	Yes	Yes	Yes	2Q 2018	1Q 2018	St. Lucie	1 2	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Pilgrim		Yes	Note 2	Note 2	Yes	Yes	Note 2	Note 2	Note 2	Sequoyah	1 2	Yes	Yes	2Q 2018	Yes	Yes	Yes	4Q 2018	3Q 2018
Salem	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Summer		Yes	Yes	Yes	Yes	Yes	Yes	4Q 2018	3Q 2018
Seabrook		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Surry	1 2	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Susquehanna	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	Turkey Point	3 4	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Three Mile Island		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Vogtle	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
										Watts Bar	1 2	Yes	Yes	2Q 2018	Yes	Yes	Yes	Yes	Yes

NR = Not Required

Note 1: The NRC granted Entergy's request to defer the submittal date for remaining seismic and flooding reevaluation activities and the seismic MSA submittal for Indian Point until August 1, 2020 (Unit 2) and August 1, 2021 (Unit 3).

Note 2: The NRC granted Entergy's request to defer the submittal date for remaining seismic and flooding reevaluation activities and the flooding and seismic MSA submittals for Pilgrim until December 31, 2019.

## 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	MSA	FE/IA	SHSR	ESEP	LSE	MSA	SPRA		FHRR	MSA	FE/IA	SHSR	ESEP	LSE	MSA	SPRA		
Braidwood	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR	ANO	1 2	Yes	Yes	Yes	Yes	NR	Yes	Yes	NR
Byron	1 2	Yes	Yes	NR	Yes	NR	Yes	Yes	NR	Callaway		Yes	Yes	NR	Yes	Yes	Yes	1Q 2019	4Q 2018
Clinton		Yes	Yes	NR	Yes	NR	Yes	Yes	NR	Columbia		Yes	1Q 2018	2Q 2018	Yes	Yes	Yes	2Q 2019	1Q 2019
DC Cook	1 2	Yes	Yes	Yes	Yes	Yes	Yes	3Q 2018	2Q 2018**	Comanche Peak	1 2	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Davis Besse		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Cooper		Yes	Yes	4Q 2018	Yes	Yes	Yes	Yes	NR
Dresden	2 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	2Q 2019	Diablo Canyon	1 2	Yes	Yes	Yes	Yes	NR	Yes	3Q 2018	2Q 2018*
Duane Arnold		Yes	Yes	1Q 2018	Yes	NR	Yes	Yes	NR	Grand Gulf		Yes	Yes	Yes	Yes	NR	NR	Yes	NR
Fermi		Yes	Yes	NR	Yes	Yes	Yes	Yes	NR	Palo Verde	1 2 3	Yes	Yes	Yes	Yes	NR	NR	Yes	NR
LaSalle	1 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	River Bend		Yes	Yes	Yes	Yes	NR	Yes	Yes	NR
Monticello		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	South Texas Project	1 2	Yes	Yes	NR	Yes	NR	NR	Yes	NR
Palisades		Yes	Yes	4Q 2018	Yes	Yes	Yes	4Q 2019	3Q 2019	Waterford		Yes	Yes	Yes	Yes	NR	Yes	Yes	NR
Perry		Yes	Yes	1Q 2018	Yes	Yes	Yes	Yes	NR	Wolf Creek		Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR
Point Beach	2 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR										
Prairie Island	1 2	Yes	Yes	Yes	Yes	NR	NR	Yes	NR										
Quad Cities	1 2	Yes	Yes	4Q 2018	Yes	NR	Yes	Yes	NR										

NR = Not Required

\*The NRC granted Pacific Gas and Electric Company's request for an extension from 3Q 2017 until 2Q 2018.

\*\*Indiana Michigan Power Company is requesting an extension from 2Q 2018 until 4Q 2019 (under review)