



JLD-ISG-2016-01

**Guidance for Flooding Hazard
Focused Evaluation and Integrated
Assessment**

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May 11, 2016

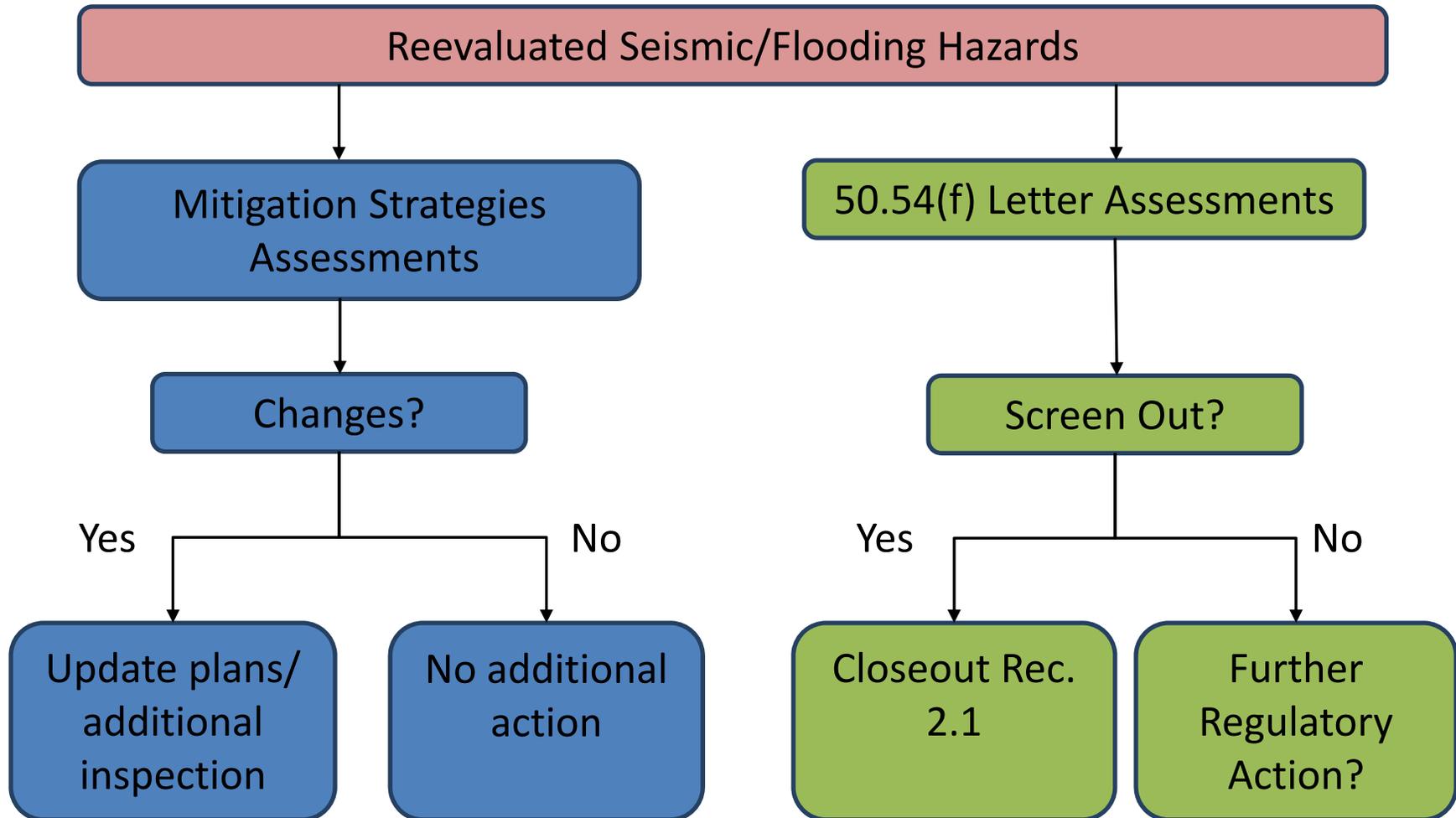
Purpose

- To discuss the draft guidance issued for comment in order to facilitate stakeholder comments
- While we are seeking to facilitate the comment process in today's meeting, it is important to provide them in writing in order to allow us to understand the reasons underlying issues identified

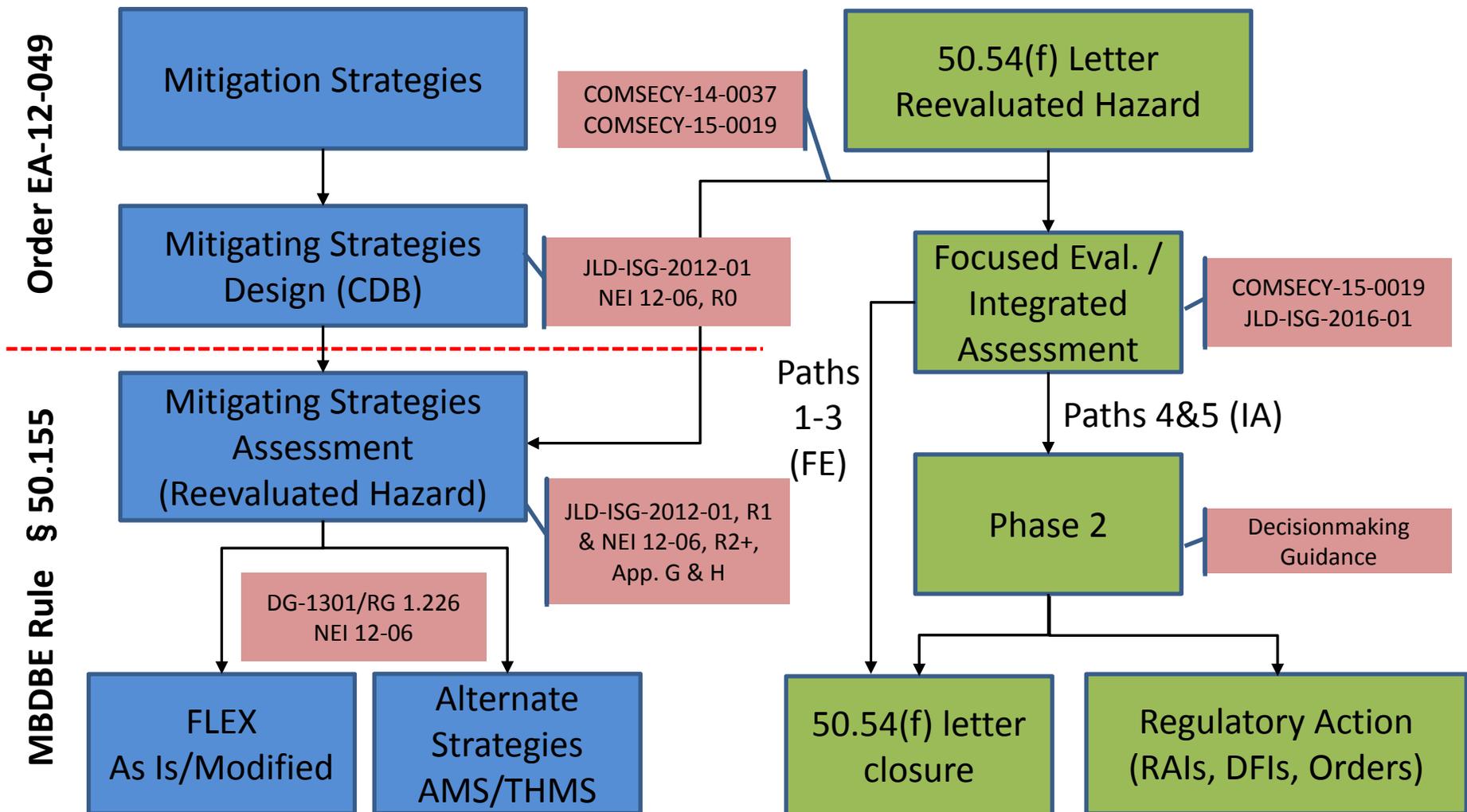
Industry Proposed Guidance: NEI 16-05

- JLD-ISG-2016-01 issued in draft form by Federal Register Notice dated April 22, 2016 (81 FR 23758)
- Comment period runs through May 23, 2016
- Docket Number: NRC-2016-0084 at www.regulations.gov, or
- By mail to address in Federal Register Notice

Closure of Seismic and Flooding Hazard Reviews



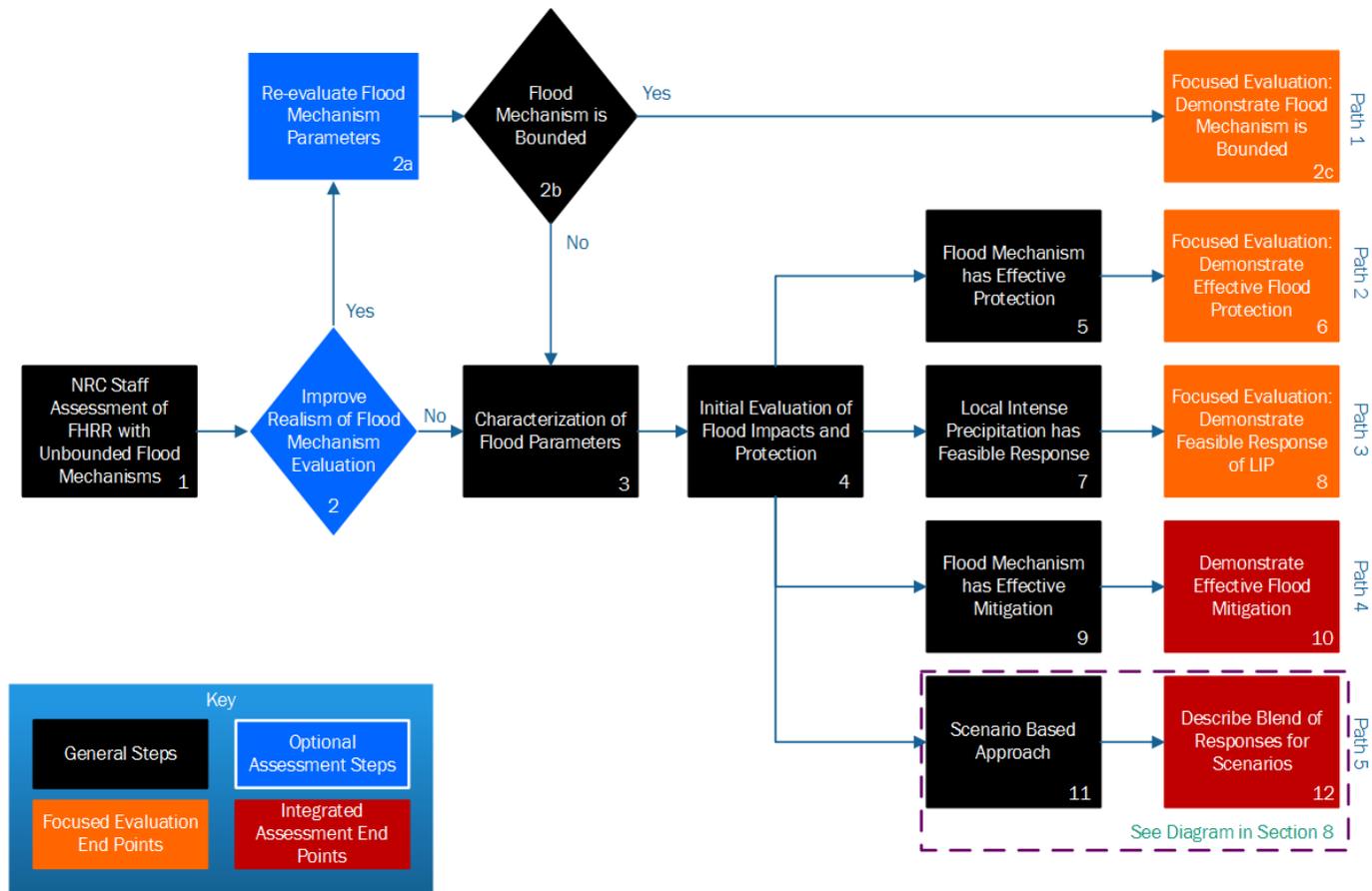
Interaction of Mitigating Strategies and Reevaluated Hazards



Anticipated Regulatory Outcomes

- Under 50.54(f) Letter:
 - Interim actions addressing hazard
 - Commitments to justify improved realism:
 - Plant modifications
 - Programs and Procedures
 - Phase 2 Regulatory decisions
- Under MBDBE Rule:
 - Mitigating strategies for hazard without change to improve realism

NEI 16-05 Flood Impact Assessment Process



Reductions of Conservatism

- SRM-COMSECY-15-0019: “[S]taff should continue to look for additional opportunities to address any over conservatism.”
- Method: NUREG/CR-7046 HHA Process
- Catalog of potential sources of conservatism in NEI 16-05, App. A to consider in HHA
 - Site-specific consideration of changes

Initial Evaluation of Impact and Protection

- NEI 16-05, Section 6.3.1 is acceptable

Determination of Available Physical Margin

- NEI 16-05, Section 6.3.2 and Appendix B are acceptable with clarifications
 - The considerations of the December 23, 2013 RAI (ML13325A891) should account for the reevaluated flood parameters rather than the current licensing basis flood height
 - Reliability of temporary features should consider operating experience

Path 1 – Bounded by Design Basis

- Licensees may use bounding sets of flood parameters to disposition groups of flood mechanisms, leaving others to be dispositioned by other paths

Path 2 – Effective Flood Protection

- NEI 16-05, Section 7.2 and App. B & C are acceptable with clarifications:
 - Resulting qualitative evaluation of site response will be reviewed using engineering judgment (See COMSECY-15-0019)
 - The considerations of the December 23, 2013 RAI (ML13325A891) should account for the reevaluated flood parameters rather than the current licensing basis flood height

NEI 16-05, Appendix C, Evaluation of Overall Site Response

- Relies on Feasibility Determination using NEI 12-06, Appendix E, Validation Guidance
- Consistent with Commission Policy and Regulation on Fire Protection Operator Manual Actions as Expressed in 10 CFR 50.48(c); NFPA 805-2001, § 4.2.4.1.6; and NFPA 805-2001, § B.5.2 as endorsed by the Standard Review Plan NUREG-0800, Chapter 9.5.1.2, Section III.3.2.2.
- NRC staff intent is to balance the burden imposed in evaluating site response with the state of the art in determination of flooding frequencies in order to allow exercising qualitative engineering judgment as described in COMSECY-15-0019 and its associated SRM in the absence of fully developed quantitative information on flooding risk.

Path 3 – Local Intense Precipitation

- NEI 16-05, Section 7.3

As discussed in COMSECY-15-0019, “licensees [with LIP hazards exceeding their current design-basis flood should] assess the impact of the LIP hazard on their sites and then evaluate and implement any necessary programmatic, procedural or plant modifications to address this hazard exceedance. This assessment includes evaluation and justification for: crediting systems that were assumed clogged during the hazard reevaluations; and considering available warning time and flood protection measures, both permanent and temporary, as well as associated manual actions.” Licensees may use the process described in the NEI White Paper, “Warning Time for Maximum Precipitation Events,” dated April 8, 2015 (ADAMS Accession No. ML15104A157), and the related NRC letter dated April 23, 2015 (ADAMS Accession No. ML15110A080) in order to take advantage of warning time for LIP.

Path 3 – Local Intense Precipitation

- Licensees should assess protection of key SSCs as defined in NEI 16-05 with the considerations described above. Protection should include considerations described in Appendix B. If the key SSCs cannot be protected from the LIP hazards, licensees should attempt to mitigate the impact of the LIP on key SSCs. Demonstration of mitigation capability could include reliance on the mitigating strategies assessment LIP evaluation.
- NRC staff reviewing the plant response evaluation for LIP should apply engineering and operational judgment.

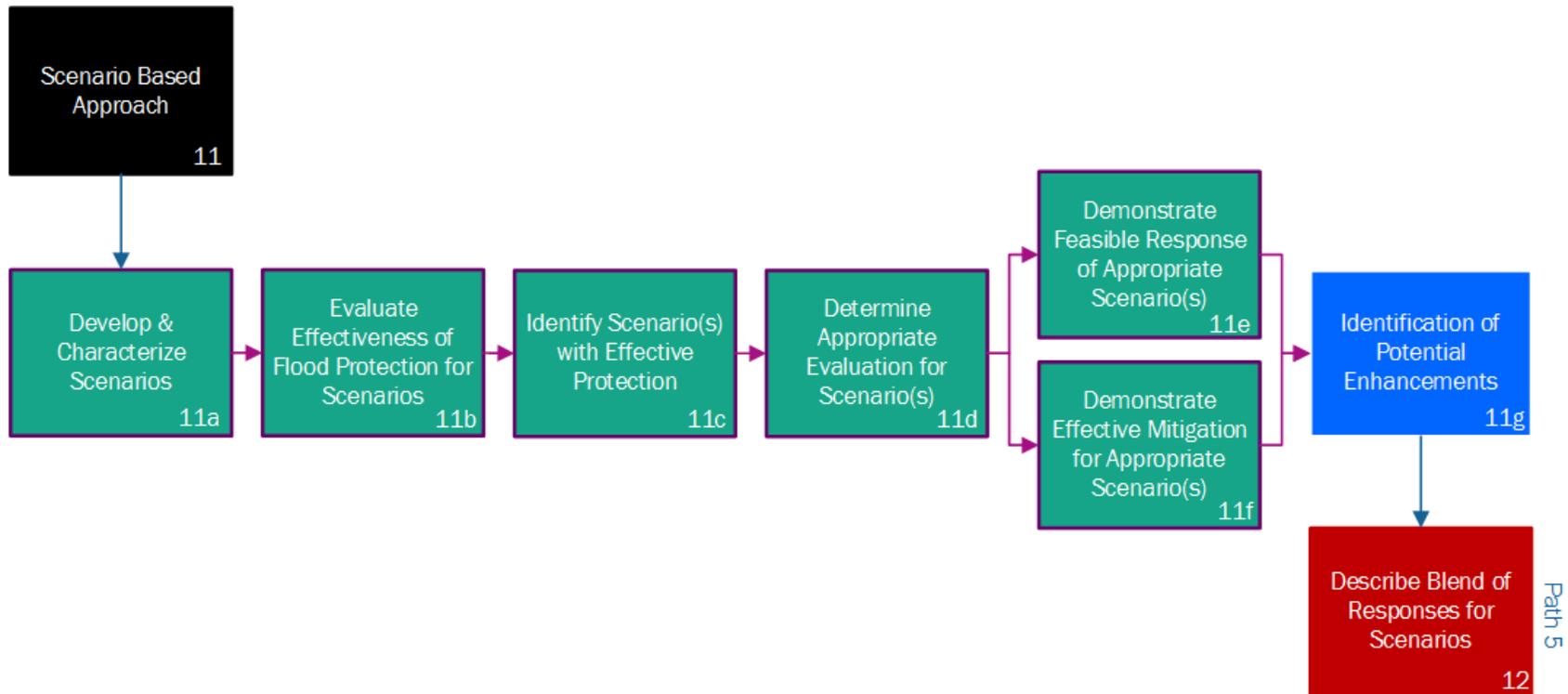
Path 4 – Demonstrate Effective Mitigation

- NEI 16-05, Section 8.1
- Licensees should provide corresponding information to address critical flood elevations from NEI 16-05, Section 6.3.1, including frequencies of exceedance

Path 4 and Path 5 Frequency Determinations

- a. Appendix D, Section D.2, compiles selected methods and references related to developing a probabilistic characterization of flooding hazards that have been used primarily in applications not related to nuclear power plants. When applying methods and references provided in Section D.2, licensees should assess the methods and references to:
 - Verify that that references have not been superseded or rescinded due to identified technical inadequacies or shortcomings. Limitations on rescinded references do not apply to documents that have been administratively withdrawn for reasons not related to technical adequacy (e.g., due to administrative schedules associated with Standards).
 - Ensure context and caveats related to the numerical values in Table D-1 (as described in USBR, 2004) and Figure D-1 as well as the methods and references described in Table D-2 are addressed.
- b. To establish the frequency of exceeding a given measure of flood severity, the licensee should aggregate the contributions from a range of potential flooding mechanisms and relevant contributing events and should not limit the assessment to development of frequencies associated with deterministic event combinations (e.g., combinations identified in NUREG/CR-7046) shown in Section D.3.

NEI 16-05 Path 5 Detail



Path 5 – Scenario-Based Approach

- NEI 16-05, Section 8.2 and App. D
- Scenarios developed should include critical flood elevations
- Identification of scenarios with effective flood protection should include path 2 considerations of NEI 16-05 and ISG
- Frequencies of exceedance should be developed with a methodology that conforms to App D, taking into account PFHA attributes and clarifications of ISG