



Public Meeting

Clarifying Relationship Between Flooding Reevaluations and Mitigating Strategies

September 18, 2014

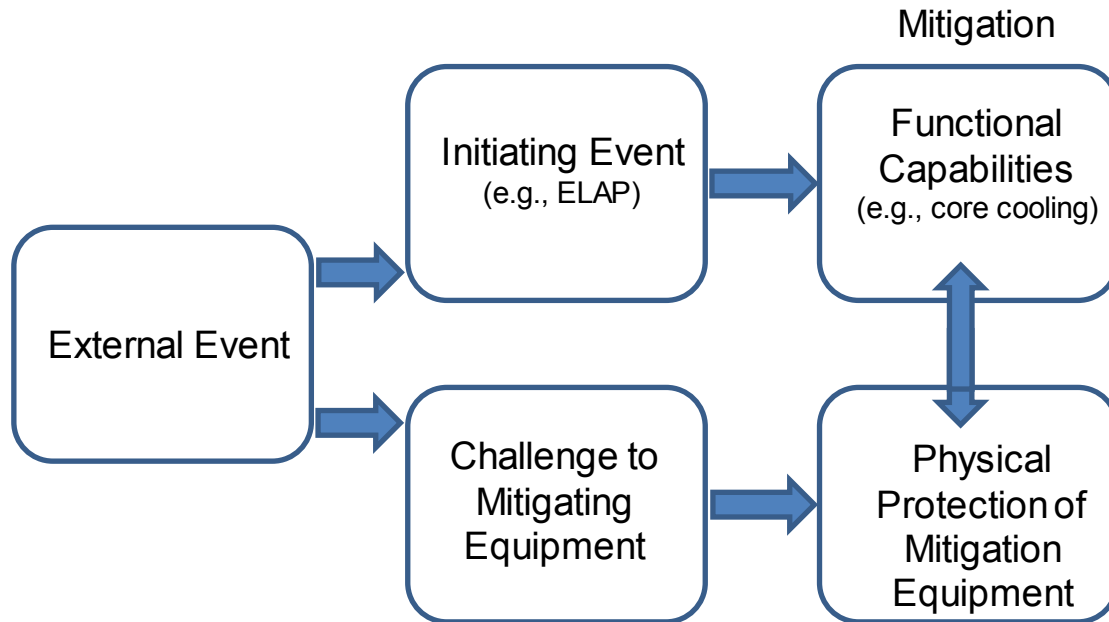


Purpose & Objectives

- Describe NRC staff plans to clarify relationship between mitigating strategies and flooding reevaluations
- Gain insights related to coordinating activities and possible implications for ongoing efforts
- Identify path forward and future interactions



Background – Severe Accident Initiated by External Event

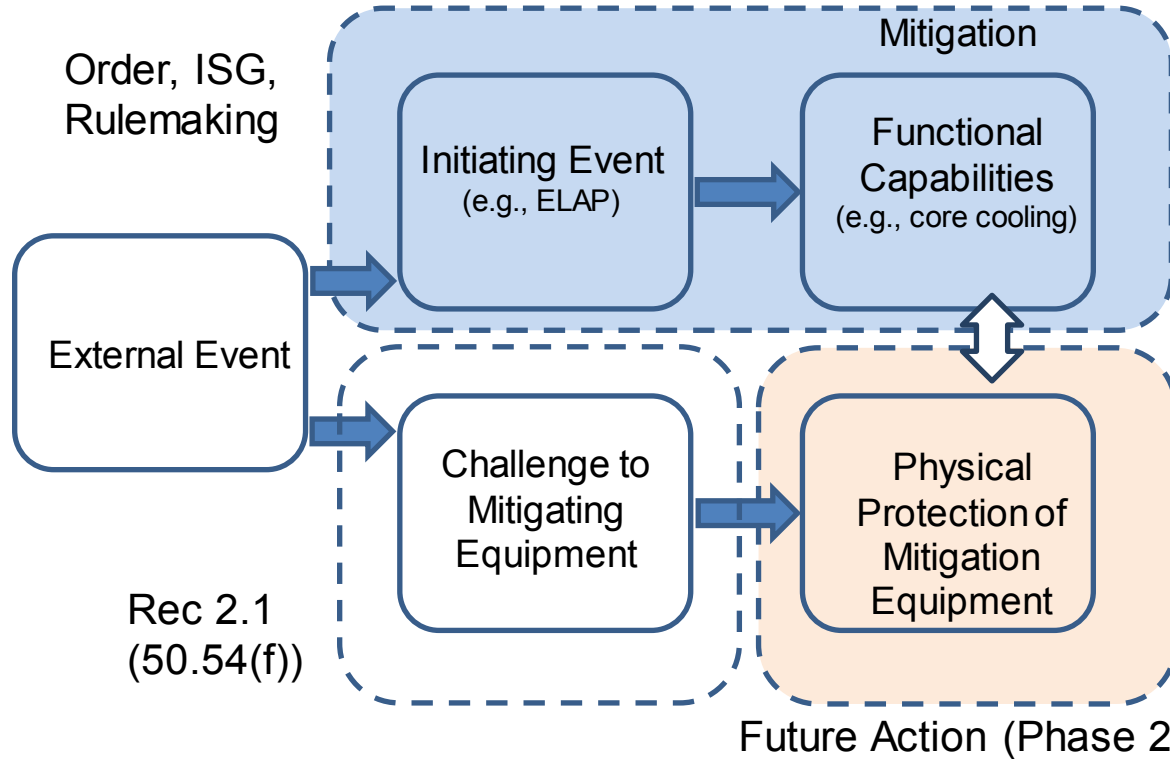


NRC slides used in July 2013 internal meetings during drafting of SBOMS reg basis (and subsequent public meetings)

The fundamental issue involves the regulatory vehicle to ensure the desired functional capabilities are available following an external event that might challenge the equipment and strategies used to mitigate such an event (e.g., the loss of equipment at Fukushima Daiichi). There are several ways that this relationship might be addressed.



Background – Possible Regulatory Approaches (1)

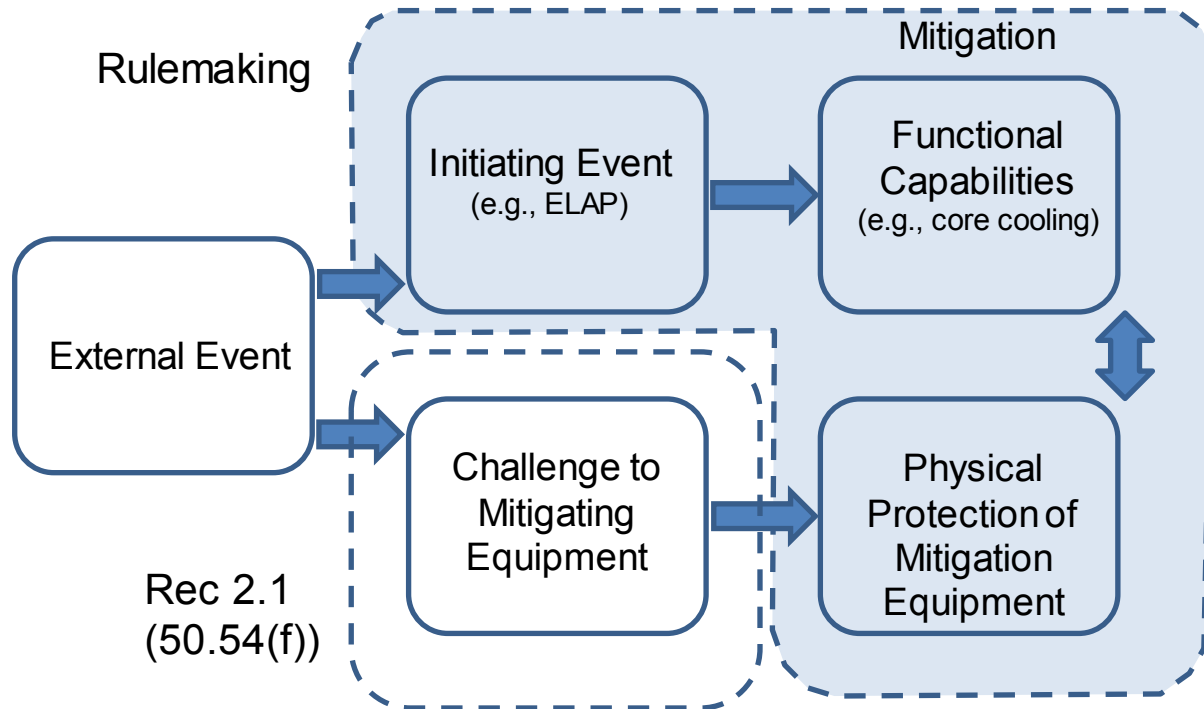


NRC slides used in July 2013 internal meetings during drafting of SBOMS reg basis (and subsequent public meetings)

To support making progress and meeting schedules for developing mitigating strategies, the functional capabilities have been developed and the matter of additional (beyond existing design basis) physical protection for the mitigation equipment would be resolved by a future action to have licensees address, as appropriate, additional flooding scenarios.



Background – Possible Regulatory Approaches (2)



NRC slides used in July 2013 internal meetings during drafting of SBOMS reg basis (and subsequent public meetings)

To prevent a “disconnect” between functional capabilities and physical protection of mitigation equipment, the rule could require a level of protection against the re-evaluated hazard.



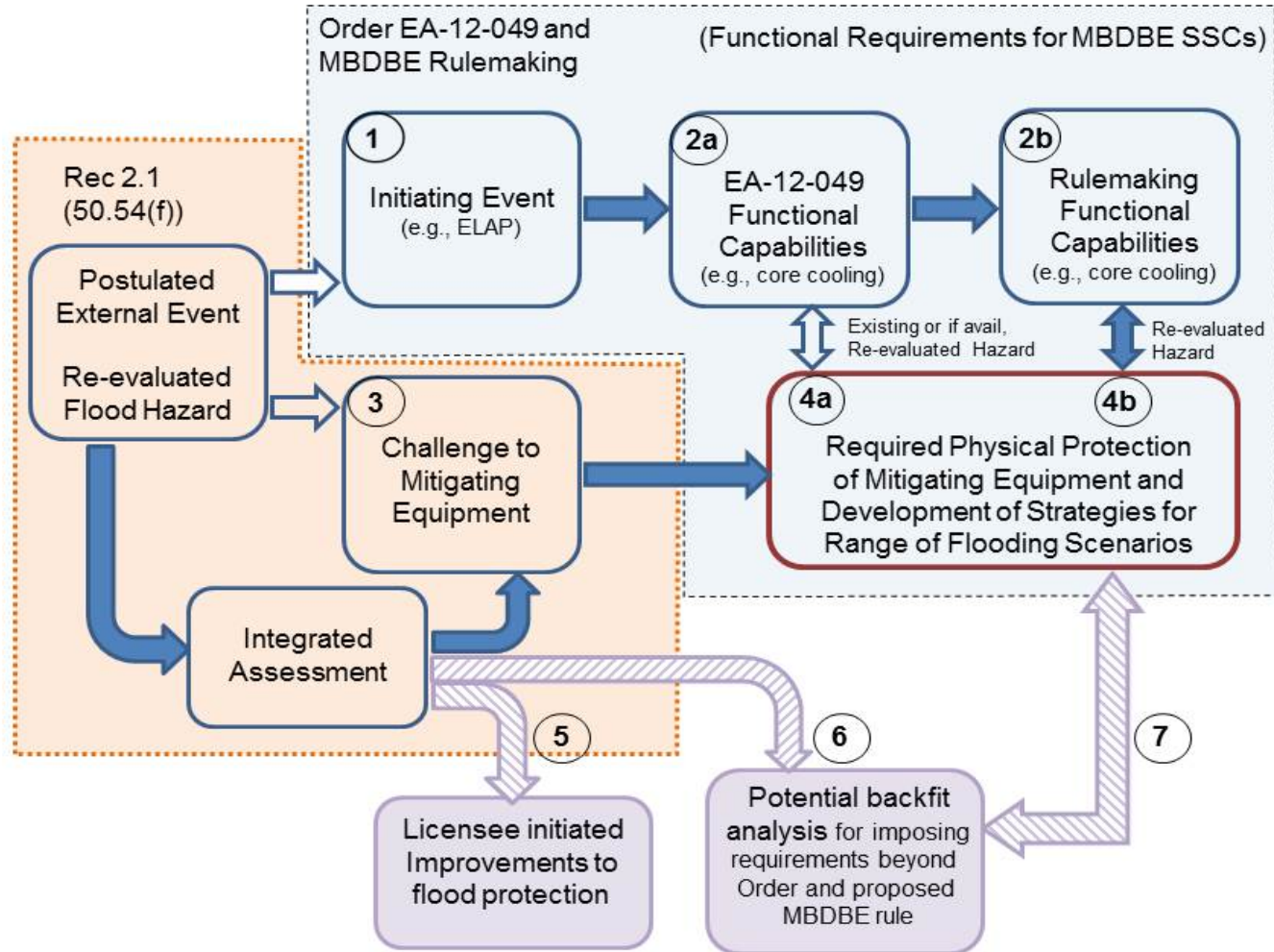
SBOMS Regulatory Basis (July 2013)

Preferred Option was reflected in SBOMS Reg Basis Document

Since the purpose of the SBOMS [Station Blackout Mitigating Strategies (SBOMS) now referred to as MBDBE] rulemaking would be to provide mitigation capability for extreme external events, information from NTTF Recommendation 2.1 regulatory activities or other re-evaluations of site-specific hazards would be relevant and need to be addressed and could result in changes to the facility. These changes could include changes to: installed equipment; portable equipment; portable equipment connections; and/or guidance and strategies. Consistent with Order EA-12-049 and related regulatory guidance, it is expected that the SBOMS rule would contain requirements to maintain the SBOMS capabilities, including the protection afforded the equipment consistent with any updated hazard analyses. The supporting SOC and regulatory guide would indicate that the meaning and intent of this provision would be to ensure that new information or operating experience feedback (e.g., new information about a re-evaluated hazard) that impacts the SBOMS equipment and strategies would need to be addressed, and the SBOMS strategies and equipment protection would be updated accordingly.



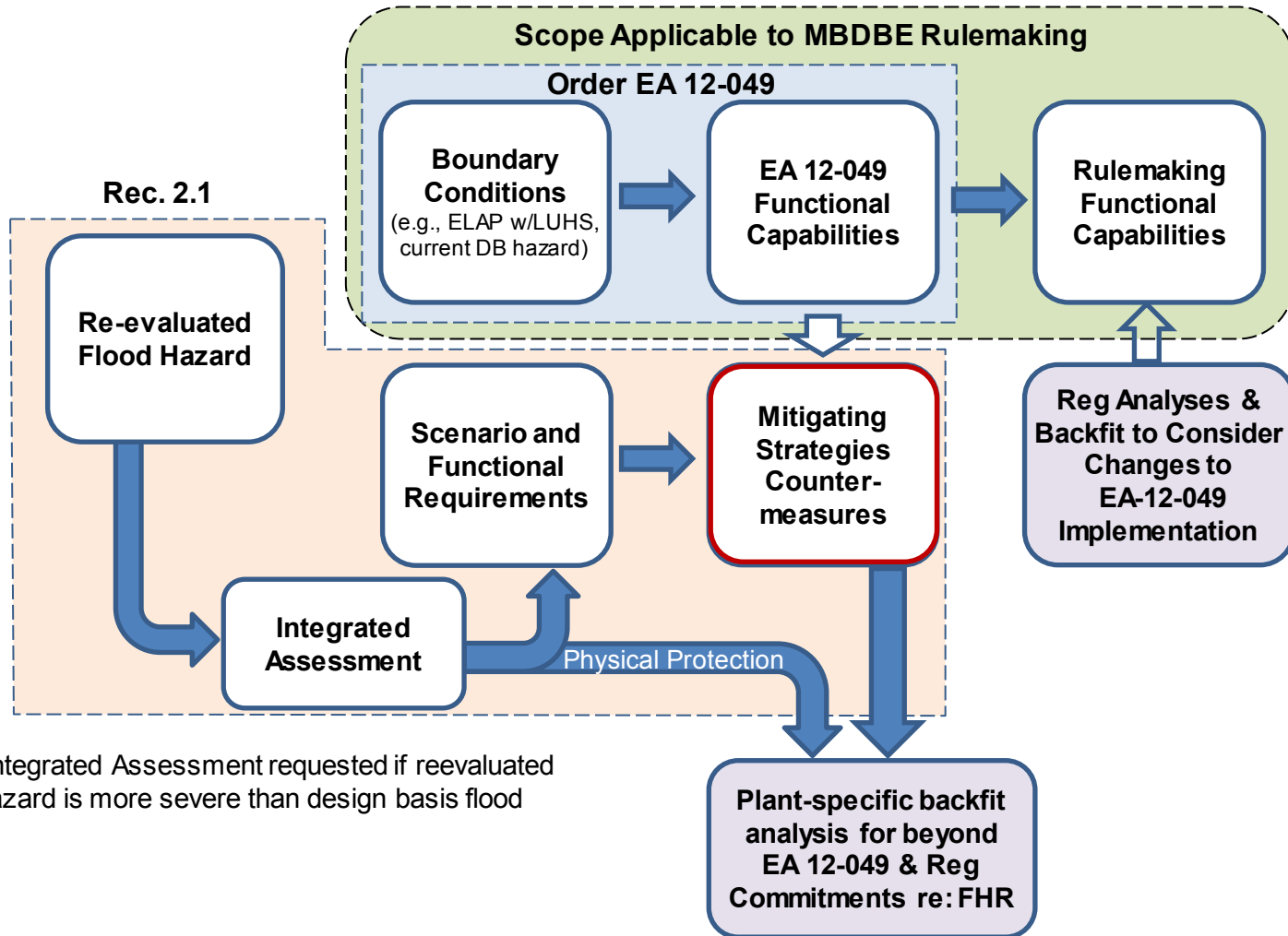
Proposed Flowchart



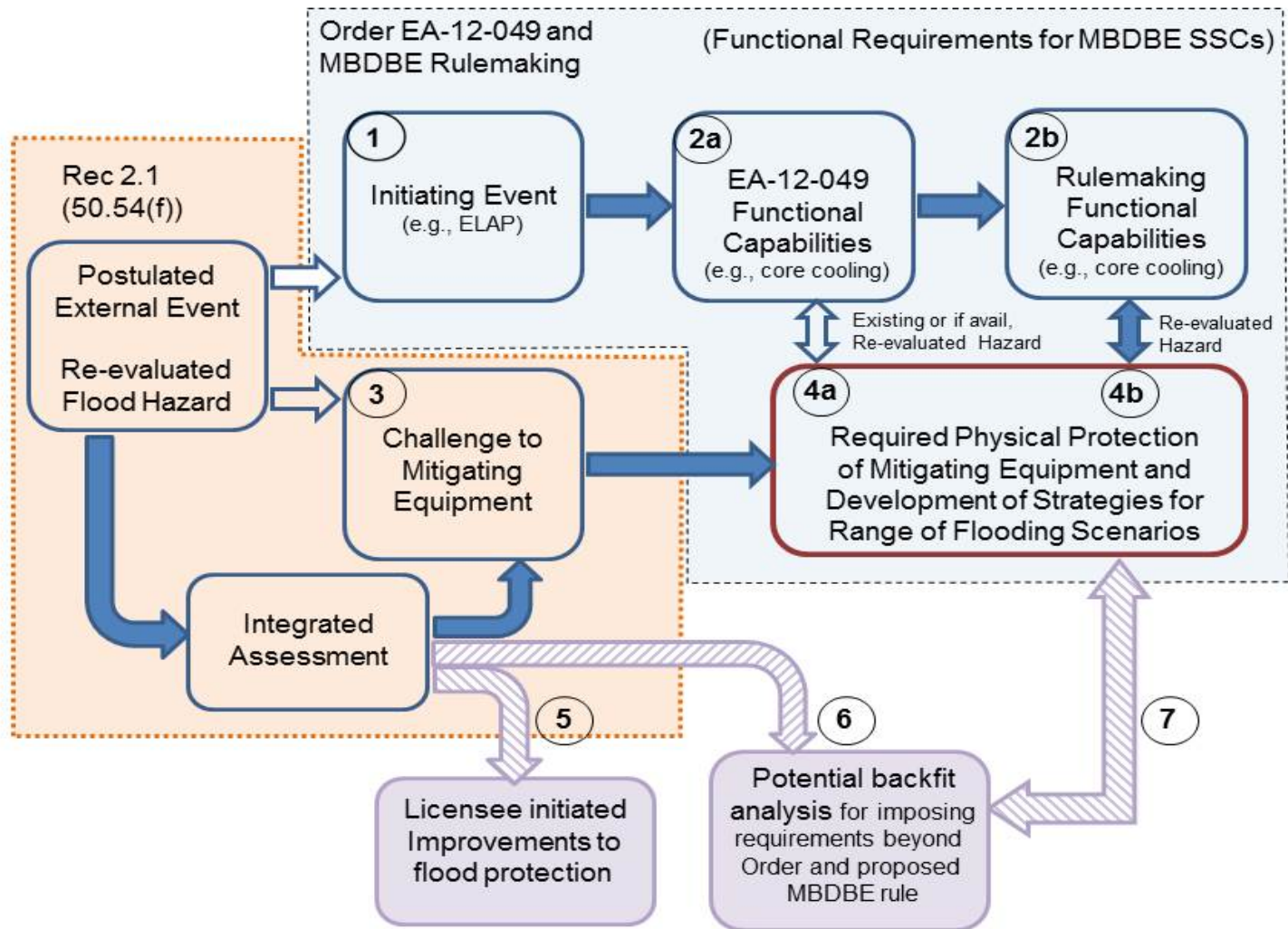
Relationship Summary

- At a minimum, additional capabilities for dealing with the beyond-design-basis flooding scenarios identified from the Recommendation 2.1 activities will be provided by the requirements for improved mitigating strategies.
- There is a possibility that circumstances at some nuclear power plants may warrant the NRC considering additional requirements

Other Approaches Considered



Proposed Flowchart



Issues/Challenges

- Transition from Order EA-12-049 to developing and implementing MBDBE rulemaking
- Regulatory treatment of “countermeasures” within regulatory requirements for mitigating strategies (vice regulatory commitments or other actions)
- “Course corrections” to guidance and actions related to mitigating strategies, flood reevaluations, rulemaking, etc.

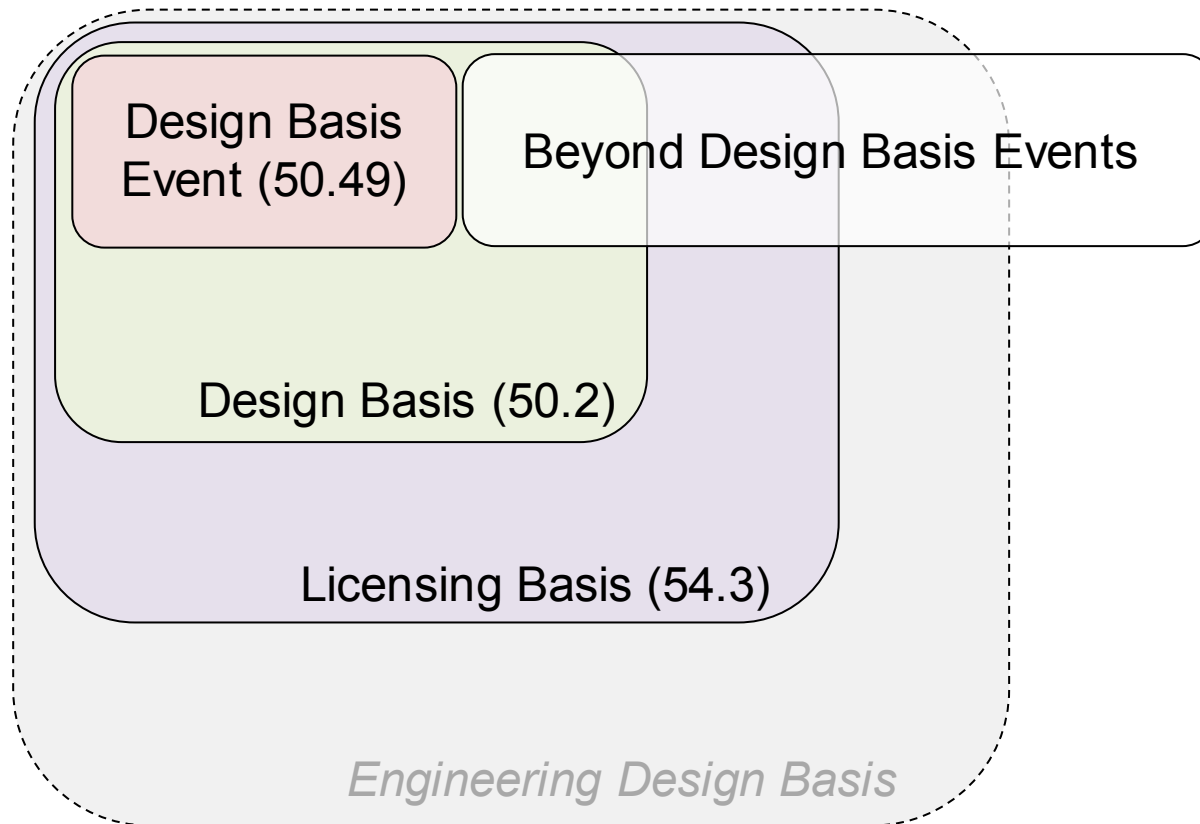
Regulatory Context

- Possible approach to address beyond design basis flood within regulatory framework
- Clarify possible difference between actions for Order EA-12-049 and MBDBE rulemaking
- Incorporate previous lessons learned activities

Discussion

From July Meeting & Draft Paper

- Clarification of Terminology



Paper (Current Draft) Proposed Approach

- Design Basis Events (e.g., design basis flood) has historically been used in the context of general design criteria (GDC 2) and safety classification of equipment (i.e., protection of safety-related SSCs)
- The NRC moved from focusing on design basis events and adopted more pragmatic approaches for addressing beyond design basis events identified for operating reactors (e.g., ATWS, SBO)
- The staff does not foresee redefining the design-basis flood against which most safety-related SSCs would need to be protected



Functional Requirements and Bounds for Design (10 CFR 50.2)

- Concept of Design Basis as defined in 10 CFR 50.2 can be applied to beyond design basis floods for which specific SSCs (e.g., mitigating strategies) need to be protected
- NEI 97-04 (endorsed by RG 1.186) describes the information that makes up the functional requirements and the controlling parameters chosen as reference bounds for design that help define the design basis for plant SSCs (i.e., design basis)



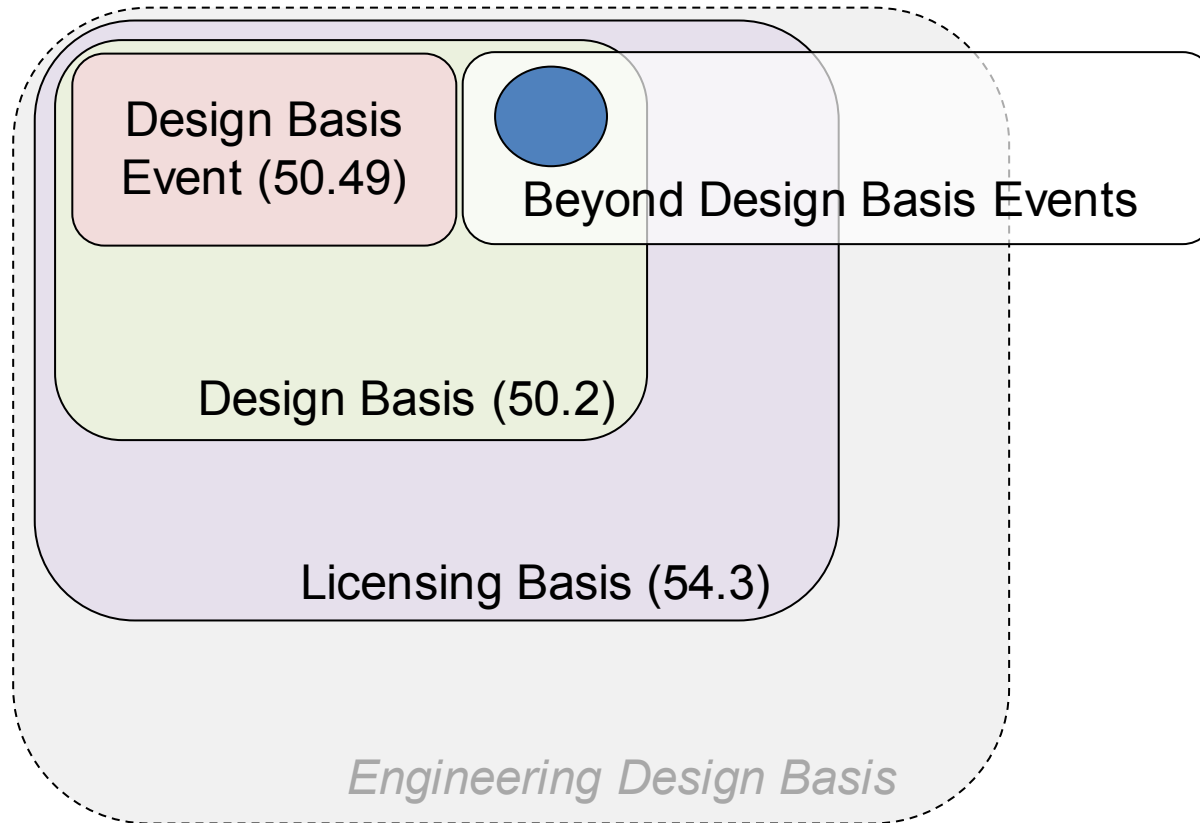
Design Basis (50.2)

- Topical design basis issues identified in NEI 97-04 include:
 - fire protection
 - flooding (internal and external)
 - tornadoes and hurricanes
 - seismic criteria
 - missiles (internal and external)
 - separation (Hazards)
 - electrical separation and independence
 - single failure criteria
 - pipe break criteria
 - environmental qualification (electrical and mechanical)
 - SBO
 - ATWS

Discussion

From July Meeting & Draft Paper

- Clarification of Terminology

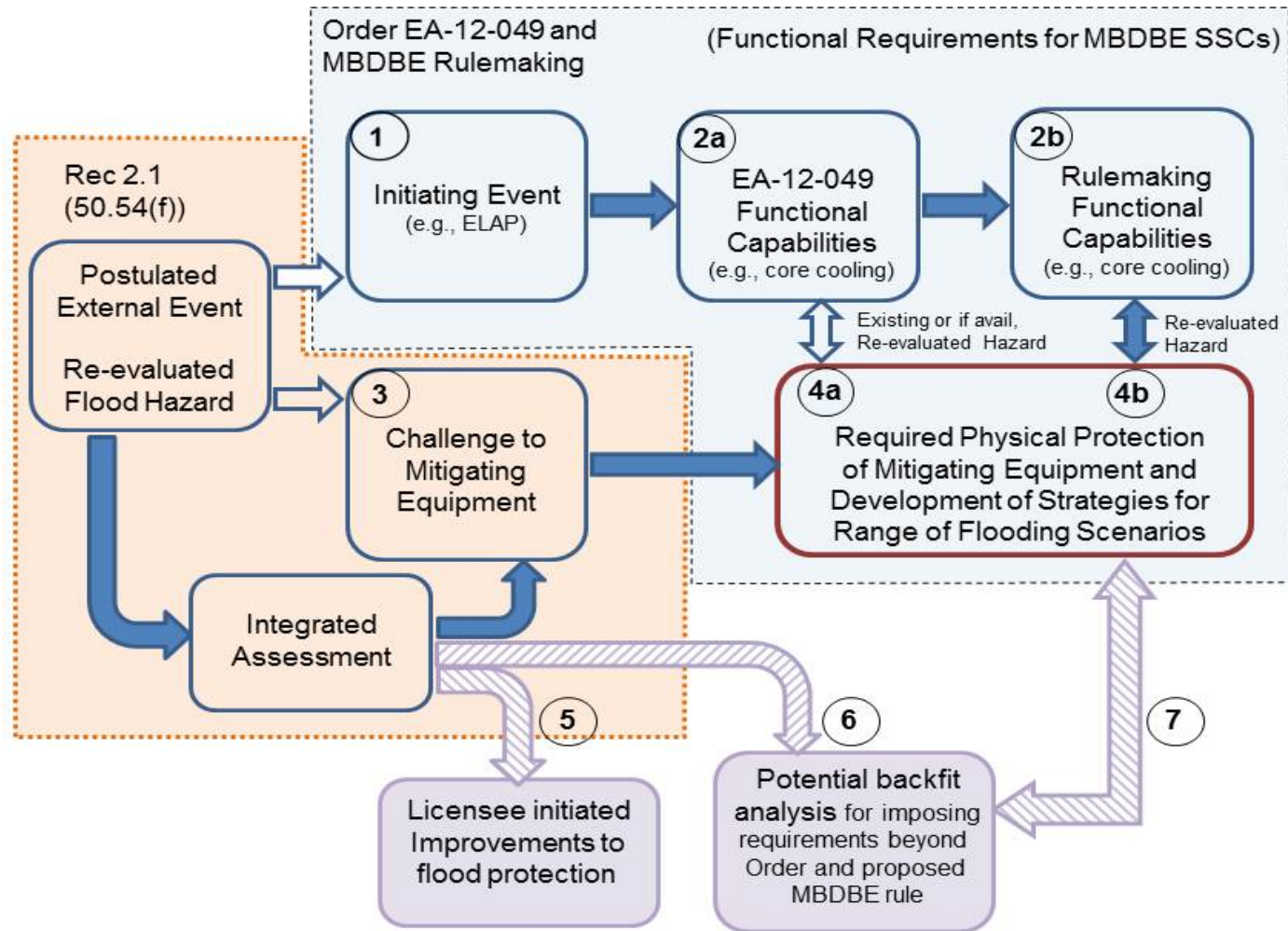


Why introduce 50.2?

- General Proposal
 - Propose that Recommendation 2.1 flooding reevaluation is treated as topical design issue per NEI-97-04 for those SSCs/strategies related to mitigating beyond design basis flooding events
 - Prior to completion (e.g., for Order), existing flooding can be used to define the functional requirement
 - Post reevaluation (e.g, for Rule), new flood hazard becomes the functional requirement – by definition and through established guidance
 - Approach defined by established process and definitions



Proposed Flowchart



Possible examples

- Slowly evolving beyond design basis flooding event
 - Variation of standard mitigating strategies/FLEX model
 - Could involve plant shutdown, other preparations
 - Strategy to prevent fuel damage and large release
- Quickly evolving beyond design basis flooding event
 - More standard mitigating strategies/FLEX model
 - Need to protect installed equipment or dedicated equipment
 - Strategy to prevent core damage and large release



Discussion

- Proposed approach defines integrated process with existing and planned regulatory actions – mitigating strategies available for reevaluated flood hazard. Outcome of hazard reevaluation used to define functional requirements to comply with NRC regulation.
- Accurately reflects what many believe was the intent of the NRC actions, including Order entitled Mitigation Strategies for Beyond-Design-Basis External Events
- To the degree that path forward requires adjustments to current and planned activities – need to identify and initiate changes to guidance
- Schedule and coordination challenges



Next Steps

- Joint Steering Committee Meeting (23 Sept)
- Consideration of insights from meeting
- ACRS Meeting (2 Oct)
- Revise paper (“white paper,” Commission paper)
- Issuance of draft “white paper” – depending on schedule; alignment
- Issuance of Commission paper – TBD
- Meetings to discuss revisions to guidance documents – TBD
- Ongoing Activities (12-049 Implementation, flooding evaluations, MBDBE rulemaking, etc.)

