

Recommendation 4.2 Order for Mitigating Strategies

January 18, 2012



NUCLEAR
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Recommendation 4.2 Order NRC Proposed Wording

- **Licensees develop, implement, and maintain guidance and strategies to mitigate the effects of challenges to the key safety functions of core cooling, containment, and spent fuel pool cooling capabilities**

Recommendation 4.2 Order Industry Proposed Wording

- **Each licensee shall develop, implement and maintain guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with external hazards resulting in extended loss of all AC power or loss of ultimate heat sink capability. Initially, the reactor is assumed to be operating at full power and is successfully shut down in advance of or as a result of the hazard.**

Recommendation 4.2 Order

NRC Proposed Timeline

- **Interim Staff Guidance (ISG) by June 30, 2012**
- **Licensees submit overall integrated plan including description of compliance within 180 days of issuance of ISG**
- **Letter when full compliance achieved, within 2 years of issuance of ISG**

Recommendation 4.2 Order

Industry Proposed Timeline

- **Interim Staff Guidance (ISG) by June 30, 2012**
 - **Industry is developing proposed guidance for NRC endorsement**
 - **Propose a meeting in late Feb to discuss concept of the guidance**
 - **Industry/NRC workshop in July**

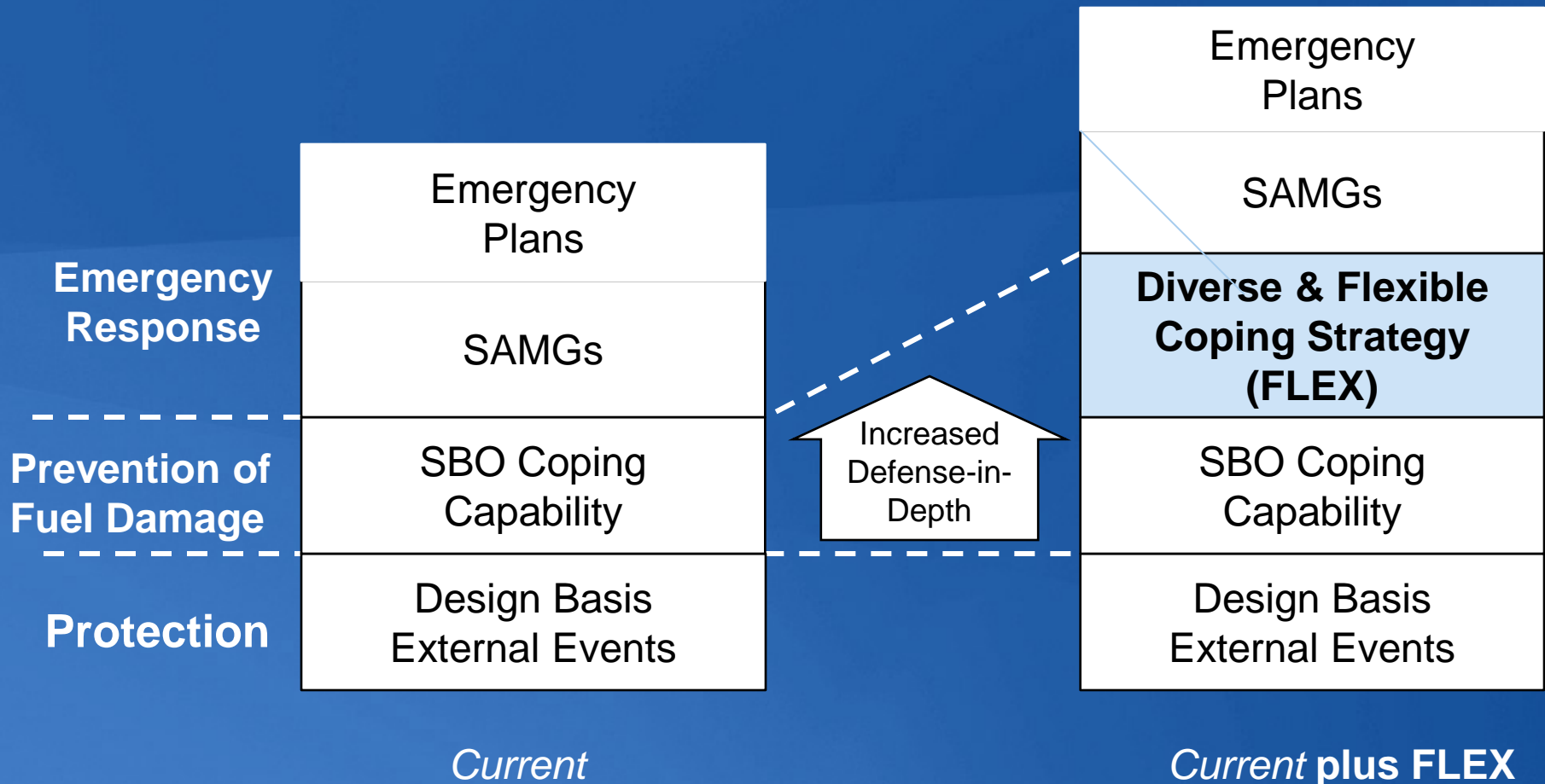
Recommendation 4.2 Order Industry Proposed Timeline

- Licensees **perform evaluation and** submit overall integrated plan including description of compliance within **180 days** of issuance of ISG **with a schedule for implementation.**
 - **Schedule to justify actions requiring more than two years from issuance of ISG**
- Letter **2 years from issuance of ISG and** when full compliance achieved

Diverse and Flexible Coping Capability (FLEX)

- **Additional layer of safety for beyond design bases external events to prevent fuel damage**
- **Focuses on maintaining key safety functions**
 - **Core cooling, containment integrity, SFP cooling**
- **Multiple supplies of power and cooling water**
- **Portable equipment reasonably protected**
- **Symptom-based guidance and instructions**
- **Programmatic controls**
- **Offsite support centers**

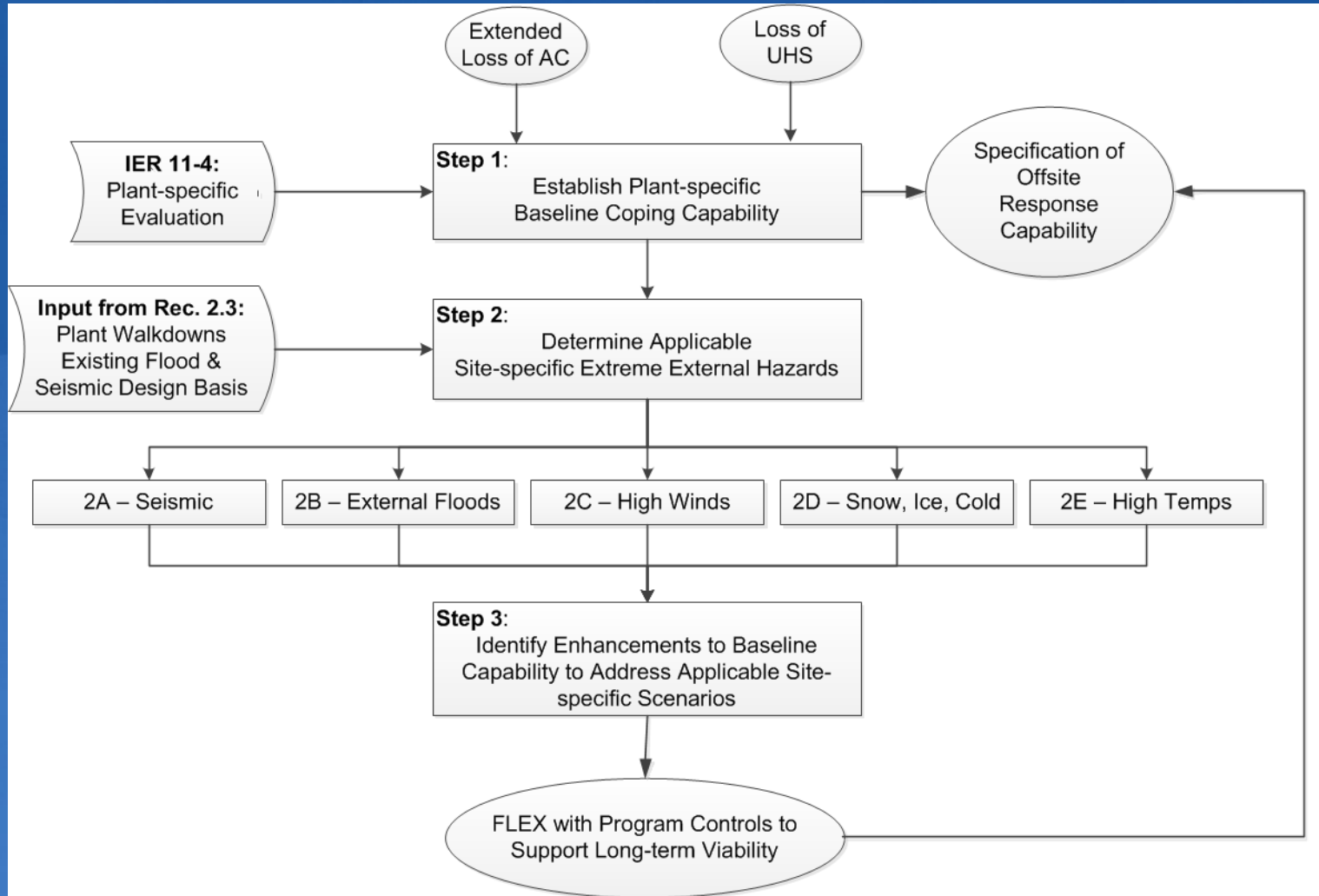
Diverse & Flexible Coping Capability (FLEX)



FLEX Relationship to Tier 1 Recommendations

- **Effective implementation of FLEX requires close coordination with other activities**
 - **2.1/2.3 – Seismic and Flooding Design Bases**
 - **4.1/4.2 – Station Blackout/B.5.b**
 - **5.1 – BWR hardened vents for containment**
 - **7.1 – SFP monitoring**
 - **8 – EOP/SAMG activities**
 - **9.3 – ERO staffing and communications**

Potential Implementation Guide Outline



Example FLEX Equipment

Onsite Response

- Diesel driven pumps (High capacity and high pressure)
- Suction, discharge hose, strainers, pipe fittings
- 480v DG or 600v DG
- 120/240v DG
- Cables
- Air compressors & nitrogen bottles
- DC power supplies
- Fuel supplies & transfer equipment
- Communications equipment

Offsite Response

- Closed loop cooling system:
- 4 kv and 6.9 kv DG & equipment
- RP Equipment
- Commodities including food & water
- Provision for Diesel Fuel resupply
- Makeup water treatment supplies
- Portable lighting
- Containment berms
- Dewatering pumps
- Water filtration/demineralization