

# **RISK-INFORMING 10 CFR 50.46**

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Presented at

**SMiRT 16**

Presented by

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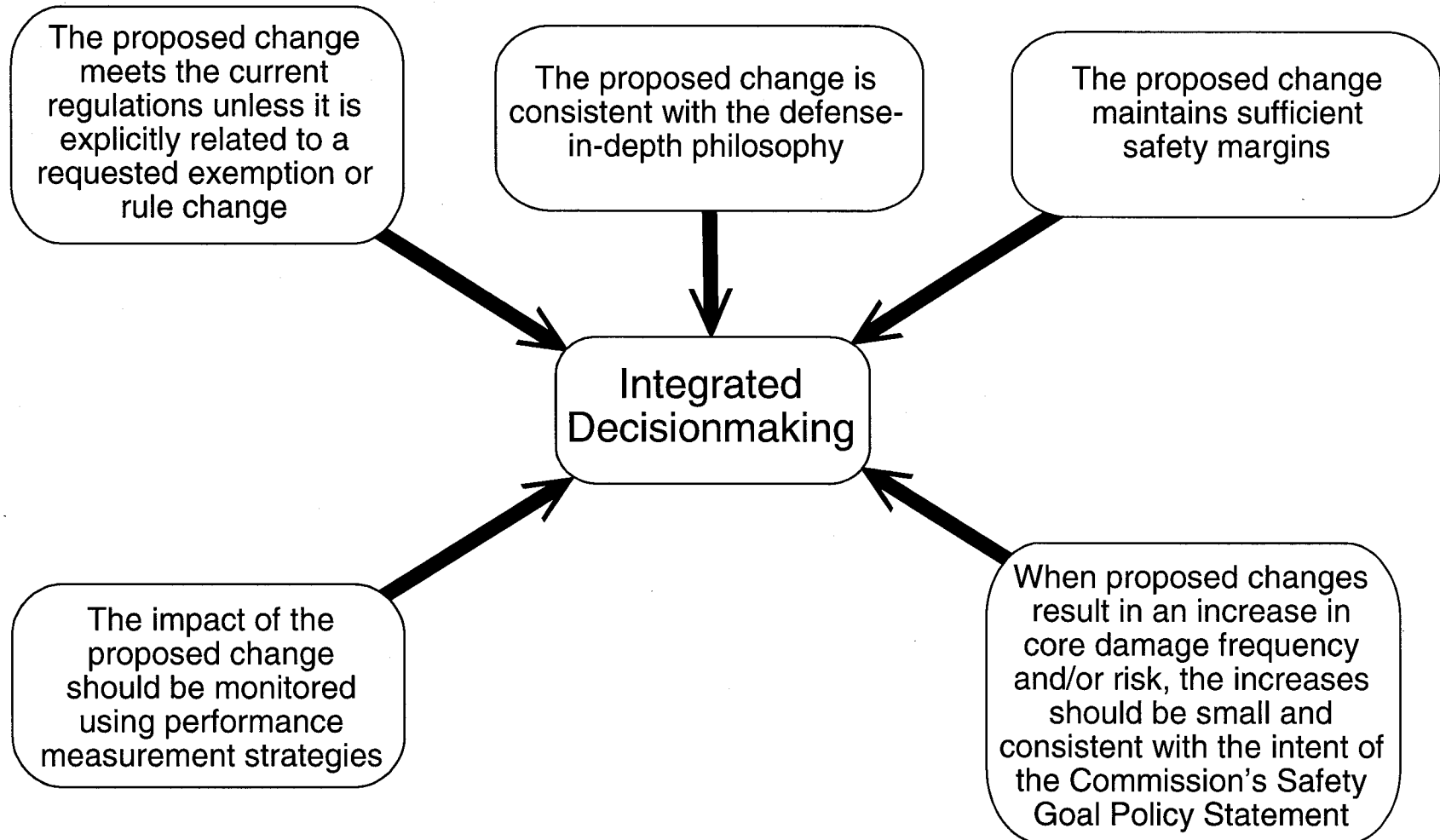
# BACKGROUND

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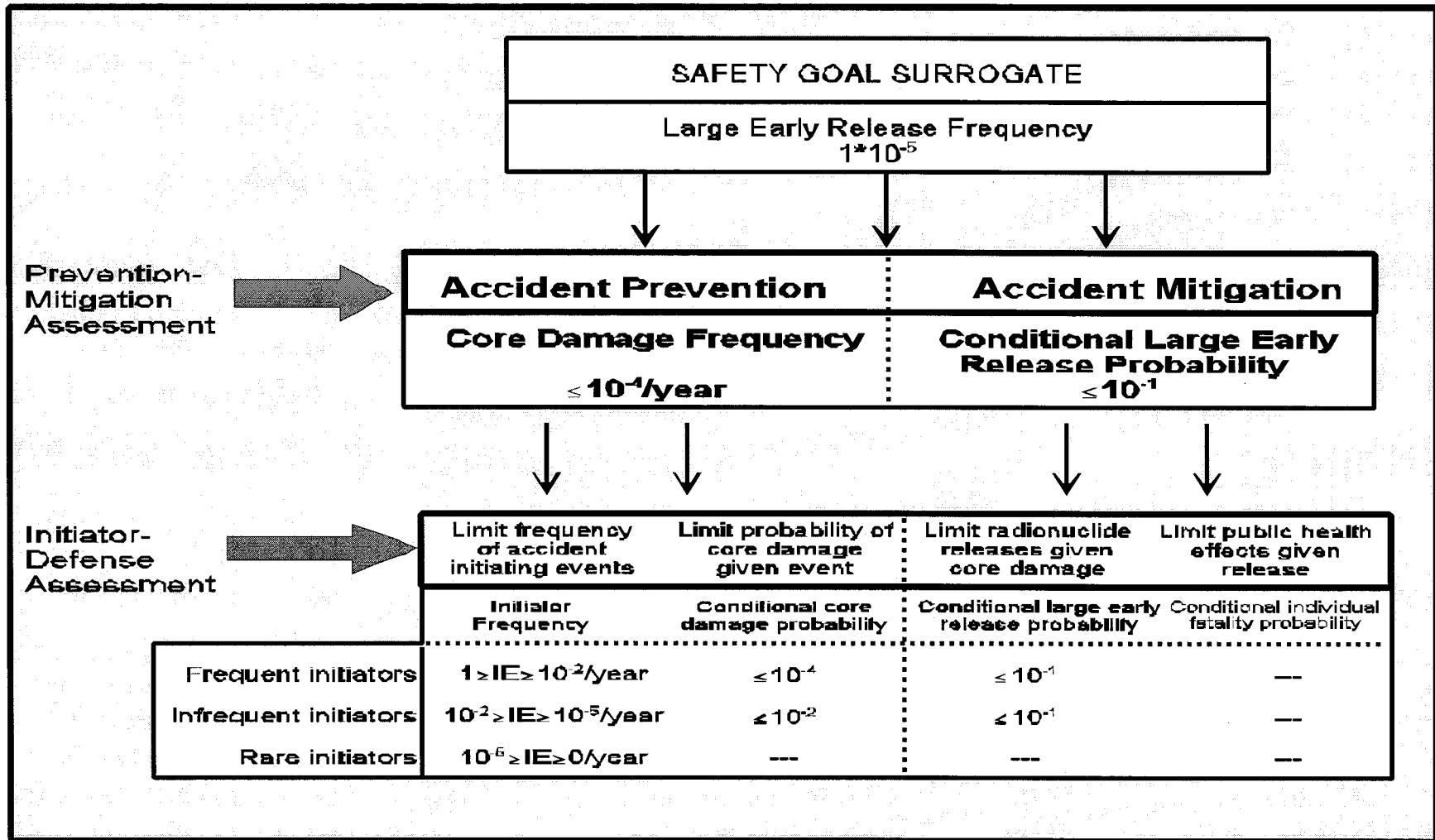
- Commission policy
  - ▶ Safety goals
  - ▶ NRC PRA Policy Statement
  - ▶ SECY-98-300, “Options for Risk-Informed Revisions to 10 CFR Part 50 - ‘Domestic Licensing of Production and Utilization Facilities’”
- Risk-informed decisionmaking
  - ▶ RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis”
- Risk-Informing our regulatory framework

# PRINCIPLES OF RISK-INFORMED DECISIONMAKING

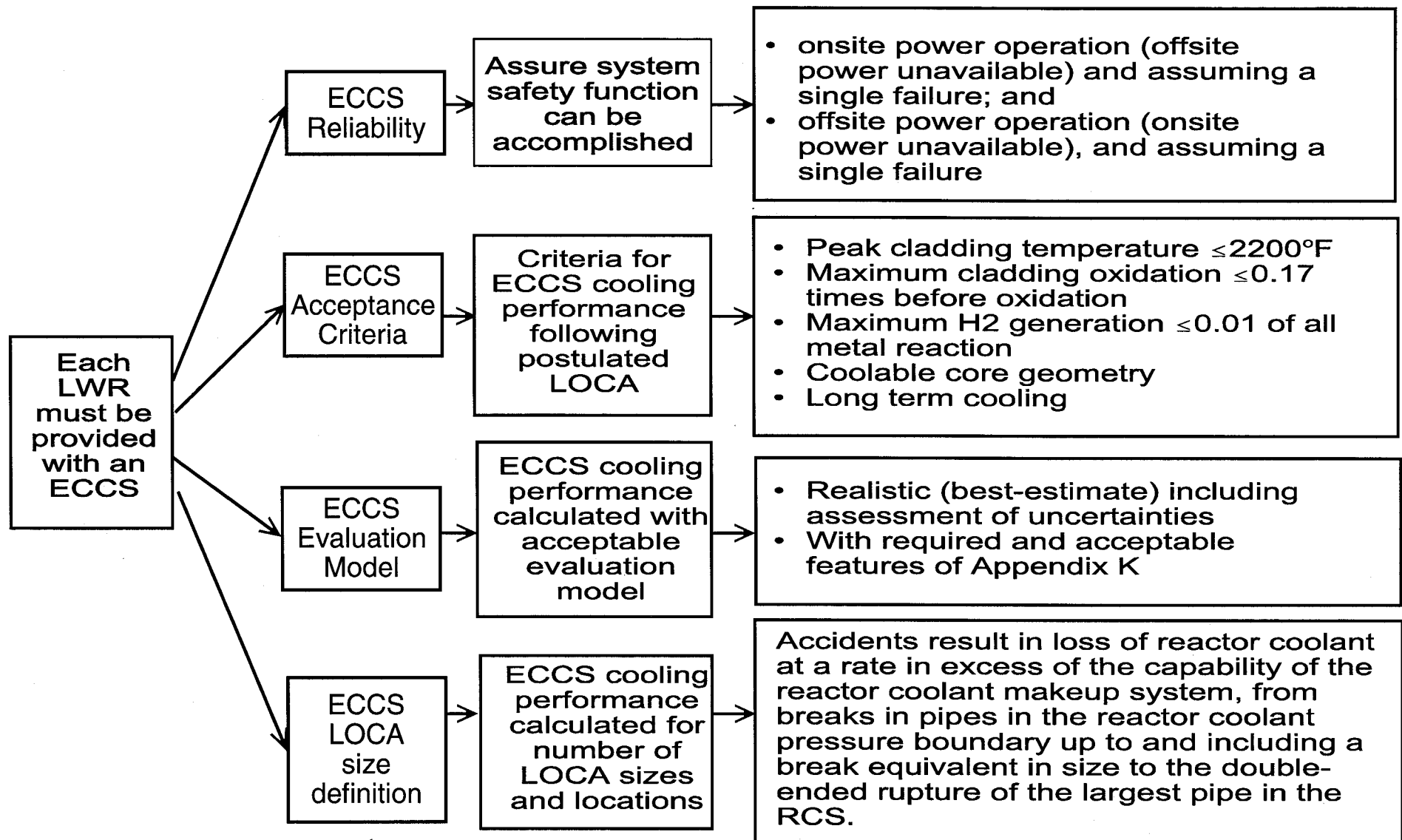
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# FRAMEWORK GUIDELINES



# OVERVIEW OF 50.46 (including Appendix K and GDC 35)



# **FEASIBILITY ASSESSMENT OF CHANGING 10 CFR 50.46 (including Appendix K and GDC 35)**

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- Changes to reliability, acceptance criteria and evaluation model feasible
  - ▶ ECCS reliability resulting from technical requirements not commensurate with risk significance of the various LOCA sizes
  - ▶ Unnecessary conservatisms exist in the requirements
  
- Changes to spectrum of LOCA sizes definition more complex
  - ▶ Current estimates of the frequency of large-break LOCAs are uncertain and are not low enough to allow elimination of all large-break LOCA sizes from the design bases

# FEASIBILITY ASSESSMENT OF CHANGING 10 CFR 50.46 (cont'd)

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- Short-term considerations:
  - A. Changes to the technical requirements of the ***current*** 50.46 related to acceptance criteria and evaluation model
  - B. Development of a voluntary risk-informed ***alternative*** to the reliability requirements in 50.46
  
- Long-term considerations:
  - Evaluation of the definition of the spectrum of break sizes
  
- All proposed changes follow the Option 3 framework guidelines with respect to quantitative goals and consideration of defense-in-depth

# POSSIBLE LONGER-TERM FEASIBILITY ASSESSMENT OF ADDITIONAL CHANGES TO 50.46

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- Additional changes to 50.46 may also have merit:
  - evaluation of the definition of the spectrum of breaks and locations
- The extent of potential change to the definition of pipe break size is dependent on the state-of-knowledge of the frequency of LOCAs of various break sizes
- For example, if a set of LOCAs can be demonstrated to have a collective mean frequency of occurrence of below  $10^{-5}$ /yr, the staff would consider reduction of regulatory requirements commensurate with this frequency (e.g., allow best-estimate calculations without the need for uncertainty propagation, relax reporting requirements, relax technical specifications)
- Staff to continue to perform the technical work to determine feasibility of changing the spectrum of pipe breaks

# POSSIBLE LONGER-TERM FEASIBILITY ASSESSMENT OF ADDITIONAL CHANGES TO 50.46 (cont'd)

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- The staff will continue to meet with representatives of the nuclear industry in public meetings to address and resolve the technical issues (i.e., initial flaw distributions, degradation mechanisms, material response and uncertainty analysis, etc.)
  - ▶ Initial meeting held on August 1, 2001, during which the staff provided further clarification of the technical issues
- If found feasible, the staff would recommend additional changes, potentially including rulemaking to change the wording in 50.46 and Appendices A and K of Part 50 which would allow the licensee to use an alternate pipe size, subject to some level of NRC approval