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The Development of PRA Quality Standards and Use in Risk-Informed Decision-Making

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Objectives

- To provide an overview of the NRC's phased approach to PRA quality including the current status and future plans

- To achieve an appropriate level of quality for PRAs used in risk-informed regulatory decision-making activities

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NRC PRA Policy Statement

- Use of PRA technology should be increased to the extent supported by the state-of-the-art in PRA methods and data and in a manner the complements the NRC's deterministic approach

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Representative Uses of PRA

- Modification of technical requirements (rules)
- Reactor Oversight Process
- Modification of plant technical specifications
- Changes to plant licensing basis
- Event assessment and response
- Prioritization of issues

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PRA Quality

- Need to understand what is meant by “PRA quality” and its relationship to risk-informed decision-making
- Reg Guide 1.174 – PRA needs to be sufficient to support the decision being made
- Fundamental issue is establishing the quality of the baseline PRA

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NRC's Phased Approach to PRA Quality

- Allows the continued practical use of risk-informed methods and continued progress towards adoption of state-of-the-art methodologies
- Phases
  - Phase 1: Contributors to risk not in the scope of the PRA model are addressed in a number of ways including qualitative arguments, bounding analysis, and restricting the scope of application
  - Phase 2: All significant risk contributors applicable to the issue are included in the PRA scope and addressed by standards
  - Phase 3: Standards exist to address all currently envisioned applications
- Plan outlines the various types of applications and the associated technical guidance documents (e.g., RGs, standards, detailed guidance) needed to support the anticipated types of applications

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NRC's Phased Approach to PRA Quality

- Approach - Develop and endorse national consensus standards for Level 1 and Limited Level 2 (LERF) PRA and associated industry guidance documents

- ASME / ANS Joint Standard
  - Level 1 and limited Level 2 PRA standard for internal and external events for at-power conditions

- Nuclear Energy Institute
  - Guidance for Self-Assessments and Peer Reviews

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Reg. Guide 1.200 - An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities

- Provides an acceptable approach for determining whether the quality of the PRA, in total or the parts that are used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision-making
- PRA results used to support an application must be derived from a baseline PRA model
- Baseline PRA
  - Scope
  - Technical elements
  - Attributes and characteristics
  - Development, maintenance, and upgrade

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Regulatory Guide 1.200

- Main Body provides guidance in four areas:
  - A definition of a technically acceptable PRA
  - The NRC's position on PRA consensus standards and industry PRA program documents
  - Demonstration that the PRA (in total or specific parts) used in regulatory applications is of sufficient technical adequacy
  - Documentation to support a regulatory submittal
- Appendices provide staff position (endorsement) of consensus standards and industry PRA peer review programs

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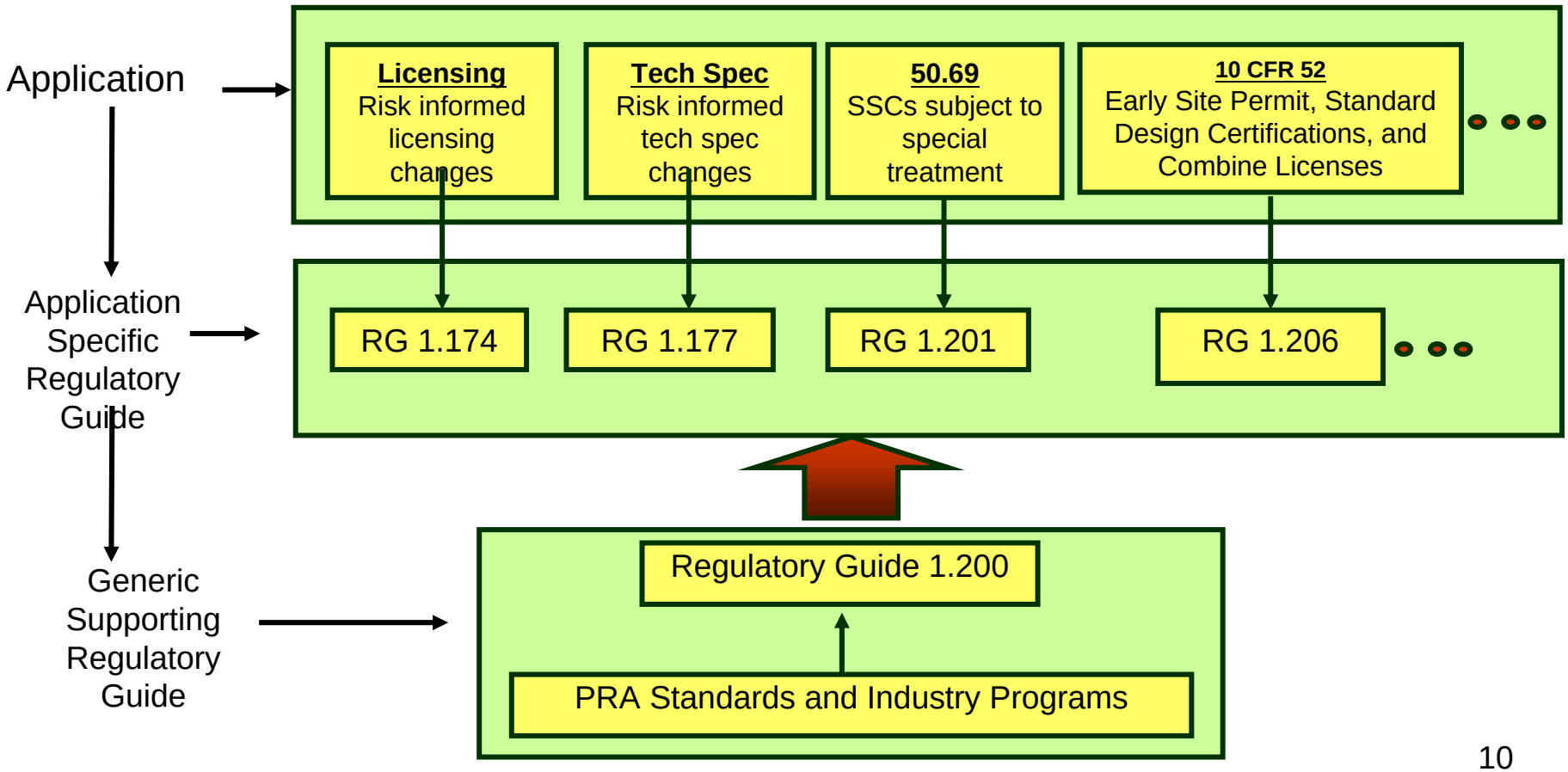
PRA Guidance Documents



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Future Plans

- Issue Reg. Guide 1.200 Rev. 2 (DG 1200) for public comment - Summer 2008
- Issue Final Reg. Guide 1.200 Rev. 2 - December 2008
- Develop low-power and shutdown operations standard
- Develop Level 2/3 standard for operating reactors
- Develop Level 1/LRF for new reactors
- Develop standards for advanced non-light water reactors