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Research Activities PRA
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# PRA Research and Development Needs for Regulatory Decision-Making

Gareth Parry
Senior Advisor for PRA
Division of Systems Safety and Analysis
NRR
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# Risk-Informed Decision-making

- A PRA has to be of sufficient quality to support the decision
- Need consistency between regulatory decisions
- Need to deal with uncertainties

# PRA Quality

- Defined in RG 1.174 and 1.200 in terms of:
  - Scope
  - Level of detail
  - Technical adequacy
- The Commission's expectations are addressed in the plan for the Phased Approach to PRA quality

# Use of PRA Standards

- PRA Standards provide a level of consistency at the level of ‘what to do’
- Non-prescriptive nature of Standards allows variability in assumptions and models leading to uncertainty in PRA results

# Role of Research to Support Regulatory Decision-Making

- Primary role should be to address those uncertainties that impact decisions
- Research can:
  - Identify weaknesses in current methods
  - Lead to new or more detailed modeling approaches to address weaknesses or new applications
  - Lead to an appropriate characterization of uncertainty
  - Provide approaches to dealing with uncertainty in decision-making

# Examples of Areas of Uncertainty

- The modeling of human performance in the context of PRA (HRA)
- Analysis of external initiating events (including internal fires)
- Modeling low power and shutdown accidents including transition
- Modeling degradation/aging effects
- Modeling Digital I&C

# Alternative Approaches to Dealing with Uncertainty

- Remove from consideration by adopting a consensus approach (e.g., RCP seal LOCA for Westinghouse plants)
- Recognize it and modify the decision to circumvent the uncertainty

# Challenges

- Determining whether the issue is amenable to a probabilistic approach (e.g., digital I&C, degradation)
- Determining when the models are good enough to make good safety decisions (e.g., do we need to develop a more detailed HRA method for calculating HEPs)