

New Regulatory Framework For Power Reactors – NEI 02-02

NRC-NEI Meeting

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Need

- **Adjust & improve regulatory safety focus**
 - Risk-analyses, operating experience and new technical information indicate that regulations may not be correctly focused on those matters that have safety significance
- **Current regime based on LWR technology**
- **Renewed interest in non-LWR designs provides impetus for a technology neutral regulatory regime**

Intent

- **Start the discussion process**
- **Frame and emphasize policy and technical issues**
- **Provide a basis and input for public discussion**
 - A public workshop & ANPR on issues identified in NEI 02-02 and by other stakeholders
- **Proposed “Part 53” language is secondary to the public discussion on the issues**

Framework Principles

- **Integrate stakeholder input and recommendations**
- **Satisfy the NRC’s mission of “adequate protection of public health and safety”**
- **Satisfy current NRC safety goals**
- **Build on operating & regulatory experiences, risk-informed insights, & risk-informed regulatory activities**
- **Focus on safety significant issues and eliminate requirements that do not address nuclear safety**
- **Where practical, analyses and decisionmaking shall be based on best-estimate data, models and assumptions**
- **Design & operational requirements shall be influenced through performance-based monitoring needs and corrective action**

Framework Principles

- **The framework shall provide for defense-in-depth through requirements, licensee and regulatory processes Additional defense-in-depth shall be provided through the application of deterministic design and operational features for events that have a high degree of uncertainty with significant consequences to public health and safety.**
- **The framework shall provide at least the same degree of protection of the public and the environment for new plants as for current plants.**
- **Additional requirements shall be imposed only when Backfit criteria are satisfied.**
- **The framework shall be flexible enough to accommodate new reactor designs and existing levels of design certifications.**

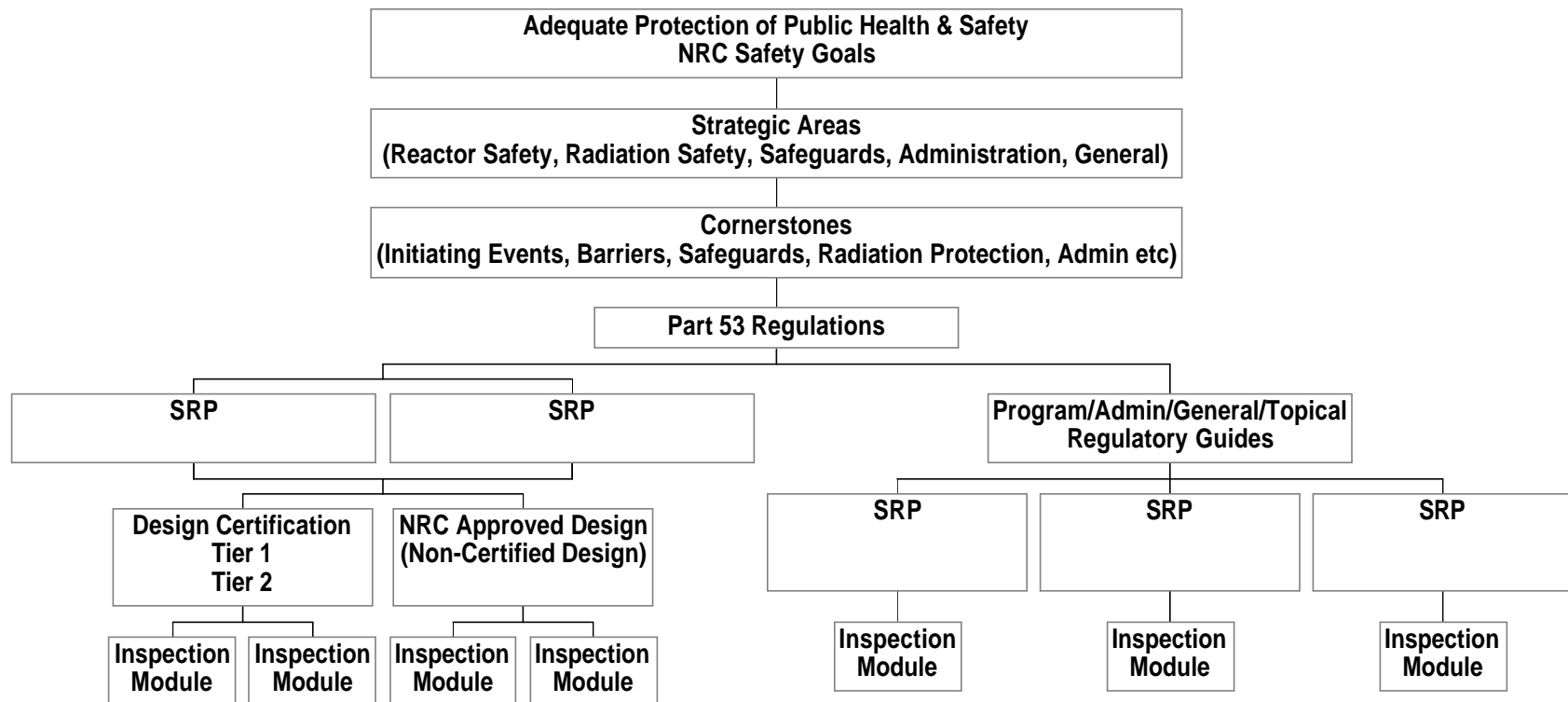
Framework Principles

- **The framework must result in a more efficient and effective regulatory review and approval of designs, license applications and regulatory oversight of plant operations**
- **The framework shall be implemented and developed to improve regulatory consistency and predictability.**

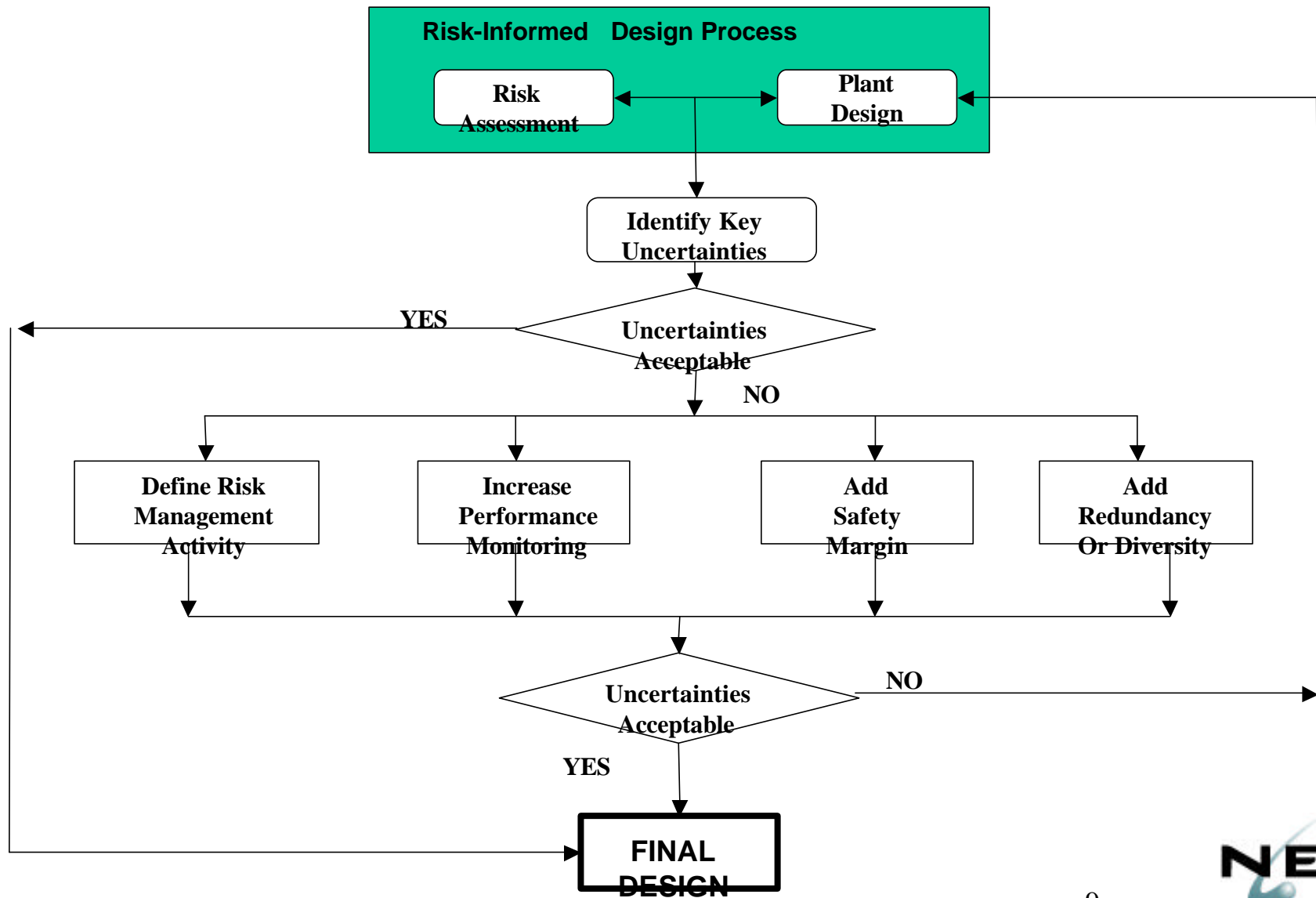
Development

- **NEI Task Force members**
 - Entergy, Exelon, Southern Nuclear Operating Company, Westinghouse, General Atomics, ERIN Eng., Scientech, ITS Corp, EPRI.
- **Build on ROP and existing NRC risk-informed activities**
 - ROP Cornerstones
 - Significance Determination Process (SDP)
 - Change process – Reg. Guide 1.174
 - RIP 50 activities

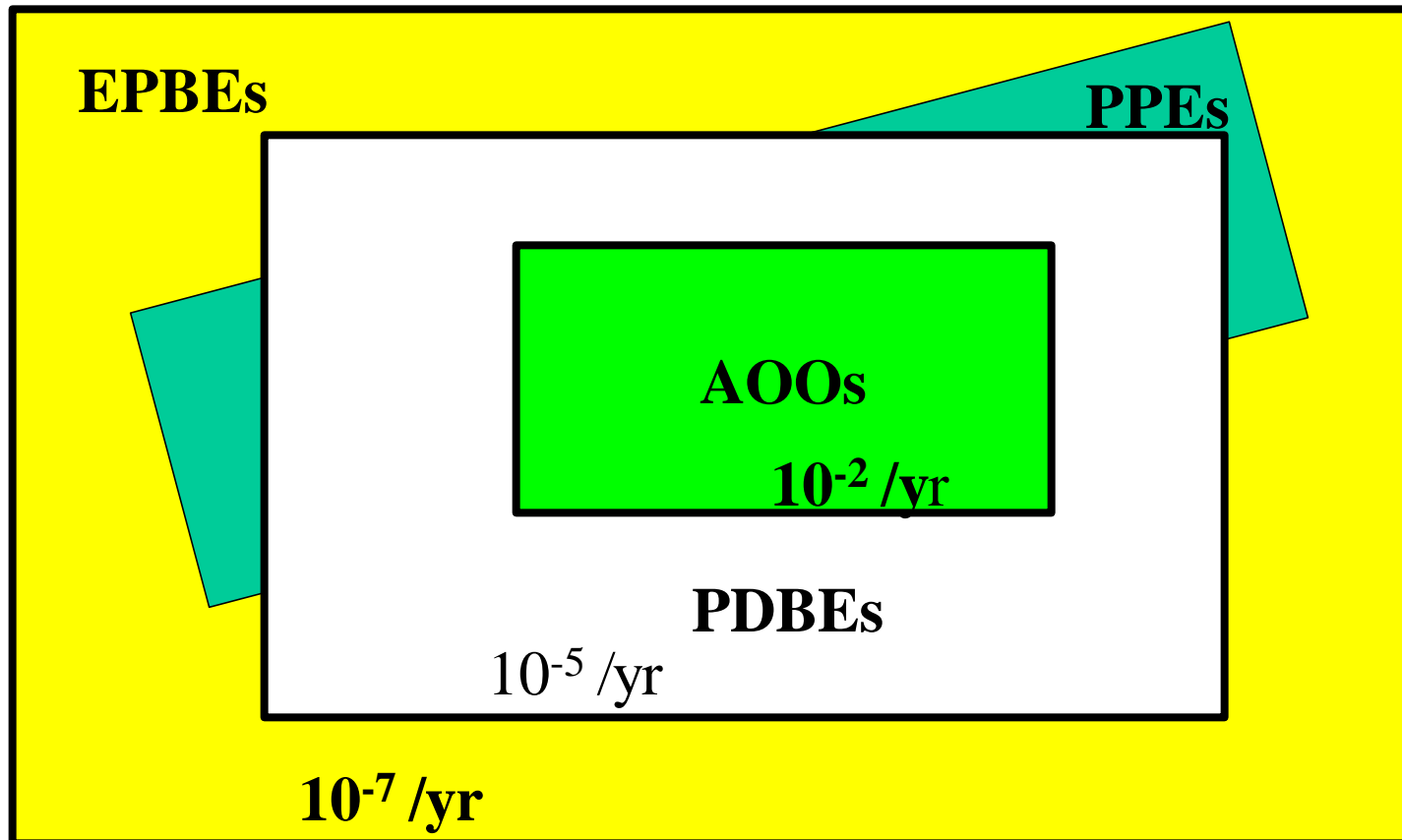
New Regulatory Architecture



Defense-in-Depth Process



New Regulatory Framework Initiating Events



Framework

- **Risk-Informed, Performance-Based**
 - Significant emphasis on PRA
 - Greater emphasis on regulatory guides
- **Encompass all designs & types**
- **Builds on ROP concepts**
- **No detailed regulatory appendices**
- **Maintains current support documentation structure**
 - Reg. Guides, SRP, Inspection Modules

Framework

- **Programmatic requirements focus on safety-significant equipment**
- **Minimal change to design processes**
- **Less prescriptive regulations**
 - Emphasis & prescription in Reg. Guides
- **Codes & Standards**
 - No specific regulation equivalent to §50.55a
 - Applicable codes & standards for safety-significant equipment listed in design specific Reg. Guides & licensee FSARs

Streamlined Scope of New Regulations

§53.20 Initiating Events

§53.21 Mitigation

§53.22 Functional Barriers to Release of Radionuclides

§53.30 Operational Requirements

REPLACE

§50.36, §50.44

§50.46, §50.48

§50.49, §50.62

§50.63, §50.65

Appendices to Part 50

A (partial), J, K, R & S

Examples of New Regulatory Framework

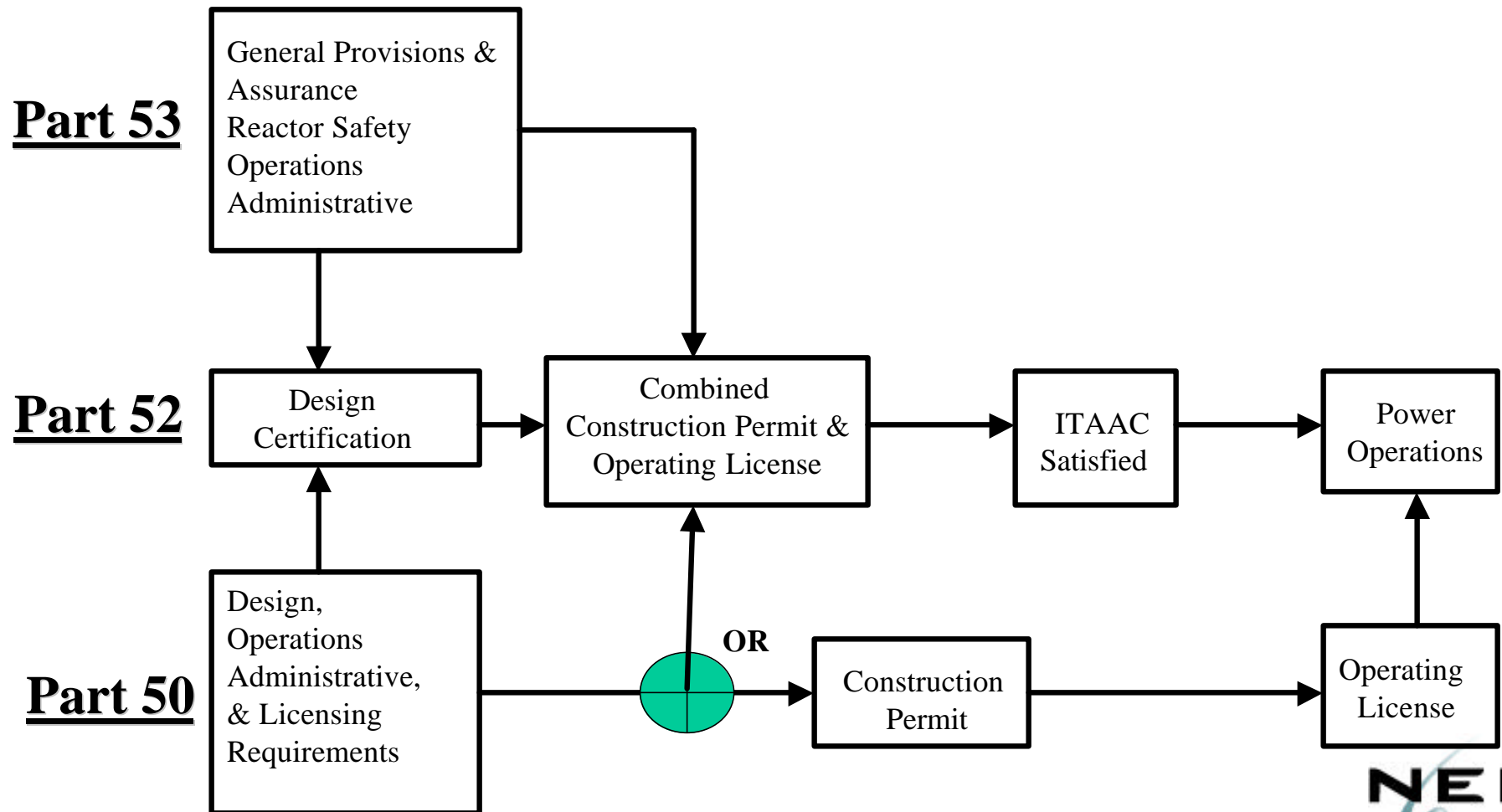
■ QA

- Similar to Appendix B
- Risk-Informed SSC scope
- Performance-Based assessments & audits
- Suppliers quality process certified to a national consensus standard or §53.15 (Quality Assurance)

■ EP

- Graded approach similar to ISFSI
 - ◆ Need for offsite program linked to size, probability & consequences of radionuclide release.

Part 50-Part 52-Part 53 Interrelationship



Benefits of Establishing New Framework

- **Helps establish a new paradigm of thinking**
- **Provide a platform for agreement on principles and objectives**
 - Ensures issues are focused on safety and are tied to defined safety objectives
 - Provides a standard against which to set requirements
- **Provides the opportunity for improving regulatory effectiveness and efficiency**

Safety Benefits

- **Improved operator focus on events that are more probable and of safety significance**
- **Operator training enhanced and focused on the more probable safety significant events**
- **Simplified operator actions**
- **Reduction in inadvertent malfunctions**
- **Maintenance and other support activities focused on safety significant equipment and activities**
- **Reduction in unnecessary operational actions**
- **Reduced number of unnecessary operational transients**

Safety Benefits

- **Optimization of equipment response to safety significant events**
- **Improved testing and inspection focus on safety significant equipment and activities**
- **Lower occupational worker exposures**
- **Increased ECCS effectiveness for safety significant events**
- **More realistic setpoints and performance-monitoring criteria**
- **Simplified design**

Next Step

- **Public Workshop and ANPR to discuss**
 - The need for a new regulatory framework
 - The concepts and issues raised in NEI 02-02
 - A schedule for development and implementation