U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

10 CFR Part 53
“Licensing and Regulation of Advanced Nuclear Reactors”

Subparts A and F Preliminary Proposed Rule Language

May 6, 2021

Agenda

10:00am – 10:15am	Welcome / Introductions / Logistics / Goals
10:15am – 11:30am	Subpart A – “General Provisions”
11:30am – 12:30pm	Subpart F – Section 53.700, “Operational Objectives” and Controls on Equipment
12:30pm – 1:15pm	Lunch Break
1:15pm – 1:45pm	Subpart F – Section 53.700, “Operational Objectives” and Controls on Equipment (cont’d.)
1:45pm – 2:30pm	Subpart F – Section 53.800, “Programs”
2:30pm – 2:45pm	Break
2:45pm – 3:30pm	Subpart F – Section 53.800, “Programs” (cont’d.)
3:30pm – 4:30pm	Discussion on Previously Released Subparts and Integration of Subparts
4:30pm – 5:00pm	Additional Public Comments/Closing Remarks

Welcome/Introductions

Welcome:
John Segala, Office of Nuclear Reactor Regulation (NRR)

Speakers/Presenters:
Bob Beall, Office of Nuclear Materials Safety and Safeguards – Rulemaking PM & Meeting Facilitator
Jordan Hoellman, NRR – Part 53 Working Group Member
Bill Reckley, NRR – Technical Lead
Nanette Valliere, NRR – Technical Lead

Public Meeting Slides: ADAMS Accession No. ML21125A161

Purpose of Today's Meeting

- Review preliminary proposed rule language for Part 53.
  - Subpart A – General Provisions
  - Subpart F – "Requirements for Operations," "Operational Objectives," and "Programs"
- Discuss previously released preliminary proposed rule language.
- Today's meeting is a "Comment-Gathering" meeting, which means that public participation is actively sought in the discussion of the regulatory issues during the meeting.
  - This meeting is being held in a "workshop" format to facilitate the discussion of today's topics.
  - The meeting is being transcribed and the transcription will be available with the meeting summary by June 5, 2021.
- No regulatory decisions will be made at today's meeting.

NRC Staff Plan to Develop Part 53

Subpart B | **Subpart C** | **Subpart D** | **Subpart E** | **Subpart F** | **Subpart G**

Requirements Definition
- Safety Objectives
- Safety Criteria
- Safety Functions

Project Life Cycle

Design and Analysis	Siting	**Construction**	Operation	Retirement
System & Component Design	*External Hazards*	*Construction/ Manufacturing*	*Facility Safety Program*	
Analysis Requirements	*Site Characteristics*	*Ensuring Capabilities/ Reliabilities*	***Surveillance Maintenance***	
Safety Categorization & Special Treatment	*Environmental Considerations*	*Change Control*	***Configuration Control***	
		Environmental Considerations	***Staffing & Human Factors***	
			Programs Security, EP	

Other

Subpart A
General Provisions

Subpart J
Admin & Reporting

Plant/Site (Design, Construction, Configuration Control)

Analyses (Prevention, Mitigation, Compare to Criteria)

Plant Documents (Systems, Procedures, etc.)

LB Documents (Applications, SAR, TS, etc.) **Subparts H & I**

Clarify Controls and Distinctions Between

NRC Staff Engagement Plan

Stakeholder Interactions

	Framework	Safety Criteria	Design	Siting	Construction	Operations	Decommissioning	Licensing	General/Admin
Sept 20									
Nov 20									
Dec 20									
Jan 21									
Feb 21									
Mar 21									
Apr 21									
May 21									
Jun 21									
Jul 21	Consolidated Technical Sections								
Aug 21									
Sept 21	Consolidated Technical Sections								
Oct 21									
Nov 21	Consolidated Rulemaking Package								
Dec 21									
Jan 22	ACRS Full Committee								
Feb 22									
Mar 22									
Apr 22									
May 22	**Draft Proposed Rulemaking Package to the Commission**								
Jun 22									
Jul 22									
Aug 22									
Sept 22									
Oct 22									

(yellow)	Concept/Introduction
(blue)	Discussion
(green)	Interim Staff Resolution

Note that this is a living schedule and will be updated as needed throughout the rulemaking process. Upcoming introductions of concepts and discussions of preliminary rule language will involve a variety of topics that have historically involved specific technical and programmatic specialties. To that end, stakeholders are encouraged to ensure that appropriate subject matter experts are involved in discussions of rule language and plans for guidance documents. An example is concepts and discussions within Subpart F (operations) that involve staffing levels and operator licensing.

General Provisions and Definitions – Subpart A

Part 53 General Layout

- Subpart A, General Provisions
- Subpart B, Technology-Inclusive Safety Objectives
- Subpart C, Design and Analysis
- Subpart D, Siting Requirements
- Subpart E, Construction and Manufacturing Requirements
- Subpart F, Requirements for Operation
- Subpart G, Decommissioning Requirements
- Subpart H, Applications for Licenses, Certifications and Approvals
- Subpart I, Maintaining and Revising Licensing Basis Information
- Subpart J, Reporting and Administrative Requirements

10 CFR Part 53 Subpart A Layout

- § 53.010 – Scope
- § 53.020 – Definitions
- § 53.040 – Written Communications
- § 53.050 – Deliberate Misconduct
- § 53.060 – Employee Protection
- § 53.070 – Completeness and Accuracy of Information
- § 53.080 – Specific Exemptions
- § 53.090 – Combining Licenses; Elimination of Repetition
- § 53.100 – Jurisdictional Limits
- § 53.110 – Attacks and Destructive Acts
- § 53.120 – Information Collection Requirements: OMB Approval

Subpart A – § 53.020 Definitions

- Advanced nuclear plant
  - "*Advanced nuclear plant [or facility]* means a utilization facility consisting of one or more advanced nuclear reactors [as defined in NEIMA] and associated co-located support facilities, which may include one or more reactor modules, [*using nuclear fission, nuclear fusion, or accelerator-driven reactor technologies*] that are used for producing power for commercial electric or other commercial purposes. The advanced nuclear plant includes the collection of sites, buildings, radionuclide sources, and structures, systems, and components for which a license is being sought under this part."

- Definition of "advanced nuclear reactor" (Nuclear Energy Innovation and Modernization Act (NEIMA))
  - "a nuclear fission or fusion reactor, including a prototype plant (as defined in sections 50.2 and 52.1 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this Act)), with significant improvements compared to commercial nuclear reactors under construction as of the date of enactment of this Act, including improvements such as— (A) additional inherent safety features; (B) significantly lower levelized cost of electricity; (C) lower waste yields; (D) greater fuel utilization; (E) enhanced reliability; (F) increased proliferation resistance; (G) increased thermal efficiency; or (H) ability to integrate into electric and nonelectric applications."
- SECY-20-0032
  - "The staff interprets NEIMA's definition of an advanced nuclear reactor, which states that such a reactor will have 'significant improvements compared to commercial nuclear reactors under construction' as of January 14, 2019, as excluding 'Generation III+' designs from the definition because the AP1000 reactors were under construction at the time of NEIMA's enactment."

Subpart A – § 53.020 Definitions

- Consensus code or standard
  - “means any technical standard (1) developed or adopted by a voluntary consensus standard body under procedures that assure that persons having interests within the scope of the standard that are affected by the provisions of the standard have reached substantial agreement on its adoption, (2) formulated in a manner that afforded an opportunity for diverse views to be considered, and (3) designated by the standards body as such a standard for the safe design, manufacture, construction, or operation of nuclear power plants.”

Subpart A – § 53.020 Definitions

- End state
  - o “means the set of conditions at the end of an event sequence that characterizes the impact of the sequence on the plant or resulting releases of radionuclides to the environment. In most probabilistic risk assessments, end states typically include success states (i.e., those states with negligible impact) and release categories.”
- Event sequence
  - o “means a postulated initiating event defined for a set of initial plant conditions followed by system, safety function, and operator successes or failures, and terminating in a specified end state depending on the system, safety function, and operator successes and failures (e.g., prevention of release of radioactive material or release in one of the reactor-specific release categories). An event sequence may include many unique variations of events (e.g., minimal cut sets) that are similar in terms of how they impact the performance of safety functions along the event sequence.”

Subpart A – § 53.020 Definitions

- Normal plant operation or normal operation
  - “means operations that are expected to occur during planned operations or shutdown of the reactor.”
- Licensing basis events (LBEs)
  - “mean a collection of event sequences considered in the design and licensing of the advanced nuclear plant. LBEs are unplanned events and include AOOs, unlikely event sequences, very unlikely event sequences, and DBAs.”
- Design basis accidents (DBAs)
  - “mean postulated event sequences that are used to set functional design criteria and performance objectives for the design of safety-related structures, systems, and components. DBAs are a type of licensing basis event and are based on the capabilities and reliabilities of safety-related structures, systems, and components needed to mitigate and prevent event sequences, respectively.”
- Anticipated operational occurrences (AOOs)
  - “mean anticipated event sequences expected to occur one or more times during the life of a nuclear power plant. An event sequences with a mean frequency of 1×10^{-2}/plant-year and greater is an AOO. AOOs take into account the expected responses of all SSCs within the plant, regardless of safety classification. AOOs are a type of *licensing basis event*. [*Based, in part, on Appendix A to part 50.*]”

Subpart A – § 53.020 Definitions

- Unlikely event sequences
  - "mean event sequences that have estimated frequencies below the frequency of AOOs. Unlikely event sequences are a subset of LBEs. [*For example, within the licensing modernization project, this would equate to design basis events with a frequency range of between $1x10^{-2}$ and $5x10^{-4}$ per plant year with an accounting for uncertainties.*]"
- Very unlikely event sequences
  - "mean event sequences that have estimated frequencies well below the frequency of events expected to occur in the life of an advanced nuclear plant. Very unlikely event sequences are a subset of LBEs. [*For example, within the licensing modernization project, this would equate to beyond design basis events with a frequency range of between $1x10^{-4}$ and $5x10^{-7}$ per plant year with an accounting for uncertainties*.]"

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Subpart A – § 53.020 Definitions

- Safety-related (SR)
  - “means those SSCs and human actions that warrant special treatment and are relied upon to demonstrate compliance with the safety criteria in § 53.210(b).”
- Non-Safety Related but Safety Significant (NSRSS)
  - “means those SSCs and human actions that warrant special treatment and are not safety-related but are relied on to achieve defense-in-depth or perform risk-significant functions.”
- Non-Safety Significant (NSS)
  - “means those SSCs not warranting special treatment, are not safety-related, and are not relied on to achieve adequate defense-in-depth or to perform risk-significant functions.”

Subpart A – § 53.020 Definitions

- Special treatment
  - "means those requirements, such as measures taken to satisfy functional design criteria, quality assurance, and programmatic controls, that provide assurance that certain SSCs will provide defense-in-depth or perform risk-significant functions and that provide confidence that the SSCs will perform under the service conditions and with the reliability assumed in the analysis performed in accordance with § 53.450 to provide reasonable assurance of meeting the safety criteria in § 53.210(b) and § 53.220(b)."
- Defense in depth
  - "means inclusion of multiple independent and redundant layers of defense in the design of a facility and its operating procedures to compensate for potential human and mechanical failures so that no single layer of defense, no matter how robust, is exclusively relied upon. Defense-in-depth includes, but is not limited to, the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures."

Subpart A – § 53.020 Definitions

- Design features
  - o “means the active and passive structures, systems, or components and inherent characteristics of those structures, systems or components that contribute to limiting the total effective dose equivalent to individual members of the public during normal operations and prevent or mitigate the consequences of unplanned events.”
- Inherent characteristic
  - “means an attribute of a design feature that has such a high degree of certainty in its performance that uncertainties need not be quantified.”
- Functional design criteria
  - o “means requirements for the performance of SSCs. For safety-related SSCs, these criteria define requirements necessary to demonstrate compliance with first tier safety criteria in § 53.210(b). For non-safety-related but safety-significant SSCs, these criteria define requirements necessary to meet the second tier safety criteria in § 53.220(b).”

Subpart A – § 53.040 - § 53.120
Other Administrative Requirements

- Subpart A consistent with Part 50 and currently includes bracketed references to existing requirements in Parts 50, 52, etc.
- Intending to develop Part 53 with largely no pointers to Parts 50 and 52; this will require copying and pasting the Part 50 or 52 language into Part 53 instead of using pointers.
- Subpart A will include many pointers to other sections of Part 53 that will be added in future iterations.

Subpart A – General Provisions

Discussion

Subpart F – Operational Objectives

Part 53 General Layout

- Subpart A, General Provisions
- Subpart B, Technology-Inclusive Safety Objectives
- Subpart C, Design and Analysis
- Subpart D, Siting Requirements
- Subpart E, Construction and Manufacturing Requirements
- Subpart F, Requirements for Operation
    - Operational Objectives
- Subpart G, Decommissioning Requirements
- Subpart H, Applications for Licenses, Certifications and Approvals
- Subpart I, Maintaining and Revising Licensing Basis Information
- Subpart J, Reporting and Administrative Requirements

Subpart F – § 53.700 Operational Objectives

- Licensee must:
  - Define structures, systems, and components (SSCs)
  - Maintain capabilities and reliabilities of SSCs
  - Ensure plant personnel have adequate knowledge and skills to perform their assigned duties to support safety functions
  - Implement plant programs sufficient to ensure the performance of identified safety functions

Subpart F – § 53.710 Transition to Operation

- Prepare a transition plan from construction to operations
  - o Demonstrate the SR and NSRSS SSCs are appropriately constructed and capable to perform
  - o Plant personnel are appropriately licensed and trained to perform safety functions
  - o Programs, procedures and controls are implemented to support the safety functions

Subpart F – § 53.720 Maintaining Capabilities

- Capabilities and reliability of SSCs, when combined with associated programmatic controls and human actions, provide reasonable assurance that the safety criteria defined in §§ 53.210(b) and 53.220(b) will be met.
- Paragraph (a) defines controls for SR SSCs (technical specifications).
- Paragraph (b) defines controls for NSRSS SSCs (reliability assurance and other special treatment).

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Subpart F – § 53.720(a) Technical Specifications (TS)

- TS required to define conditions or limitations on SSCs to fulfill safety functions (§ 53.230) and first tier safety criteria (§ 53.210(b))
  - Inventories of radioactive materials
  - Operating limits
  - For each SSC classified as safety related
    - Limiting Conditions for Operation
    - Surveillance Requirements
  - Design Attributes
  - Administrative Controls
  - *Decommissioning*

- First iteration does not include:
  - Safety limits or associated limiting safety system settings
  - Criteria for limiting conditions for operation
- Some stated preferences to use deterministic approaches may be better addressed within Part 50.

Subpart F – § 53.720(b) Special Treatment of NSRSS SSCs

- Configurations and special treatments for NSRSS SSCs ensure capabilities, availabilities, and reliabilities to satisfy second tier safety criteria (§ 53.210(b)).
- Controls must:
  - Identify authorities and processes for configuration changes
  - Describe means by which special treatments for each NSRSS SSC will be provided and maintained

- Controls for NSRSS SSCs needed to implement a performance-based approach used to gain operational flexibilities and as part of methods that include replacing the single-failure criterion with a probabilistic (reliability) approach.
- Deterministic approaches with different supporting analysis, safety classification schemes, and design approaches (e.g., inclusion of the single failure criterion) may be better addressed within Part 50.

MEETING BREAK

Meeting to resume in 45 minutes

Subpart F – § 53.730 Maintenance, Repair and Inspection

a) Develop a program to maintain and repair SR and Safety Significant SSCs.
b) Take appropriate corrective action when NSRSS SSCs do not meet special treatment requirements or performance goals.
c) Evaluate performance and preventive maintenance activities every 24 months.
d) Conduct risk-informed assessment of the impact and scope of any maintenance activities.

Subpart F – § 53.740 Design Control

- Assess the potential for adverse effects on safety, security, Emergency Preparedness (EP), operations, or other items related to plant safety during the design process and before implementing design or operational changes.
  - Physical modifications, procedural changes, operator actions, maintenance activities, system reconfigurations, access modifications or restrictions, changes to the emergency plan and security plan or their implementation.
  - Establish measures for the identification and control of interfaces among plant activities.

Subpart F – Operational Objectives

Discussion

Subpart F – Programs

Part 53 General Layout

- Subpart A, General Provisions
- Subpart B, Technology-Inclusive Safety Objectives
- Subpart C, Design and Analysis
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- Subpart F, Requirements for Operation
  - Programs
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- Subpart J, Reporting and Administrative Requirements

Subpart F – § 53.800 Programs

- Programs must be provided for each advanced nuclear plant such that, when combined with associated design features and human actions, the plant will satisfy the first and second tier safety criteria defined in §§ 53.210 and 53.220.

Subpart F – § 53.810 Radiation Protection

- Implement a radiation protection program to limit occupational exposure in accordance with Part 20.
- Limit exposure to the public.
  - Develop procedures and remedial actions in an Offsite Dose Calculations Manual (ODCM).
  - ODCM
    - Define methodology used in the calculation.
    - Contain radioactive effluent controls and environmental monitoring activities.
    - Annual Radiological Environmental Operating and Radioactive Effluent Release Reports.

Subpart F – § 53.820 Emergency Preparedness

- Develop and implement an EP Program for operations that is commensurate with the risks posed by the licensing basis events as analyzed in accordance with § 53.450.
  - Staff is developing preliminary proposed rule language for Part 53 in coordination with activities related to the "Emergency Preparedness for Small Modular Reactors and Other New Technologies" rulemaking.

Subpart F – § 53.830 Security Programs

- Develop and implement security programs:
  - Information security
  - Physical security
  - Cyber security
  - Access authorization
  - Material control and accounting

Staff is planning to review security-related preliminary proposed rule language at a future public meeting.

Subpart F – § 53.840 Quality Assurance (QA)

- Develop and execute a QA program (QAP):
  - Define duties and responsibilities for QA of SSCs
  - Written QA manual
  - Written procedures
    - Qualified personnel
    - Procurement
    - Handling, shipping and storage of materials
    - Testing and inspection
    - Corrective action
    - Document and configuration control
    - Design control
    - Record keeping
    - Auditing
  - Document results of QA activities

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MEETING BREAK

Meeting to resume in 15 minutes

Subpart F – § 53.850 Integrity Assessment Program (IAP)

- Develop and implement an IAP.
- Monitor, evaluate and manage:
  - Effects of aging on SR and NSRSS SSCs whose failure could affect performance of safety functions.
  - Cyclic and transient loads are maintained within applicable design limits.
  - Degradation related to chemical interactions, operating temperatures, irradiation, and other environmental factors to ensure the capabilities and reliabilities of SSCs satisfy the functional design criteria of §§ 53.410(b) and 53.420(b).

Subpart F – § 53.860 Fire Protection

- Develop and implement a fire protection plan:
  - Identify responsible parties and authorities
  - Outline plans for fire protection, detection, suppression capability, and limitation of damage
  - Administrative controls, personnel requirements, and suppression activities
  - Means to limit damage to SR and NSRSS SSCs
- Specific features of program:
  - SR and NSRSS SSCs designed to minimize effect of fires
  - Use noncombustible and fire-resistant materials wherever practical in facility
  - Appropriate capacity and capability
  - Design such that inadvertent operation does not impair SR SSCs

Subpart F – § 53.870
Inservice Testing (IST) and Inservice Inspection (ISI)

- Develop programs for ISI and IST:
  - ISI and IST includes codes and standards supplemented by risk insights
  - Testing and frequency done to maintain reliability of SSCs
  - Documented procedures
- Perform baseline inspections prior to starting operations:
  - Determine benchmarks
  - Develop acceptance criteria
  - Results provided to plant manager and determine need for corrective action

Subpart F – § 53.880
Criticality Safety Program

- The program must address the requirements in 10 CFR 70.24 for maintaining a monitoring system capable of detecting a criticality, having emergency procedures, and providing radiation protection for plant workers.

A topic for discussion is whether the alternatives to 10 CFR 70.24 provided in 10 CFR 50.68, “Criticality accident requirements,” are appropriate and useful in Part 53.

Subpart F – § 53.890 Facility Safety Program (FSP)

- Establish an FSP using a risk-informed, performance-based process to proactively identify new or revised hazards and performance issues.
- Routinely evaluate potential hazards, operating experience, human actions, and programmatic controls.
- Consider measures to mitigate or eliminate the resulting risks.

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Subpart F – § 53.892 FSP Performance Criteria

- Take measures to protect public health and minimize danger to life or property as may be reasonably achieved when considering costs.
  - Assess risk reduction measures related to radionuclide release during normal operation.
  - Assess risk reduction measures for contributors to the overall cumulative risk from unplanned events.
- Certified designs/manufacturing licenses must also use change control from Subpart H.

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Subpart F – § 53.894 FSP Plan

- FSP must use written plan and address:
  - Scope of facilities covered
  - How FSP will be implemented
  - How personnel will be trained in FSP
  - Risk-informed hazard management program
  - Technology assessment program
  - Internal facility safety program assessment

- Note that staff is looking at the possibility that some of the administrative details in the first iteration language might be addressed within guidance documents.

Subpart F – § 53.896 Review, Approval, and Retention of FSP

- FSP plan is part of the application
- NRC to review/approve FSP plan
- Will define staff process for reviewing FSP plan changes and amendments

Subpart F – § 53.900 Procedures and Guidelines

- Integrated set of procedures and guidelines to maintain normal operations and respond to unplanned events
- Plan must address:
  - Plant operations
  - Maintenance under § 53.730
  - Program requirements under this subpart (e.g., radiation protection, QA, Integrity Assessment)
  - Emergency operating procedures if human intervention required
  - Accident management guidelines

Discussion

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Discussion on Previously Released Subparts and Integration of Subparts

Previously Released Subparts

- Previously Released Preliminary Proposed Rule Language
  - Subpart D, Siting
  - Subpart E, Construction and Manufacturing
- Other Previously Released Preliminary Proposed Rule Language
  - Subpart B, Technology-Inclusive Safety Requirements
  - Subpart C, Design and Analysis

Previously Released Subparts

Discussion

Final Discussion and Questions

Part 53 Rulemaking Schedule

Milestone Schedule	
Major Rulemaking Activities/Milestones	Schedule
Public Outreach, ACRS Interactions and Generation of Proposed Rule Package	Present to April 2022 (11 months)
Submit Draft Proposed Rule Package to Commission	May 2022
Publish Proposed Rule and Draft Key Guidance	October 2022
Public Comment Period – 60 days	November and December 2022
Public Outreach and Generation of Final Rule Package	January 2023 to February 2024 (14 months)
Submit Draft Final Rule Package to Commission	March 2024
Office of Management and Budget and Office of the Federal Register Processing	July 2024 to September 2024
Publish Final Rule and Key Guidance	October 2024

Future Public Meetings

- The NRC staff will continue to host monthly public meetings, estimated to be the first Thursday of every month, to discuss and receive feedback on various regulatory topics and preliminary proposed rule text.
  - The next Part 53 public meeting will be scheduled for June 3, 2021.
  - The preliminary proposed rule text will be posted on regulations.gov under docket ID NRC-2019-0062 before the public meeting.
- The NRC staff is scheduled to meet with the ACRS Future Plants Subcommittee on May 20, 2021.

Closing Remarks

Rulemaking Contacts

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Regulations.gov docket ID: **NRC-2019-0062**

Please provide feedback on this public meeting using this link:
https://www.nrc.gov/public-involve/public-meetings/contactus.html

Acronyms and Abbreviations

ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Document Access Management System
AOO	Anticipated operational occurrences
CFR	Code of Federal Regulations
DBA	Design basis accident
EP	Emergency preparedness
FSP	Facility Safety Program
IAP	Integrity Assessment Program
ISI	Inservice inspection
IST	Inservice testing
LBE	Licensing basis event
NEI	Nuclear Energy Institute
NEIMA	Nuclear Energy Innovation and Modernization Act

NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSRSS	Non-safety related but safety significant
NSS	Non-safety significant
ODCM	Offsite Dose Calculations Manual
OMB	Office of Management and Budget
QA	Quality assurance
QAP	Quality assurance program
SAR	Safety analysis report
SR	Safety related
SSCs	Structures, systems, and components
TS	Technical specifications
UCNIC	U.S. Nuclear Industry Council

Background Slides

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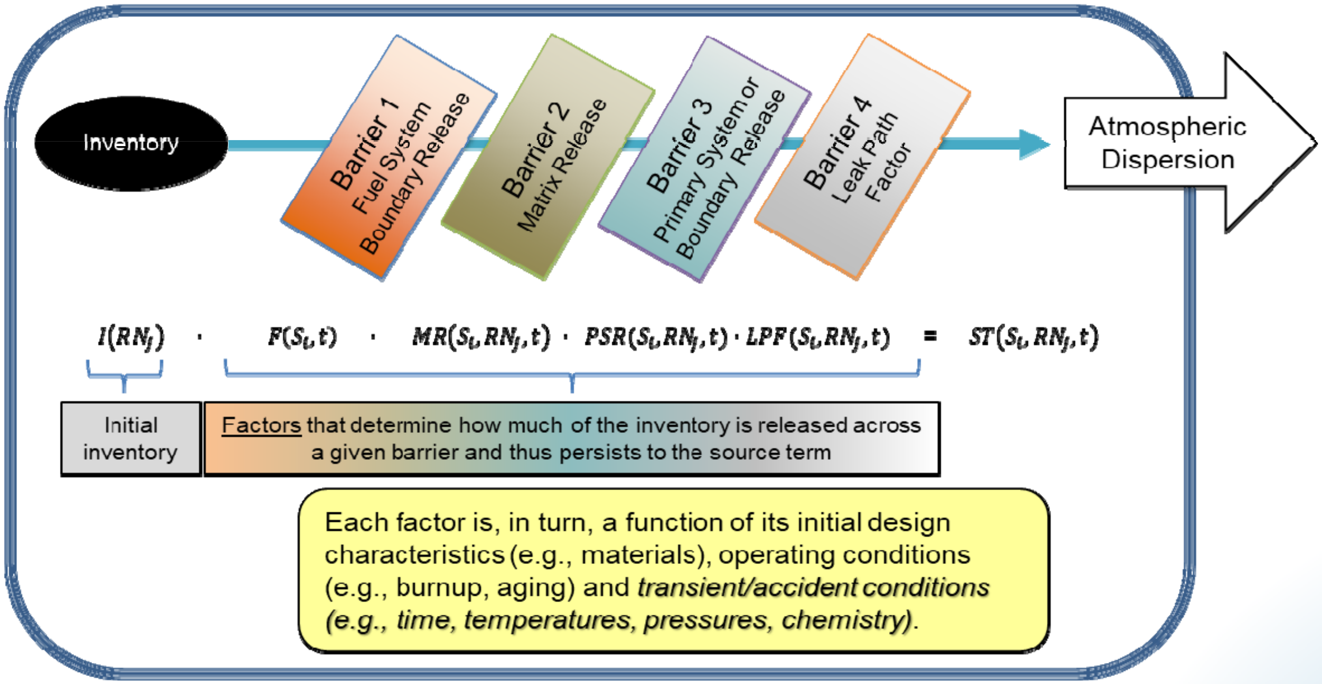
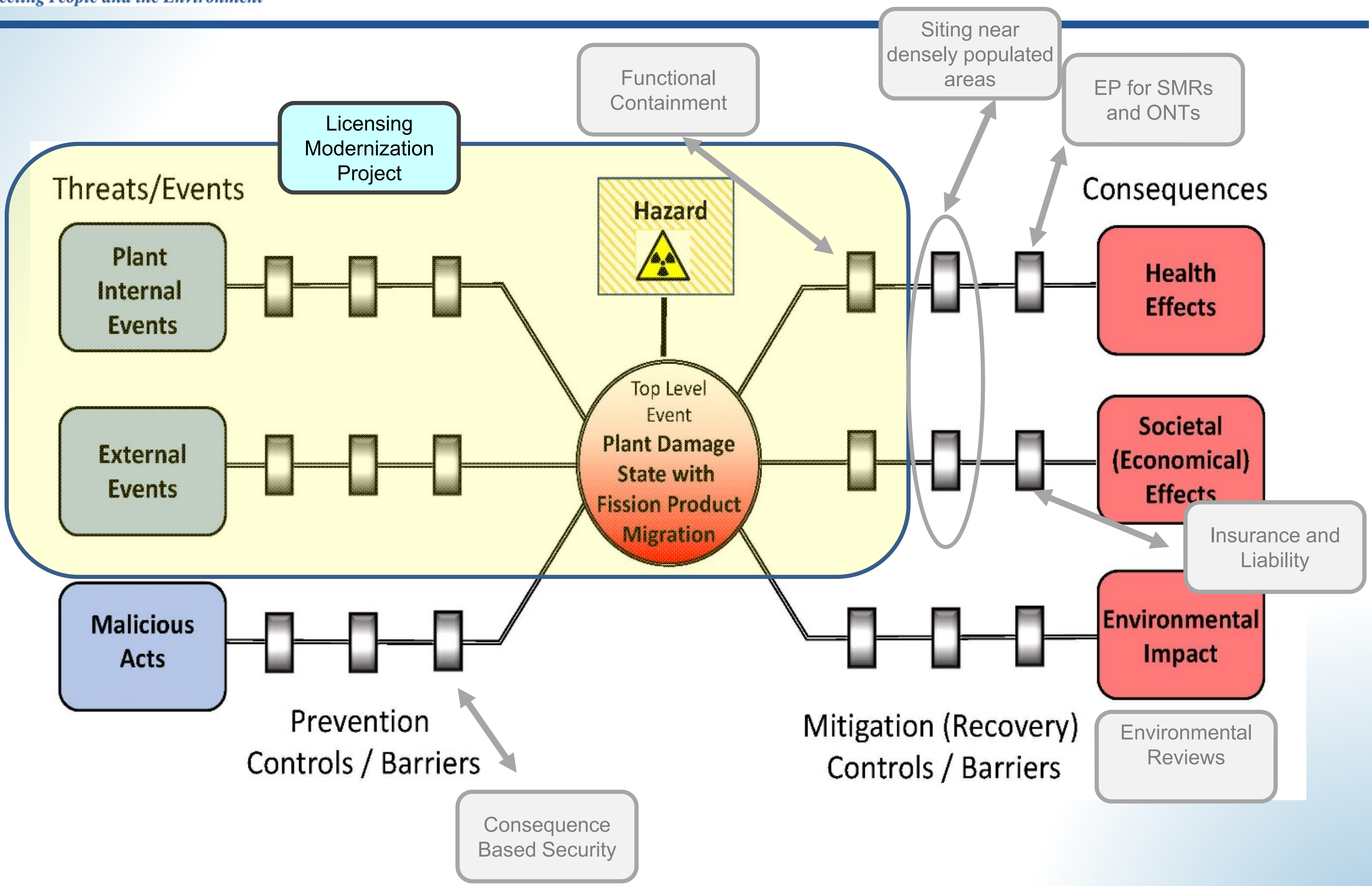
First Principles

Recent NRC activities related to advanced reactors (e.g., functional containment performance criteria, possible changes to emergency planning & security, and DG-1353) recognize the limitations of existing LWR-related guidance, which requires a return to first principles such as fundamental safety functions supporting the retention of radionuclides



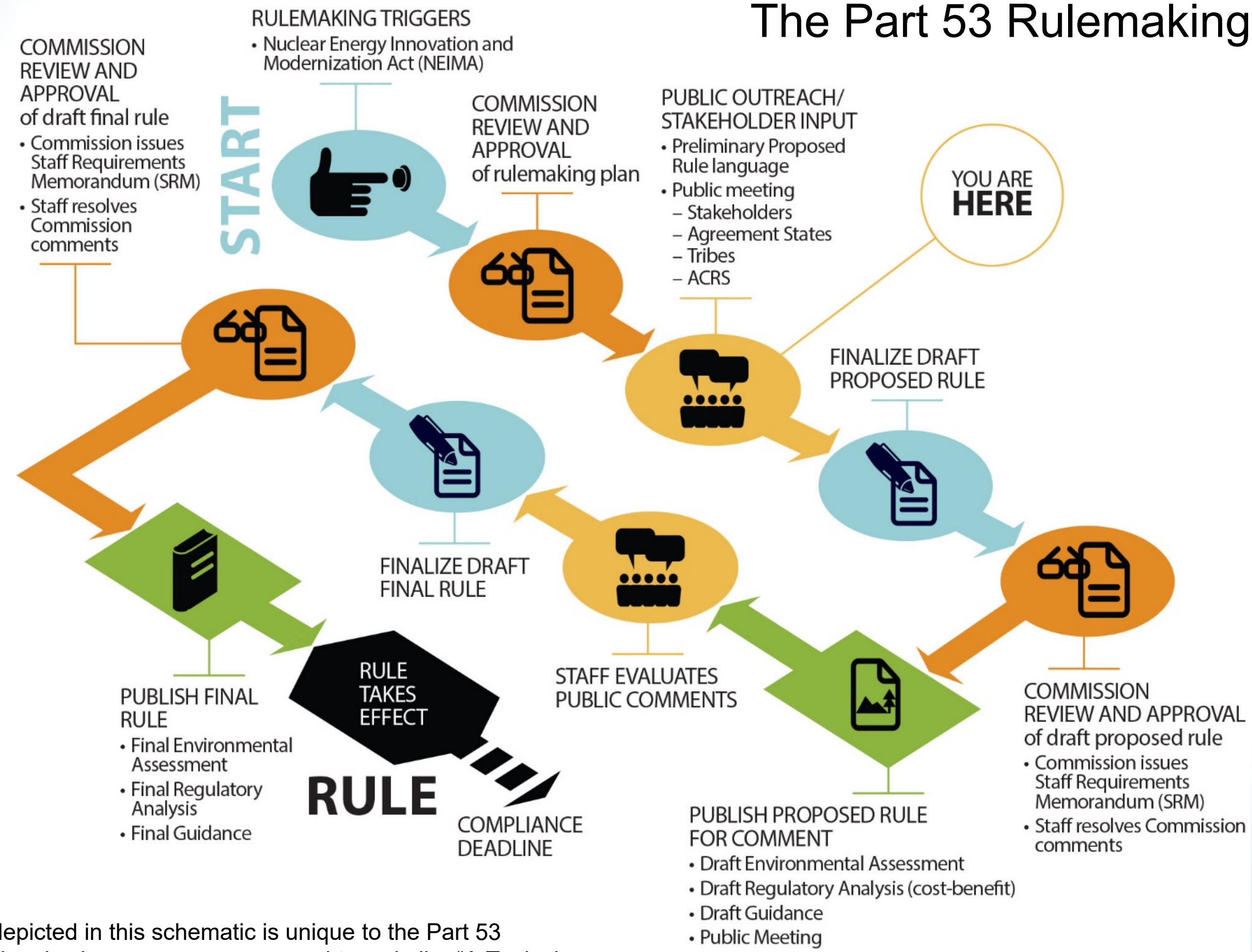
See: SECY-18-0096, "Functional Containment Performance Criteria for Non-Light-Water-Reactors," and INL/EXT-20-58717, "Technology-Inclusive Determination of Mechanistic Source Terms for Offsite Dose-Related Assessments for Advanced Nuclear Reactor Facilities"

Integrated Approach



Part 53 Rulemaking

The Part 53 Rulemaking Process*



*The process depicted in this schematic is unique to the Part 53 rulemaking and varies in some ways compared to a similar “A Typical Rulemaking Process” schematic available on the NRC’s public website.

Background

- Nuclear Energy Innovation and Modernization Act (NEIMA; Public Law 115-439) signed into law in January 2019 requires the NRC to complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use for commercial advanced nuclear reactors no later than December 2027
  - (1) ADVANCED NUCLEAR REACTOR—The term “advanced nuclear reactor” means a nuclear fission or fusion reactor, including a prototype plant… with significant improvements compared to commercial nuclear reactors under construction as of the date of enactment of this Act, …