



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

10 CFR Part 53, Subpart I - Section 53.1322, “Evaluating changes to facility as described in final safety analysis reports.”

September 15, 2021

Agenda

- 1:00pm – 1:15pm** Welcome / Introductions / Logistics / Goals
- 1:15pm – 2:30 pm** Subpart I – Section 53.1322, “Evaluating changes to facility as described in final safety analysis reports” – Paragraph (a)
- 2:30pm – 3:00pm** Subpart I – Section 53.1322, “Evaluating changes to facility as described in final safety analysis reports” – Paragraphs (b) & (c) and Section 53.1333 (Programs)
- 3:00pm – 3:15pm** Break
- 3:15pm – 4:30pm** Discussion of Other Recently Released Iterations of Preliminary Rule Language; Subpart F - Programs
- 4:30pm – 5:00pm** Additional Public Comments/Closing Remarks

Welcome/Introductions

Welcome:

- John Segala, Office of Nuclear Reactor Regulation (NRR)

Speakers/Presenters:

- Dennis Andrukat, Office of Nuclear Materials Safety and Safeguards – Meeting Facilitator
- Bill Reckley, NRR – Technical Lead
- Nuclear Energy Institute (NEI)

Public Meeting Slides: ADAMS Accession No. ML21252A124

Purpose of Today's Meeting

- Review preliminary proposed rule language for Subpart I - Sections 53.1322 & 53.1333 (evaluation of plant changes).
- Open discussion of previously released preliminary rule language, including Subpart F – Program-related sections
- 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 October 14, 2021.
- No regulatory decisions will be made at today's meeting.

**Subpart I – Section 53.1322,
“Evaluating changes to facility as
described in final safety analysis
reports”**

&

**Section 53.1333, “Evaluating
changes to programs included in
licensing basis information”**

Subpart I – § 53.1322(a)

- Licensees may make changes in the facility as described in the UFSAR and make changes in the procedures as described in the UFSAR without obtaining a license amendment only if:
 - A change to the technical specifications incorporated in the license is not required.
 - The change does not:
 - Result in a change to the frequency or consequences of an event sequence previously deemed not risk significant such that it becomes risk significant.
 - Result in a change to the frequency or consequences of an event sequence deemed risk significant such that it has a decrease of 10 percent or more in the calculated margins to the LBE evaluation criteria.
 - Result in a change to the frequency or consequences of one or more event sequences such that the margin between the calculated cumulative risks posed by the commercial nuclear plant and the safety criteria of § 53.220 decreases by 10 percent or more.

Subpart I – § 53.1322(a) (cont'd)

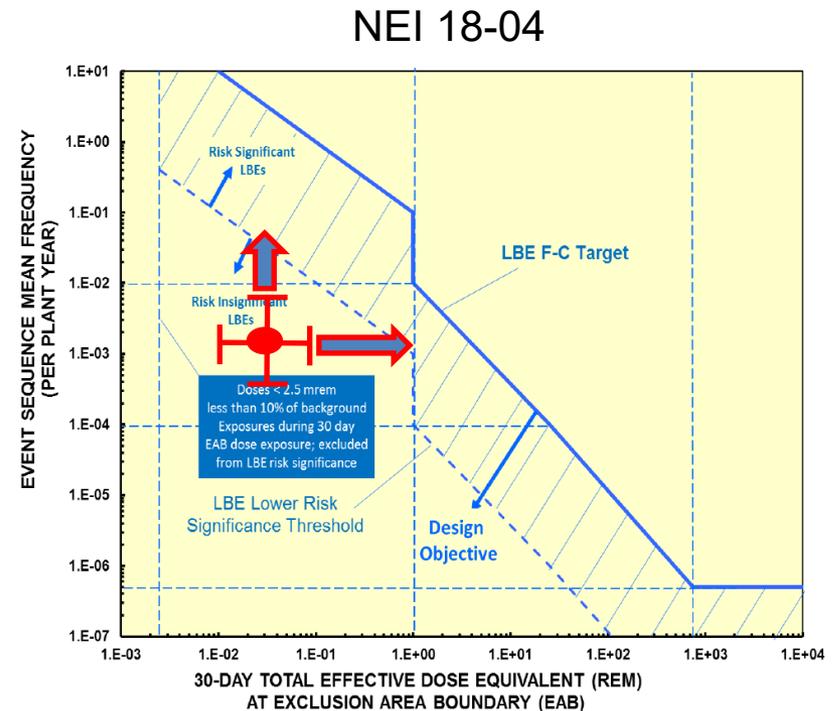
- The change does not (cont'd):
 - Involve a departure from a method of evaluation described in the UFSAR used in assessing margins in accordance with § 53.450(e) unless the results of the analysis are conservative or essentially the same, the revised method of evaluation has been previously approved by the NRC for the intended application, or the revised method of evaluation can be used in accordance with an NRC endorsed consensus code or standard.
 - For commercial nuclear plants licensed under Part 53 for which alternative evaluation criteria are applicable, result in a change to the frequency or consequences of event sequences such that the calculated margins between the results for event sequences and the alternative evaluation criteria decreases by 25 percent or more.
- In implementing this paragraph, the UFSAR is considered to include changes since submittal of the last update of the UFSAR.
- This section does not apply to changes to the facility or procedures when the applicable regulations establish more specific criteria for accomplishing such changes.

§ 53.1322(a)(2)(i)

(i) Does not result in a change to the frequency or consequences of an event sequence such that an **event sequence previously deemed not risk significant** becomes risk significant by the analyses performed in accordance with § 53.450(e).

§ 53.450(e)

... The analyses must address event sequences from initiation to a defined end state and demonstrate that the functional design criteria required by § 53.420 provide sufficient barriers to the unplanned release of radionuclides to satisfy **evaluation criteria defined for licensing basis events**, to satisfy the safety criteria of § 53.220, and provide defense in depth as required by § 53.250. **The methodology used to identify, categorize, and analyze licensing basis events must include a means to identify event sequences deemed significant for controlling the risks posed to public health and safety.**



§ 53.1322(a)(2)(ii)

(ii) Does not result in a change to the frequency or consequences of an event sequence such that an **event sequence deemed risk significant** in accordance with § 53.450(e) has a decrease of 10 percent or more in the calculated margins to the LBE evaluation criteria required to be established in accordance with § 53.450(e).

NEI 18-04

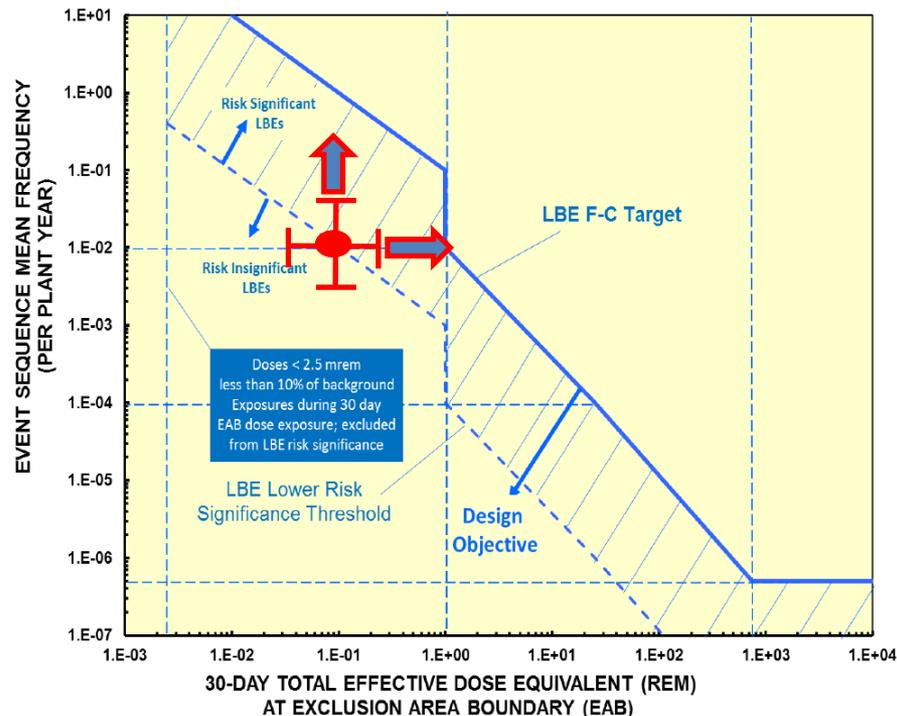


Figure 3-4. Use of the F-C Target to Define Risk-Significant LBEs

§ 53.1322(a)(2)(iii)

(iii) Does not result in a change to the frequency or consequences of one or more event sequences such that the margin between the calculated **cumulative risks** posed by the commercial nuclear plant and the safety criteria of § 53.220 decreases by 10 percent or more.

§ 53.220 Safety Criteria for Licensing Basis Events Other Than Design Basis Accidents

(b) Maintain overall cumulative plant risk from licensing basis events such that the risk to an average individual within the vicinity of the plant receiving a radiation dose with the potential for immediate health effects remains below five in 10 million years, and the risk to such an individual receiving a radiation dose with the potential to cause latent health effects remains below two in one million years.

§ 53.1322(a)(2)(iv)

(iv) Does not involve a **departure from a method of evaluation** described in the UFSAR used in assessing margins in accordance with § 53.450(e) unless the results of the analysis are conservative or essentially the same, the revised method of evaluation has been previously approved by the NRC for the intended application, or the revised method of evaluation can be used in accordance with an NRC endorsed consensus code or standard.

§ 50.59(c)(1)(viii)

(viii) Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses..

§ 53.1322(a)(2)(v)

(v) For commercial nuclear plants licensed under this part for which **alternative evaluation criteria** are applicable in accordance with § 53.470, does not result in a change to the frequency or consequences of event sequences such that the calculated margins between the results for event sequences evaluated in accordance with § 53.450(e) and the alternative evaluation criteria decreases by 25 percent or more.

§ 53.470 Application of Analytical Safety Margins to Operational Flexibilities.

Where an applicant or licensee so chooses, alternative criteria more restrictive than those defined in §§ 53.220 and 53.450(e) may be adopted to support operational flexibilities (e.g., emergency planning requirements under Subpart F of this part). In such cases, applicants and licensees must ensure that the functional design criteria of § 53.420, the analysis requirements of § 53.450(e), and identification of special treatment of SSCs and human actions under § 53.460 reflect and support the use of alternative criteria to obtain additional analytical safety margins. Licensees must ensure that measures taken to provide the analytical margins supporting operational flexibilities are incorporated into design features and programmatic controls and are maintained within programs required in other Subparts.

NEI 18-04 (w/ 1 rem goal)

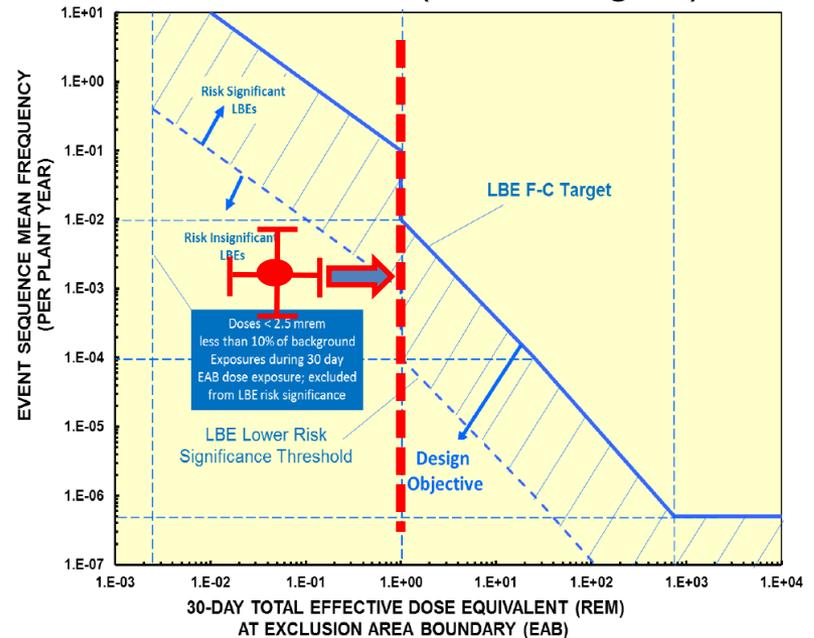


Figure 3-4. Use of the F-C Target to Define Risk-Significant LBEs

Subpart I – § 53.1322(b)

- Licensees who reference a design certification rule may make departures from the standard design, without prior Commission approval, unless the proposed departure involves a change to the design as described in the rule certifying the design, in which case the requirements of § 53.1315 are applicable.
- Licensees shall maintain records of all departures from the certified design of the facility and these records must be maintained and available for audit until the date of termination of the license. Licensees will identify the location and nature of departures from licensing basis information within supporting documents for a certified design within the updates to the safety analysis report.
- Licensees for which the NRC has docketed the certifications required under Subpart G of this part are not required to retain records of departures from the design of the facility associated with structures, systems, and components that have been permanently removed from service *using an NRC-approved change process*.

Subpart I – § 53.1322(c)

- Licensees shall maintain records of changes in the facility and procedures made pursuant to paragraph (a) of this section. These records must include a written evaluation which provides the bases for the determination that the change does not require a license amendment pursuant to paragraph (a)(2) of this section.
- Licensees shall submit, as specified in § 53.040 of this part, a report containing a brief description of any changes, including a summary of the evaluation of each. A report must be submitted at intervals not to exceed 24 months. For combined licenses, the report must be submitted at intervals not to exceed 6 months during the period from the date of application for a combined license to the date the Commission makes its findings under 10 CFR 53.[TBD] (52.103(g)).
- The records of changes in the facility must be maintained until the termination of an operating license or combined license issued under this part, or the termination of a renewed license issued under [TBD], whichever is later. Records of changes in procedures must be maintained for a period of 5 years.

Subpart I – § 53.1333

- Evaluating **Changes to Programs** in Licensing Basis Information

This iteration provides a uniform approach for program documents, which correspond to the programs required under Subpart F. The staff is interested in stakeholder views on the benefits of possibly developing a common approach versus the current practice of establishing program-specific requirements for reporting and change control. Note that this current iteration includes pointers in (a)(2) and (a)(3) that would allow program-specific change control criteria to be defined in other regulations or administrative sections of technical specifications. Where needed, the staff is seeking stakeholder views on the appropriate location and possible criteria for evaluating specific program documents.

§ 53.1333(a)

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- (2) An exemption from an NRC regulation is not required,
- (3) The change conforms to program-specific requirements included in regulations or technical specifications,

* * * * *

Subpart I - Section 53.1322

Discussion

Part 53 Rulemaking: Change Control

Marc Nichol
Senior Director, New Reactors

September 15, 2021



Initial Feedback on 53.1322

■ General observations

- Very quantitative and should appeal to PRA intensive approaches, would not work for traditional approaches to using PRA (i.e., confirmatory)
- No noticeable benefit to being different, and functionally not so different from existing
- Proposed change criteria are extremely confusing and difficult to interpret
- Needs significant guidance to explain how it works, and 50.59 guidance based on hard earned experience
- The “10% change criterion” is consistent in magnitude with 50.59 guidance, but “more than minimal” provides more flexibility than “10%” (e.g., need for some deterministic elements)

■ Questions

- What does a 10% decrease in margin mean? Margin to what – proximity to F-C curve?
- How are margins measured and evaluated? Mean or upper uncertainty band?
- How are design basis accidents and DID addressed?

■ Potential concerns

- Criteria apply to all risk-significant licensing basis events (AOOs, DBEs, and BDBEs)
- There are hundreds if not thousands of event sequences (they collapse into LBEs)
- More than 10% change on very low frequencies will occur often, but have no safety significance
- Margin to metrics in LWRs are totally different from margin for metrics in advanced reactors
- Term “used in assessing margins” not in 50.59 and not consistent with definition in guidance “calculational framework used for evaluating behavior or response of the facility or an SSCs

Discussion of Other Recently Released Iterations of Preliminary Rule Language

Other Recently Released Iterations of Preliminary Rule Language

- Subpart B – Technology-Inclusive Safety Requirements (3rd iteration) (ML21202A162)
- Subpart C – Requirements for Design and Analysis (3rd iteration) (ML21202A162)
- Subpart H – Licenses, Certifications, and Approvals (ML21202A178)
- Subpart I – Maintaining and Revising Licensing Basis Information (ML21202A175)
- Subpart J – Reporting and Other Administrative Requirements (ML21225A224)

Other Recently Released Iterations of Preliminary Rule Language

Discussion

Part 53 Rulemaking: Programs

Marc Nichol
Senior Director, New Reactors

September 15, 2021



Evaluating NRC Proposed Part 53 Programs

Programs with a Part 50/52 Equivalent

Required in NRC Part 53 Preliminary Language	Part 50/52 Equivalent Requirements
53.710(a)* - Initial Startup Testing	50.34(b)(6)(iii)
53.870 Inservice Inspection/Inservice Testing	50.55a
53.730 Maintenance, repair, and inspection programs	50.65 - although some elements may not have Part 50/52 counterpart
53.720 Maintaining capabilities and availability of SSCs	50.36 and 50.69
53.710(b)* - Training (Expected in future Subpart F requirements on human actions)	50.2, Part 55, 50.120
53.710(c)* - Operating Plans (Expected in future Subpart F requirements on human actions)	50.34(b)(6)(iv and v)
53.860 Fire Protection	50.48
53.810 Radiation Protection	Part 20
53.820 Emergency Preparedness	50.47 or 50.160 (in development)
53.830 Security Programs	Part 73 (73.54, 73.55, 73.56) and Part 26
53.550 Environmental Considerations – Points to Part 51	50.36b – Points to Part 51 (if applicable)

*Note that the NRC has not yet released the Subpart F regulations for human actions, which could include duplicative requirements

Evaluating NRC Proposed Part 53 Programs

Programs that duplicate the Quality Assurance Program

Required in NRC Part 53 Preliminary Language	Part 50/52 Equivalent Requirements
53.840 Quality Assurance	Most of Appendix B QA Program
53.480 Design Control Quality Assurance	None - Duplicates QA Program
53.610(a)(1&7) and 53.620(a)(1&6) Construction and Manufacturing Quality Assurance	None - Duplicates QA Program
53.490 Design and Analyses Interfaces	None - Duplicates QA Program
53.740 Design Control	None - Duplicates QA Program
53.620(b)(1)(IV)(vii) – Manufacturing, Manufacturing Activities	None - Duplicates QA Program

- NRC should eliminate requirements that duplicate the QA Program
- NRC should put all of the QA Requirements together similar to Appendix B
 - Enable the use of ISO-9001 and other commercial QA standards
 - Preserve the ability to use Appendix B for those that wish to
- NRC does not need to specific QA requirements for non-safety-related but safety significant SSCs

Evaluating NRC Proposed Part 53 Programs



NRC Required Programs without any Part 50/52 equivalent

Required in NRC Part 53 Preliminary Language	Part 50/52 Equivalent Requirements
53.700 Operational Objectives	None – Duplicates most other operational programs
53.800 Operational Programs	None – Duplicates most other operational programs
53.850 Integrity Assessment Programs	None – Duplicates Maintenance, ISI/IST, Technical Specifications, and creates an aging management program from Day 1
53.890, 53.892, and 53.894 Facility Safety Program, Criteria and Plan	None – Duplicates other programs, codifies periodic safety review, and circumvents backfit protection
53.880 Criticality Safety Program	None – Not necessary to require a program for compliance with each requirement. 50.68 is a better model for Part 53 requirement.
53.610 (a)(2-5), (c&d) and 53.620(a)(2-4), Construction and Manufacturing Organization and Procedures	None – Not necessary for NRC to approve the organization and plan during construction and manufacturing
53.1225 PRA Maintenance Program for 53.450(c)	None – Not necessary for NRC to approve the controls for updating the PRA
53.460(c) Human Action Performance Program	None – Duplicates the training and other operational programs related to performance of human actions

- NRC should eliminate all of these programs as they are not needed for reasonable assurance of adequate protection

NRC Approach to Programs in Part 53

An unstructured approach is inefficient and creates unintentional challenges

- NRC's approach to administrative controls results in:
 - Dramatic expansion of NRC regulatory footprint over licensee controls
 - An unclear and unbounded set of programmatic information subject to NRC approval
- Part 53 requires more programs and administrative controls be approved by the NRC, as compared to Parts 50/52
- Part 53 requires approval of programmatic controls not required by Part 50/52
 - *Programmatic controls* mean administrative procedures that govern the actions of equipment and personnel of an advanced nuclear plant.
 - Required in 53.210, 53.220, 53.230, 53.240, 53.250, 53.260, 53.270, 53.400, 53.410, 53.420, 53.425, 53.430, 53.440, 53.460, 53.470, 53.490, 53.500, 53.510, 53.540, 53.610, 53.1225, etc.
 - Typically stated as “Design features and programmatic controls must be provided for...” – Not performance-based, clear or predictable

NRC Needs a Regulatory Philosophy for Part 53

Lack of a Regulatory Philosophy leads to a patchwork approach to requirements

- Regulatory philosophy, starting with the Atomic Energy Act, to establish
 - The standard of adequate protection, in terms of radiological consequences to public health
 - The types of technical features and corresponding performance criteria that are necessary and sufficient to satisfy the adequate protection standard
 - The type, scope and level of detail of the technical information (licensing basis) that NRC needs to have a reasonable assurance that the technical features meet the adequate protection standard
 - Scope and level of oversight and inspection of licensee to provide reasonable assurance of compliance with license and requirements
- Technical features are: design features, human actions and programs
 - The role of programs is to provide reasonable assurance that the design features and human actions will perform the actions described in the licensing basis
 - Not all of the programs used by the licensee need to be required to be approved by the NRC

Recognize Confidence in Licensee Controls

Input provided in Unified Industry Position letter

- The NRC imposes requirements that are effective even after the NRC issues a license for a new reactor
 - NRC has an oversight and inspection program to ensure compliance
 - NRC does not need to approve licensee controls related to compliance
- The licensee is competent in fulfilling their responsibility to perform administrative controls
 - QA Program permeates the plant at each stage
 - QA comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service
 - Very little need for NRC approval of other administrative controls to achieve reasonable assurance that design features and human actions will perform functions in the licensing basis

Performance-Based Approach to Part 53 Programs

Leads to a clear, predictable and flexible regulatory framework

- Recognize that the QA Program provides substantial assurance that design features and human actions will perform functions in the licensing basis
- Establish the purpose for programs (e.g., by stage)
 - **Design** - Provide reasonable assurance that the plant design is in accordance with the license and regulations.
 - **Manufacturing and Construction** - Provide reasonable assurance that the plant is constructed and manufactured according to the license and regulations.
 - **Maintenance** - Provide reasonable assurance that the SSCs are capable of performing their intended functions described in the SAR.
 - **Operations** - Provide reasonable assurance that the plant is operated according to the license and regulations.
- Establish performance criteria for each program, and entry criteria (graded)
- Evaluate suitability of historical programs required by Part 50/52
- Identify historical administrative controls not required to have NRC approval

Performance-Based Approach to Part 53 Programs

Leads to a clear, predictable and flexible regulatory framework

	Performance Criteria	Part 50 Programs Requiring NRC Approval	Programs not needing NRC Approval
Design	<p>Provide reasonable assurance that the plant design is in accordance with the license and regulations.</p> <ol style="list-style-type: none"> 1. Applicable regulatory requirements and the design basis specified in the license are correctly translated into specifications, drawings and procedures. 2. The design process used appropriate quality standards, selected materials, parts and processes, controlled interfaces among participating organizations, suitable to the safety significance of the SSCs, and provided for verifying the adequacy of the design. 3. Performance characteristics of SSCs that serve as the basis for the design and analyses are supported by validation data. 4. Design changes are subject to the same design control measures and approved by the same design organization used for the original design. 	<ul style="list-style-type: none"> • Criterion III – Design Control (Appendix B) 	<ul style="list-style-type: none"> • Change Control (50.59) • Records, reports and FSAR Update (50.71) • Reliability Assurance Program (SRM-SECY-95-132) • Environmental Qualification (50.49(a))

Performance-Based Approach to Part 53 Programs

Leads to a clear, predictable and flexible regulatory framework

	Performance Criteria	Part 50 Programs Requiring NRC Approval	Programs not needing NRC Approval
Manufacturing and Construction	<p>Provide reasonable assurance that the plant is constructed and manufactured according to the license and regulations</p> <ol style="list-style-type: none"> As-built SSCs are consistent with their as-designed specifications. The applicable regulatory requirements are referenced in the procurement documents. Procured material, equipment and services conform to the procurement specifications. As-built SSCs, prior to operation, are capable of performing the functions described in the license. 	<ul style="list-style-type: none"> Criteria IV, VI thru XV – for safety-related SSCs (Quality Assurance - Appendix B) Defined by Applicant - for non-safety related but risk important (50.69 Augmented Quality) Initial startup testing program (50.34(b)(6(iii))) 	<ul style="list-style-type: none"> NSR SSC – Any commercial quality program Procurement program Receipt and verification programs Turnover and routine startup program Reporting of Defects and Nonconformances (Part 21)

Performance-Based Approach to Part 53 Programs

Leads to a clear, predictable and flexible regulatory framework

	Performance Criteria	Part 50 Programs Requiring NRC Approval	Programs not needing NRC Approval
Maintenance	<p>Provide reasonable assurance that the SSCs are capable of performing their intended functions described in the SAR.</p> <ol style="list-style-type: none"> SSCs, during operations, continue to be capable of performing the functions described in the license. SSCs, for which the code or regulations require periodic inspection or testing, are confirmed to have not experienced unexpected degradation. 	<ul style="list-style-type: none"> Maintenance Monitoring Program (50.65) ISI/IST (50.55a) Material Surveillance Program – if applicable (Part 50 Appendix H) 	<ul style="list-style-type: none"> FLEX Equipment - if applicable (50.155) Maintenance procedure development

Performance-Based Approach to Part 53 Programs

Leads to a clear, predictable and flexible regulatory framework

	Performance Criteria	Part 50 Programs Requiring NRC Approval	Programs not needing NRC Approval
Operations	<p>Provide reasonable assurance that the plant is operated according to the license and regulations.</p> <ol style="list-style-type: none"> 1. Plant stays within the licensed conditions of operations. 2. Administrative controls provide reasonable assurance that human actions credited for protection of public health and safety will be performed when needed. 3. Humans relied upon are trained and capable of performing assigned actions as described in the license. 	<ul style="list-style-type: none"> • Technical specifications (50.36) • Training and Requalification Programs for Operators, Fuel Handlers and Other Identified Positions (50.2, Part 55, 50.120) • Operating Plans, Normal and Emergency (50.34(b)(6)(iv and v)) • Fire Protection Plan (50.48) • Radiation Protection (Part 20) • Emergency Planning (50.47 or 50.160) • Security (Physical, cyber, access and FFD) (Part 73, Part 26) • Environmental Protection – if applicable (51.50) 	<ul style="list-style-type: none"> • Effluent release program • Worker safety training programs and effectiveness assessments • OSHA worker safety • Procedure development for operations and emergencies • Event Reporting (50.72/50.73)

Conclusions

- NRC's assertion that increased design and analysis requirements would lead to a reduction in operational requirements does not appear accurate
- NRC needs to establish a regulatory philosophy for Part 53 that defines the regulatory purpose of programs
 - Having clarity on why programs are needed will ensure that the program requirements are efficient
- NRC needs to reassess the program requirements in Part 53
 - 11 program areas have equivalents in Part 50/52
 - 13 program areas do not have a Part 50/52 equivalent or duplicate others
 - Over 20 instances of open ended requirements for “programmatic controls”
- NRC should ensure needed programs are performance-based, graded and appropriately scoped with entry criteria
 - Some programs (with Part 50/52 equivalents) require more than Parts 50/52

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 (7 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 announce public meetings to discuss and receive feedback on various regulatory topics and preliminary proposed rule text.
 - Preliminary proposed rule language will be posted on regulations.gov under docket ID [NRC-2019-0062](#) before the public meetings.
- The NRC staff is scheduled to meet with the ACRS Future Plants Subcommittee on September 23rd-24th, 2021.
 - Subpart B – Technology-Inclusive Safety Requirements (3rd iteration)
 - Subpart C - Requirements for Design and Analysis (3rd iteration)
 - Subpart H - Licenses, Certifications, and Approvals
 - Subpart I - Maintaining and Revising Licensing Basis Information
 - Subpart J - Reporting and Other Administrative Requirements

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

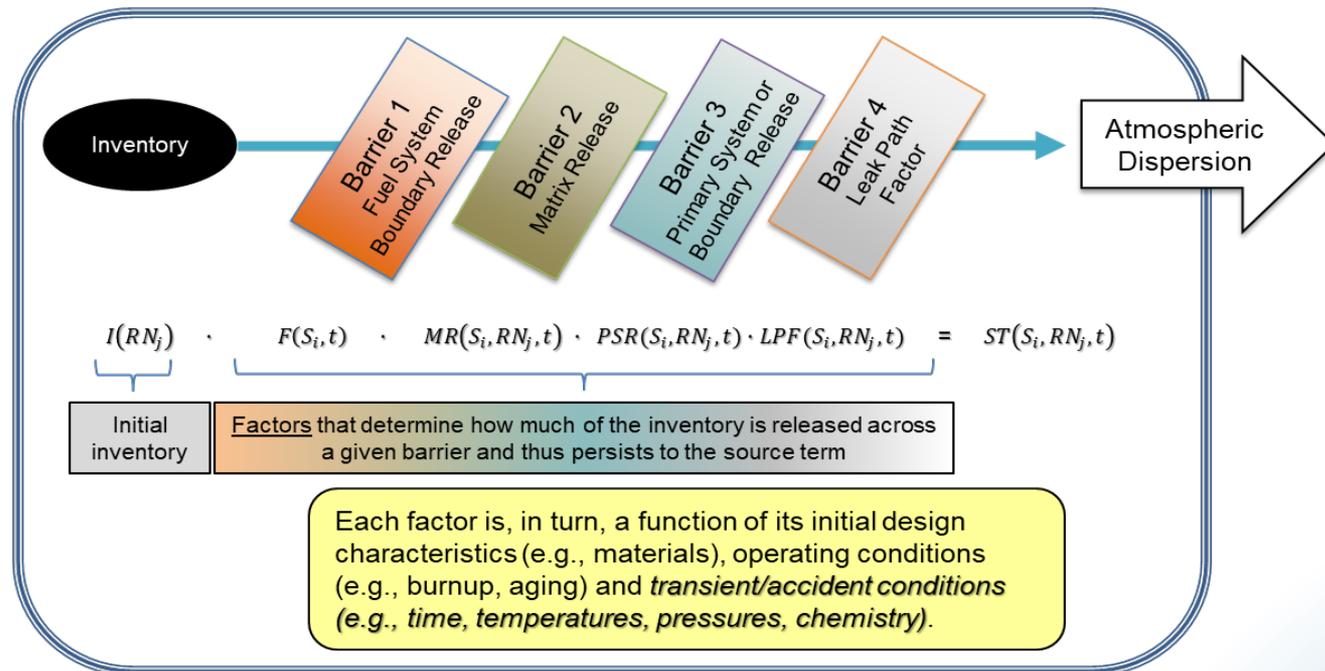
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Document Access Management System
AOOs	Anticipated operational occurrence
BDBE	Beyond design basis event
CFR	Code of Federal Regulations
DBE	Design basis event
DID	Defense in Depth
EAB	Exclusion Area Boundary
F-C	Frequency-consequence
FFD	Fitness for Duty
FLEX	Flexible Mitigation Capability
FSAR	Final safety analysis report
ISI	Inservice inspection
IST	Inservice testing

LBE	Licensing basis event
LWR	Light water reactor
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulations
NSR	Non-safety related
OSHA	Occupational Safety and Health Administration
PRA	Probabilistic Risk Assessment
QA	Quality Assurance
REM	Roentgen-equivalent man
SAR	Safety analysis report
SRM	Staff Requirements Memorandum
SSCs	Structures, systems, and components
UFSAR	Updated final safety analysis report

Background Slides

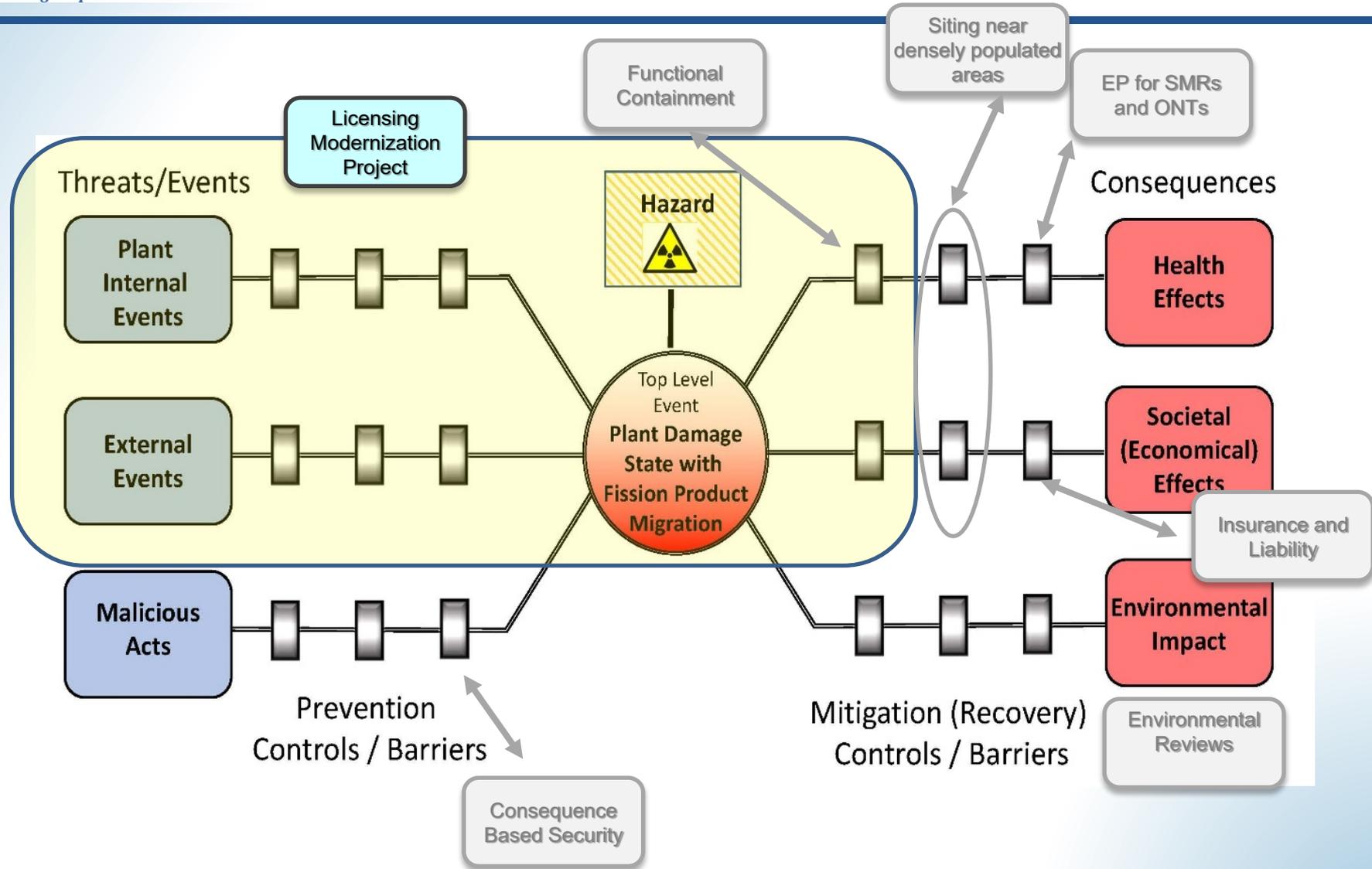
First Principles

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



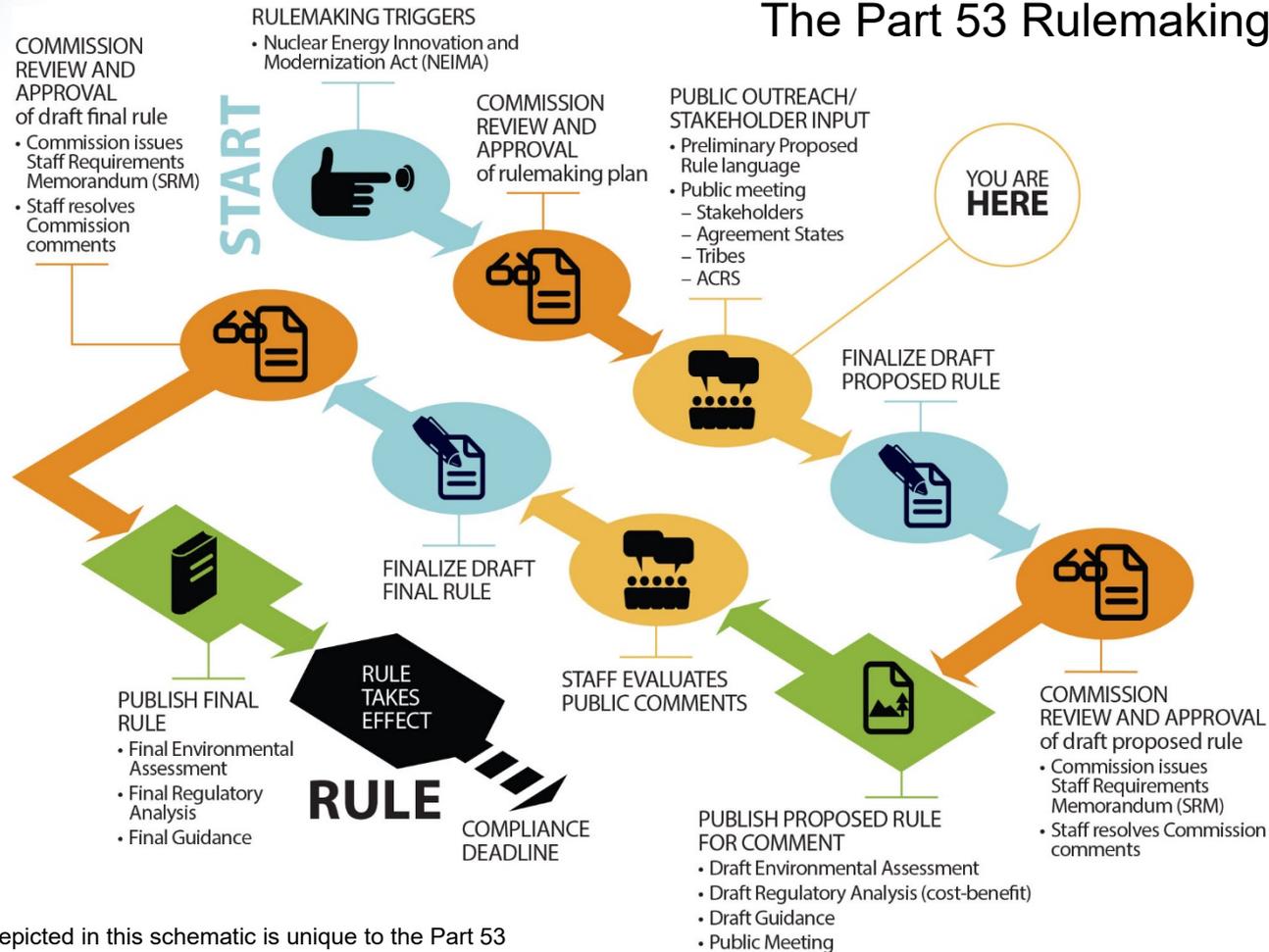
See: SECY-18-0096, “Functional Containment Performance Criteria for Non-Light-Water-Reactors,” and INL/EXT-20-58717, “Technology-Inclusive Determination of Mechanistic Source Terms for Offsite Dose-Related Assessments for Advanced Nuclear Reactor Facilities”

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, ...

NRC Staff Plan to Develop Part 53

Subpart B

Subpart C

Subpart D

Subpart E

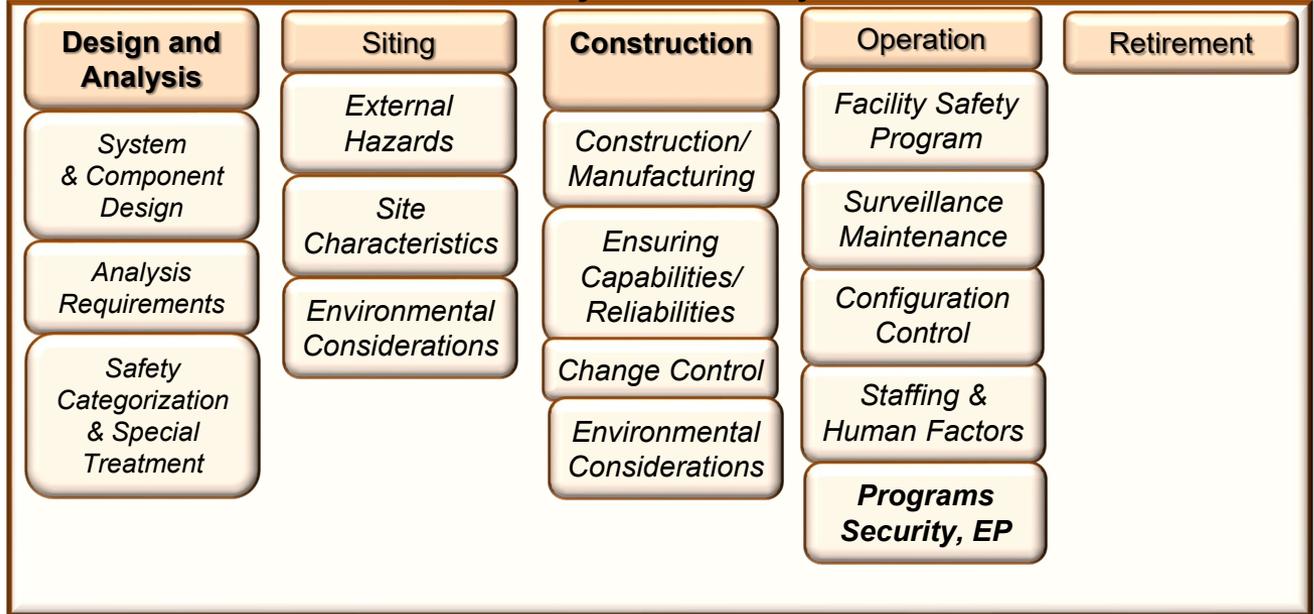
Subpart F

Subpart G

← Project Life Cycle →

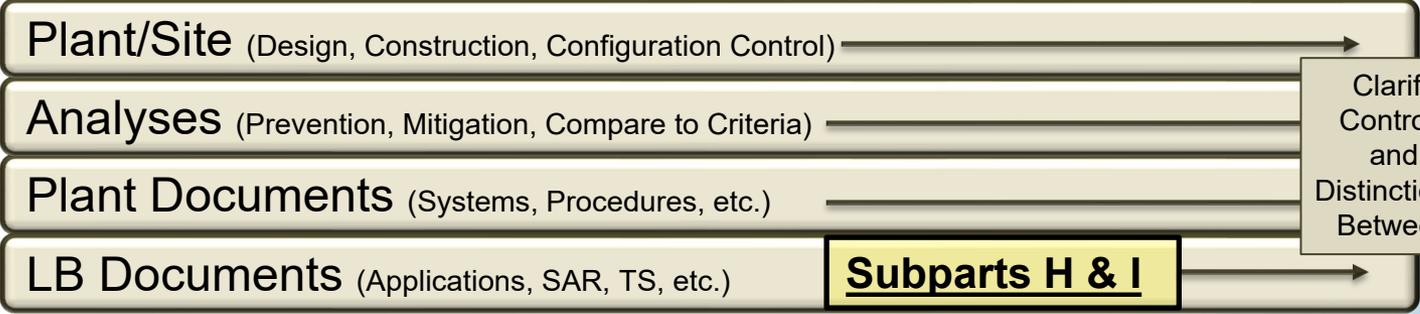
Requirements Definition

- Safety Objectives
- Safety Criteria
- Safety Functions



Other

- Subpart A**
General Provisions
- Subpart J**
Admin & Reporting
- Other 10 CFR Parts**



Clarify Controls and Distinctions Between

Subparts H & I