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

10 CFR Part 53
"Licensing and Regulation of Commercial Nuclear Plants"

February 8, 2022

Agenda

1:00pm - 1:15pm	Welcome / Introductions / Logistics / Goals
1:15pm – 2:30 pm	Overview and Discussion of Part 53 Rulemaking
2:30pm – 3:30pm	Individual Organization Prepared Remarks
3:30pm – 4:00pm	Additional Public Comments, Questions, and Closing Remarks / Adjourn

Welcome & Introductions

Welcome:

- Rob Taylor, Office of Nuclear Reactor Regulation (NRR)

NRC Speakers/Presenters:

- Dan Mussatti, Office of Nuclear Material Safety and Safeguards (NMSS) – Meeting Facilitator
- Jordan Hoellman, NRR
- Bob Beall, NMSS – Rulemaking Project Manager
- Steve Vitto, Office of Nuclear Security and Incident Response

Public Meeting Slides: ADAMS Accession No.

- NRC Staff – ML22038A001
- Union of Concerned Scientists – ML22038A002
- Nuclear Innovation Alliance – ML22038A000
- Breakthrough Institute – ML22038A171
- ClearPath – ML22038A179

Purpose of Today's Meeting

- Discuss Part 53 proposed rulemaking effort
- 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.
- The meeting is being transcribed and the transcription will be available with the meeting summary by March 10, 2022.
- No regulatory decisions will be made at today's meeting.

Background Discussion of Part 53 Rulemaking

NRC is preparing for a Variety of Advanced Nuclear Technologies

EVOLVING LANDSCAPE

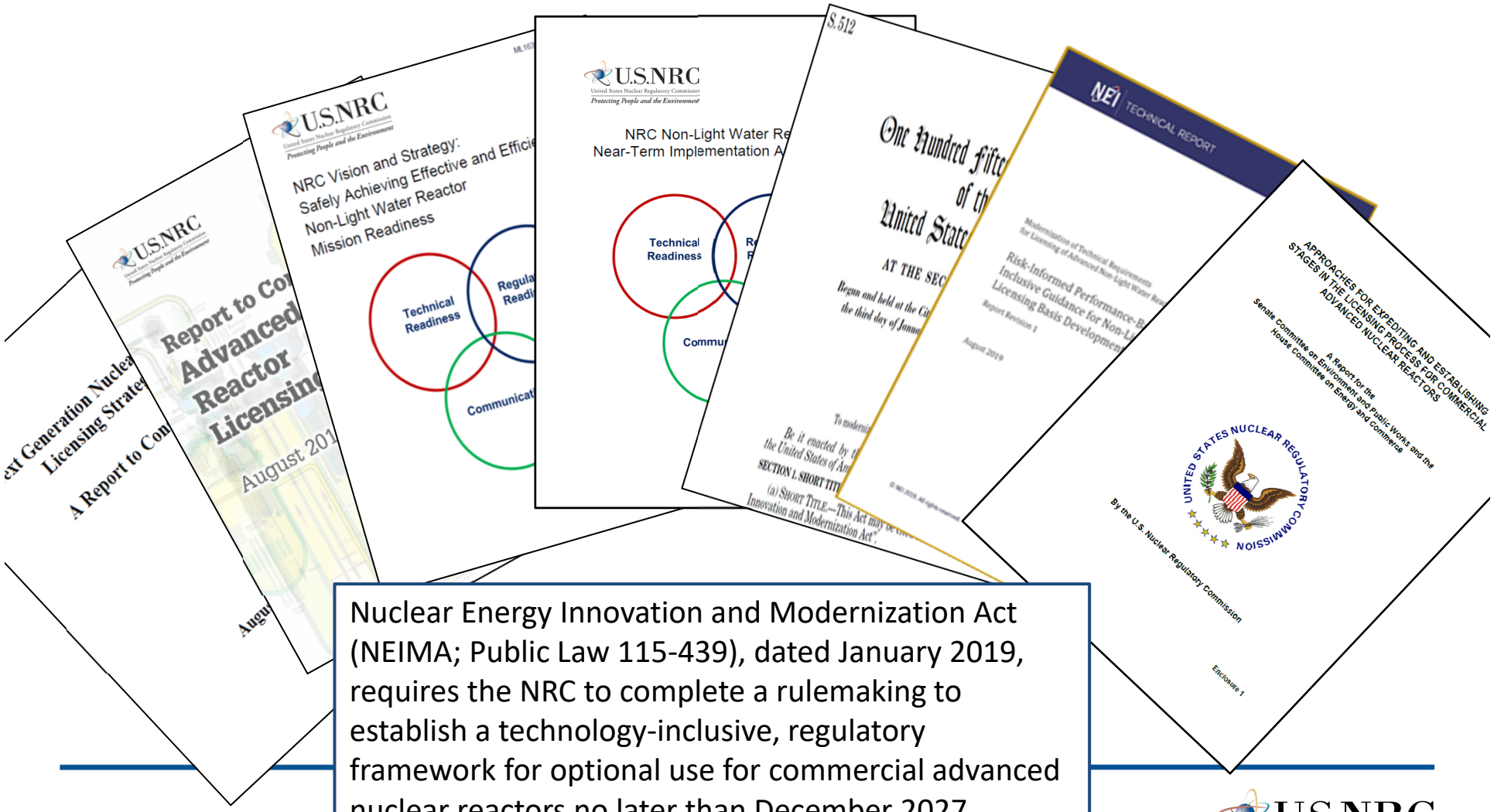
- Research and Test Reactors
- Molten Salt Reactors
- Small Modular Reactors
- High-Temperature Gas-Cooled Reactors
- Liquid Metal Cooled Fast Reactors
- Micro-Reactors

13+ Current and potential applications by 2027

6+ Potential operating licenses by 2027

- Many different reactor technologies
- Range of sizes from < 10 MWt to 600 MWt
- Multiple reactors on a single site
- Hazards vary with power level and radionuclide inventory

Vision & Strategy



Nuclear Energy Innovation and Modernization Act (NEIMA; Public Law 115-439), dated 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

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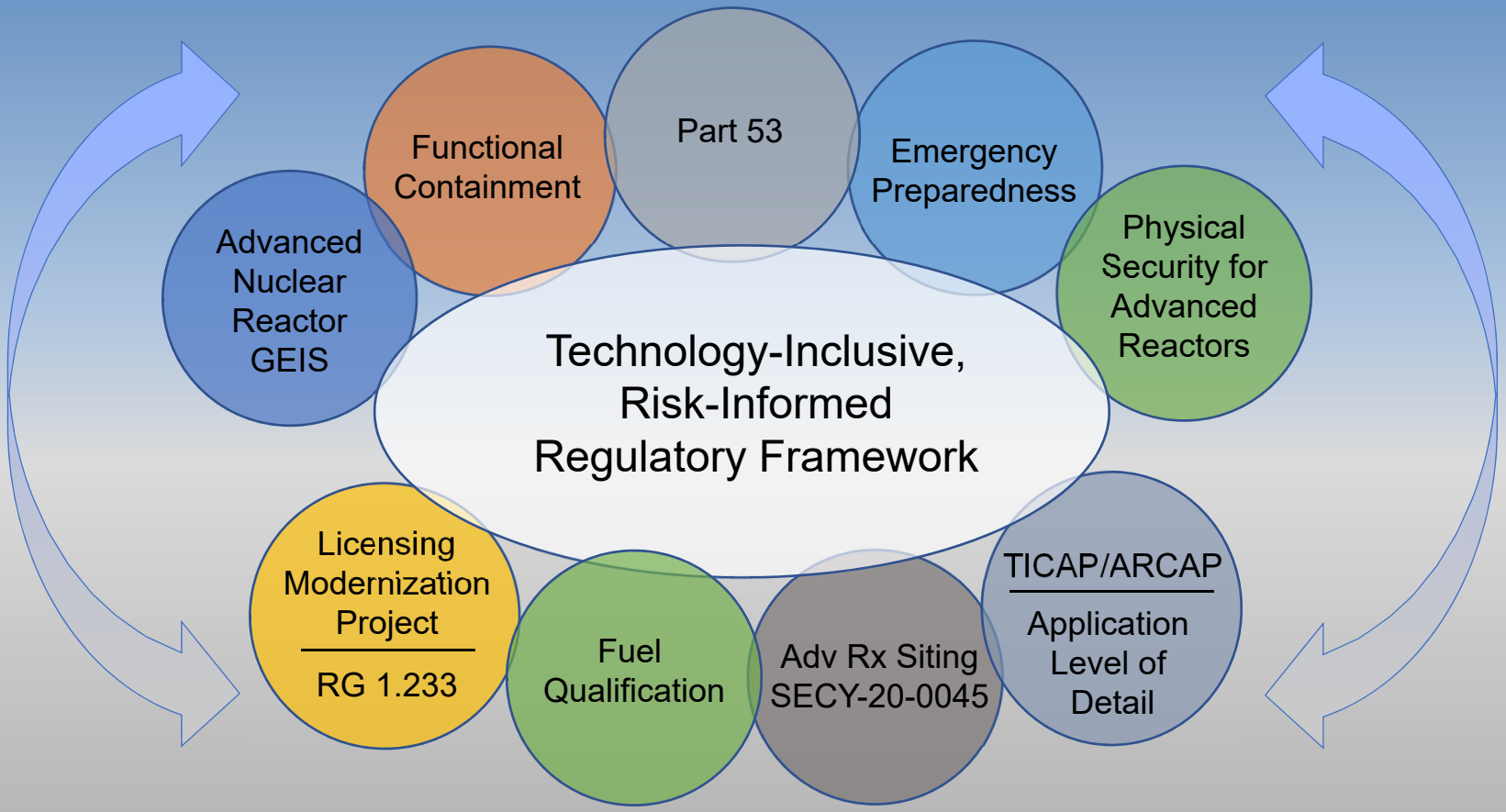
Modernizing the Regulatory Framework



Licensing Modernization Project (LMP)

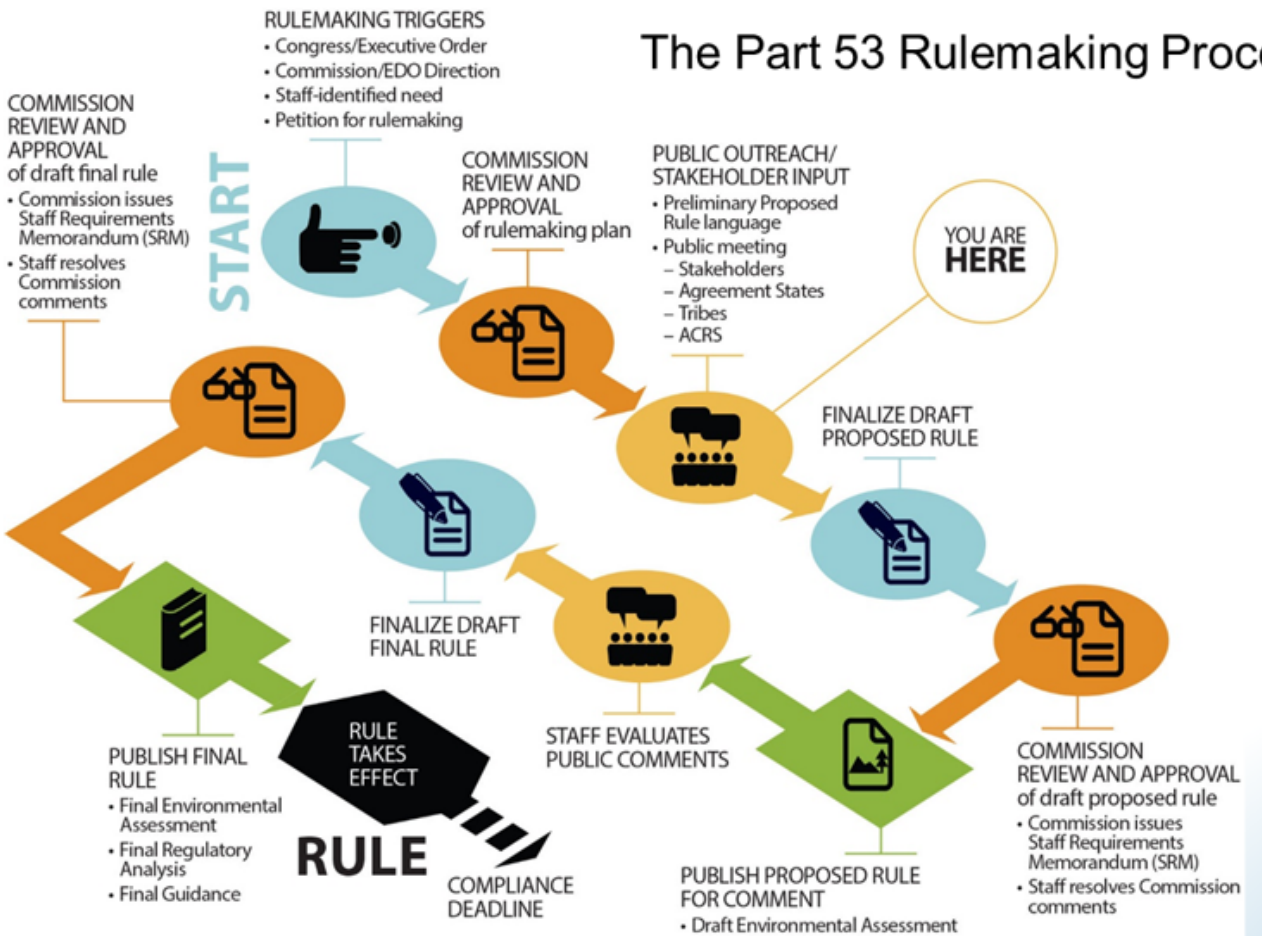
A risk-informed, consequence-oriented approach to establish licensing basis and content of applications

(see Regulatory Guide (RG) 1.233 https://www.nrc.gov/docs/ML2009/ML20091L698.pdf)

Rulemaking Plan

- SECY-20-0032, "Rulemaking Plan on Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors," dated April 13, 2020 (ADAMS ML19340A056).
- In SRM-SECY-20-0032, dated October 2, 2020 (ADAMS ML20276A293), the Commission provided direction to the staff.
- On November 2, 2020, staff submitted a Commission memorandum responding to the SRM direction to provide a schedule with milestones and resources to complete the final rule by October 2024 (ADAMS ML20288A251).
- On November 23, 2021, the Commission approved the NRC staff's schedule extension request

The Part 53 Rulemaking Process*

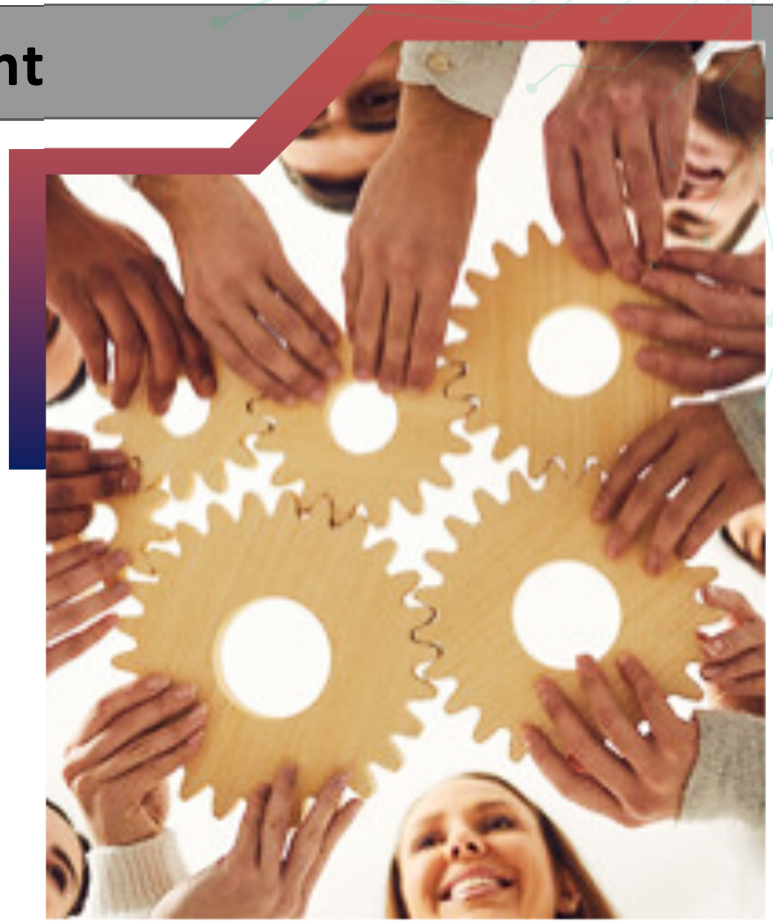


* The process depicted in this schematic is unique to the Part 53 rulemaking and varies in some ways compared to a similar "A Typical Rulemaking Process" schematic available on the NRC's public website.

Rulemaking Stakeholder Engagement

Broadening engagement:

- 14 public and 15 ACRS meetings
- Releasing initial and revised preliminary proposed rule language
- Further considering stakeholder comments
  - Over 200 public comment submittals received
  - Extended public comment period on preliminary proposed rule language until August 31, 2022



Rulemaking Schedule

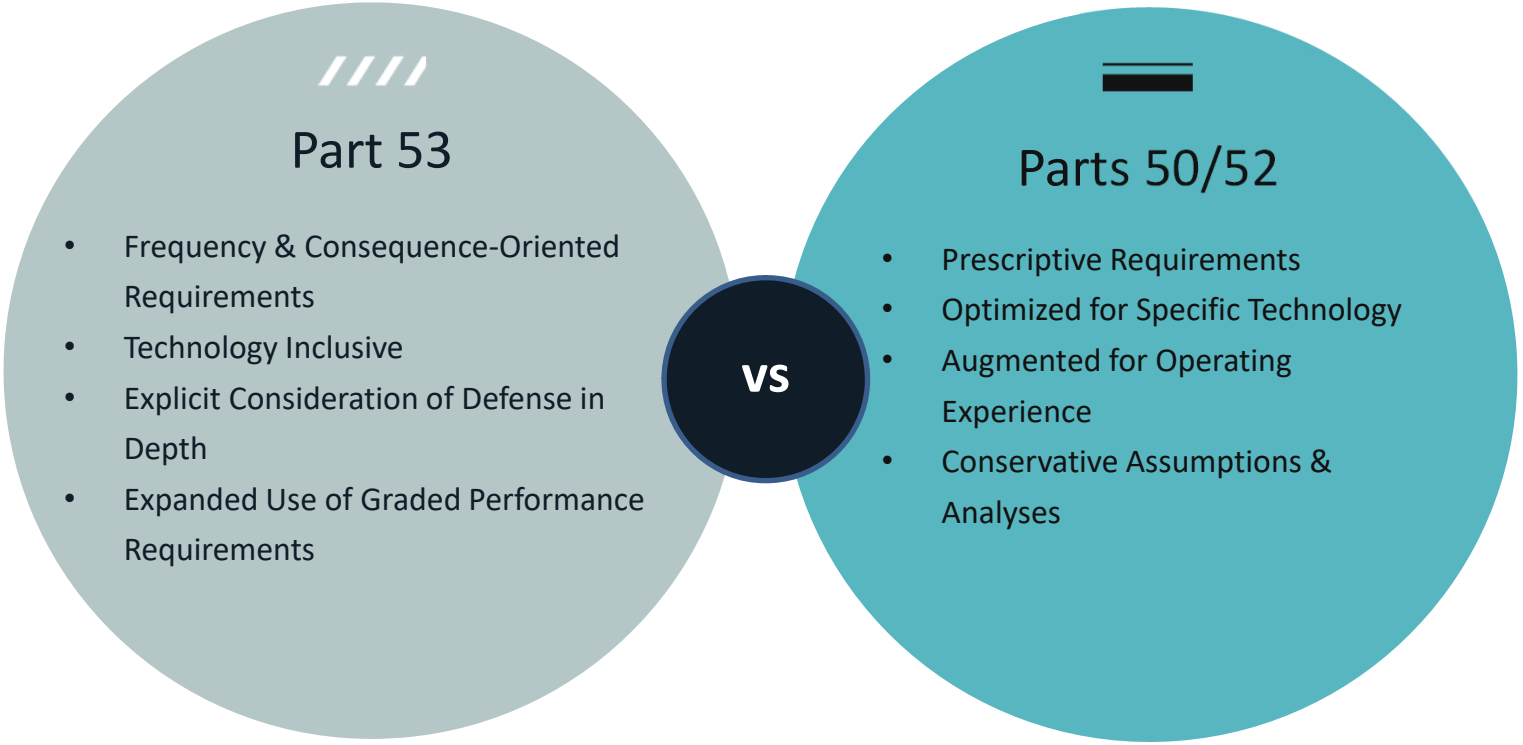
Part 53 Overview

Part 53 Rulemaking Objectives

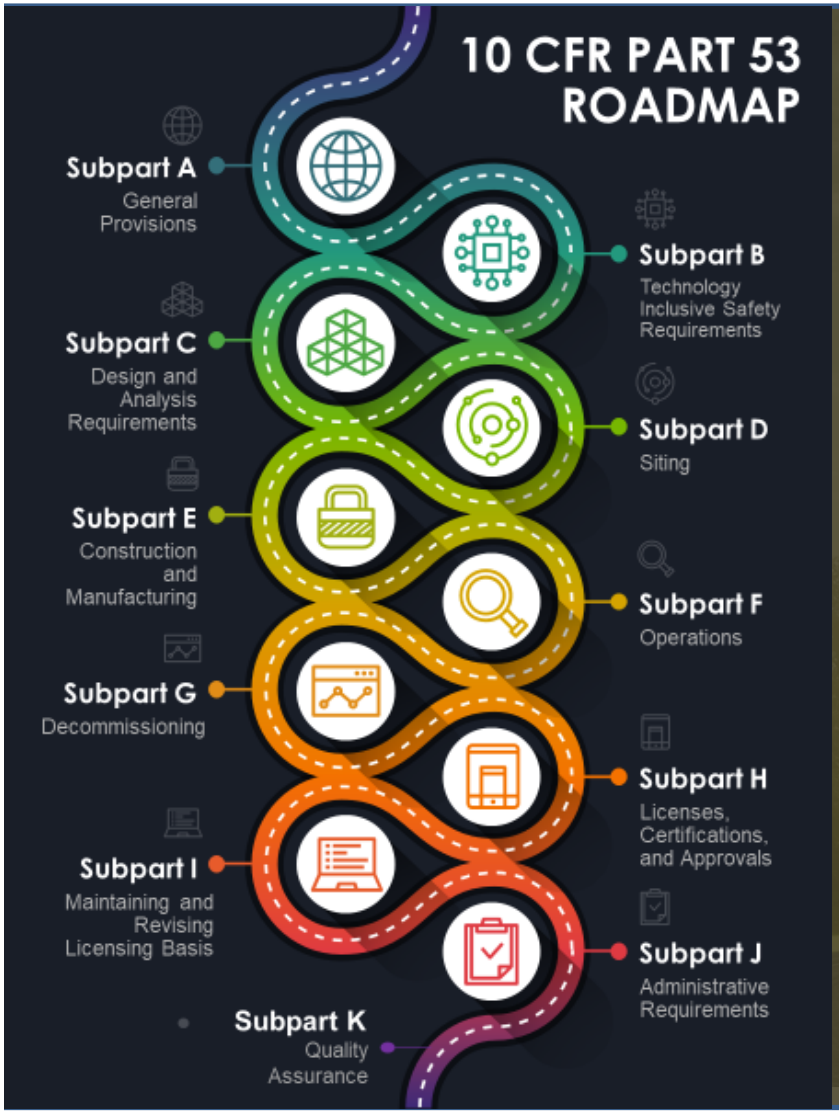
1. Continue to provide reasonable assurance of adequate protection of public health and safety and the common defense and security,
2. Promote regulatory stability, predictability, and clarity,
3. Reduce requests for exemptions from the current requirements in 10 CFR Part 50 and 10 CFR Part 52,
4. Establish new requirements to address non-light-water reactor technologies,
5. Recognize technological advancements in reactor design, and
6. Credit the response of advanced nuclear reactors to postulated accidents, including slower transient response times and relatively small and slow release of fission products.

Part 53 vs Parts 50/52

Part 53 would evolve existing requirements into a modern, risk-informed, performance-based approach



AEA Sections 182 and 161 are the enabling legislation for Parts 50/52 and Part 53.



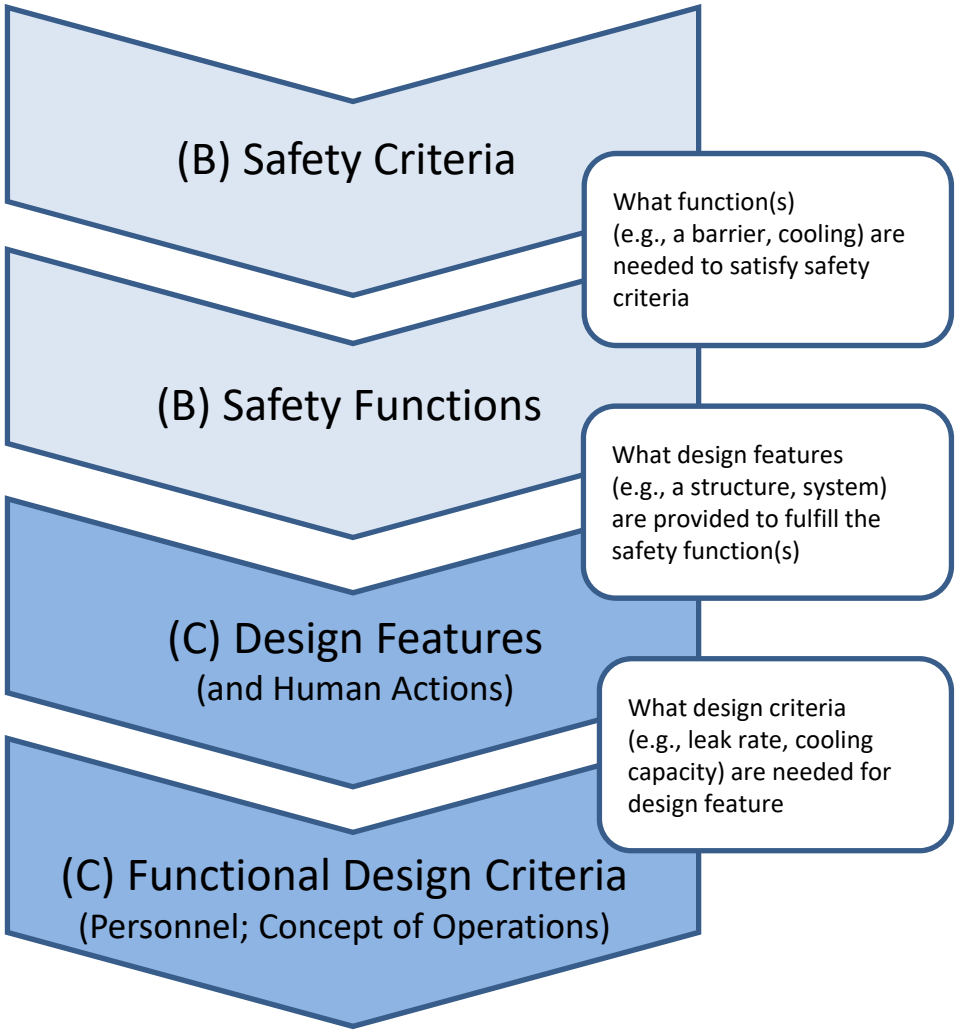
Part 53 rulemaking addresses plant lifecycle with appropriate flexibilities and safety focus

Subpart A – General Provisions

- This subpart includes sections related to topics such as scope, definitions, interpretations, relationships to other parts, communications, misconduct, employee protections, and exemptions.
- Most sections in this subpart were developed based on similar or identical requirements in existing parts of NRC regulations.

Subpart B - Technology-Inclusive Safety Requirements

- Safety Objectives
- Safety Criteria
- Safety Functions
- Licensing Basis Events
- Defense in Depth
- Normal Operations and Protection of Plant Workers



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Subpart C - Design and Analysis Requirements

- Includes requirements for identification of Design Features and Functional Design Criteria as well as specific design requirements (e.g., using of consensus codes and standards, considering degradation mechanisms, achieving subcriticality, providing long-term cooling, earthquake engineering).
- Includes analysis requirements (e.g., use of a probabilistic risk assessment, qualification of analytical tools) and requirements related to the safety categorization and Treatment of plant equipment.
- Addresses how safety margins in the design can be balanced with flexibilities during operations.

Subpart D – Siting Requirements

- Addresses requirements associated with the siting of commercial nuclear plants and assumes the role provided by 10 CFR Part 100 for those facilities licensed under 10 CFR Parts 50 or 52.
- Establishes the overall siting-related considerations in relation to the safety criteria in Subpart B and interfaces with the design (e.g., external hazards).
- Recognizes that some applicants may propose designs that would allow them to essentially collapse the exclusion area and low population zone to the site boundary by demonstrating that the design basis accident does not challenge the dose-related criteria in this section.

Subpart E - Construction and Manufacturing Requirements

- This subpart addresses requirements for the construction of a commercial nuclear plant and the possible factory fabrication of reactors using a manufacturing license (ML).
- The preliminary language for construction-related activities reflects current requirements without any fundamental changes.
- The preliminary language for manufacturing activities largely mirrors the construction-related activities.

Subpart F - Requirements for Operation

- Defines the requirements during the operating phase of a commercial nuclear plant to ensure the safety criteria design & analysis requirements continue to be satisfied throughout the plant's lifetime
- Provides requirements on:
  1. Plant equipment (e.g., configuration control, testing)
  2. Plant personnel (e.g., operator licensing, training)
  3. Plant programs (e.g., radiation protection, emergency preparedness, security)

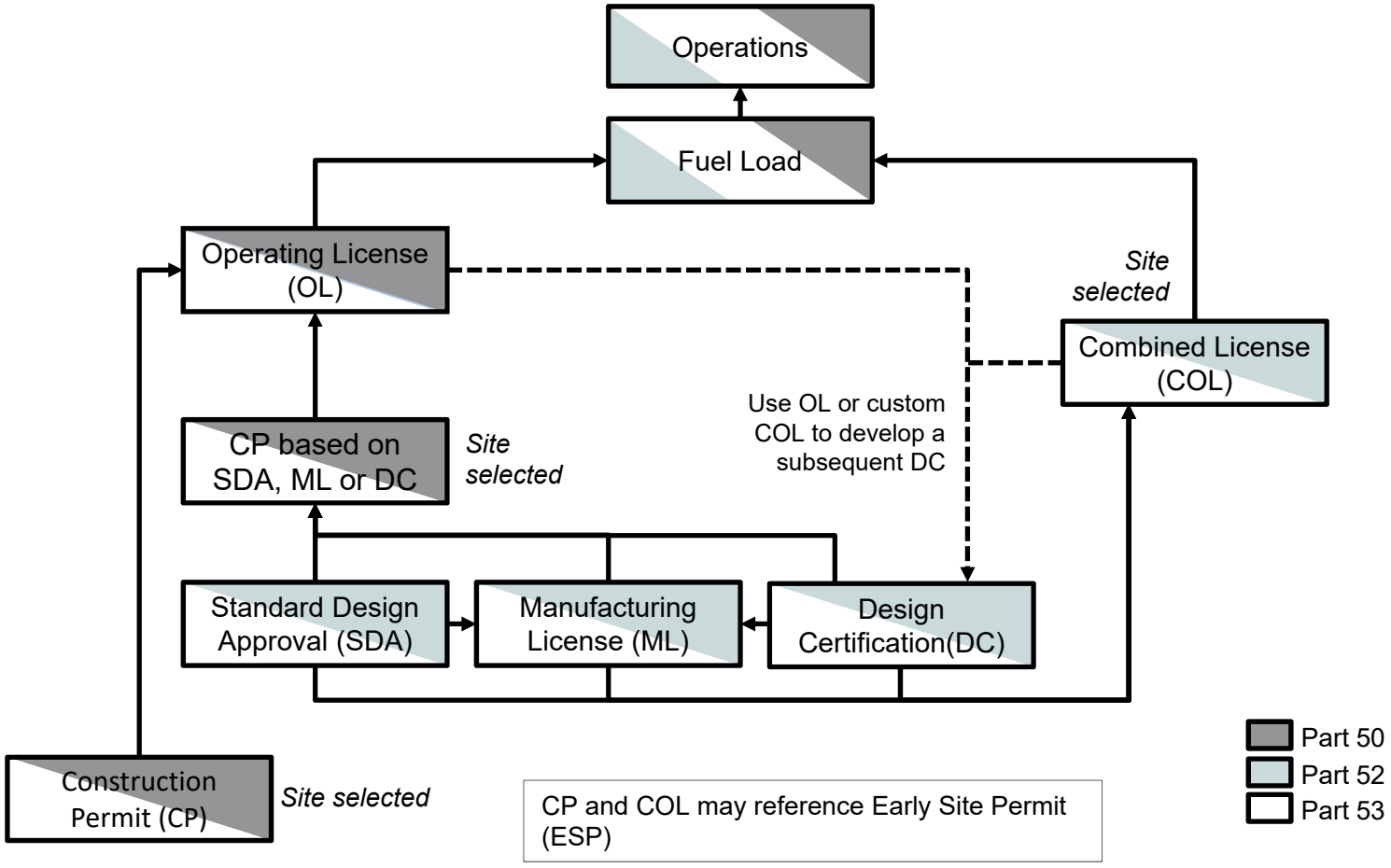
Subpart G - Decommissioning Requirements

- This subpart includes requirements related to maintaining financial assurance for decommissioning, requirements for transitioning from operations to decommissioning, termination of commercial nuclear plant licenses, and ultimately supporting unrestricted use of the site.
- Most sections in this subpart were developed based on the existing decommissioning requirements.
- Includes a requirement to perform site-specific cost estimates for decommissioning. In lieu of specific estimates for light-water reactors currently provided in § 50.75(c).

Subpart H - Licenses, Certifications and Approvals

- General requirements for the contents of applications for all NRC licenses, approvals, and certifications.
- Reflects existing licensing processes in 10 CFR Parts 50 and 52.
- Application requirements tailored to match Part 53 technical requirements.

Leveraging and Combining Existing Licensing Processes



Subpart I - Maintaining and Revising Licensing Basis Information

- Subpart I and some provisions within Subpart H define the requirements and processes for maintaining licensing basis information by holders of ESPs, CPs, OLs and COLs.
- The subpart is generally organized into those sections dealing with (1) licensing basis information that licensees are not authorized to change without NRC approval (e.g., licenses, regulations) and (2) licensing basis documents that licensees may change if specified criteria are satisfied.

Subpart J - Reporting and Other Administrative Requirements

- This subpart includes sections related to ensuring that NRC inspectors have unfettered access to sites and facilities licensed or proposed to be licensed, maintaining records and making reports to the NRC, meeting financial qualification and reporting requirements, and obtaining and maintaining required financial protections in case of an accident
- Most sections in this subpart were developed based on similar or identical requirements in existing parts of NRC regulations.

Subpart K – Quality Assurance Criteria

- New subpart developed in response to stakeholder feedback
- Consolidates the requirements related to quality assurance from other sections in Part 53, similar to Appendix B to Part 50

Part 5X

- Consideration of stakeholder requests for an option for a more traditional, deterministic licensing framework for advanced reactors
- Provides technology-inclusive alternatives to LWR-centric requirements in Part 50
- Aligns with international standards (i.e., IAEA)
- Developing guidance for systematic searches for hazards, initiating events, and accident scenarios

Part 73 Security and Part 26 Fitness for Duty

- § 73.100 – Physical security requirements at nuclear plants against radiological sabotage
- § 73.110 – Technology neutral requirements for protection of digital computer and communication systems and networks
- § 73.120 – Access authorization
- 10 CFR Part 26 – Fitness for duty programs

Discussion and Questions

Stakeholder Presentations

Union of Concerned Scientists – Dr. Ed Lyman
Uranium Watch – Sarah Fields
Nuclear Innovation Alliance – Dr. Patrick White
Breakthrough Institute – Dr. Adam Stein
ClearPath – Nicholas McMurray
Clean Air Task Force – Ann Weeks
Third Way – Stephen Burns

Final Discussion and Questions

Next Steps—Future Public Meetings

- The NRC will continue to announce public meetings to discuss and receive feedback on various regulatory topics and preliminary proposed rule text.
  - Preliminary proposed rule text will be posted on regulations.gov under docket ID NRC-2019-0062 before the public meetings and in ADAMS at ML20289A534.
- Continue to engage with ACRS
- Stay informed! Subscribe to GovDelivery: https://service.govdelivery.com/accounts/USNRC/subscriber/new

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 Documents Access and Management System
AEA	Atomic Energy Act
AOO	Anticipated operational occurrence
ARCAP	Advanced reactor content of application project
BDBE	Beyond design basis event
CFR	Code of Federal Regulations
COL	Combined license
CP	Construction permit
DBA	Design basis accident
DBE	Design basis event
DC	Design certification
EDO	Executive Director for Operations
ESP	Early site permit
GEIS	Generic Environmental Impact Statement
IAEA	International Atomic Energy Agency
LMP	Licensing Modernization Project
LWR	Light-water reactor
ML	Manufacturing license
MWt	Megawatt thermal
NEIMA	Nuclear Energy Innovation and Modernization Act
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OL	Operating license
RG	Regulatory Guide
SDA	Standard design approval
SRM	Staff Requirements Memorandum
SSC	Structures, systems, and components
TICAP	Technology-inclusive content of application project