



Public Meeting on Possible Changes to Physical Security Requirements for Advanced Reactor Designs

December 13, 2017



Telephone Bridge
(888) 793-9929
Passcode: 9862437

Public Meeting

- Telephone Bridge
(888) 793-9929
Passcode: 9862437
- Opportunities for public comments and questions at designated times

Outline

- Introductions
- Project Plan
- Discussion – NRC White Paper/Commission Paper
- Public Questions/Comments
 - Union of Concerned Scientists

- **Recent Interactions**

- NEI White Paper; December 14, 2016; (ML17026A474)
- Public Meeting; May 3, 2017; (Summary - ML17144A403)
 - Interactions leading to Commission paper
- NRC staff questions/comments; July 21, 2017; (ML17201Q109)
- NEI Response; September 8, 2017; (ML17263B142)
- Public Meeting; October 12, 2017

- **Current Discussion**

- NRC Staff White Paper - ML17333A524

- NRC Staff / Stakeholder Interactions on White Paper
- Commission paper in early-mid 2018
- *Higher assay low enriched uranium and fuel cycle facility discussions as part of routine stakeholder meetings*

NRC Advanced Reactor Policy Statement – Attributes:

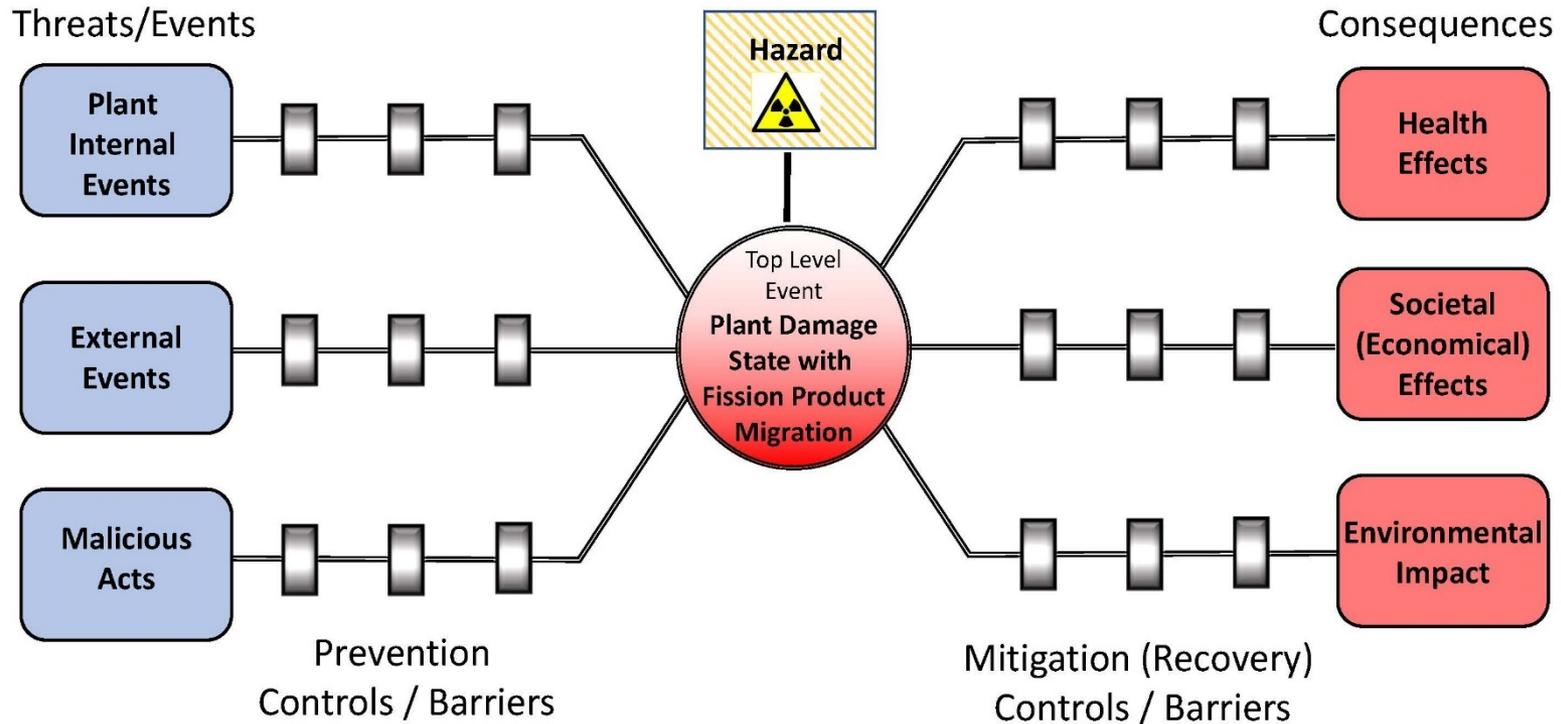
- Highly reliable and less complex decay heat removal systems;
- Longer time constants to reaching safety system challenges;
- Simplified safety systems that reduce required operator actions;
- Designs that minimize the potential for severe accidents and their consequences; and
- Designs that incorporate the defense-in-depth philosophy by maintaining multiple barriers against radiation release

NRC Advanced Reactor Policy Statement

- Designs that include considerations for safety and security requirements together in the design process such that security issues (e.g., newly identified threats of terrorist attacks) can be effectively resolved through facility design and engineered security features, and formulation of mitigation measures, with reduced reliance on human actions.
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- Challenge is to address policy issues related to how safety and security requirements for advanced reactors should reflect inherent design characteristics such as longer time constants before degradation of barriers and release of radioactive material given a loss of safety functions.

Barrier Assessment (Bow Tie Diagram)



Note that top level event generally aligns with security concerns for radiological sabotage; a rulemaking, if pursued, would also need to address threats related to theft/diversion

Background

- SECY-11-0184, “Security Regulatory Framework for Certifying, Approving, and Licensing Small Modular Reactors.”
 - The staff’s assessment determined that the current security regulatory framework is adequate to certify, approve, and license iPWRs ...
 - The current regulations allow SMR designers and potential applicants to propose alternative methods or approaches to meet the performance-based and prescriptive security and MC&A requirements.
 - Alternate Measures (10 CFR 73.55(r))
 - License Conditions
 - Exemptions
- *“The question at hand is whether some type of generic regulatory action would be preferable to the case-by-case approach described in SECY-11-0184.”*

Draft White Paper

Identifies 4 Options:

- 1) No change / Status quo
- 2) Address possible requests for alternatives via guidance
- 3) Limited scope rulemaking to address what would otherwise be likely requests for alternatives
- 4) Broader based rulemaking to more fully reflect attributes of advanced reactors

Option 1 - No Change

- Status quo with neither changes in regulations or NRC staff preparing guidance
- As described in SECY-11-0184, “Security Regulatory Framework for Certifying, Approving, and Licensing Small Modular Reactors,” designers and potential applicants may propose alternative methods or approaches to meet the performance-based and prescriptive security and MC&A requirements.
 - Alternate Measures (10 CFR 73.55(r))
 - License Conditions
 - Exemptions

Option 1 - No Change

- Advantages:
 - Agency resources will not be spent on rulemaking and the related guidance documents.
- Disadvantages:
 - Regulatory uncertainties remain as policy matters addressed on a case-by-case basis, which complicates the ability of reactor developers and potential licensees to make design and business decisions.
 - Case-by-case decisionmaking may not support the goals described in the Principles of Good Regulation, the Policy Statement on the Regulation of Advanced Reactors and more recent documents defining vision and strategies and implementation action plans for non-LWR regulatory readiness.
- Stakeholder Views ?

Option 2 - Guidance

- NRC staff would prepare guidance for processing requests for proposed alternatives or exemptions related to physical security requirements for SMRs and non-LWRs.
- Developers or other parties could prepare generic approaches (e.g., a topical report) or applicants could propose alternatives supported by NRC issued guidance

Option 2 - Guidance

- Advantages:
 - Agency would save the resources needed for rulemaking while reducing regulatory uncertainties by issuing guidance for applicants expecting to propose alternatives to existing requirements.
- Disadvantages:
 - This option would require resources to prepare guidance but not provide the same degree of certainty or finality of agency decisions that are provided by a rulemaking.
 - Foregoing a rulemaking would ultimately still require case-by-case decisionmaking, which raises concerns about consistency, clarity and predictability of NRC's regulatory process.
- Stakeholder Views ?

Option 3 – Limited Scope Rulemaking

- Revise specific regulations and guidance related to physical security for SMRs and non-LWRs through rulemaking.
 - Example – NEI Proposal for reductions in the number of armed responders (10 CFR 73.55(k)(5))
- NRC staff would interact with stakeholders to identify specific requirements within existing regulations that contribute significantly to capital or operating costs but may play a diminished role in providing physical security for SMRs and non-LWRs.
- NRC staff would develop guidance documents to support the implementation of the requirements defined through the rulemaking.

Option 3 – Limited Scope Rulemaking

- Advantages:
 - Changes to a limited scope of requirements related to physical security for SMRs and non-LWRs would: (1) promote regulatory stability, predictability, and clarity; (2) eliminate the need for future applicants to propose alternatives or request exemptions from physical security requirements; and (3) recognize technology advancements and design features associated with the NRC recommended attributes of advanced reactors.

- Disadvantages:
 - This option requires rulemaking and creation of new guidance for the revised physical security requirements for SMRs and non-LWRs, which would require resource expenditures.

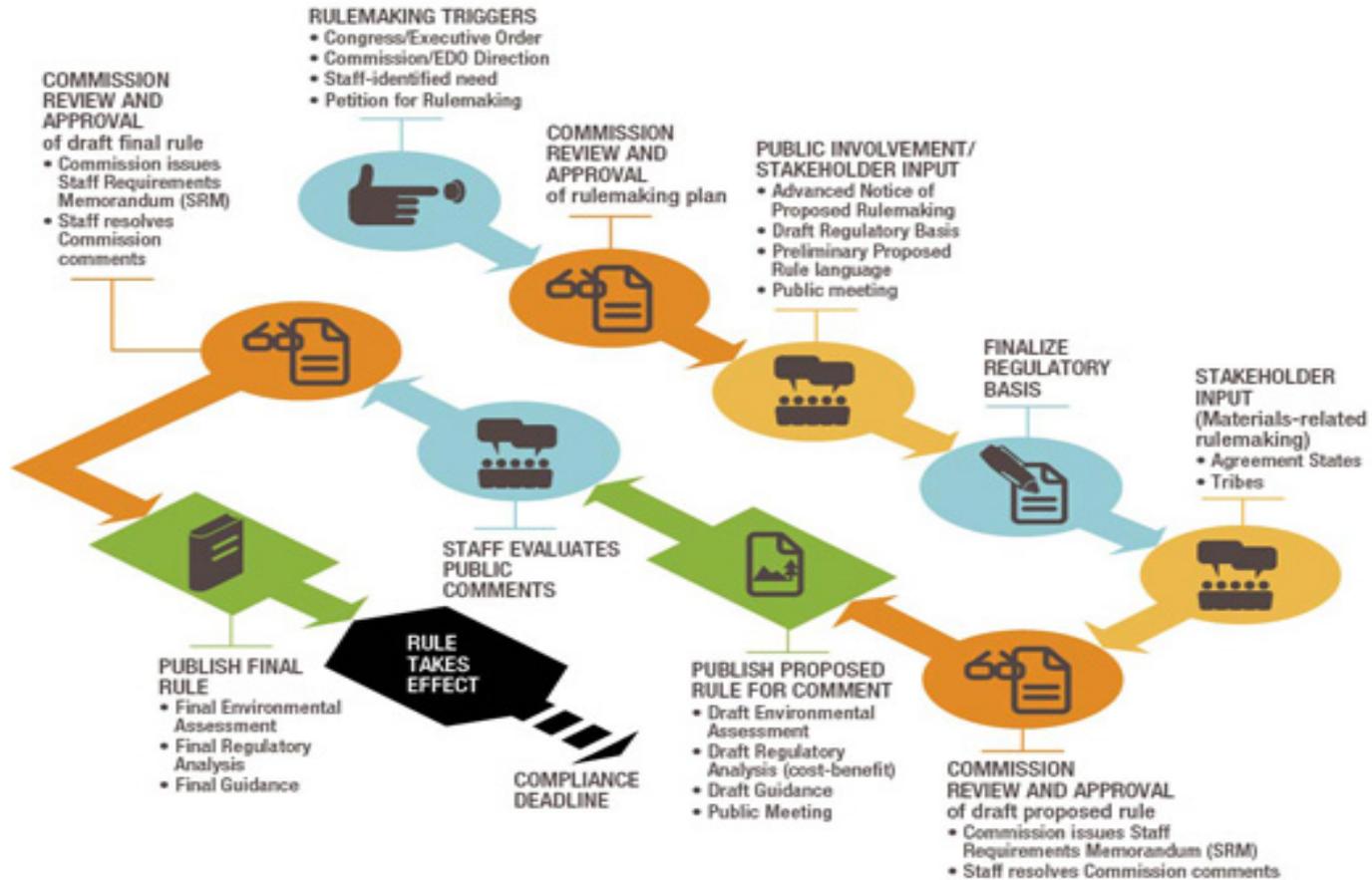
- Stakeholder Views ?

Option 3 – Limited Scope Rulemaking

- Rulemaking Plan
 - Medium Priority (using Common Prioritization of Rulemaking methodology)
 - Moderate contributor to safety/security goals
 - Moderate contributor to regulatory effectiveness strategies
 - Support an NRC licensing initiative (advanced reactors)
 - Public interest in topic
 - Relationship to ongoing rulemaking effort “Emergency Preparedness for Small Modular Reactors and Other New Technologies”
 - Cost and Benefits
 - Estimated Schedule
 - SECY-16-0069 Example:
 - Complete Regulatory Basis Phase: ~ 10 months
 - Publish Proposed Rule: ~ 18 months
 - Publish Final Rule: ~ 18 months

Option 3 – Limited Scope Rulemaking

A TYPICAL RULEMAKING PROCESS



Option 4 – Broad Scope Rulemaking

- Identify a possible rulemaking considering broader changes to Part 73 based on possible design attributes of advanced reactors.
- The variety of advanced reactor designs would likely require a performance-based approach with physical security requirements defined in terms of different design features, including inherent design characteristics.
- The NRC would need to interact with stakeholders and consult with experts on both security and advanced reactors to define relationships and possible performance-based requirements.

Option 4 – Broad Scope Rulemaking

- Advantages:
 - This option would best integrate performance-based security requirements into the processes for developing advanced reactor plant designs.

- Disadvantages:
 - This option would require significant resources and would be unlikely to support current reactor developers needing to make critical design decisions.

- Stakeholder Views ?

- Identify potential need for further interactions
- Commission paper in early-mid 2018
- Post-SECY Paper Activities/Interactions
 - Staff Requirements Memorandum
 - Option 1 – Limited interactions/follow-up. Note that developers/organizations could prepare industry guidance
 - Option 2 – Identification of scope (likely alternatives) to be addressed in guidance and expected approach to be taken (e.g., NRC develop or NRC review/endorsement of industry document)
 - Option 3 – Identification of scope; interactions on regulatory basis, rule language, and guidance
 - Option 4 – Evaluate and develop approach, identify scope and develop performance criteria, interactions on regulatory basis, rule language, and guidance

Public Comments / Questions