



# **ACRS Subcommittee Briefing:**

## **Content of Proposed Rulemaking to Align Licensing Processes and Incorporate Lessons Learned from New Reactor Licensing**

February 18, 2022

# OPENING REMARKS

**Vicki Bier – Subcommittee Chairman**

**Brian Smith – Director, Division of  
New and Renewed Licenses, Office  
of Nuclear Reactor Regulation**

# Today's Meeting

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- Provide an update on the effort since the last ACRS meeting on this rulemaking (meeting slides and materials: ADAMS Accession No. ML22020A000)
- Address in more depth ACRS members' questions and comments provided during the last meeting
- Discuss specifics of proposed changes to guidance documents that support the draft proposed rule
- Provide an update on next steps and the rulemaking schedule
- Receive ACRS members' perspectives

# NRC STAFF PRESENTATION

# NRC Staff Presenters



Jim O'Driscoll,  
NMSS

Rulemaking Project  
Manager



Omid Tabatabai,  
NRR

Senior Project  
Manager

# Topics for Further Discussion

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- Entry conditions for part 50/52/53/53-T
- Cumulative effects of changes on the design when the plant is built
- Physical security of mobile reactors/assembled reactor cores shipped to a facility
- Flexibility for changes related to digital I&C
- Transfer of DC information to other vendors (NRC's role)
- Definition of “essentially complete design”
- Cutoff accident frequency for “credible” accidents

# Entry Conditions for Licensing Processes

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- There are no planned entry conditions for Part 50 or Part 52 (open to all technology)
- Part 53 will meet the provisions of NEIMA and provide risk-informed licensing pathways to applicants
- In addition, Part 53 will be technology inclusive



# Cumulative Effects of Changes During Construction

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- Part 50 and Part 52 remain distinct processes
- Part 52 is based on:
  - Essentially complete nuclear plant design
  - Final design information
  - Resolution of all safety issues
  - Finality for resolutions in subsequent proceedings





## Physical Security of Mobile Reactors/ Assembled Reactor Cores

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- The proposed changes in this rule do not affect this issue
- Mobile reactors are not being considered in rulemaking
- Requirements would be triggered by arrival of the fueled reactor
- Before arrival, access is controlled as it is currently for reactor construction sites



## Review of Changes Related to Digital I&C

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- Endorsement of NEI-96-07 Appendix D unaffected
- RG 1.187 unaffected
- Current interim staff guidance unaffected
- No changes to 10 CFR 50.55a(h) in this rulemaking



## **Review of Changes Related to Digital I&C (cont'd)**

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- Staff will ask for the level of detail necessary to meet a safety finding
- Design acceptance criteria is not needed
- Proposed change process for standard design approvals would use current methods



# Transfer of DC Information to Other Vendors

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- The proposed rule does not affect the responsibilities of vendors in this area
- Existing regulations and reviews ensure design errors are evaluated and reported, vendor qualifications are considered
  - E.g., 10 CFR 50.46(a)(3)(i) through (iii), Appendix B to Part 50, Part 21
  - E.g., STP COL review considered alternate vendor qualifications

# Definition of “Essentially Complete Design”

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- “Essentially complete” is a unique term to Part 52 DCs
- CP level of detail must be sufficient to make 10 CFR 50.34(a) and 50.35 findings
  - NUREG-0800
  - RG 1.70
  - CP Interim Staff Guidance
- No intentional distinction between “evolutionary” and “differs significantly” designs within 10 CFR 52.41

## **Cutoff Accident Frequency for “Credible” Accidents**

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- A discrete cutoff accident frequency for credible accidents is not defined
- The changes to 10 CFR 50.59(c) would align the Part 50 change process with Part 52, with regard to consideration of severe accidents
- This rulemaking does not further define “credible” or what is “substantial”



# Proposed Updates to Guidance Documents

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- RG 1.206 (Applications)
- RG 1.187 (Changes, Tests, and Experiments)
- RG 1.200 (Acceptability of PRA Results)
- RG 4.7 (Site Suitability Criteria)
- SRP 19.0 (PRA and Severe Accident Evaluation)
- SRP 19.1 (Technical Adequacy of PRA Results)
- SRP 13.3 (Emergency Planning)

## **RG 1.206 (Applications)**

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- Purpose: Unchanged—provide guidance on the format and content of applications for Part 52 nuclear power plants
- Rulemaking items driving changes:
  - PRA
  - Design scope and standardization
  - Contents of applications
  - Physical security
  - Change process



## **RG 1.187 (Changes, Tests, and Experiments)**

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- Purpose: Unchanged—provide an acceptable method for use in complying with regulations related to changes, tests, and experiments
- Rulemaking item driving changes:
  - Severe accident treatment requirements; new criteria 10 CFR 50.59(c)(2)(ix) and (x).
- Guidance applies to future Part 50 licensees



## **RG 1.200 (Acceptability of PRA Results)**

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- Purpose: Unchanged—provide an acceptable method to determine if a PRA is adequate to support an application
- Rulemaking item driving changes:
  - Use of PRA in design
    - Expands applicability to Part 50
- Guidance applies to future Part 50 applicants

## **RG 4.7 (Site Suitability Criteria)**

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- Purpose: Describe the major site characteristics related to public health and safety and environmental issues that NRC considers in determining the suitability of sites for light-water-cooled nuclear power stations
- Rulemaking item driving changes:
  - Significant impediments to development of emergency plans
- Changes address siting criteria for ESP reviews conducted under 10 CFR 52.17(b)(1)



## **SRP 19.0 (PRA and Severe Accident Evaluation)**

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- **Purpose:**
  - Guides NRC staff review of PRA for a DC, ML, COL, CP, and OL application
  - Guide staff in deterministic evaluation of severe accident design features
- **Rulemaking items driving changes:**
  - Severe accident treatment requirements
  - Use of PRA in design
- **Guidance applies to future new reactor licensing reviews under Part 50**

## **SRP 19.1 (Technical Adequacy of PRA Results)**

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- **Purpose:** Guides NRC staff review of the technical adequacy of PRA used to support a DC, ML, COL, CP, and OL application
- **Rulemaking items driving changes:**
  - Severe accident treatment requirements
  - Use of PRA in design
- **Guidance applies to future new reactor licensing reviews under Part 50**

## **SRP 13.3 (Emergency Planning)**

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- Purpose: Guides NRC staff review of the applicant's emergency planning, as described in the safety analysis report associated with the CP, OL, or COL application
- Rulemaking items driving changes:
  - Significant impediments to development of emergency plans
  - Three Mile Island requirements
- Changes provide additional guidance on conducting a siting analysis and update references

# Questions



# Recap and Next Steps

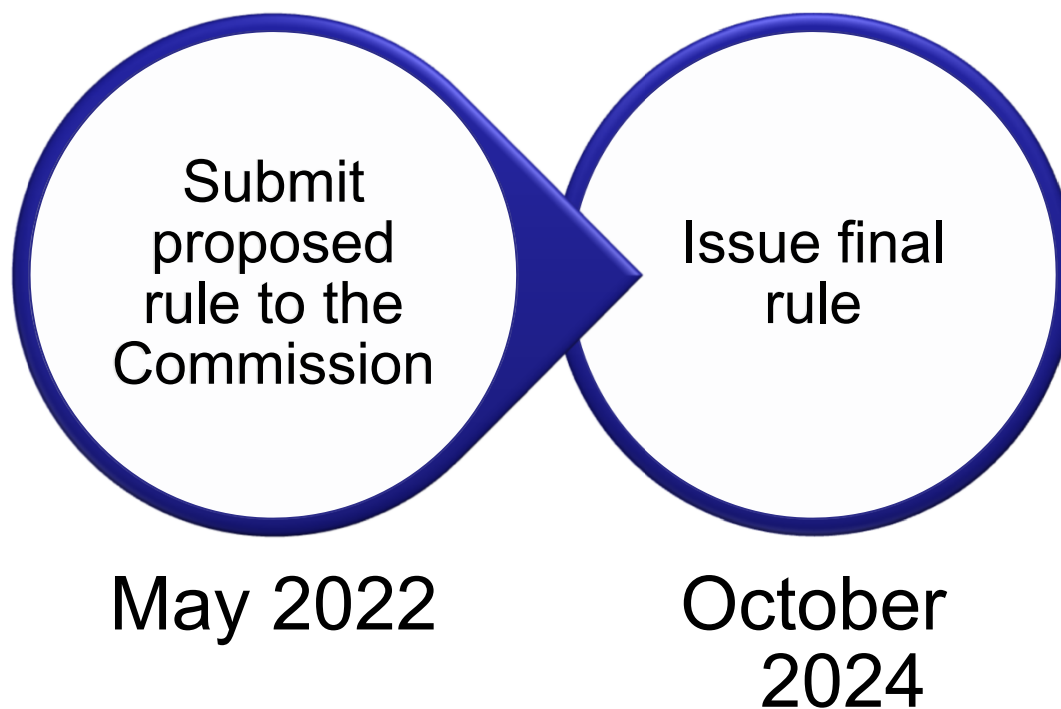
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- Complete concurrence on draft proposed rule
- Submit the proposed rule to the Commission
- Plan for additional public meeting(s) during the proposed rule phase



# Rulemaking Schedule

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# Contact Information

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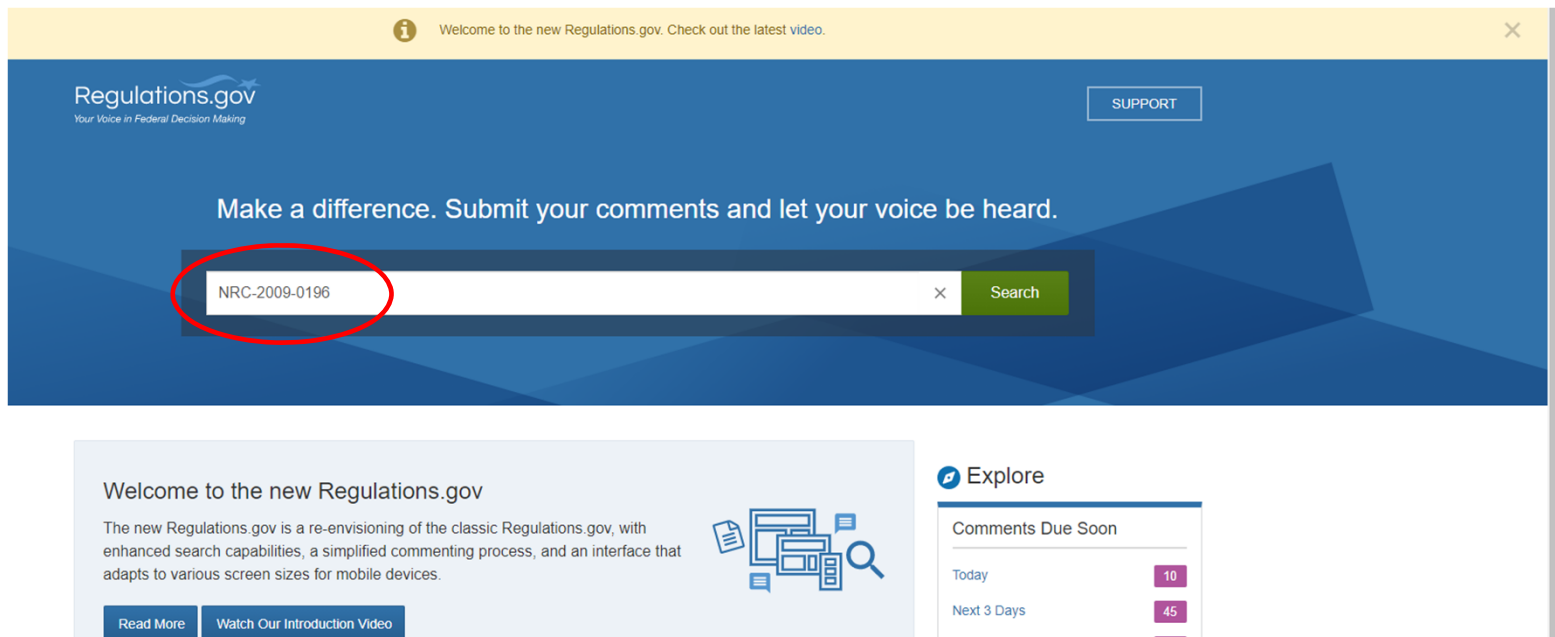
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Comments Due Soon	
Today	10
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# SUPPORTING INFORMATION

# Abbreviations

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ACRS	Advisory Committee on Reactor Safeguards	LAR	License Amendment Request
ADAMS	Agencywide Documents Access and Management System	LWR	Light-Water Reactor
AEA	Atomic Energy Act of 1954, as amended	ML	Manufacturing License
CFR	Code of Federal Regulations	NEI	Nuclear Energy Institute
COL	Combined License	NEIMA	Nuclear Energy Innovation and Modernization Act
CP	Construction Permit	NMSS	Office of Nuclear Material Safety and Safeguards
DAC	Design Acceptance Criteria	NRC	Nuclear Regulatory Commission
DC	Design Certification	NRR	Office of Nuclear Reactor Regulation
DG	Draft Regulatory Guide	OL	Operating License
ECCS	Emergency Core Cooling System	PRA	Probabilistic Risk Assessment
EP	Emergency Planning	RG	Regulatory Guide
ESP	Early Site Permit	SDA	Standard Design Approval
FFD	Fitness For Duty	SECY	Office of the Secretary
FRN	<i>Federal Register</i> Notice	SRP	Standard Review Plan
FSAR	Final Safety Analysis Report	SSC	Structure, System, and Component
I&C	Instrumentation and Controls	STP	South Texas Project
ISG	Interim Staff Guidance	TMI	Three Mile Island
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria		

# References

Document Title	ADAMS Accession Number/FR Citation
Regulatory Guide 1.70, Revision 3, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," dated November 1978	<a href="#">ML011340122</a>
SECY-90-241, "Level of Detail Required for Design Certification Under Part 52," dated July 11, 1990	<a href="#">ML003707877</a>
IEEE Std. 603-1991, "Standard Criteria for Safety Systems for Nuclear Power Generating Stations," dated December 31, 1991	<a href="https://ieeexplore.ieee.org/document/159411">https://ieeexplore.ieee.org/document/159411</a>
NEI 01-01/EPRI TR-102348, Revision 1, "Guideline on Licensing Digital Upgrades," dated March 2002	<a href="#">ML020860169</a>
NEI 00-04, Revision 0, "10 CFR 50.69 SSC Categorization Guideline," dated July 2005	<a href="#">ML052910035</a>
Regulatory Guide 1.201, Revision 1, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to Their Safety Significance," dated May 2006	<a href="#">ML061090627</a>
NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 13.3, Revision 3, "Emergency Planning," dated March 2007	<a href="#">ML063410307</a>
NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 19.1, Revision 3, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," dated September 2012	<a href="#">ML12193A107</a>
Regulatory Guide 4.7, Revision 3, "General Site Suitability Criteria for Nuclear Power Stations," dated March 2014	<a href="#">ML12188A053</a>
NEI 96-07, Appendix C, Revision 0 – Corrected, "Guideline for Implementation of Change Processes for New Nuclear Power Plants Licensed Under 10 CFR Part 52," dated March 2014	<a href="#">ML14091A739</a>
"Results of Periodic Review of Regulatory Guide (RG) 1.201," dated April 23, 2015	<a href="#">ML15091A788</a>

## References (cont'd)

Document Title	ADAMS Accession Number/FR Citation
Interim Staff Guidance COL-ISG-025, "Changes During Construction Under 10 CFR Part 52," dated July 2015	<a href="#">ML15058A377</a>
NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 19.0, Revision 3, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors," dated December 2015	<a href="#">ML15089A068</a>
International Atomic Energy Agency, Specific Safety Requirements No. SSR 2/1, Revision 1, "Safety of Nuclear Power Plants: Design," dated February 2016	<a href="https://www.iaea.org/publications/8771/safety-of-nuclear-power-plants-design">https://www.iaea.org/publications/8771/safety-of-nuclear-power-plants-design</a>
NRC Letter to NEI Related to the Public Meeting of March 28, 2018, Regarding Avoiding Delays in Issuance of U.S. Nuclear Regulatory Commission Combined Licenses, dated May 9, 2018	<a href="#">ML18123A245</a>
Regulatory Issue Summary (RIS) 2002-22, Supplement 1, Clarification on Endorsement of Nuclear Energy Institute Guidance in Designing Digital Upgrades in Instrumentation and Control Systems, dated May 31, 2018	<a href="#">ML18143B633</a>
Regulatory Guide 1.206, Revision 1, "Applications for Nuclear Power Plants," dated October 2018	<a href="#">ML18131A181</a>
DI&C-ISG-06, Revision 2, "Licensing Process," dated December 2, 2018	<a href="#">ML18269A259</a>
NEI 18-04, Revision 1, "Risk-Informed Performance-Based Technology Inclusive Guidance for Non Light Water Reactor Licensing Basis Development," dated August 2019	<a href="#">ML19241A472</a>
NEI Letter to the NRC, "Part 50/52 Lessons Learned Rulemaking," dated March 9, 2020	<a href="#">ML20108F543</a>
NEI 96-07, Appendix D, Revision 1, "Supplemental Guidance for Application of 10 CFR 50.59 to Digital Modifications," dated May 2020	<a href="#">ML20135H168</a>

## References (cont'd)

Document Title	ADAMS Accession Number/FR Citation
Public Meeting to Discuss the Status of Rulemaking to Align Licensing Processes and Apply Lessons Learned from New Reactor Licensing [NRC-2009-0196; RIN 3150-AI66] held April 29, 2020, dated May 26, 2020	<a href="#">ML20141L609</a>
Regulatory Guide 1.233, "Guidance for a Technology-Inclusive, Risk-Informed, and Performance-Based Methodology to Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non-Light Water Reactors," dated June 2020	<a href="#">ML20091L698</a>
NRC Letter to NEI, "Part 50/52 Lessons-Learned Rulemaking: U.S. Nuclear Regulatory Commission Transparency and Stakeholder Engagement," dated September 8, 2020	<a href="#">ML20156A308</a>
Regulatory Guide 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," dated December 2020	<a href="#">ML20238B871</a>
Regulatory Guide 1.237, Revision 0, "Guidance for Changes During Construction for New Nuclear Power Plants Being Constructed Under a Combined License Referencing a Certified Design Under 10 CFR Part 52," dated February 2021	<a href="#">ML20349A335</a>
"Design Review Guide (DRG): Instrumentation and Controls for Non-Light-Water Reactor (Non-LWR) Reviews," dated February 26, 2021	<a href="#">ML21011A140</a>
NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," last reviewed/updated March 9, 2021	<a href="https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html">https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html</a>
NEI, "Industry Comments on the Regulatory Basis for Alignment of Licensing Processes and Lessons Learned from New Reactor Licensing (Docket ID: NRC-2009-0196)," dated May 14, 2021	<a href="#">ML21144A164</a>





# References (cont'd)

Document Title	ADAMS Accession Number/FR Citation
Regulatory Guide 1.187, Revision 3, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated June 2021	<a href="#">ML21109A002</a>
NUREG-1021, Revision 12, "Operator Licensing Examination Standards for Power Reactors," dated September 2021	<a href="#">ML21256A276</a>
Draft Interim Staff Guidance; Request for Comment, "Safety Review of Light-Water Power-Reactor Construction Permit Applications," dated December 14, 2021	<a href="#">86 FR 71101</a>
Draft FRN to Support ACRS Subcommittee Meeting – 10 CFR Part 50/52 Rulemaking to Align Licensing Processes and Lessons Learned from New Reactor Licensing, dated January 27, 2022	<a href="#">ML22020A002</a>
ACRS Subcommittee Public Meeting – NRC Presentation for 10 CFR Part 50/52 Rulemaking to Align Licensing Processes and Lessons Learned from New Reactor Licensing, dated February 1, 2022	<a href="#">ML22020A001</a>
Draft Guidance Documents to Support ACRS Subcommittee Meeting Regarding Part 50/52 Proposed Rulemaking, dated February 15, 2022	<a href="#">ML22040A074</a>



## **Changes to Tier 1 Information Without Prior NRC Approval**

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- Industry desires more flexibility
- Additional process changes are not recommended due to experience with only one referenced DC
- Limited by the Atomic Energy Act



# Operators' Licensing NUREG-1021 Changes

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- Permit the use of suitable alternatives in lieu of the plant walkthrough portion of the operating test while the facility is under construction
- Permit waivers for examination and test requirements for multiple unit sites of the same design
- Require actions that would ensure that an operator license applicant's knowledge, skills, and abilities are maintained when there would be a significant amount of time between when the applicant successfully passes the licensing exam and completes the remaining requirements to be licensed
- Amend the definitions of "plant-referenced simulator" and "reference plant" to clarify that these terms are also applicable to simulators that model nuclear power plants that are under construction

# Status of RG 1.201

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## Development of regulation and guidance:

- 10 CFR 50.69 issued in 2004
- NEI 00-04 issued in final form in 2005
- RG 1.201 issued for trial use in 2006
- First application in 2014
- Summary of issues in 2015

Many changes are needed to address use of the rule before construction