

# Appendix B to DG-1404, Revision 1: Acceptability of a PRA Supporting a Non-LWR Construction Permit Application Based on the LMP Methodology

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Office of Nuclear Reactor Regulation

U.S. Nuclear Regulatory Commission

Public Meeting

September 26, 2023

# Overview

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Purpose

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Framework for Achieving PRA Acceptability

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Appendix B to DG-1404, Revision 1

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Submitting Comments on Appendix B to DG-1404, Revision 1

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Open Discussion

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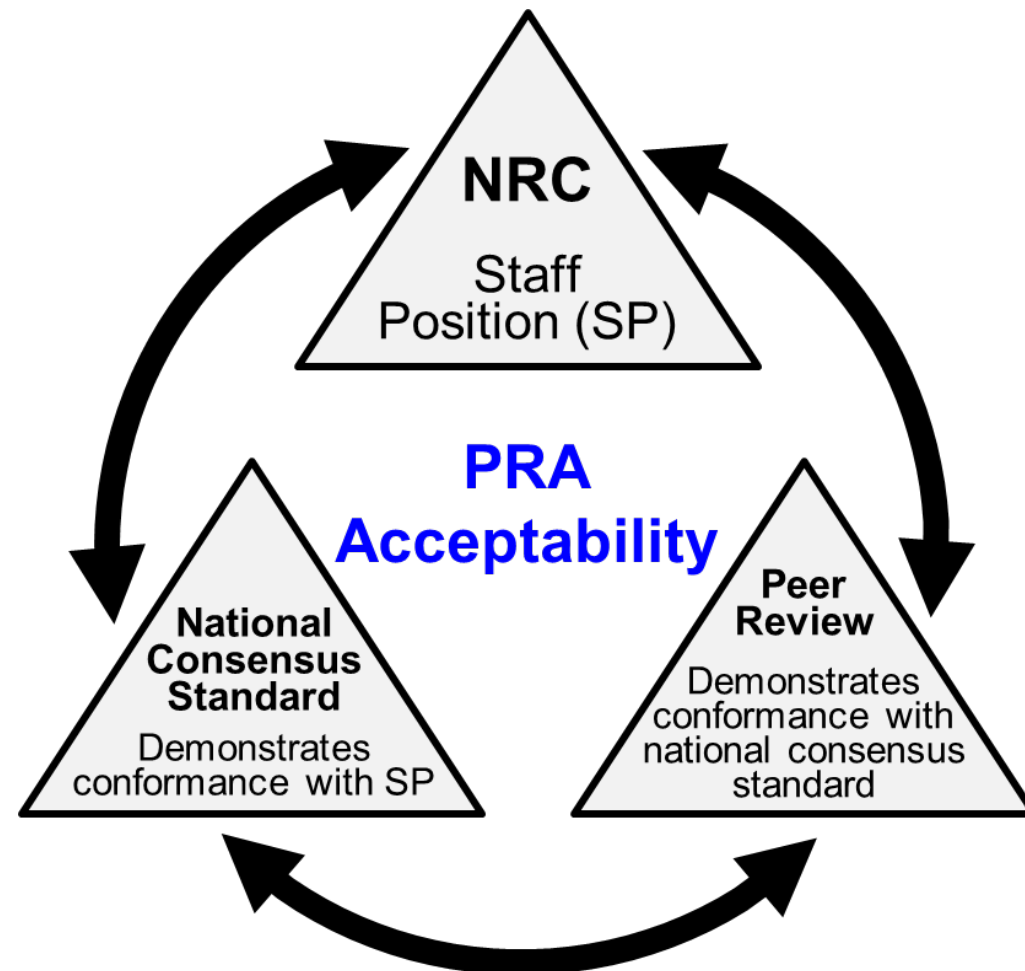
# Purpose

- Facilitate stakeholder understanding of the guidance in Appendix B to DG-1404, Revision 1
- Share that the availability of DG-1404<sup>1</sup>, Revision 1, for comment on the proposed Appendix B was announced in the *Federal Register* (FR) on September 8, 2023 ([88 FR 61989](#))
- Provide guidance on how to submit written comments. **Comments on this document will not be taken in today's meeting.** Please submit your comments in accordance with the instruction in the *Federal Register* notice
- The comment period for Appendix B to DG-1404, Revision 1, closes on **October 10, 2023**

<sup>1</sup> DG-1404, Rev. 1, "Guidance for a Technology-Inclusive Content-of-Application Methodology to Inform the Licensing Basis and Content of Application for Licenses, Certifications, and Approvals for Non-Light Water Reactors" (ML23194A194)

# Framework for Achieving PRA Acceptability

*Development of guidance in Appendix B to DG-1404, Revision 1, is consistent with the NRC's framework for achieving PRA acceptability*



# Appendix B to DG-1404, Revision 1

- Appendix B to DG-1404, Revision 1, applies the four related principles of PRA acceptability provided in trial RG 1.247<sup>2</sup>, published in March 2022 (ML21235A008), to a construction permit:
  - PRA scope
  - PRA level of detail
  - PRA elements
  - Plant representation and PRA configuration control
- Appendix B also addresses:
  - PRA documentation
  - Demonstrating PRA acceptability (self-assessment or peer review)
  - Applicability of supporting requirements in ASME/ANS RA-S-1.4-2021

<sup>2</sup> RG 1.247, “Acceptability of Probabilistic Risk Assessment Results for Non-Light-Water Reactor Risk-Informed Activities” (ML21235A008)



# Appendix B to DG-1404, Revision 1

Guidance was developed in Appendix B to inform the type and detail of PRA information to be included with a non-LWR CP application sufficient to provide confidence in the PRA results such that the PRA can be used in regulatory decision-making.



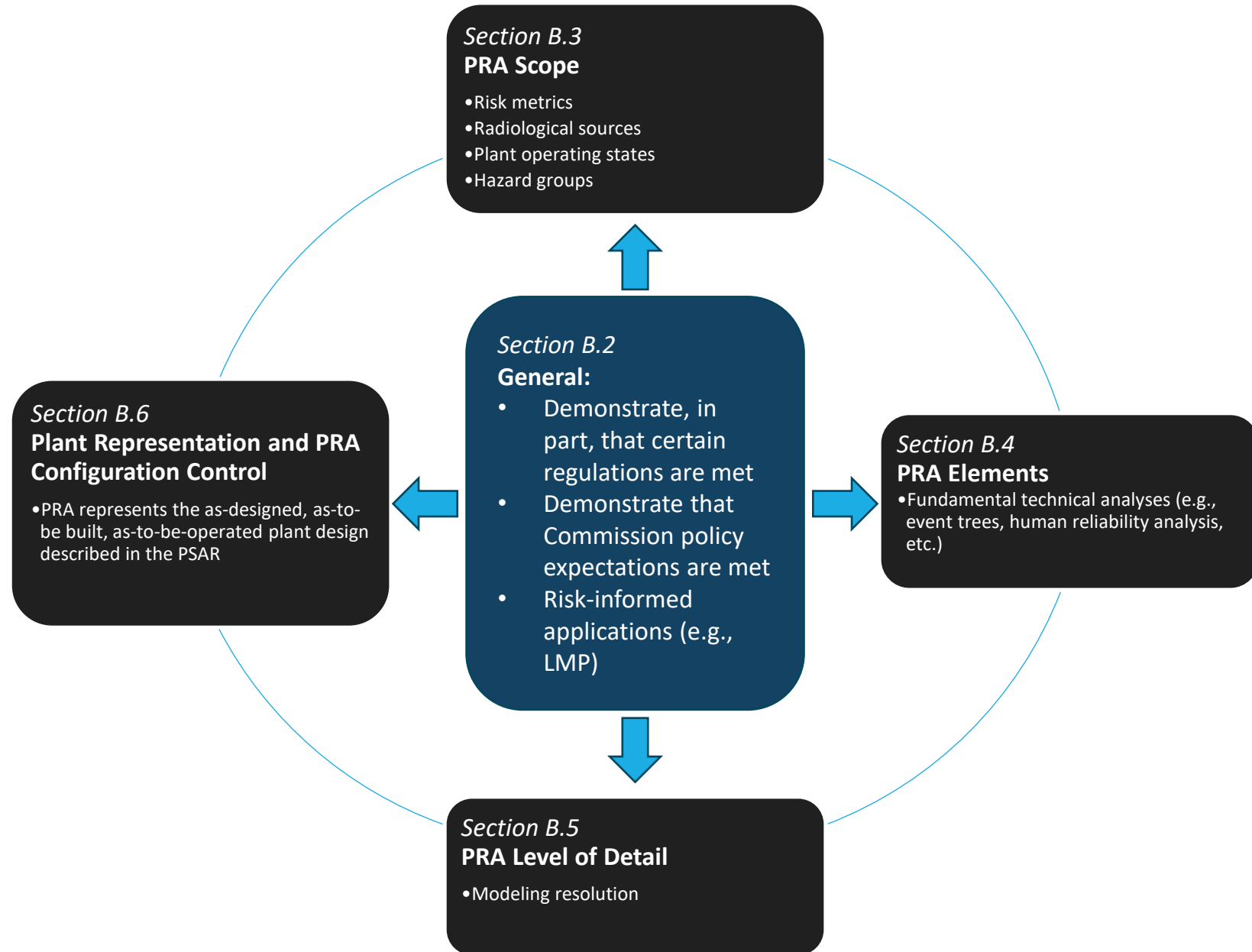
The CP application should demonstrate:

Commensurate with the preliminary plant design and proposed site described in the CP application, information developed from the PRA is sound and reliable.

The PRA produces insights with appropriate fidelity to support implementation of the LMP methodology and development of the CP application.

Processes and procedures are defined to adequately maintain and upgrade the PRA to support continued implementation of the LMP methodology as the plant design evolves, the plant is constructed, and leading up to the OL application submittal.

# PRA Acceptability for Non-LWR CP Applicants Implementing LMP



## *Section B.7: PRA Documentation*

- The proposed guidance in Appendix B to DG-1404, Revision 1, addresses the acceptability of a PRA used to implement LMP for a non-LWR CP application
- The TICAP guidance in NEI 21-07, Rev. 1, provides an acceptable approach and format for providing PRA submittal information
  - The staff recognizes that PRA results and key assumptions will be provided in the sections of the PSAR to which they apply
- As referenced in the proposed Appendix B, Staff Position C.4.1 in RG 1.247 provides an acceptable approach for developing and preserving PRA archival information
  - PRA archival information may be controlled by a stand-alone program, or the quality assurance program required by 10 CFR 50.34(a)(7)



## *Section B.8: Demonstrating PRA Acceptability*

- The CP applicant should demonstrate the acceptability of the PRA by conducting a self-assessment or a peer review of the PRA, which will generally:
  - Indicate the extent to which the relevant HLRs and associated SRs are met
  - Reveal the PRA's strengths and limitations
  - Provide a basis for asserting that the PRA is acceptable
- Consistent with the guidance in Appendix B of DG-1404, Revision 1, the guidance in DANU-ISG-2022-05, "Organization and Human-System Considerations," (ML22048B542) provides an acceptable approach for describing:
  - Key management responsibilities for developing the PRA
  - Ability of the CP applicant's technical staff to develop the PRA

# Applicability of Supporting Requirements in the ASME/ANS Non-LWR Standard

- Tables B-2 and B-3 provide the results of the staff's application of the process provided in Section 3 of ASME/ANS RA-S-1.4-2021 for a CP applicant implementing the LMP methodology

## Meanings of Table Entries:

- “YES” means the related SR spans across CC-I and CC-II and is applicable
  - “CC-I” means the related CC-I SR is applicable
  - “CC-II” means the related CC-II SR is applicable
  - SRs not listed were determined not to be applicable.
- An applicant may perform a separate analysis using the process provided in Section 3 of the ASME/ANS non-LWR PRA standard and justify any deviations from or alternatives to Tables B-2 and B-3.

# Submitting Comments on Appendix B to DG-1404, Revision 1

*Comments may be submitted two ways:*

1. **Federal Rulemaking Website:** Go to <https://www.regulations.gov> using Docket ID NRC-2022-0073
  - Address questions about Docket IDs in *Regulations.gov* to Stacy Schumann; telephone: 301-415-0624
  - Email: [Stacy.Schumann@nrc.gov](mailto:Stacy.Schumann@nrc.gov)
2. **Mail comments to:**

Office of Administration  
Mail Stop: TWFN-7-A60M  
U.S. Nuclear Regulatory Commission Washington, DC  
20555-0001,  
ATTN: Program Management, Announcements, and  
Editing Staff

# Open Discussion

# Reference Information

## Prior Public Meeting Presentations

Please see the [Advanced Reactor Content of Application Project](https://publish.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/advanced-reactor-content-of-application-project.html) webpage on NRC.gov

(<https://publish.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/advanced-reactor-content-of-application-project.html>)

# Abbreviations

ALWR	advanced light-water reactor	LBE	licensing basis event
ASME	American Society of Mechanical Engineers	LERF	large early release frequency
ANS	American Nuclear Society	LMP	Licensing Modernization Project
CC	Capability Category	LPSD	low-power and shutdown
CFR	<i>Code of Federal Regulations</i>	LWR	light-water reactor
COL	combined license	NEI	Nuclear Energy Institute
CP	construction permit	non-LWR	non-light-water reactor
DANU	Division of Advanced Reactors and Non-Power Production and Utilization Facilities	OL	operating license
DBHL	design-basis hazard level	POS	plant operating state
DC	design certification	PRA	probabilistic risk assessment
DG	Draft Guide	PSAR	preliminary safety analysis report
DRA	Division of Risk Assessment	RG	Regulatory Guide
EAB	exclusion area boundary	RIM	Reliability Integrity Management
FR	<i>Federal Register</i>	SR	supporting requirement
HLR	high-level requirement	SRP	Standard Review Plan
ISG	Interim Staff Guidance	TICAP	Technology-Inclusive Content of Application Project
		TUPA	trial use and pilot application