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

Reconsidering the NRC's Radiation Protection Framework

EO 14300 Section 5(b)

July 16, 2025

ADAMS Accession No. ML25196A090

https://www.nrc.gov/pmns/mtg?do=details&Code=20250860

Announcements

Please identify yourself each time before speaking throughout the meeting.

Meeting Agenda

PUBLIC MEETING AGENDA

Public Meeting on Executive Order 14300 Section 5(b) – Reconsidering the NRC's Radiation Protection Framework

July 16, 2025, 01:00 PM to 05:30 PM ET

Webinar

Time	***Topic***	***Speaker***
1:00-1:15 p.m.	Introduction/Opening Remarks	NRC
1:15 p.m.- 1:45 p.m.	NRC Presentations	NRC
1:45 p.m.- 3:00 p.m.	Stakeholder Presentations	Multiple
3:00 p.m.- 3:15 p.m.	Break	
3:15 p.m.-4:30 p.m.	Stakeholder Presentations	Multiple
4:30 p.m.-5:30 p.m.	Public Comments (2 minute per speaking opportunity)	Public
5:30 p.m.	Closing/Adjourn	NRC

Introductions

Please identify yourself each time before speaking throughout the meeting.

NRC Opening Remarks

Michael Franovich, Deputy Office Director for Engineering

Office of Nuclear Reactor Regulation

Executive Order 14300 Section 5(b)

PRESIDENT DONALD J. TRUMP — The WHITE HOUSE

Ordering the Reform of the Nuclear Regulatory Commission

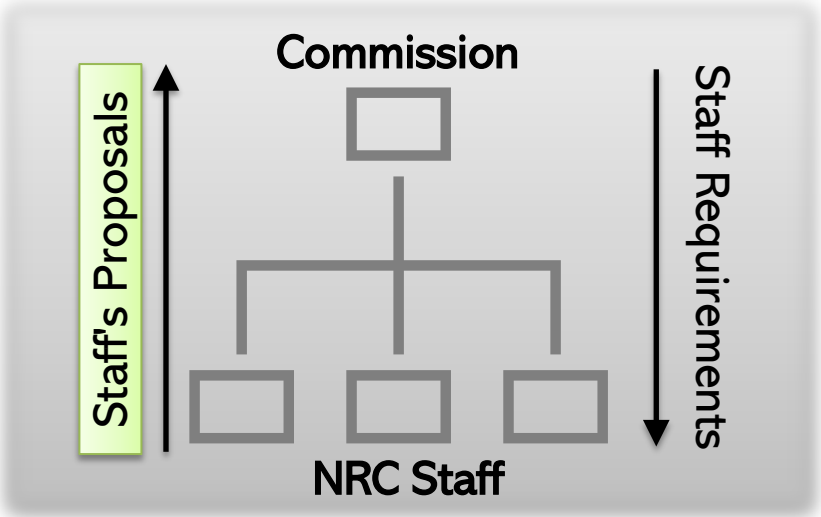
Presidential Actions, Executive Orders | May 23, 2025

Sec. 5. Reforming and Modernizing the NRC's Regulations. The NRC, working with its DOGE Team, the Office of Management and Budget, and other executive departments and agencies as appropriate, shall undertake a review and wholesale revision of its regulations and guidance documents, and issue notice(s) of proposed rulemaking effecting this revision within 9 months of the date of this order. The NRC shall issue final rules and guidance to conclude this revision process within 18 months of the date of this order. In conducting this wholesale revision, the NRC shall be guided by the policies set forth in section 2 of this order and shall in particular:

(b) Adopt science-based radiation limits. In particular, the NRC shall reconsider reliance on the linear no-threshold (LNT) model for radiation exposure and the "as low as reasonably achievable" standard, which is predicated on LNT. Those models are flawed, as discussed in section 1 of this order. In reconsidering those limits, the NRC shall specifically consider adopting determinate radiation limits, and in doing so shall consult with the Department of Defense (DOD), the Department of Energy (DOE), and the Environmental Protection Agency.

EO 14300: https://www.whitehouse.gov/presidential-actions/2025/05/ordering-the-reform-of-the-nuclear-regulatory-commission/

NRC Staff Approach



NRC Mission - The NRC protects public health and safety and advances the nation's common defense and security by enabling the safe and secure use and deployment of civilian nuclear energy technologies and radioactive materials through efficient and reliable licensing, oversight, and regulation for the benefit of society and the environment.

Reliability **Efficiency**

What?

Respond to directives in EO 14300 Section 5(b)

How?

Enable safe and secure use of nuclear technology (NRC Mission)

Seize the Opportunity to learn from decades of regulatory experience and research

Rise to the Challenge to be agile and efficient in work and decisionmaking

Weight of scientific evidence (EO 14303)

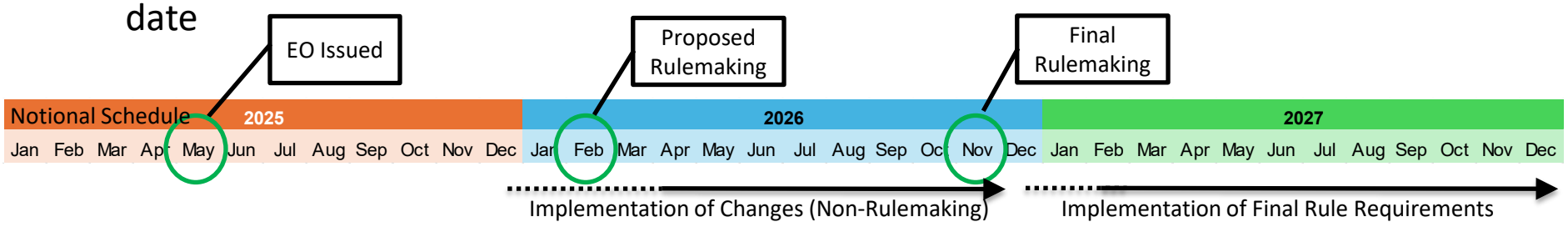
Why?

Benefit of society and the environment

EO 14303: https://www.whitehouse.gov/presidential-actions/2025/05/restoring-gold-standard-science/

NRC Response to 14300 Section 5(b)

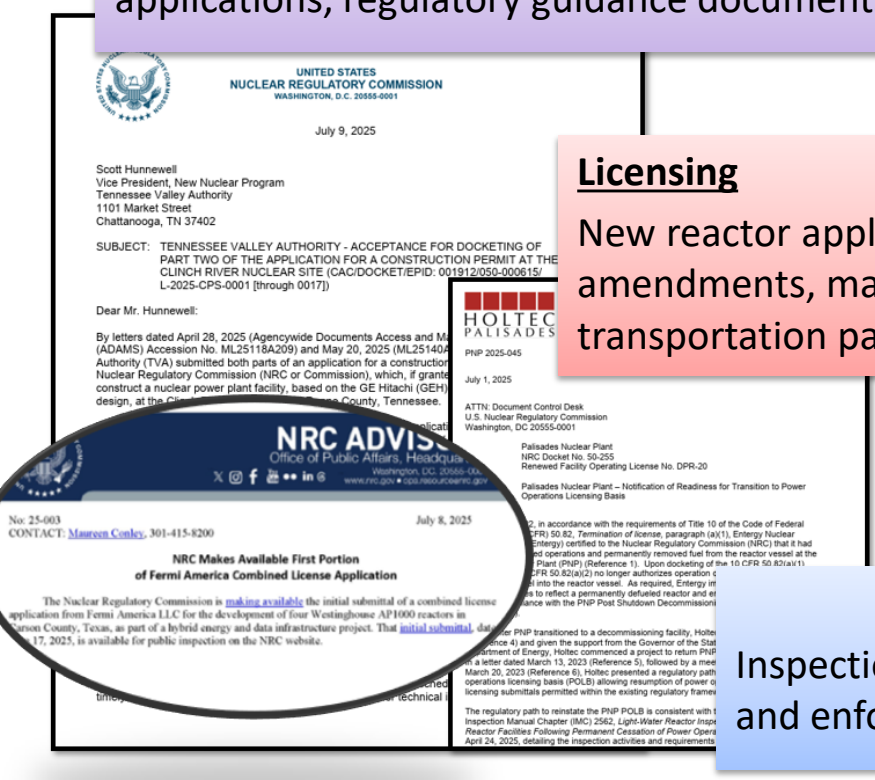
- ✓ Staff collaboration
- ✓ Public engagement
- ✓ Identify near-term and long-term proposals
  - Near-term – safe, immediate, impactful improvements for applicants and licensees
  - Long-term – Important to EO response but require more time to develop
- ✓ Consult with DOD, DOE, and EPA
- ✓ Engage with other government partners
- ✓ Provide proposals for Commission consideration
- ✓ Proposed rulemaking within 9 months of EO date, Final rule within 18 months of EO date



Key NRC Functions

Regulation

Rules, guidance for submittals of amendments and applications, regulatory guidance documents



Licensing

New reactor applications, license amendments, materials licenses, transportation packages

Oversight

Inspections, assessment and enforcement

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NRC's Radiation Protection Framework

Broad areas of radiation protection

- Occupational
  - power plants
  - medical providers
  - radiographers
- Public
  - power plant effluents
  - medical treatments
  - transportation
- Environment
  - low level waste disposal
  - decommissioning

Requirements and Guidance

- Standards include dose and activity limits and various precautions

Dose Response

Key Terms and Concepts

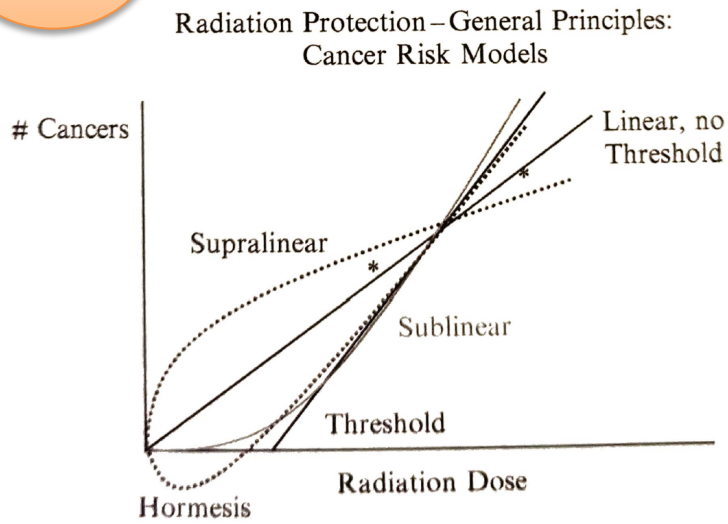

Figure 6.10 General principles of radiation risk models.

Source: Stabin, Michael G. *Radiation Protection and dosimetry*. New York, NY: Springer, 2007.

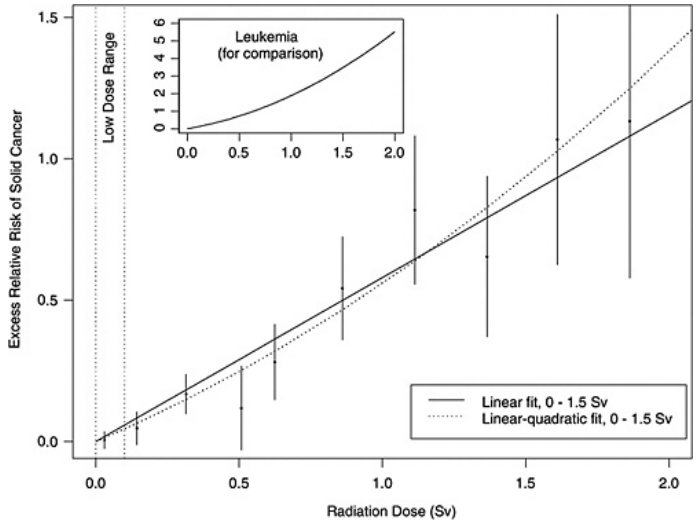

FIGURE ES-1 Excess relative risks of solid cancer for Japanese atomic bomb survivors.

Source: Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2. Washington, DC: The National Academies Press. https://doi.org/10.17226/11340.

- LNT – Linear, No Threshold
- ALARA – As Low As is Reasonably Achievable
- Hormesis
- Stochastic – Depends on statistics

- Deterministic – Will not occur below a known level
- Determinate – Single value
- Justification, optimization, and limits
- Excess Relative Risk

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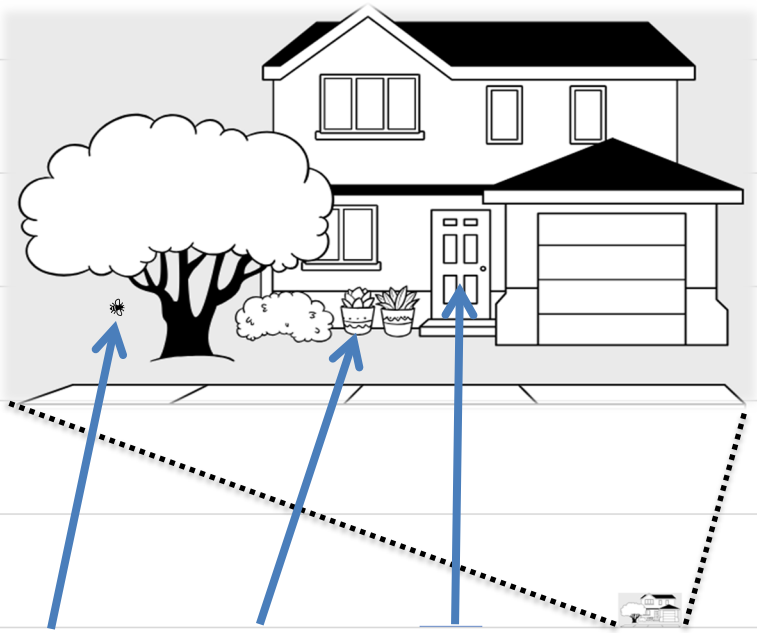
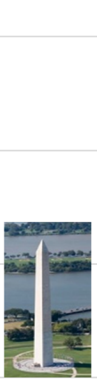
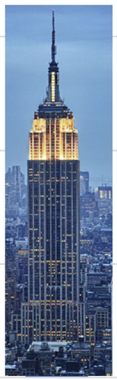
Visualizing Magnitudes of Dose

1 mSv = 100 mrem







For illustration only

0.2 5 25 100 1000 5000 10000

Plant Effluents

NPP Effluent Guidelines

EPA Fuel Cycle Limit

Public Dose Limit

Occupational Dose Limit

Statistical Limit of Observable Health Effects

Dose (mrem)

Radiation Dose in Perspective

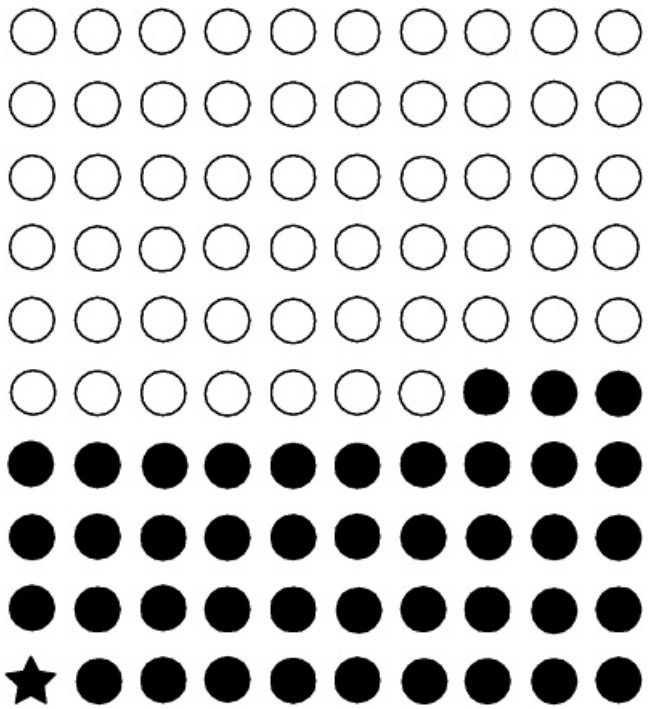


FIGURE PS-4 In a lifetime, approximately 42 (solid circles) of 100 people will be diagnosed with cancer (calculated from Table 12-4 of this report). Calculations in this report suggest that approximately one cancer (star) per 100 people could result from a single exposure to 0.1 Sv of low-LET radiation above background.

The BEIR VII committee has developed and presented in Chapter 12 the committee's best risk estimates for exposure to low-dose, low-LET radiation in human subjects. An example of how the data-based risk models developed in this report can be used to evaluate the risk of radiation exposure is illustrated in Figure PS-4. This example calculates the expected cancer risk from a single exposure of 0.1 Sv. The risk depends on both sex and age at exposure, with higher risks for females and for those exposed at younger ages. On average, assuming a sex and age distribution similar to that of the entire U.S. population, the BEIR VII lifetime risk model predicts that approximately 1 person in 100 would be expected to develop cancer (solid cancer or leukemia) from a dose of 0.1 Sv above background, while approximately 42 of the 100 individuals would be expected to develop solid cancer or leukemia from other causes. Lower doses would produce proportionally lower risks. For example, the committee predicts that approximately one individual per thousand would develop cancer from an exposure to 0.01 Sv. As another example, approximately one individual per hundred would be expected to develop cancer from a lifetime (70-year) exposure to low-LET, natural background radiation (excluding radon and other high-LET radiation). Because of limitations in the data used to develop risk models, risk estimates are uncertain, and estimates that are a factor of two or three larger or smaller cannot be excluded.

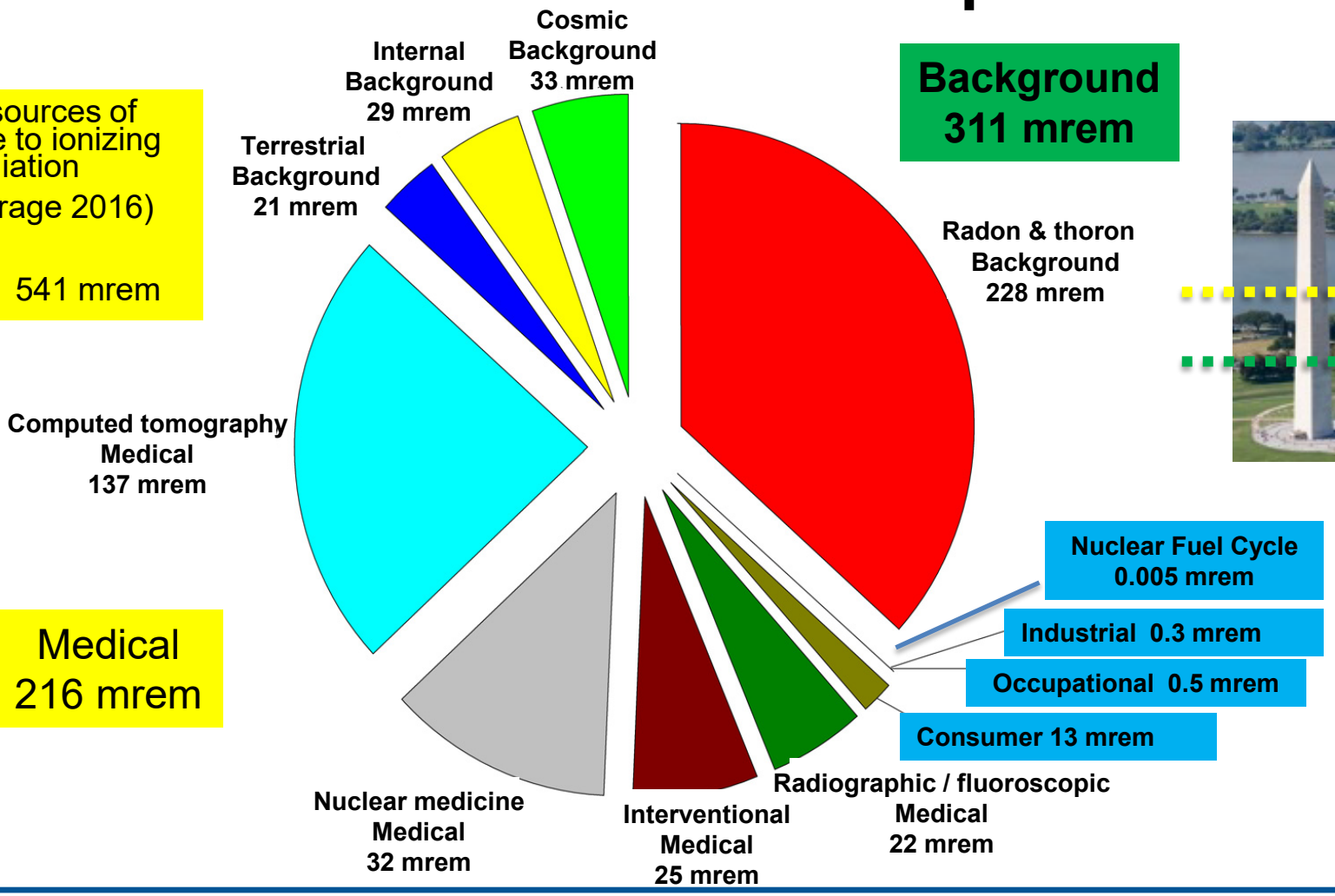
0.1 Sv = 10,000 mrem
0.01 Sv = 1,000 mrem

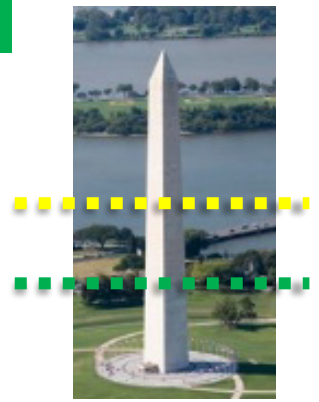
Source: National Academies of Sciences, Engineering, and Medicine. 2006. Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2. Washington, DC: The National Academies Press. https://doi.org/10.17226/11340.

Radiation Dose in Perspective

Major sources of exposure to ionizing radiation
(US average 2016)

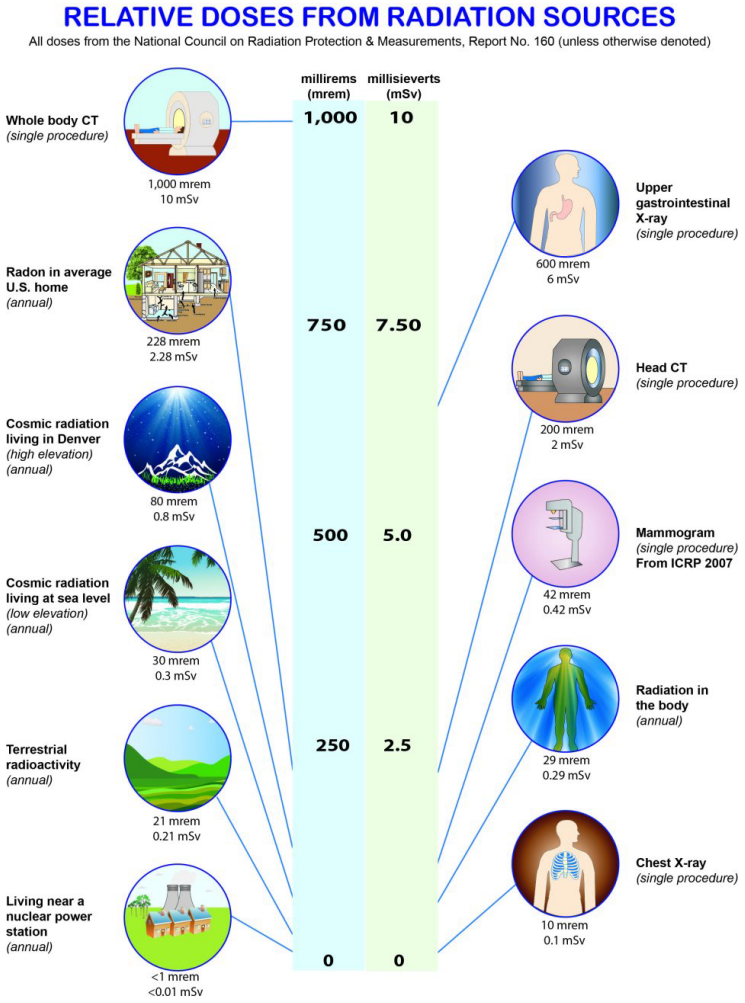
TEDE = 541 mrem





Sources:
NCRP Report 160: Ionizing Radiation Exposure of the Population of the United States (2009)
NCRP Report 184: Medical Radiation Exposure of Patients in the United States (2019)

Radiation Dose in Perspective



EPA United States Environmental Protection Agency

Diagram Developed by EPA: https://www.epa.gov/radiation/radiation-sources-and-doses

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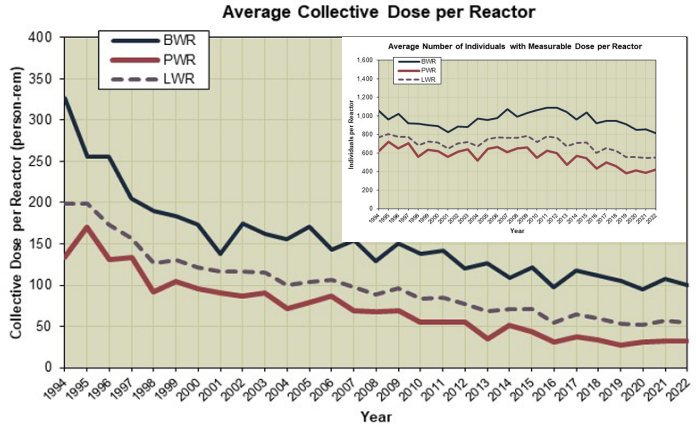
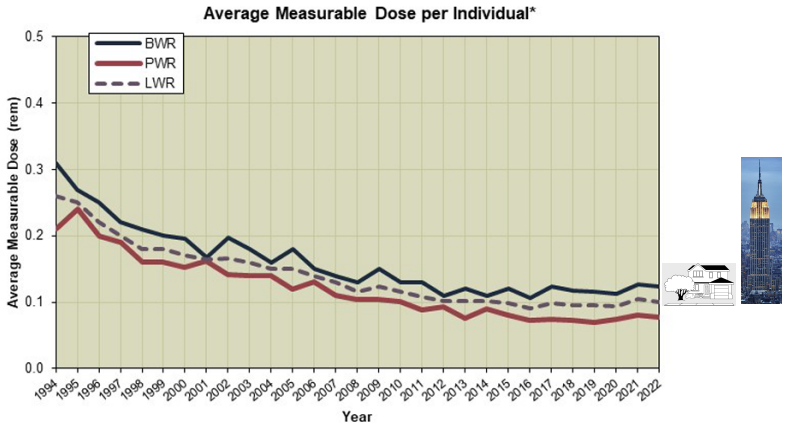
Regulatory Experience

Decreasing Dose

NUREG-0713, Vol 44





Occupational Exposure

NUREG/CR-2907, Vol 27

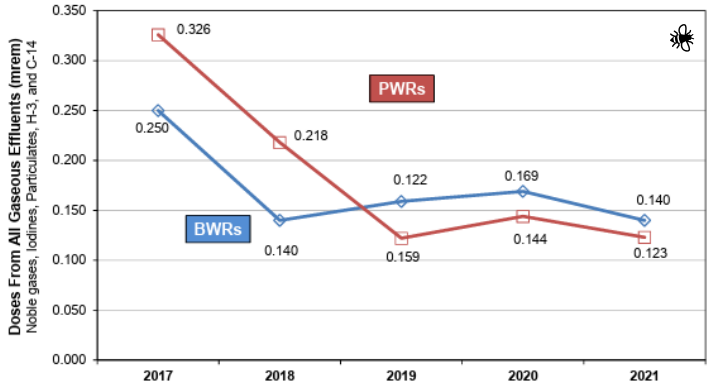


Figure 3-21 Median Maximum Annual Organ Dose, Gaseous Effluents 5-Year Trend, 2017–2021

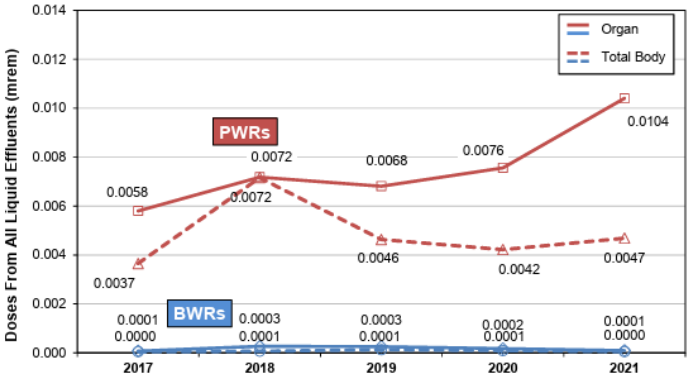


Figure 3-22 Median Maximum Annual Dose, Liquid Effluents 5-Year Trend, 2017–2021

Public Exposure

NUREG-0713: https://www.nrc.gov/docs/ML2430/ML24303A136.pdf
NUREG/CR-2907: https://www.nrc.gov/docs/ML2413/ML24134A119.pdf

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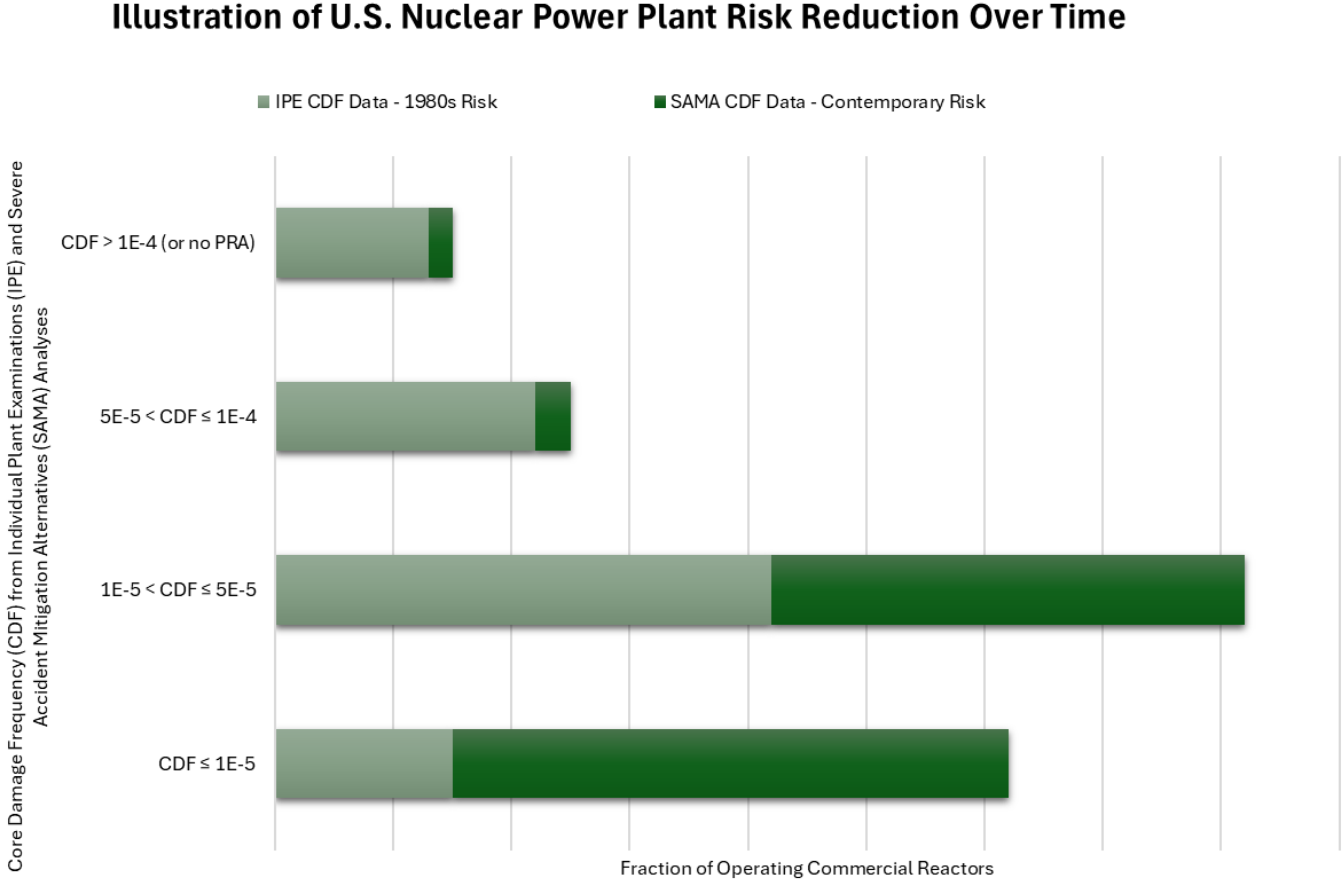
Regulatory Experience (continued)

Decreasing Accident Risk



Adapted from: Dickson, E., NRC, internal memorandum to K. Hsueh, "Method for a Graded Risk-Informed Performance-Based Control Room Design Criteria Framework," Washington, DC, July 2024 (ML24212A254).

Stakeholder Discussion Topics

Stakeholder Discussion Topics:

1. Overviews of scientific research (e.g., non-LNT or other models) that could inform the NRC's recommendations for changes to its radiation protection framework, including adoption of determinate dose limits and levels for acceptable lifetime occupational doses.

2. Summaries of data and experience that quantify the impact of ALARA on stakeholders, and insights on the potential impacts of removing ALARA from NRC regulations.

3. Insights on defining dose values below which ALARA efforts would not be required by regulation.

4. Insights on potential transition from annual stochastic dose limits to stochastic limits based on longer periods (e.g., public dose limit of 500 mrem over five years and occupational dose limit of 25 rem over five years) while retaining current deterministic dose limits (e.g., occupational skin dose limit).

5. Insights for modifying NRC's cost-benefit dollar per person-rem guidance at low doses considering lower risk and uncertainties of health effects and resulting economic impacts on stakeholders.

6. Recommendations for improvements to the NRC's radiation protection regulatory framework that would improve outcomes for licensees while maintaining adequate protection of exposed individuals.

https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML25181A247

External Presentations

Meeting Rules

July 16, 2025 Comment Gathering Public Meeting on
Executive Order 14300 Section 5(b) – Reconsidering the NRC's Radiation Protection Framework

- The views expressed by non-NRC staff during presentations and during the public comment period reflect those of the speaker and do not necessarily reflect the official views of the NRC or the federal government.

Conduct During the Meeting

- This is comment-gathering public meeting where the public is invited to express views on technical and policy matters relevant to the directives to the NRC in EO 14300 Section 5(b)
  - NRC staff may defer questions that require lengthy answers
- Conduct that is disruptive to the meeting is prohibited
  - Matters not relevant to the directives to the NRC in EO 14300 Section 5(b)
  - Remarks cannot contain: vulgar, obscene, offensive, or abusive language, language that advocates violence, or personal attacks of any kind, hate speech directed at race, color, sex, sexual orientation, national origin, ethnicity, age, religion, or disability.

Meeting Rules (Continued)

July 16, 2025 Comment Gathering Public Meeting on
Executive Order 14300 Section 5(b) – Reconsidering the NRC's Radiation Protection Framework

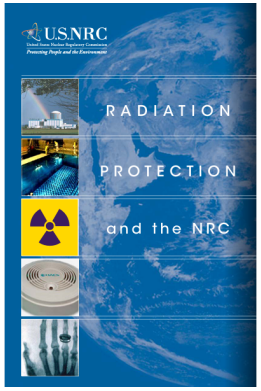
Time Controls During the Meeting

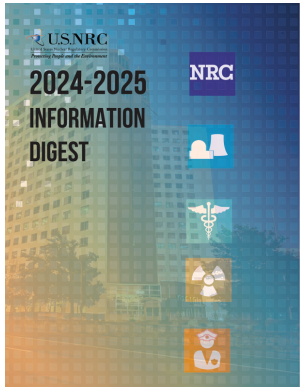
- Necessary to ensure that as many participants viewpoints can be heard, balanced with appropriate time for participants to express viewpoints
- 10-Minute Presentations
  - Pre-arranged with NRC staff as described in public meeting notice
  - Speaker order was determined based on when proposal received by NRC staff
- 2-Minute Public Comments
  - Limited public forum to enable public engagement in regulatory process
  - Comments limited to technical and policy matters relevant to the directives to the NRC in EO 14300 Section 5(b)
  - Timer will be shared on screen with speaker cues
- Warning Policy: Mute (1st warning), Invitation to submit written remarks (2nd warning)

Break

Public Comments

Additional Resources





- https://www.nrc.gov/about-nrc/radiation.html
- https://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0322/index.html
- https://www.nrc.gov/reading-rm/basic-ref/students/elearning.html
- https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/index.html
- https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/index.html

EPA United States Environmental Protection Agency

- https://www.epa.gov/radiation

Contacts

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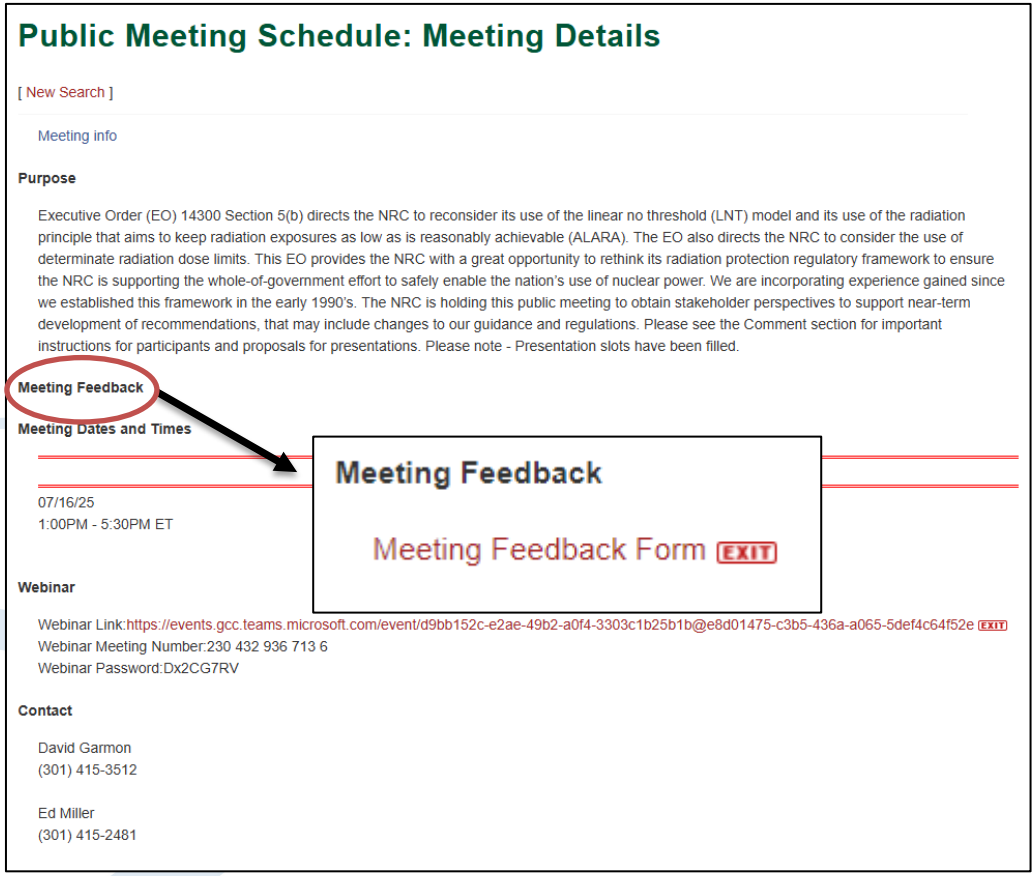
How did we do?



Public Meeting Schedule: Meeting Details

[New Search]

Meeting info

Purpose

Executive Order (EO) 14300 Section 5(b) directs the NRC to reconsider its use of the linear no threshold (LNT) model and its use of the radiation principle that aims to keep radiation exposures as low as is reasonably achievable (ALARA). The EO also directs the NRC to consider the use of determinate radiation dose limits. This EO provides the NRC with a great opportunity to rethink its radiation protection regulatory framework to ensure the NRC is supporting the whole-of-government effort to safely enable the nation's use of nuclear power. We are incorporating experience gained since we established this framework in the early 1990's. The NRC is holding this public meeting to obtain stakeholder perspectives to support near-term development of recommendations, that may include changes to our guidance and regulations. Please see the Comment section for important instructions for participants and proposals for presentations. Please note - Presentation slots have been filled.

Meeting Feedback

Meeting Dates and Times

07/16/25
1:00PM - 5:30PM ET

Meeting Feedback

Meeting Feedback Form EXIT

Webinar

Webinar Link:https://events.gcc.teams.microsoft.com/event/d9bb152c-e2ae-49b2-a0f4-3303c1b25b1b@e8d01475-c3b5-436a-a065-5def4c64f52e EXIT
Webinar Meeting Number:230 432 936 713 6
Webinar Password:Dx2CG7RV

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https://www.nrc.gov/pmns/mtg?do=details&Code=20250860