

U.S. Nuclear Regulatory Commission Public Meeting Summary

July 20, 2023

Title: Public Meeting on the Proposed Rule: Regulatory Framework for Fusion Energy Systems

Meeting Identifier: [20230751](#)

Date of Meeting: July 12, 2023

Location: Webinar (via Microsoft Teams)

Type of Meeting: Information Meeting with a Question-and-Answer Session

Purpose of Meeting:

The U.S. Nuclear Regulatory Commission (NRC) staff hosted a public meeting to inform the public that the staff has commenced work on a proposed rule to develop a regulatory framework under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 30 for fusion energy systems and to develop guidance under NUREG-1556 “Consolidated Guidance About Materials Licenses”. The staff encouraged public feedback during the meeting; however, no formal responses will be issued. This feedback discussion was intended to help staff develop the proposed rule.

General Details:

The NRC is proposing to amend its regulations in 10 CFR 30 to provide a regulatory framework for fusion energy systems.

As part of the proposed rule, the NRC staff also intends to issue, for public comment, the following supporting materials:

- draft guidance under a new volume (Volume 22) of NUREG-1556
- a draft regulatory analysis (cost analysis)
- an environmental assessment
- a supporting statement for any proposed information collections under the Paperwork Reduction Act

The virtual meeting consisted of one NRC presentation providing an overview of the Commission’s direction for this proposed rule, four stakeholder presentations providing their feedback on what this rule should accomplish, and finally a question-and-answer session where the public was invited to pose any additional feedback and questions to the NRC. The meeting was well attended by 156 participants, including NRC staff, fusion companies, Fusion Industry Association, academia, Agreement States, non-government organizations, Department of Energy, and other members of the public.

Summary of Presentation:

Dennis Andrukat of the NRC opened the meeting, introducing himself as the Project Manager for this rule and acting as the meeting’s facilitator. Mr. Andrukat described the purpose of the meeting - to present an overview of the proposed rule and to listen to public feedback on what this rule should accomplish. Mr. Andrukat then discussed

Public Meeting on the Proposed Rule: Regulatory Framework for Fusion Energy Systems

logistics of the meeting and advised participants on the features of the webinar platform. Mr. Andrukat noted the agenda in which the first half of the meeting will be presentations by the NRC staff and various stakeholders, followed by a short break, and the remaining half of the public meeting will be an open question and answer session. Mr. Andrukat provided instructions for how members of the public attending via Microsoft Teams or via the phone could ask questions or offer comments. Mr. Andrukat expressed the desire that the meeting will help the NRC staff better understand stakeholder ideas and concerns related to the development of the proposed rule. Mr. Andrukat encouraged public participation during the meeting from all stakeholders but noted that the NRC will not provide any formal responses to the feedback and questions offered during the meeting. Mr. Andrukat then introduced the speakers for this public meeting.

Mr. Andrukat then turned the meeting over to the NRC's Theresa Clark, Deputy Director for the Division of Materials Safety, Security, State, and Tribal Programs (MSST) in the Office of Nuclear Material Safety and Safeguards (NMSS). Ms. Clark welcomed everyone and gave the opening remarks before turning the meeting back over to Mr. Andrukat.

The meeting then commenced with the presentations and Mr. Andrukat turned the meeting over to the rulemaking's technical lead: the NRC's Duncan White, NMSS/MSST. Mr. White began his slide presentation by providing a short overview of the background of the rulemaking. Mr. White highlighted the Commission direction to pursue a regulatory framework under the Part 30 Byproduct Material framework. Mr. Andrukat added a high-level overview of the NRC's rulemaking process, where we are today in that process, the public milestone dates, the proposed opportunities for public engagement, and a general idea of the types of supporting documents before handing the meeting back to Mr. White.

Mr. White continued the NRC's overview of the Commission's direction for this rulemaking, highlighting the planned structure for rule and the implementation guidance (NUREG-1556, Volume 22), key areas and topics to be addressed, and the staff's outreach plans.

Next, Mr. Andrukat turned the meeting over to the following stakeholders who presented their slides:

- University of Wisconsin-Madison – Laila El-Guebaly – “Inquiry to Develop Fusion-Specific Standards to Regulate Radioactive Waste of Fusion Energy System”
- Fusion Industry Association (FIA) – Andrew Holland – “NRC Meeting: Regulatory Framework for Fusion Energy Systems”
- Helion – Sachin Desai – “Introduction to Helion: Rulemaking for Fusion Energy Systems”
- Commonwealth Fusion Systems (CFS) – Tyler Ellis Ph.D. – “CFS Regulatory Presentation”

This concluded the presentation portion of the meeting.

Public Feedback and Questions:

Public Meeting on the Proposed Rule: Regulatory Framework for Fusion Energy Systems

Below is a high-level summary of the feedback offered by the stakeholders for the NRC staff to consider as they develop the draft proposed rule and the draft implementation guidance.

- In general, stakeholders agreed on utilizing a 10 CFR Part 30 byproduct material regulatory framework.
- The four stakeholder presentations offered many questions and suggestions for the NRC staff to consider including waste management, definitions, regulation changes, export controls, fusion types and characteristics, and offers to develop guidance.
- A stakeholder suggested the guidance could mirror NUREG-1556, Volume 21, “Program-Specific Guidance About Possession Licenses for Production of Radioactive Material Using an Accelerator.”
- A stakeholder asked about the rulemaking timeline and if the NRC had the needed resources to complete the rulemaking and guidance.
- A stakeholder asked about the interfacing with other federal agencies.
- A stakeholder suggested that for near-term fusion energy systems, a 10 CFR Part 30 framework would be acceptable. However, for fusion energy systems developed in the longer-term, then a more fulsome, standalone regulatory framework should be established. This stakeholder also advocated the use of fusion energy as a means towards a cleaner climate.
- Numerous stakeholders presented feedback related to waste management and welcomed the waste-related information presented. Feedback included:
 - highlighting the NRC’s current 10 CFR Part 61, low-level waste rulemaking and asked if fusion-related material should be included in that rulemaking.
 - questions on whether to update the 10 CFR 61.55 waste classification tables with fusion-related material and whether to identify a maximum limit for low-level, greater-than Class C materials.
 - question on whether the comparison of potential fusion-related wastes and waste from the current power reactor fleet captured annual waste production or was based only on core volumes.
 - a comment that waste volume comparisons might be premature because they relied on research reactors and commercial systems could use different technologies and would be designed to minimize waste production.
 - a stakeholder agreed with the use of 10 CFR Part 61 and asked about the use of an accelerator model.
 - agreement that this is an issue for further refinement and consideration.
- Numerous stakeholders mentioned export controls and are committed to ensuring they continue to meet and maintain the export control framework in-place today.
- A stakeholder asked whether 10 CFR Part 51, regarding environmental-related requirements, would need to be changed for fusion energy systems.
- In general, stakeholders eagerly offered to help the NRC staff to develop the rule and associated guidance (or to develop their own guidance for NRC’s approval for use).

Closing:

Mr. Andrukat made brief closing remarks, thanking everyone for their time and attention. Mr. Andrukat displayed a slide with the rule's www.regulations.gov Docket ID number (NRC-2023-0071), the public repository for key documents related to the development of this rulemaking, as well as contact information and the NRC's new public website for [Fusion Energy Systems](#).

Mr. Andrukat informed participants of the [public meeting feedback form](#) available on the [NRC Public Meeting Schedule website](#) and ended the meeting by stating that the NRC looks forward to the public's comments on the proposed rule.

Action Items/Next Steps:

- The staff will review the feedback for consideration in the drafting of the rule and guidance.
- The staff anticipates the next public meeting to be held in October 2023.

Related Documents:

- [ML23191A146](#) – ADAMS PACKAGE: 07/12/2023 – Public Meeting -- Proposed Rule: Regulatory Framework for Fusion Energy Systems
 - [ML23191A154](#) – 07/12/2023 – Notice of Public Meeting to Discuss the Proposed Rule: Regulatory Framework for Fusion Energy Systems
 - [ML23191A153](#) – 07/12/2023 – Public Meeting Presentation -- Proposed Rule: Regulatory Framework for Fusion Energy Systems
 - [ML23191A156](#) – 07/12/2023 – Public Meeting Summary -- Proposed Rule: Regulatory Framework for Fusion Energy Systems

Information Referenced During Public Meeting:

- [ML22273A178](#) – ADAMS PACKAGE: SECY-23-0001, "Options for Licensing and Regulating Fusion Energy Systems," dated January 3, 2023
- [ML23103A449](#) – SRM-SECY-23-0001, "STAFF REQUIREMENTS – SECY-23-0001 – Options for Licensing and Regulating Fusion Energy Systems," dated April 13, 2023
- NUREG-1556, "Consolidated Guidance About Materials Licenses"
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/index.html>
- NRC Public Website for Fusion Energy Systems:
<https://www.nrc.gov/materials/fusion-energy-systems.html>
- Fusion Industry Association, "The Global Fusion Industry in 2023: Fusion Companies Survey by the Fusion Industry Association"
<https://www.fusionindustryassociation.org/wp-content/uploads/2023/07/FIA-2023-FINAL.pdf>
- *Link to FIA's industry reports:*
<https://www.fusionindustryassociation.org/news/from-the-fia/#industry-reports>
- [ML22243A083](#) – Letter from Helion to NRC, "Classification of Fusion Devices as Particle Accelerators; and Supplementing Common Defense & Security Discussions," dated August 12, 2022

Public Meeting on the Proposed Rule: Regulatory Framework for Fusion Energy Systems

- NRC's Public Rulemaking Website - Regulatory Framework for Fusion Energy Systems: <https://rulemaking.nrc.gov/Rules/Detail/2185>
- Regulations.gov Website for Docket ID: NRC-2023-0071: www.regulations.gov/docket/NRC-2023-0071

LIST OF ATTENDEES*

JULY 12, 2023, PUBLIC MEETING TO DISCUSS THE PROPOSED RULE: Regulatory Framework for Fusion Energy Systems

NRC

Dennis Andrukat**
Duncan White**
Allyce Bolger
Amy Hull
Andrew Proffitt
Boby Abu-Eid
Candace Spore
Carrie McCann
Charles Murray
Christian Einberg
Christianne Ridge
Christopher Grossman
Christopher Ulmer
Cindy Bladey
Cindy Rosales-Cooper
Daniel Dimarco
Daniel Shaw
Dave McIntyre
David Cullison
Donald Palmrose
Duane White
Ethan Licon
Helen Chang
Hossein Esmaili
Ilka Berrios
Isaac Johnston
Jack Cowan
James Anderson
Jeff Poehler
Jill Shepherd
Jonathan Fiske
Joseph Staudenmeier
Kenneth Erwin
Kevin Williams
Leah Smith
Lee Smith
Linda Howell
Lisa Dimmick
Mari de Jesus
Marilyn Diaz Maldonado
Neil Sheehan
Patricia Cline-Thomas
Robert Tregoning
Ronald Raunikar
Sandra Talley
Sarah Spence
Scott Burnell
Shah Malik
Sheldon Clark
Stephen Philpott
Steven Lynch
Suzanne Dennis
Theresa Clark
Tricia Lizama
Tyler Hammock
Wendy Reed

EXTERNAL STAKEHOLDERS

Laila El-Guebaly**
Andrew Holland**
Sachin Desai**
Tyler Ellis**
Adam Maslowski
Alison Brown
Ane Lasa
Andrew Holcomb
Ashley Forbes
Augustinus Ong
Austin J. Nowak (DHS)
Becki Harisis
Bibake Uppal
Bill Dundulis (RIDOH)
Brenda Garcia-Diaz
Brian Vamvakias (DSHS)
Bruce Hammond (DSHS)
Cameron Williams
Charles Burns
Charlyne A Smith
Chris Ajemian
Chris Faranetta
Corey Creveling
Cortney Dillard
Dan Andrei
Dave Babineau
David Matos
Derek Bailey (CDPHE)
Diane Demers
Diego S. Saenz (DHS)
Don Gregoire
Edward Khatchatrian
Eric Skotak (DSHS)
Floyd DesChamps
Forrest Weston (DSHS)
Gene Nardella
Guinevere Shaw
Hesham Y. Khater
Ian Miner
Ira Schneider (CDPH)
Jana Bergman
Jarrett Mack
Jeffrey S. Merrifield
Jennifer Elee
Jerry Bingaman
Jim Klein
Joseph McCarthy (CDPH)
Kaci Studer
Kasey McGinty
Kate Hyam
Kathy McCarthy
Kenath Traegde (DPH)
Kevin Quach (CDPH)
Lisa Bruedigan (TX DSHS)
Luke Thomson
Mark D Paulson (DHS)

EXTERNAL STAKEHOLDERS

Matt Hendrickson (ODOE)
Matthew Greenwood
Matthew Lipka
Megan L. Shober (DHS)
Megan Wart
Meghan Cromie (CDPHE)
Melvin J Weatherly (DOH)
Michael Hua
Mike O'Neill
Mike Stephens
Pascal Dumont
Philip Justin Keb
Phillip Peterson (CDPHE)
Robert Custodio
Robert C. Harris
Robert Jennings
Rose Yankoski (VDH)
Ryenne Kennedy (MPR)
Sara Castegini
Scott Clausen
Scott Landry (CDPH)
Sean Williams
Sheila Nelson (VDH)
Sidney L. Fowler
Stacey French
Stefanie Blum (DSHS)
Susan Gallier
Szymon Mudrewicz (DPH)
Teodori Michael
Todd M. Anselmi
Trent Bauserman
Undria McCallum
Xinhan (Henry) Tao
Zachary Johnson

* List does not contain attendees who participated via a phone line or who did not provide first and last names

** Presenter